



# 17<sup>TH</sup> WORLD CONGRESS ON PUBLIC HEALTH 2023 May 2-6 ROME ITALY

## ABSTRACT BOOK



Abstract book by:





# ORGANISING COMMITTEE

## CMC

The three organising partners of the 17th World Congress on Public Health established a Congress Management Committee (CMC) consisting of representatives of WFPHA, SItI, ASPHER and the PCO. The CMC has the full managerial and financial management responsibility for the Congress.

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## ICC

The International Congress Council (ICC) consisted of the Congress Management Committee and international public health experts representing various regions of the WFPHA, international health organisations, European health non-governmental organisations and Italian universities and institutes. The ICC in particular develops, in consultation with the CMC, the scientific programme including subthemes and plenary programme of the WCPH and identify speakers/panellists/moderators of the plenary sessions.

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## ISC

The International Scientific Committee (ISC) consists of experienced public health experts from around the world nominated by WFPHA, SItI and Aspher. It mainly advises the ICC on scientific matters of the conference and contributes to the scientific evaluation of the conference. We would like to thank the ISC for their support.

## Aim & Scope

Population Medicine is an open-access double-blind peer-reviewed scientific journal that encompasses all aspects of population, preventive, and public health research including health care systems and health care delivery. Its broader goal is to address major and diverse health issues, to provide evidence-based information to professionals at all levels of the health care system, and to inform policymakers who are responsible for the formation of health policies that can lead to evidence-based actions.

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## Musculoskeletal symptoms and disorders, and related knowledge, attitude and practices among female textile workers in Karachi, Pakistan: a cross-sectional study

Ali Hussaini<sup>1</sup>

<sup>1</sup>Aga Khan University, Karachi, Pakistan

**Objectives:** The aim of this study was to determine the prevalence of Musculoskeletal symptoms and disorders (MSD) and to assess Knowledge, Attitude and Practices regarding Musculoskeletal symptoms and disorders among female textile workers in Karachi, Pakistan. **Methodology:** To assess the prevalence of MSD, we used the adopted version of Nordic Musculoskeletal Questionnaire (NMQ). For assessing individual and work-related factors, a structured questionnaire was developed and used. Data was captured on EpiData and analyzed using SPSS 19. Percentages and frequencies were calculated for musculoskeletal symptoms and disorders, socio-demographic and work-related factors. Standard deviation (SD) and mean were calculated for age, duration of work and income. For KAP variables, responses were coded as "positive" or "negative". Those scoring "positive" were considered as having good knowledge, attitude, and practices.

**Results:** 311 respondents participated in this study. 253 (81.4%) of the female textile workers reported musculoskeletal symptoms. The Lower back was the most frequently affected region (71.7%), followed by shoulders (70.7%), neck (43.4%), forearm and elbow (24.4%), hands and wrist (20.6%), upper arms (15.1%) and upper back (5.1%). Self-reported average difficulty of pain was moderate, and most individuals (29.6–53.1%) reported duration of pain to be between 3-5 days. Nearly 69.5% female workers were very dissatisfied with their working space. Frequency of musculoskeletal complaints were popular among 26-35 years of age bracket. Higher monthly income, up to 5 years spent working in the textile industry, marital status and lower educational attainment all correlated positively with complaints. Those with MSD complaints were more likely to have better knowledge and safer practices score. **Conclusions:** Here is a high prevalence of musculoskeletal symptoms and disorders among female textile workers in economically developing countries. Preventive measures and worksite interventions are needed to reduce work-related musculoskeletal disorders in this population. Health insurance, treatment and reimbursement schemes should be launched.

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## Heart Health of Filipino senior workers

Meryl Quero-Asa<sup>1</sup>

<sup>1</sup>Balai Obrero Foundation, Philippines

The study uses a mixed approach which includes using an online survey to quantitatively describe the cardiovascular health condition of senior working people, and its relation to access to food, medicine, and health care. The sample is taken from worker communities or neighborhoods near factory belts in the capital of the Philippines. Linear regression is used to analyze the social determinants of health. The study shows the condition of hunger and poor health among the elderly amid job and livelihood insecurity that was exacerbated by the pandemic. **Keywords:** senior workers, elderly health, job insecurity, healthcare

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## Awareness and practice of family planning services among married men in area of Yemen

Abdulla Bagahizel<sup>1</sup>

<sup>1</sup>Hadhramout University, Yemen

**Background and objectives:** Family planning is the capacity of people and couples to expect and accomplish their ideal number of youngsters and the dispersing and timing of their births. This study aimed to assess the level of awareness and practice of family planning methods among married men in Mukalla public hospitals.

**Methodology:** A descriptive cross-sectional study was conducted in Al-Mukalla city during the time period of (2021-2022). 366 married men were recruited using interviewer-administered questionnaires with close-ended questions which consisted of three sections including demographic characteristics, awareness and practice sections. The collected data was computerized and summarized numerically and graphically using Statistical Package for the Social Sciences (SPSS) version 25. Nonparametric statistical tests were used to assess the mean differences of sociodemographic variables with the knowledge, attitudes, and practices scores toward family planning.

**Results:** Among the study participants, the mean age was 35.25 ( $\pm 7.959$ ), and most of them (60.1%) had married within 10 years. The Findings of the study revealed that the majority of the participants (51.9%) had a good awareness

of family planning methods with a mean score of 7.27 ( $\pm 2.307$ ). Based on their responses, the most common method known and practiced by them as oral contraceptive pills. The most common reasons for not using family planning methods among men were the wish for more children and the fear of side effects. **Conclusions:** The study concludes that most men have a piece of comprehensive knowledge. However, the practice of family planning methods is still inadequate. Our study suggests directing more health education interventions and promotion to enhance the utilization of family planning Methods.

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## Inequalities in primary and secondary healthcare use among people living with dementia in England

James Watson<sup>1</sup>

<sup>1</sup>NIHR Applied Research Collaboration North West Coast (ARC NWC), The University of Liverpool, United Kingdom

**Background and objectives:** In the UK healthcare services for people living with dementia (PLWD) are under pressure, and central government have not adhered to additional funding commitments. The UK population with dementia is expected to surpass 1 million by the year 2024, and the health and social care costs for PLWD set to treble by 2040, making it critical we understand how and to what extent, PLWD differentially use healthcare. This study aimed to explore social and spatial variations in healthcare use among people diagnosed with dementia (2002-2016). **Methods:** Data were taken from Electronic Health Records of Clinical Practice Research Datalink General Practice patients in England (n=142,302). Healthcare contacts were standardised for the sample population, with rates of contacts per year calculated for three primary healthcare types (GP observations, and both dementia and non-dementia medications) and three secondary (Accident and Emergency (A&E) attendances, and emergency and elective hospital admissions). Generalised linear regression models, fully-adjusted for confounders enabled identification of differences in healthcare use by socio-economic, demographic and geographic factors. The sample was stratified by dementia onset, with a subsequent series of analyses generated for each healthcare type, Resulting in 12 regression models.

**Results:** The study highlights several social and spatial inequalities in healthcare use among PLWD. Men, PLWD from White ethnicity groups, in more deprived areas, and from rural areas, have greater use of healthcare services more closely associated with negative health outcomes, including less frequent GP contact and medications, and greater use of secondary healthcare.

**Conclusions:** Social and systemic measures are needed to reduce healthcare use inequalities among PLWD. These include: improved healthcare continuity, more frequent and better-quality health checks and medicines reviews, more culturally appropriate services, as well as greater and more accessible treatment and improved infrastructure for underserved communities.

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## Concepts and definitions of healthy ageing: a systematic review and synthesis of theoretical models

Marilyne Menassa<sup>1</sup>, Karien Stronks<sup>2</sup>, Farnaz Khatami<sup>3</sup>, Zayne Díaz<sup>3</sup>, Octavio Espinola<sup>3</sup>, Magda Gamba<sup>3</sup>, Oche Itodo<sup>3</sup>, Chepkoech Buttia<sup>3</sup>, Faina Wehrli<sup>3</sup>, Beatrice Minder<sup>4</sup>, Minerva Velarde<sup>5</sup>, Oscar Franco<sup>6</sup>

<sup>1</sup>Graduate School of Health Sciences, Institute of Social and Preventive Medicine, University of Bern, Bern, Switzerland, <sup>2</sup>Department of Public and Occupational Health, Amsterdam University Medical Centers, University of Amsterdam, Netherlands, <sup>3</sup>Institute of Social and Preventive Medicine, University of Bern, Switzerland, <sup>4</sup>Public Health and Primary Care Library, University of Bern, Switzerland, <sup>5</sup>Department of Radiology and Medical Informatics, University of Geneva, Switzerland, <sup>6</sup>Department of Public Health, Julius Center for Health Science and Primary Care, UMC Utrecht, University of Utrecht, Netherlands

**Background:** Healthy ageing (HA) has been defined using multiple approaches. We aim to produce a comprehensive overview and analysis of the theoretical models underpinning this concept and its associated normative terms and definitions.

**Methods:** We conducted a systematic review of peer-reviewed HA models in Embase.com, Medline(Ovid), Cochrane CENTRAL, CINAHL, PsycINFO, and Web of Science until August 2022. Original theoretical papers, concept analyses, and reviews that proposed new models were included. Operational models/definitions, lifespan development psychology theories and mechanisms of ageing were excluded. We followed an iterative approach to extract the models' characteristics and thematically analyze them based on the approach of Walker and Avant. The protocol was registered in PROSPERO(CRD42021238796).

Results: Out of 10,741 records, we included 59 papers comprising 65 models/definitions, published in English (1960-2022) from 16 countries in Europe, Asia, and America. Human ageing was described using 12 normative terms, mainly (models (%)): successful (34 (52%)), healthy (eight (12%)), well (five (8%)), and active (four (6%)). We identified intrinsic/extrinsic factors interacting throughout the life course, adaptive processes as attributes, and outcomes describing patterns of ageing across objective and subjective dimensions (number of models/definitions): cognitive(62), psychological(53), physical (49), social (49), environmental (19), spiritual (16), economic (13), cultural (eight), political (six), and demographic (four) dimensions. Three types of models emerged: health-state outcomes (three), adaptations across the life course (31), or a combination of both (31). Two additional sub-classifications emphasized person-environment congruence and health promotion.

Conclusions: HA is heterogeneously termed and conceptualized multidimensionally as adaptive processes of dynamic person-environment interactions to ageing, health-state outcomes, or both. Congruence with the living environment and health promotion/empowerment are emphasized. Our model classification provides a basis for harmonizing conceptual terms and dimensions that can guide research and comparisons of empirical Findings. This would inform social and health policies enabling HA for populations in various contexts.

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### The Adult Immunization Board (AIB): a platform to provide multidisciplinary support for the implementation and optimization of adult immunization in Europe

Jade Pattyn<sup>1</sup>, Marco Del Riccio<sup>2</sup>, Angela Bechini<sup>2</sup>, Greet Hendrickx<sup>1</sup>, Sara Boccalini<sup>2</sup>, Pierre Damme<sup>3</sup>, Paolo Bonanni<sup>2</sup>

<sup>1</sup>Centre for the Evaluation of Vaccination, Vaccine & Infectious Disease Institute, University of Antwerp, Belgium, <sup>2</sup>Department of Health Sciences, University of Florence, Italy, <sup>3</sup>Centre for the Evaluation of Vaccination, Vaccine and Infectious Disease Institute, University of Antwerp, Belgium

Background: The low adult vaccination coverage and the barriers experienced during the implementation of the COVID-19 vaccination strategies in almost all European countries underline the need for a thorough reflection on adult immunization programs in Europe. Therefore, the teams of Prof. Bonanni - University of Florence and Prof. Van Damme - University of Antwerp joined forces to create an adult immunization board (AIB) based on years of experience with the Viral Hepatitis Prevention Board (created in 1992) and the HPV board (created in 2015). The AIB will be an independent, international, and multidisciplinary group of experts in adult immunization. The experts will set the strategy and define the actions of the AIB.

Materials: AIB operates by organizing two yearly meetings: 1) Technical meeting covering technical aspects of adult immunization such as tailored vaccine services and communication for adults, electronic vaccine registries, adult immunization schedules, vaccine equity, coadministration of vaccines etc. 2) Country meeting to discuss country/region-specific aspects of adult immunization together with local experts.

Results: In November 2022, the AIB secretariat organized a Kick-off meeting with experts to establish the basic structure/functions of the Board, discuss the main Objectives, and plan future meetings. Experts from different disciplines/sectors welcomed the AIB initiative. It was indicated that it is timely to have a closer look into adult vaccination and it was recognized that immunization needs a lifelong course and does not end after childhood. The new platform was well received and endorsed as an appropriate and effective way to share information and exchange ideas and experiences across disciplines and borders. In Q2/Q4 2023, the first AIB technical/country meetings are scheduled.

Conclusions: AIB will be a platform that brings together the different key European stakeholders on adult immunization in order to effectively contribute towards the implementation and optimization of adult immunization in Europe.

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### Impact of multimorbidity on health care utilisation in Australian older adults aged 45 years and over: a large population-based data linkage cohort study

A.Y.M. Kabir<sup>1</sup>, Sameera Ansari<sup>2</sup>, Damian Conway<sup>3</sup>, Joel Rhee<sup>4</sup>, An Tran<sup>5</sup>, Margo Barr<sup>5</sup>

<sup>1</sup>Centre for Primary Health Care and Equity, University of New South Wales, Sydney, Australia, <sup>2</sup>School of Population Health, University of New South Wales, Kensington, Australia, <sup>3</sup>Population and Community Health Directorate, South Eastern Sydney Local Health District, Australia, <sup>4</sup>School

of Population Health, University of New South Wales, Kensington, Australia, <sup>5</sup>Centre for Primary Health Care and Equity, University of New South Wales, Kensington, Australia

Background: Multimorbidity (MM), co-occurrence of two or more chronic health conditions in an individual, is often used in the assessment of complex healthcare needs and their impact on health outcomes. Management of MM is complex, but little is known about the impact of MM on health care services. Methods: We conducted a cross-sectional study among people aged 45+ years in New South Wales, Australia, who completed baseline questionnaires in the 45 and Up Study between 2005-2009. Baseline questionnaire data were linked to hospital, primary care Medicare billings, emergency department (ED), and deaths registry data. Our outcome of interest was high use of health care services within the 3-year baseline period (averaged over the years before, during and after recruitment). People who died during that period were excluded. High use was defined as:  $\geq 11$  General Practice (GP) visits,  $\geq 2$  ED visits, and  $\geq 2$  hospital admissions. Prevalence ratios (PRs) were used to measure the impact of MM, and Poisson regression models were used to estimate adjusted and unadjusted PRs with 95% confidence intervals.

Results: Among 251,689 participants (46.5% male, and 46.1% aged <60 years), the overall prevalence of MM was 44.1% and prevalence increased with age: 32.2% in 45-59 years, 50.3% in 60-74 years, and 63.3% in 75+ years. After adjusting for confounding, MM was associated with high service use: adjusted PR (95% CI) was 2.27 (2.06-2.51) for high hospital use, 2.02 (1.98-2.06) for high GP use, and 2.04 (1.90-2.21) for high ED use. The impact of MM on health care utilisation was higher among the younger age group. Conclusions: This study illustrates the burden of multimorbidity on service use within the health system. It also highlights the need to examine and rationalise service provision and utilisation across the health system to assist people with multimorbidity efficiently manage their conditions.

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### Identifying risk factors for becoming obese: a record linkage longitudinal study in metropolitan Sydney using the 45 and Up Study

Alamgir Kabir<sup>1</sup>, Kylie Vuong<sup>2</sup>, Damian Conway<sup>3</sup>, Margaret Williamson<sup>4</sup>, Mark Harris<sup>4</sup>, Margo Barr<sup>4</sup>

<sup>1</sup>Centre for Primary Health Care and Equity, University of New South Wales, Australia, <sup>2</sup>School of Medicine and Dentistry, Griffith University, Australia, <sup>3</sup>South Eastern Sydney Local Health District, Population and Community Health Directorate, Australia, <sup>4</sup>Centre for Primary Health Care and Equity, University of New South Wales, Kensington, Australia

Background: Obesity is the fourth leading cause of mortality globally. Australia has one of the world's highest rates of adult obesity, with 31% being obese in 2017/2018, and increasing. If this trend continues, the Australian Bureau of Statistics predicts 18 million Australians will be obese or overweight by 2030. We aimed to identify risk factors for becoming obese among people aged 45 years and older. Methods: A record linkage longitudinal study of people from metropolitan Sydney was undertaken using data from the: 45 and Up Study at baseline (2005-2009) and first follow-up (2012-2015); Medicare Benefits Schedule; Pharmaceutical Benefits Scheme; and deaths registry. We examined risk factors for becoming obese (Body Mass Index [BMI]:30-40) at follow up (5-7 years after baseline), separately for people within the: healthy weight range (BMI:18.5- < 25), and overweight range (BMI: 25- <30) at baseline. We considered demographics, modifiable behaviours, health status, primary care usage, and medication use as covariates. Crude and adjusted relative risks (RR) were measured using Poisson regression model.

Results: At follow up, in the healthy weight range cohort, 1.1% (180 of 16,205) people became obese, and in the overweight range cohort, 12.7% (1939 of 15266) people became obese. In both cohorts, the following were associated with an increased risk of becoming obese: current smokers, physical functioning limitations, allied health services use through team care planning and use of psychiatric medications, while alcohol consumption and adequate physical activity were found to be protective. In the healthy weight cohort, high psychological distress was associated with an increased risk of becoming obese. In the overweight cohort, being female and full-time work were associated with increased risk, while older age was found to be protective. Conclusions: These findings should assist primary care clinicians to identify patients with characteristics that place them at risk of becoming obese for intervention.

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### Use of wearable sensor technology to detect risk of fall in Indian older adults

Snehal Kulkarni<sup>1</sup>

<sup>1</sup>School of Public Health, Faculty of Sustainability Studies, MIT-World Peace University, India

**Background and Objectives:** Approximately 28-35% of people aged 65 and older fall each year. As most of the falls occur during walking; evaluation of gait and balance impairment are considered as the most prevalent and sensitive predictors of fall. The population of older adults is expected to increase 193 million by 2050 in India. However, no such programme fall prevention programme exists to date in India. Therefore, the present study was undertaken to establish normative reference gait parameters for Indian older adults and identify older adults at risk of fall using wearable sensors. **Methodology:** This cross-sectional study was conducted in the Pune city, India among 659 community-dwelling older adults. Participants performed the Timed-up and go test (TUG) test fitted with the wearable sensors, which measured 59 gait parameters. Seven parameters were standardized for Indian older adults and fall risk of each individual was computed. Independent t-test, and one-way ANCOVA were used to establish normative gait parameters and predict risk of fall.

**Results:** The study reported a fall prevalence of 24.7%, with a mean stride length of 123.00 ± 15.19 cm and stride velocity of 110 ± 17.57 cm/s respectively. Significantly (p<0.05) shorter stride length was observed in participants above 80 years of age (109.01±18.08 cm). Using these gait parameters, the study found that 20% of the study participants were at low risk of fall, 30.5% medium risk, 25.5% had high risk and 24.1% were at very high risk of falling. The sensor reported a sensitivity of 85.71% (CI: 69.74%- 95.19%) and 56.02% (CI: 49.82%- 62.07%) specificity to predict falls. **Conclusions:** Wearable sensors are a dependable tool for identifying older adults at risk of falling in community settings with limited resources and expertise.

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### Social wellbeing among urban elderly in India: exploring the role of multidimensional health

Raghnath Mandi<sup>1</sup>, Dhananjay Bansod<sup>2</sup>

<sup>1</sup>Department of Public Health and Mortality Studies, International Institute for Population Sciences, Mumbai, India, <sup>2</sup>Department of Public Health and Mortality Studies, International Institute for Population Sciences (IIPS), Mumbai, India

**Background:** Globally, the share of the population aged 65 and above is projected to rise from 10 percent in 2022 to 16 percent in 2050. India too will become the home for more than 350 million elderly by 2050. With ageing, people experience various crisis like loss of physical, mental, and social status and modification in their roles and responsibilities within family and society and paving their way towards dependency in life. This dependency on others deteriorates the quality of life and well-being among the geriatric population. The present study examines the influence of multidimensional health on the well-being among urban-dwelling elderly in India aged 60 and above.

**Methodology:** The sample was obtained from first wave of the Longitudinal Ageing Study in India (LASI). Social well-being was assessed based on the SWLS scale (Diener et al., 1985) among the urban elderly in India. Multivariate linear regression analysis was used to investigate the association between multidimensional health, sociodemographic variables and life satisfaction.

**Results:** The overall mean well-being score was 24.94 (SD=7.20) which is more than many developed countries like Spain, Mexico and China. Elderly with good physical, functional and mental health have been associated with higher well-being while having any depressive symptoms or any impairment was associated with lower life satisfaction among urban elderly. Apart from that, life satisfaction score differs significantly by socio-demographic characteristics (marital status, living arrangement, wealth and educational status).

**Conclusions and Discussion:** During old age a sense of companionship and good social networks are essential in enhancing well-being, whereas, perceived physical, mental and functional health are equally important in facilitating self-perception of ageing. Therefore, well-being among urban elderly should be looked not only from the perspective of individual factors (like health and socioeconomic status) but a broad socio-cultural dimensions should be inquired extensively to achieve successful aging.

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### How multimorbidity affects trajectories in functional limitation and quality of life among middle-aged and older adults:

### longitudinal findings from the 2013-2020 survey of health, ageing, and retirement in Europe

Piotr Wilk<sup>1</sup>

<sup>1</sup>Western University, Canada

**Background and Objective:** The increased burden of multimorbidity is impacting the lives of people worldwide, restricting the ability of individuals to live autonomously and leading to a poorer quality of life. Improving or maintaining a good quality of life can be an important coping mechanism for individuals living with multimorbidity and functional limitation. This study assessed how multimorbidity affects the trajectories in functional limitation and quality of life as well as the relationship between these two trajectories in a sample of middle-aged and older adults.

**Methods:** Longitudinal prospective data came from the survey of health, ageing, and retirement in Europe, conducted in Luxembourg between 2013 and 2020, distributed across two age cohorts: 50-64 years old (n=897) and 65 years old and over (n=688). Multimorbidity was defined as the co-existence of two or more chronic conditions. Functional limitation was assessed by the summated score from the (instrumental) activities of daily living scales. Quality of life was assessed by the control, autonomy, self-realization and pleasure scale. We used latent growth curve modelling techniques to conduct the analysis.

**Results:** Our results suggest that, throughout the life course, middle-aged and older adults living with multimorbidity experienced poorer quality of life, were at a higher risk of functional limitation, and had a higher number of functional limitations than those without multimorbidity. At baseline and across time, functional limitation had a negative impact on quality of life. We also found that the impact of multimorbidity on functional limitation and quality of life varies across the life course.

**Conclusions:** The previously observed cross-sectional associations between multimorbidity, functional limitation, and quality of life are more persistent and can affect adults over the life course. Any future research on the interrelationship between multimorbidity, functional limitation, and quality of life should assess these effects separately for middle-aged and older adults.

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### Post acute care: cui prodest? A 1-year retrospective observational study

Pietro Ballesini<sup>1</sup>, Sabina Sanseverinati<sup>2</sup>, Ivo Venturini<sup>3</sup>, Sergio Rovesti<sup>2</sup>, Athos Borghi<sup>4</sup>, Alessandro Callegaro<sup>5</sup>, Naïke Sola<sup>6</sup>, Piero Benatti<sup>3</sup>, Valeria Evandri<sup>3</sup>

<sup>1</sup>Medical Urgency and Post-Acute Care, Department of Internal Medicine, Azienda Ospedaliero-Universitaria di Modena, Modena, Italy, <sup>2</sup>Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>3</sup>Department of Internal Medicine, Medical Urgency and Post-Acute Care, Azienda Ospedaliero-Universitaria di Modena, Italy, <sup>4</sup>Post-Acute Care, Department of Internal Medicine, Medical Urgency and Post-Acute Care, <sup>5</sup>Azienda Ospedaliero-Universitaria (AOU) di Modena, Italy, <sup>6</sup>Management, Azienda Ospedaliero-Universitaria di Modena, Italy

**Background:** At the time of discharge from acute care (AC) hospital, many old patients are unable to return home and need a short or extended stay at skilled medical and nursing facilities in the hospital, post-acute care (PAC), for clinical stabilization and/or reactivation/rehabilitation. This work analyzes the characteristics of patients that needed hospitalization in PAC and the benefit for patients and hospital. **Methods:** We checked consecutively 272 patient's requests of transfer records from January 1 to December 31, 2020. We considered age, sex, assessment of the patients suitability for transfer and date, day of transfer to PAC, date and type of discharge, diagnosis, re-hospitalization, death during hospitalization or within 3-6 months etc.

**Results:** 12 patients (4.4%) were considered not suitable for PAC; 95 woman and 82 male were transfer to PAC; 45 woman and 38 male considered suitable were not transfer for "lack of beds". 26 patients (14.6%) transfer to PAC needed palliation versus 12 remained in AC. Patients discharged from PAC versus not transfer, due to "lack of beds", were fewer re-hospitalized at one and 3 months (7,3% vs 12%) and (14,6 % vs 22,9%). For lack of beds in PAC, patients remained in AC 2116 days and were considered "bed blockers" long this period. In Italy PAC is remunerated "on a day" (about 150 Euros/day/patient) and from the day of the request's/ evaluation's PAC the patient has already acquired its DRG, so we can consider that the hospital has renounced approximately to 317,400 thousand euros of reimbursements from the Region.

**Conclusions:** Who benefits from the PAC? 1) The patient, who have a lower rate of re-hospitalization; 2) The patient, who have an adequate and protected discharge path 3) the AC, that have more bed available 4) the hospital that has adequate healthcare reimbursement for the provided medical service.

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### National Recovery and Resilience Plan - using the Health Project programming tool in Sardinia: Social Health Districts' mortality and aging index analysis from 2017 to 2021

Federica Cadoni<sup>1</sup>, Sara Pani<sup>2</sup>, Luigi Minerba<sup>3</sup>

<sup>1</sup>School of Hygiene and Preventive Medicine, Medicine Faculty, University of Cagliari, Italy, <sup>2</sup>School of Hygiene and Preventive Medicine, University of Cagliari, Cagliari, Italy, <sup>3</sup>Medicine Faculty, School of Hygiene and Preventive Medicine, University of Cagliari, Cagliari, Italy

**Background and Objective:** A better reorganization of territorial assistance responses depends on identifying the specific social welfare needs of both individuals and collectivity. Focusing on Sardinia Region, in line with recent Italian National Recovery and Resilience Plan' indications, Population Medicine setting and Health Project programming tool, we should take into account its peculiar heterogeneity: population' size and demographic characteristics; variation in mortality; oro-geographical aspects of the Social-Health Districts (SHD).

**Methods:** Retrospective observational study on the Italian and Sardinian resident population from 2017 to 2021. Population (Istat demographic data detailed for each municipality to depict Sardinian SHD) divided into 21 age groups, each including five years (0-4/100+). Ratios: Aging index and age-adjusted standardized mortality ratios (SMRs) calculated for the period 2017-2019, for 2020 and 2021, divided by SHD (age groups 0-64/65+). Standardized death rate calculated for the 21 age groups (reference: Italian population, same year). The excess mortality compared to the average baseline deaths calculated for the years 2020 and 2021 (group 0-100+; 0-64; 65+).

**Results:** The regional trend of standardized mortality rate shows an increase in 2020 and a slight decrease in 2021, confirmed by the excess mortality analysis. The SMRs show instead an overall increase in all Districts from 2020 to 2021, except in 7 of them, for the 0-64 range. The aging index is progressively increasing in all Districts, more incisively in some areas.

**Conclusions:** Sardinia has the highest Italian aging index, with uneven dynamics across the Districts. The demographic aging will heavily test healthcare and social security costs. Health professionals and policymakers should therefore work together using as key concepts healthy aging and aging in-place, and paying attention to the elders' idea of health as "the ability to adapt and self-manage", focusing more on social environments and ability to use resources and manage restrictions.

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### Association of serum uric acid with body mass index in the United Arab Emirates UAE healthy future pilot study

Mitha Balushi<sup>1,2</sup>, Amar Ahmad<sup>2,3</sup>, Syed Javaid<sup>4</sup>, Fabio Piano<sup>2,5</sup>, Ayesha Dhaferi<sup>6</sup>, Abdishakur Abdulle<sup>1</sup>, Fatma Al-Maskari<sup>7</sup>, Raghib Ali<sup>1</sup>

<sup>1</sup>Public Health Research Center, New York University Abu Dhabi, Abu Dhabi, United Arab Emirates, <sup>2</sup>Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, United Arab Emirates, <sup>3</sup>New York University Abu Dhabi, Abu Dhabi, United Arab Emirates, <sup>4</sup>Department of Psychiatry and Behavioral Sciences, College of Medicine and Health Sciences, United Arab Emirates University, United Arab Emirates, <sup>5</sup>New York University, Abudhabi, United Arab Emirates, <sup>6</sup>Department of nutrition sciences, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, United Arab Emirates, <sup>7</sup>Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, United Arab Emirates

**Background and Objective:** The UAE Healthy Future Study (UAEHFS) is the first large prospective cohort study and one of the few studies in the region which examines causes and risk factors for chronic diseases among the nationals of the UAE. Body Mass Index (BMI) has been showed to be associated with serum uric acid level in many societies. This study investigates the association of serum uric acid with BMI among the UAEHFS pilot participants.

**Methods:** We analyzed the UAEHFS pilot data to investigate the association between serum uric acid levels and BMI. The predictors were BMI, age, gender and age\*gender using multivariate quantile regression models. The quantiles to be estimated was between 25th and 75th varied by 5th. The effect of BMI was estimated with corresponding 95% confidence interval (95% CI). Statistical analysis were performed using statistical software R.

**Results:** Data from 487 eligible participants (67.8% male) with a median age of 30 years (Interquartile-Range: 23-38) was used in the sensitivity analysis. Of these, 406 (83.4%) were included in the complete case analysis. The estimated effect

of BMI on the serum uric acid level in the fitted multivariate quantile regression models was positive and statistically significant. The estimated effect of BMI in the median (50th quantile) was 0.047 (95% CI: 0.033-0.070).

**Conclusions:** Our Results shows that higher BMI was positive and statistically significantly associated with higher serum uric acid levels. Additional research is needed, using the main UAEHFS data (after recruitment is complete), to validate this results. The main finding of this study could add to the future direction of the field of public health research.

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### Multimorbidity and out-of-pocket expenditure on medicine in Europe: longitudinal analysis of 13 European Health Systems between 2013 and 2015

Raffaele Palladino<sup>1</sup>, Tianxin Pan<sup>2</sup>, Stewart Mercer<sup>3</sup>, Rifat Atun<sup>4</sup>, Barbara McPake<sup>5</sup>, Fabiana Rubba<sup>6</sup>, Maria Triassi<sup>6</sup>, John Lee<sup>7</sup>

<sup>1</sup>Department of Primary Care and Public Health, Imperial College of London, United Kingdom, <sup>2</sup>Health Economics Unit, Center for Health Policy, Melbourne School of Population and Global Health, University of Melbourne, Australia, <sup>3</sup>Centre for Population Health Sciences, The Usher Institute, The University of Edinburgh, United Scotland, <sup>4</sup>Department of Global Health and Population, Harvard T H Chan School of Public Health and Department of Global Health and Social Medicine, Harvard Medical School, Harvard University, United States, <sup>5</sup>Nossal Institute for Global Health, Melbourne School of Population and Global Health, University of Melbourne, Melbourne, Australia, <sup>6</sup>Department of Public Health, University "Federico II" of Naples, Naples, Italy, <sup>7</sup>Nossal Institute for Global Health, Melbourne School of Population and Global Health, The University of Melbourne, Melbourne, Australia

**Background:** Many European health systems are implementing or increasing levels of cost-sharing for medicine in response to the growing constrains on public spending on health despite their negative impact on population health due to delay in seeking care. **Objective:** this study aims to examine the relationships between multimorbidity (two or more coexisting chronic diseases, CDS), complex multimorbidity (three or more CDS impacting at least three different body systems), and out-of-pocket expenditure (OOPE) for medicine across European Nations. **Methods:** this study utilized data on participants aged 50 years and above from two recent waves of the survey of health, ageing, and retirement in Europe conducted in 2013 (n=55,806) and 2015 (n=51,237). Pooled cross-sectional and longitudinal study designs were used, as well as a two-part model, to analyze the association between multimorbidity and OOPE for medicine.

**Results:** the prevalence of multimorbidity was 50.4% in 2013 and 48.2% in 2015. Nearly half of those with multimorbidity had complex multimorbidity. Each additional cd was associated with a 34% greater likelihood of incurring any OOPE for medicine (odds ratio=1.34, 95% ci=1.31 - 1.36). The average incremental OOPE for medicine was 26.4 euros for each additional cd (95% ci=25.1 - 27.7), and 32.1 euros for each additional body system affected (95% ci 30.6 - 33.7). The average incremental OOPE for medicine was higher for those in the lowest socio-economic position group, as compared with those in the highest. **Conclusions:** Between 2013 and 2015 in 13 European health systems increased prevalence of CDS was associated with greater likelihood of having OOPE on medication and an increase in the average amount spent when occurred. Monitoring this indicator is important considering the negative association with treatment adherence and subsequent effects on health. This study provides additional evidence to the erosion of the universal health coverage in European health systems.

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### The psoriasis comorbidome

Andrea Miatton<sup>1</sup>, Alessandra Buja<sup>2</sup>, Claudia Cozzolino<sup>3</sup>, Giovanni Damiani<sup>1,4</sup>, Arnon Cohen<sup>5</sup>

<sup>1</sup>Università degli Studi di Padova, Italy, <sup>2</sup>Università degli Studi di Padova, Padova, Italy, <sup>3</sup>Istituto Oncologico Veneto, Università degli Studi di Padova, Italy, <sup>4</sup>University of Milan, Italy, <sup>5</sup>Clalit Health Services Israeli, Israel

**Background and Objective:** Psoriasis is a multifactorial, chronic, systemic inflammatory disease. Current evidence suggests that psoriasis is associated with many chronic inflammation-related morbidities, but epidemiological studies on the specific characteristics of the psoriasis comorbidome are still lacking. The aim of the present article is to compare the multi-morbidity profile between patients with and without psoriasis.

**Methods:** In a matched case-control study, we extracted data on 57,228 patients and 125 morbidities from the Clalit Health Services Israeli insurance database.

Psoriasis cases were matched with control individuals by sex and age at enrolment. As pre-existing comorbidities we considered all conditions already present in controls at the same age as the matched psoriasis case at the time of their diagnosis. The two-proportion Z-test was used to test for differences in the prevalence of comorbidities between the case and control groups, while logistic regression analyses were run to calculate the odds ratio (OR) for each comorbidity.

Results: A higher proportion of psoriasis patients had at least one comorbidity (70% vs. 55% approx.); and half of them had two or more comorbidities, as opposed to one in three controls without psoriasis. Judging from a prevalence analysis, more than one in four psoriasis patients already had hyperlipidemia when their psoriasis was diagnosed, while one in five had hypertension or arthropathy. Behcet's disease, hereditary neurological disorders, rheumatoid arthritis and hidradenitis suppurativa showed the strongest associations with psoriasis, with estimated ORs ranging between 3.5 and 7.

Conclusions: These findings confirmed the association between psoriasis and autoinflammatory or rheumatic diseases. Investigating the psoriasis comorbidity can help to quantify the real burden of comorbidities in psoriasis patients, and thereby support the development and adoption of personalized treatments to further improve their management.

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### **Selenium exposure and oxidative stress and genotoxicity risk in a healthy Italian population: a cross sectional study**

Teresa Urbano<sup>1</sup>, Tommaso Filippini<sup>2,3</sup>, Marcella Malavolti<sup>4</sup>, Bernhard Michalke<sup>5</sup>, Silvia Fustinoni<sup>6</sup>, Marco Vinceti<sup>7,8</sup>

<sup>1</sup>Environmental, Genetic and Nutritional Epidemiology Research Center (CREAGEN), Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Italy, <sup>2</sup>Department of Biomedical, Metabolic and Neural Sciences and School of Public Health, CREAGEN - Environmental, Genetic and Nutritional Epidemiology Research Center, University of California, Berkeley, United States, <sup>3</sup>University of Modena and Reggio Emilia, Italy, <sup>4</sup>CREAGEN - Environmental, Genetic and Nutritional Epidemiology Research Center, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>5</sup>Research Unit Analytical BioGeoChemistry, Helmholtz Center Munich, German Research Center for Environmental Health, Germany, <sup>6</sup>University of Milan, <sup>7</sup>CREAGEN - Environmental, Genetic and Nutritional Epidemiology Research Center, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Italy, <sup>8</sup>Department of Epidemiology, Boston University School of Public Health, United States

Background and Objective: The relation between selenium and cellular redox status is a greatly debated topic in human health. 8-oxo-7,8-dihydro-2'-deoxyguanosine (8-oxodG) is an oxidized derivative of deoxyguanosine and a sensitive biomarker of oxidative stress and genotoxicity. The present study assessed the extent to which selenium status was associated with urinary 8-oxodG concentrations in a Northern Italian population.

Methods: Of 148 eligible subjects, 137 healthy and non-smoking blood donors living in the Reggio Emilia province during 2017-2019 were enrolled. We measured urinary 8-oxodG concentrations and used restricted cubic spline regression analyses to investigate the association between selenium status (estimated using food frequency questionnaires, urinary concentrations, and serum concentrations of selenium and selenium species) and 8-oxodG/g creatinine.

Results: Median age of our population was 48.2 years. Median urinary selenium and 8-oxodG levels (n=137) were 22.02 µg/L and 3.21 µg/g creatinine, respectively. Median total serum (n=104) concentrations were 116.50 µg/L, while median dietary intake (n=137) was 78.7 µg/day. Little association between dietary, serum, or urinary selenium with 8-oxodG concentrations emerged in the overall population. Urinary selenium positively correlated with 8-oxodG levels in men, while in women an inverted U-shaped association emerged. Total organic selenium and selenoprotein P levels were positively associated with 8-oxodG until 100 µg/L and then the association became slightly inverse in both sexes. In males, glutathione peroxidase-bound selenium and selenomethionine were positively correlated with 8-oxodG, while negative associations emerged for inorganic species. In females, positive but weak associations emerged for organic selenium species.

Conclusions: Results of our study suggest that even though total selenium exposure seems not associated with 8-oxodG, selected selenium species may largely differ in their association with this oxidative stress biomarker, and that effects modification by sex was encountered. Selenomethionine-bound selenium was the organic compound most strongly associated with 8-oxodG.

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### **Key considerations for the implementation of active assisted living systems to support older adult care**

Gaya Noon<sup>1</sup>, Thoko Phiri<sup>1</sup>, Laura Fadrique<sup>1</sup>, Jennifer Teague<sup>2</sup>, Plinio Morita<sup>1</sup>

<sup>1</sup>University of Waterloo, Canada, <sup>2</sup>CSA Group, Canada

Background and Objective: Active Assisted Living (AAL) refers to internet-connected systems designed to improve quality of life, aid in independence, and create healthier lifestyles. As the population of older adults grows, there is a pressing need for additional supports in their daily lives and for non-intrusive, continuous, adaptable, and reliable health monitoring tools. AAL has great potential to support these efforts, but additional work is required to address the feasibility of the integration of AAL into care. The objective of this project is to address core issues with AAL system implementation, including user concerns, data governance, and building requirements for smart living environments.

Methods: To understand the concerns and opportunities regarding AAL, as well as to validate our data governance framework, 18 semi-structured group interviews were held with stakeholders representing different parts of an AAL ecosystem. Each group comprised of several participants from the same organization. These were categorized as (1) care organizations, (2) technology developers, (3) technology integrators, and (4) potential care recipients or patient advocacy groups. Furthermore, a review of 156 smart home technologies was conducted to understand what their technical requirements are and what issues may be faced by users trying to implement them.

Results: There is a critical need to acknowledge the trade-off inherent in AAL use between the benefits of the technology, their encroachment on privacy, and their cost in terms of time and finances. This trade-off is influenced by several factors, including the care context and what resources care recipients have available to them.

Conclusions: A greater consistency in oversight is needed, including clearer definition in roles and who can access and is responsible for acting on data from AAL systems. Further work is necessary to address these needs, as well as set standards for AAL technologies and explore the equity of AAL access.

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### **Importance and determinants of advance directives and healthcare proxy use among the oldest-old**

Judith Wenner<sup>1</sup>, Ferzaneh Fakhani<sup>1</sup>, Susanne Zank<sup>1</sup>

<sup>1</sup>University of Cologne, Germany

Background and Objective: Making advance directives or deciding on a healthcare proxy are common instruments to assure that end-of-life care is in line with one's own wishes. Correctly specified, these instruments help health professionals and relatives to act in the best interest of the patient. We use two large population-based datasets from Germany to explore if the oldest-old (80+) make use of these instruments and what determines this use.

Methods: Analyses are based on two population-based studies among persons aged 80 years and older in Germany. We perform descriptive and subsequently logistic regression analyses to identify who makes use of these instruments. In line with theoretical assumptions on healthcare behavior, we consider age, gender, education, (functional and cognitive) health, institutionalization, social embeddedness, and personal attitude (towards spirituality, assisted suicide and death) as determinants of using advance directives or deciding on a healthcare proxy.

Results: The majority in both studies had either advance directives or decided on a care proxy (76.2% and 87.4%). Often participants used both (62.8%). In the large nation-wide sample, higher age, good functional health, a partnership, and a strong focus on self-determination at the end of life increased the odds of using these instruments while cognitive impairment decreased their use. In the smaller regional sample, only cognitive impairment was significantly associated with (lower) use.

Conclusions: Most persons aged 80 years and older in Germany make use of advanced directives and decide on a healthcare proxy. This shows that the oldest-old want to have a say in their end-of-life care and want their alleged wishes to be considered. Persons with cognitive impairment – and thus potentially in need of these instruments – had considerably lower odds of using them. Targeted information for persons with beginning cognitive decline within the healthcare setting could thus be helpful.

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### **Transition to retirement impact on depressive symptoms: results**

### from a longitudinal analysis within the Survey of Health, Ageing and Retirement in Europe (SHARE) project

Giacomo Vigezzi<sup>1</sup>, Giacomo Vigezzi<sup>1</sup>, Giansanto Mosconi<sup>1</sup>, Paola Bertuccio<sup>1</sup>, Andrea Amerio<sup>2</sup>, Anna Odone<sup>1</sup>

<sup>1</sup>Department of Public Health, Experimental and Forensic Medicine, Università degli Studi di Pavia, Italy, <sup>2</sup>Department of Neuroscience, Rehabilitation, Ophthalmology, Genetics, Maternal and Child Health (DINOEMI), Università degli Studi di Genova, Italy

**Background and Objective:** In an ageing society, with people living long years after retirement, pension impacts on mental health outcomes should be carefully assessed. Scant evidence is available from longitudinal studies on the short and long-term impact on depressive symptoms and suicidal ideation.

**Methods:** We conducted a longitudinal study based on the Survey of Health, Ageing and Retirement in Europe (SHARE) data from 28 European countries collected between 2004 and 2020. To estimate the relative risk (RR) and corresponding 95% confidence intervals (CI) for depression (derived from the EURO-D scale as a binary outcome) and suicidality at seven different time intervals since retirement, we fitted generalised estimating equation models for repeated measures.

**Results:** We selected a cohort of 8,998 individuals employed at baseline and retired at follow-up (median follow-up time: 9 years; maximum: 16 years). Considering the "year of retirement" as the reference category, the risk of depression ten years or more before retirement resulted being about 17% higher (RR: 1.17; 95%CI: 1.03-1.32), with a trend to decrease - tough estimates were not statistically significant - as retirement approached. Compared to the year of retirement, we observed a 9% (RR: 0.91; 95%CI: 0.82-1.00) to 11% (RR: 0.89; 95%CI: 0.81-0.99) reduction in risk in the following three years, and a gradual rise thereafter. Because their risk patterns did not overlap, suicidality and depression stood out as clinical entities that do not necessarily cooccur and require different preventive strategies.

**Conclusions:** Longitudinal data suggest that transitioning to retirement reduces the risk of depression in the first years after the withdrawal from work, in the so-called honeymoon phase. As retirement seems to have an independent and protective effect on mental health, it may be identified as a target moment for preventive interventions to promote well-being in older ages and boost the observed impact.

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### Developing new models for integrated community health and social care for dependent older people: the case of Programa Maior Cuidado in Brazil

Karla Giacomini<sup>1</sup>

<sup>1</sup>Oswaldo Cruz Foundation (Fiocruz), Brazil

This paper offers a case study of the development, implementation, evaluation and national scale-up of a novel intervention for dependent older people living in vulnerable families. It also identifies key lessons for other countries facing similar health service challenges. Since 2011 Programa Maior Cuidado (PMC) has been supporting care-dependent older people living in poor neighbourhoods of Belo Horizonte. Local health posts and social assistance centres work together to identify eligible families and provide integrated support. Trained paid family-support caregivers, recruited from similar communities, provide families 10 to 40 hours of help a week. This offers family caregivers respite from round-the-clock care-work, and PMC carers also promote family care-giving skills. PMC carers monitor older people's condition and report back to monthly case reviews jointly conducted by staff at health and social assistance posts. Over the past five years, there have been an ongoing process and impact evaluation of PMC, including both before and during the COVID-19 pandemic. These have generated broadly positive findings, including evidence that PMC is cost effective, promotes more effective use of health services and benefits both older people and their families. This had led the Ministry of Health to support PMCs national roll-out, and PMCs identification as a model of best practice by WHO, World Bank and other agencies.

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### Patient-reported outcomes in robotic total knee arthroplasty: a retrospective cohort study with RObotic Surgical Assistant system

Daniele Ceriotti<sup>1</sup>, Matteo Ratti<sup>1</sup>, Rabia Bibi<sup>2</sup>, Riccardo Rescinito<sup>1</sup>, Massimiliano Panella<sup>1</sup>

<sup>1</sup>Università del Piemonte Orientale, Italy, <sup>2</sup>Università del Miamonte Orientale, Pakistan

**Background and Objective:** Even if RATKA (Robotic assisted total knee arthroplasty) is a widely used surgery, there is still a gap of knowledge about patient reported outcomes. The aim of this study was to compare self-reported

outcomes in patients who underwent RATKA (with ROSA - "RObotic Surgical Assistant system"- technique) and patients who underwent the manual surgery (traditional technique).

**Methods:** We compared 73 patients operated with ROSA technique with 62 operated with traditional technique. The data were collected with WOMAC (Western Ontario and McMaster University Osteoarthritis index), a self-administrated questionnaire that investigates pain, stiffness, and functionality of the patients. We performed two surveys, the first was before the intervention and the second was 6 months after the surgery. We evaluated the absolute and percentage differences between the two groups. Statistical analysis were performed with two-tailed T-test and chi-squared test.

**Results:** After the 6 months follow-up, we observed lower PROM scores in both groups. In particular, the total WOMAC score in the ROSA group dropped from 66.0 to 32.5, while in the other group it decreased from 62.4 to 24.6. The post-operative absolute difference between the WOMAC scores of two groups was 7.9 points (95%CI: -12.49 to -3.23) in favor of conventional technique. On the other hand, the analysis of the percent improvement, despite still slightly in favor of the conventional group (54.1% vs 47.8%), failed to reach statistical significance (p=0.23). The post-operative percentage difference was 6.3% (95%CI: -4.0% to 16.7%).

**Conclusions:** These findings indicate that a clear superiority of RATKA to conventional TKA is not yet demonstrated. Moreover, a knowledge gap about the proper methodology to analyze the patient reported outcome measures may exist. Also, given the recent evolution of the technology, an urgent need to conduct studies with longer term outcome evaluation is compelling.

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### Empowerment of healthy ageing through integrated care managers in China

Ninie Wang<sup>1</sup>

<sup>1</sup>Pinetree Care Group, Chaoyang District, China

With over 200 million people over the age of 65 by the end of 2021 and around 50 million being care dependent, China faces the enormous challenge of reforming the system and strengthening primary health care to meet the needs of older adults, aiming for better prevention and reduction of care dependency as part of the nation's healthy ageing strategies. While people-centered integrated care (PCIC) has been set as the key model for improving the health and care systems in coming decades, World Health Organization's ICOPE (integrated care for older people) is being implemented first in Beijing, then in a multi-center pilot across China. Health and social care workers went through modular training sessions before becoming "integrated care managers" to carry out screening, assessment and care plans in primary care settings following the ICOPE care pathways that are adapted to fit locally available resources. Incentives are designed for them to receive additional income and recognition from delivering personalized care plans. Despite their heavy duty of pandemic control-related tasks, primary health care workers reported high levels of satisfaction and interest in continuing as the front-line providers of integrated care, supported by multi-disciplinary teams leveraged tele-care tools to empower each other when working against the risks of intrinsic capacity decline and functional ability loss among community and home-dwelling older adults. The ICOPE implementation pilot in China might provide some reference for feasibility and impact of integrated care on the health and social well-being of the ageing population in low resource settings. Advocating a policy shift from disease-oriented approach to one that promotes holistic care continuum often demands locally relevant and applicable innovations.

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### Predictors of Chronic Pain: comparison between older adults with and without life-long cognitive disability

Rafat Hussain<sup>1</sup>, Stuart Wark<sup>2</sup>, Trevor Parmenter<sup>3</sup>, Matthew Janicki<sup>4</sup>

<sup>1</sup>School of Medicine and Psychology, Australian National University, Canberra, Australia, <sup>2</sup>School of Rural Medicine, University of New England, Armidale, Australia, <sup>3</sup>Centre for Disability Studies, University of Sydney, Australia, <sup>4</sup>University of Illinois, United States

**Background and Introduction:** Chronic pain is a major public health issue globally, adversely affecting quality of life (QoL) of older adults. It constitutes a 'silent epidemic' in many countries including Australia. Amongst those with life-long cognitive impairments, are people with intellectual disability (PwID), who experience multiple socioeconomic and health disadvantages. This comparative study aims to examine concurrent underlying social and health factors as predictors

of chronic pain in older PwID cohort compared to their normative age peers (i.e. older non-PwID cohort). Methods: Data were derived from cross-sectional surveys on demographic, socioeconomic, health and health-services measures across Australia's two most populous states – New South Wales and Queensland. The sample included older adults aged 60+ years (PwID, N=391; non-PwID=920). The PwID cohort required face-to-face interviews to mitigate comprehension-limitations that could confound results. Non-PwID cohort completed paper/online survey forms. No observable errors were found in response validity by variation in survey modality.

Results: PwID cohort was younger (mean: 65.2y, SD: 4.4y) compared to non-PwID (mean: 71.9y, SD: 7.7y). Chronic pain was reported by both PwID (26.9%) and non-PwID (24.1%) groups. Univariate logistic-regression for both cohorts showed chronic pain to be associated ( $p < 0.05$ ) with arthritis, gum disease, falls, and sleep-disturbance, whereas cancers (past & current) were not significantly associated. Anxiety, depression, and adverse life-events were also statistically significant. Multivariable regression modelling showed that significant variables ( $p < 0.05$ ) for PwID cohort included arthritis and adverse life-events, whereas for the non-PwID cohort arthritis, falls, adverse life-events, and depression were significant. Conclusions: Despite its relatively younger age-profile, PwID cohort had higher levels of chronic pain. There was also similarity of factors associated with chronic pain in both cohorts. The presentation will highlight importance of better understanding and managing predictors of chronic pain for maintaining or enhancing quality of life of older adults.

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### Development and validation of a dietary diversity score for French older adults

Anne-Fleur Jacquemot<sup>1</sup>, Rosalie Prat<sup>2</sup>, Rozenn Gazan<sup>2</sup>, Christophe Dubois<sup>3</sup>, Nicole Darmon<sup>4</sup>, Catherine Feart<sup>5</sup>, Eric Verger<sup>6</sup>

<sup>1</sup>INSERM, BPH, UMR1219, F-33000, Université de Bordeaux, Bordeaux, France, <sup>2</sup>MS-Nutrition, Marseille, France, <sup>3</sup>Trophis, France, <sup>4</sup>MoISA, University Montpellier, CIRAD, CIHEAM-IAMM, INRAE, Institut Agro, IRD, Montpellier, France, <sup>5</sup>Inserm, France, <sup>6</sup>MoISA, Univ Montpellier, CIRAD, CIHEAM-IAMM, INRAE, Institut Agro, IRD, Montpellier, France

Adopting healthy dietary habits, including higher dietary diversity, has been associated with healthy aging. Several scores have been developed to assess the dietary diversity, but none specifically among older adults. Therefore, the present work aimed to develop and validate a healthy dietary diversity score (DAS) in a sample of older adults enrolled in a representative national survey. The studied sample was constituted of 696 older adults aged 60y and over, from the latest cross-sectional French Individual and National Food Consumption study (INCA3). The dietary survey included three 24 hours recalls and a Food Propensity Questionnaire. The occurrence of consumption of 20 food groups weighted by positive (for whose consumptions are healthy and should be encouraged) or negative (for whose consumptions are unhealthy and should be limited) points composed the 20 score components whose sum defined the DAS. The validity of the DAS was assessed by describing its association with the food score components, energy intake, solid energy density (SED), probability of adequate nutrient intake assessed by the PANDiet and with educational and physical activity levels. The DAS ranged from -35 to 115. Higher DAS were positively and significantly associated with more points in healthy score components like Fruits or Vegetables ( $r = 0.51$ ,  $p < 0.0001$  and  $r = 0.54$ ,  $p < 0.0001$  respectively). The DAS was not significantly associated with the total energy intake ( $r = 0.02$ ,  $p = 0.6$ ). The DAS was significantly positively associated with the PANDiet ( $r = 0.43$ ,  $p < 0.0001$ ) while inversely associated with the SED ( $r = -0.37$ ,  $p < 0.0001$ ). Higher DAS were observed among participants with higher educational and physical activity levels as expected. The DAS we developed is validated to assess the healthy dietary diversity score of French older adults. Beyond, it could be a useful tool to assess the impact of public health nutritional trials.

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### Association of pain and depression among middle-aged and older adults of India

Amit Goyal<sup>1</sup>, Amit Goyal<sup>1</sup>, Sanjay Mohanty<sup>1</sup>

<sup>1</sup>International Institute for Population Sciences, Mumbai, India

Background and Objective: India is ageing and it is estimated that the population age 45 and above will account over 40% of the population by 2050. Ageing is associated with high burden of chronic diseases. Approximately one third of the population aged 45+ are also suffering from pain and depressive symptoms. Epidemiological studies have shown that pain and depression are closely related.

We didn't find any nationally representative study establishing this relationship of pain and depression. This study aims to examine the association between pain and depression among middle-aged and older adults of India.

Methods: This study uses the individual level data from the Longitudinal Ageing Survey of India (LASI), Wave 1, 2017-18. This study is restricted to 59416 individuals who have responded to all the variables of interest. We used the Center for Epidemiologic Studies Depression (CES-D) Scale short form to measure the depression with threshold of  $\geq 4$  symptoms. Pain is measured by a polar question i.e. "Are you often troubled with pain?". Descriptive statistics were reported by proportions or mean. Independent chi-square tests were used to compare the categorical variables between those with and without pain and depression. The estimates for the prevalence of depressive symptoms were adjusted for age-sex considering the national age and sex composition as reference. The logistic regression model was used with depression as outcome variable and pain and socio-demographic covariates as predictor variables.

Results: Depression typically affects 25% of the middle aged and older adults without pain, but among patients with pain, 32% experience depression. The predicted probability of depression among those with pain was 0.31 compared to 0.25 among those without pain. Considering the older adults with pain, there is huge variation in the prevalence of depression among states of India ranging from 56.5% in Jammu and Kashmir to 8.8% in Mizoram. This will be done via SLIDO and via personal interventions of the delegates. Also, delegates from public bodies and from academic institutions will be invited to attend and actively contribute to improve cross-country exchange and learnings in population health from a planetary perspective. Links: -----[1] <http://www.healthinformationportal.eu/rapid-exchange-forum>

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### The integrated pathways of care in the social and healthcare services: the AgICOT experience in Teramo, Italy

Marco Del Riccio<sup>1</sup>, Stefano Greco<sup>2</sup>, Valerio Profeta<sup>2</sup>, Chiara Lorini<sup>1</sup>, Niccolò Persiani<sup>3</sup>, Santa Remigis<sup>4</sup>, Guido Angeli<sup>5</sup>, Dimitrios Kaliakoudas<sup>6</sup>, Eleonora Sparvieri<sup>7</sup>, Guglielmo Bonaccorsi<sup>1</sup>, Martina Giusti<sup>8</sup>, Patrizio Zanobini<sup>1</sup>, Maurizio Giosia<sup>8</sup>

<sup>1</sup>Department of Health Sciences, University of Florence, Italy, <sup>2</sup>Department of Community and Territorial Services, Local Health Unit of Teramo, Italy, <sup>3</sup>Department of Experimental and Clinical Medicine, University of Florence, Italy, <sup>4</sup>Anesthesia and Intensive Care, Teramo Hospital, Local Health Unit of Teramo, Italy, <sup>5</sup>Medical Direction, Teramo Hospital, Local Health Unit of Teramo, Italy, <sup>6</sup>Counselling Center, Local Health Unit of Teramo, Italy, <sup>7</sup>Internal Medicine, Teramo Hospital, Local Health Unit of Teramo, Italy, <sup>8</sup>Local Health Unit of Teramo, Italy

Background and Objectives: The process of population ageing leads to greater needs for local welfare services. This projects main Objective is to strengthen the hospital-territory integration by establishing Hospital - Territory Agencies of Continuity and Integration (AgICOT) in the Local Health Unit (ASL) of Teramo. The specific target of the project is frail elderly people aged 65 years or more.

Methods: A multidisciplinary working group (health professionals from the Local Health Unit of Teramo and academics from the University of Florence) has set up an organizational plan and a training course for all the health professionals working in AgICOT. The innovative tools used by AgICOT are the Life Project (LP), a document that collects clinical, social, psychological, and linguistic-communicative assessments of the followed person, and the Healthcare Budget (HB), which is the sum of all healthcare, social and relational resources and services used for this person. Individuals followed by AgICOT are monitored and/or re-evaluated continuously, and LP and HB are updated in each of these situations.

Results: Between April and October 2022, the working group defined the organization of AgICOT and its kick-off, and at the same time prepared and implemented a training course on the topics of primary care and transition care management. The first AgICOT was inaugurated in October 2022 and started working on 20 cases, which represent the first group of patients served by the new Agency.

Conclusions: AgICOT takes care of the frail elderly by defining a care pathway that is comprehensive of both social- and health-related aspects. The re-evaluations and continuous monitoring guarantee that every need is better assessed and can find a proper answer outside the hospital. AgICOT will not only improve the integration between the hospital and the territorial services, but it will also improve an effective and efficient use of the latter.

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### Gender differences in global Disability-Adjusted Life Years (DALYs): a descriptive Analysis of the global burden of disease study 2021

Vedavati Patwardhan<sup>1</sup>, Luisa Flor<sup>1</sup>, Emanuela Gakidou<sup>2</sup>

<sup>1</sup>Institute for Health Metrics and Evaluation (IHME) University of Washington, Seattle United States, <sup>2</sup>Institute for Health Metrics and Evaluation (IHME)

**Background & Objective:** Gender inequalities in society result in gender differences in the social determinants of health and health risk factors, and have lifelong health consequences. However, little research systematically examines the magnitude and nature of gender differences in health across the life course.

**Methods:** We used data from the Global Burden of Disease Study (GBD) 2021 to conduct a descriptive analysis of gender differences in the top-20 causes of male and female Disability-Adjusted Life Years (DALYs) globally and across world regions for four age groups (10-24, 25-49, 50-69, and 70+ years).

**Results:** Across the lifespan, female DALY rates are higher than males ( $p < 0.05$ ) for mental, neurological, and musculoskeletal disorders globally. For depressive, anxiety, and headache disorders, the female-male gap emerges at an early age and continues over the life course. The gender gap in low back pain widens with age and is highest at 70+ years. Girls and women aged 10-49 years have higher DALYs due to HIV/AIDS compared to men, and the most pronounced gap is in sub-Saharan Africa. On the contrary, for several conditions with a higher male burden ( $p < 0.05$ ), gender gaps emerge after 50 years, for e.g., for COVID-19, ischemic heart disease, and lung cancer. Among younger males (10-24 years), road injuries are the top cause of global DALYs, with the largest male-female gap in Latin America. We also find that women and girls are more affected by conditions with a higher morbidity burden throughout their lifespan. On the other hand, men and boys of all ages bear a disproportionate mortality burden.

**Conclusions:** Our study highlights the need for policy interventions to promote well-being and reduce gender disparities in health at all stages of life, in line with the United Nations Sustainable Development Goals (SDGs) 3 and 5.

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### Reliability and validity of the bone health literacy questionnaire for middle-aged and elderly women

Biao Xu<sup>1</sup>, Chenyang Jin<sup>1</sup>, Yuge Zhang<sup>1</sup>, Hong Jiang<sup>1</sup>, Biao Xu<sup>1</sup>

<sup>1</sup>Fudan University China

**Objective:** To develop a questionnaire for assessing bone health literacy among perimenopausal and postmenopausal women in Shanghai, and to evaluate reliability and validity of the questionnaire and to provide scientific evidence for generalizing the application of the questionnaire in the elderly. **METHODS** The questionnaire was developed based on the integrated theoretical model of health literacy proposed by Regional Office for Europe of World Health Organization in 2012. Using relevant questionnaires in domestic and abroad literatures for reference, through two rounds of expert consultation, 45 items of bone health literacy questionnaire were formed. After evaluating the repeatability and effectiveness of the questionnaire, a questionnaire on bone health literacy for middle-aged and elderly women was formed. 40 items of bone health literacy questionnaire for perimenopausal and elderly women were summarized. Cronbachs a and split-half reliability were calculated to evaluate the reliability of bone health literacy questionnaire, and content, discriminant, convergent and structural validity were performed to measure the validity of the questionnaire. **RESULTS** A total of 447 community women aged 45-65 were investigated. The overall Cronbachs a of bone health literacy questionnaire was 0.763 and the split-half reliability was 0.793. The correlation coefficient of each sub-questionnaire with the total questionnaire was 0.403~0.703. The bone health literacy questionnaire had good content validity, with the success rate of calibration experiment of 57.50% and 86.25% respectively. Confirmatory factor analysis showed that the goodness of fit index (GFI) and other indicators reached the adaptation standard, and the structural validity was good. **Conclusion:** The questionnaire has good reliability and validity, and can be used as a simple tool to measure and evaluate bone health literacy.

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### Serological responses up to 9 months following COVID - 19 mRNA vaccination in residents and healthcare workers of long - term care facilities: a multicenter prospective cohort study in Northern Italy

Valerio Bordino<sup>1</sup>, Costanza Vicentini<sup>1</sup>, Alessandro Cornio<sup>1</sup>, Noemi Marengo<sup>1</sup>, Davide Meddis<sup>1</sup>, Jacopo Garlasco<sup>1</sup>, Savina Ditommaso<sup>1</sup>, Monica Giacomuzzi<sup>1</sup>, Carla Zotti<sup>1</sup>, Gabriele Memoli<sup>1</sup>, Maria Gianino<sup>1</sup>

<sup>1</sup>Università di Torino Italy

**Background and Objective:** Long-term care facilities (LTCFs) were severely affected by COVID-19, in particular in Northern Italy. We aimed to assess antibody responses among residents and healthcare workers (HCWs) of 13 LTCFs through serum samples collected at three time points: prior to, two weeks, and 9 months after receiving Pfizer/BNT162b2 SARS-CoV-2 mRNA vaccine (respectively t0, t1, and t2).

**Methods:** IgG antibodies targeted towards the S1 domain of the spike protein were measured, and results were expressed in binding antibody units (BAU/ml). Friedman's average rank test was performed to compare antibody titres between the three time points. Two logistic regression models were built to identify independent predictors of (1) developing and (2) maintaining a significant antibody response to vaccination, using a previously identified threshold. In total, 534 subjects were enrolled (371 HCWs and 163 residents).

**Results:** Age had a bi-modal distribution, in line with participant type: the median age among HCWs was 47 years (IQR 38 - 54), and was 86 years (IQR 80 - 90) among residents. The majority of participants were female, both among HCWs and residents (83.01 and 70.55% respectively). Over half of study participants had a SARS-CoV-2 infection confirmed by RT-PCR prior to t0, however the proportion of seropositive individuals at t0 was 37.83%. The antibody titres at t1 were the highest; at t2 the IgG titres significantly decreased, remaining however 10 times higher compared to titres at t0. Previous infection was the only significant predictor of developing and maintaining a response over threshold in both models. Residents showed higher IgG titres than HCWs at each time point. Significant differences were found at all time points stratifying participants according to age.

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### Role of vegetarian and plant-based diet in the prevention of mild cognitive impairment and dementia

Giulia Barbolini<sup>1</sup>, Giulia Barbolini<sup>1</sup>, Marco Vinceti<sup>1</sup>, Tommaso Filippini<sup>1</sup>

<sup>1</sup>University of Modena and Reggio Emilia, Italy

**Background and Objective:** The increasing number of people with Mild Cognitive Impairment (MCI) and dementia represents a relevant public health problem. For this reason, there is interest in the assessment of factors affecting disease risk, in order to implement effective prevention strategies and promote a healthy lifestyle. In particular, diet as a determinant of cognitive impairment and dementia represents an important field of research, and many studies focused on the effects of plant-based, vegetarian or vegan diets on cognitive functions and dementia risk.

The aim of this systematic review is to assess whether a plant-based or a 'strict' vegetarian diet is protective or detrimental towards cognitive functions.

**Methods:** The protocol of this systematic review and meta-analysis has been submitted to PROSPERO. The literature search has been conducted on 4 different databases: PubMed, Web of Science, Embase and Cochrane library. We used MeSH terms and keywords related to "plant-based diet", "vegetarian diet", "Mild Cognitive Impairment", "dementia" and "memory impairment". We found 2 additional articles through citation chasing techniques.

We defined the following inclusion criteria according to the PICOS statement: adult population, adherence to plant-based, vegetarian or vegan diets, assessment of cognitive functions through dementia risk or cognitive decline at increasing adherence to different dietary patterns, and both observational studies (cohort, cross-sectional or case-control) and randomized clinical controlled trials. We will also perform a dose-response meta-analysis whenever possible.

**Results:** In the preliminary literature search, we found a total of 1537 articles (including 2 studies added through citations), 255 of which were duplicates. After duplicate removal, the abstract and the full-text of 1282 articles were screened, leading to the exclusion of 1263 of them. Nineteen studies met our inclusion criteria and could be included in the systematic review.

**Conclusions:** The study is currently ongoing and its results will be presented at the Congress.

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### Do meta-analyses of randomized controlled trials estimate the true population effects of multiple risk factor interventions?

Mark Speechley<sup>1</sup>, Saverio Stranges<sup>1</sup>, Manuel Montero Odasso<sup>1</sup>, Paige France<sup>2</sup>

<sup>1</sup>Western University, Department of Epidemiology & Biostatistics, Western Centre for Public Health & Family Medicine, 1465 Richmond Street, London Ontario, N6G 2M1, Canada, <sup>2</sup>University of Toronto Mississauga, Studies in Life Sciences Program, 3359 Mississauga Rd., Mississauga Ontario, L5L 1C6, Canada

**Background:** Large reductions in cardiovascular disease (CVD) mortality since 1950 are a significant public health triumph. Explanatory models of declining CVD mortality trends in high-income countries attribute just under 50% each to population trends in medical/surgical interventions and risk factor reductions, leaving <10% unexplained. However, meta-analyses (MA) of multifactorial trials yield modest effect sizes that explain only a tiny fraction of the population declines. Arguably, entire population data are superior to MAs of Randomized Controlled Trial (RCT) samples given the methodological and practical problems of experimentally estimating the effect of simultaneously modifying several factors in real-world settings. Might MAs of multifactorial RCTs also underestimate the true population effects of multiple risk factor modifications in other common outcomes in older adults?

**Methods:** For cognitive impairment (CI) and unintentional falling (UF) in older adults, literature searches were conducted for i) MAs of multifactorial RCTs and ii) attempts to explain population trends in terms of changes over time in risk factors and clinical interventions.

**Results:** For UF, while some well-done RCTs show clinically significant comparative reductions in both fall occurrence and the number of risk factors in intervention groups, MAs tend to show modest or even null results. While fewer multifactorial RCTs have been completed for CI, early MAs also show modest effects. No attempts were found to replicate the CVD trend analysis for UF or CI, possibly because neither UF nor CI outcomes, or trends in risk factors or clinical interventions, are available in population data like for CVD. This data incompleteness might be overcome with statistical models that interpolate partial time-series data from numerous sources to estimate the true population effects of multifactorial interventions.

**Conclusion:** Estimating the true population effects of UF and CI interventions may require more sophisticated methods than MAs of samples studied in complex and problematic multifactorial RCTs.

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### Assessing the quality of the built environment in dementia: a framework to evaluate long-term care facilities

Silvia Mangili<sup>1</sup>, Silvia Mangili<sup>1</sup>, Gaia Ferraguzzi<sup>2</sup>, Stefano Capolongo<sup>1</sup>

<sup>1</sup>Politecnico di Milano, Italy, <sup>2</sup>Università degli Studi di Milano Statale

**Introduction:** Life expectancy worldwide is raising fast, with a correlated increase in Non-Communicable Diseases (NCDs) and years lived with disability. Dementia is one of these, with about 7 million people affected in Europe and the number is set to double by 2050. These patients are complex due to the serious changes in the cognitive sphere, altering perceptions of the space. They are the most frequent users of healthcare facilities, but these structures often are not suitable for them. For this reason, rethinking is now urgent to create safe and suitable environments. **Materials and Methods:** This study aims to develop an evaluation framework of the main aspect of the design of a built environment for people with dementia.

To this end, a systematic literature review has been conducted on scientific databases using meaningful keywords. The review was useful to outline the main characteristics that the environment dedicated to the dementia patient must possess to be inclusive and prosthetic.

**Results:** The research has allowed defining a set of requirements that the space must have to be prosthetic for the patient. These findings have been identified and were divided into three main macro-areas (physical, cognitive, and social aspects) 7 criteria, and 31 related sub-criteria. The results were also validated through the involvement of stakeholders and experts in the topic, both from the architectural and medical field to establish the relationship between physical factors and patient outcomes.

**Conclusion:** The results of this research can be used as guidelines to assess and design proper facilities for people with dementia and cognitive disabilities. This is because there is an urgent need to create and renovate the existing buildings to make them as therapeutic and prosthetic as possible. The priority also in research must be to investigate which aspects of architecture can impact patients' health and well-being.

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### Longitudinal clustering of health behaviours and their association with health outcomes in older adults in England: a latent class analysis

Alisha Suhag<sup>1</sup>, John Holmes<sup>2</sup>, Thomas Webb<sup>1</sup>

<sup>1</sup>Healthy Lifespan Institute, University of Sheffield, United Kingdom, <sup>2</sup>School of Health and Related Research, University of Sheffield

**Background:** Leading risk factors for chronic disease – smoking, alcohol

consumption, poor nutrition and physical inactivity (SNAP behaviours) – cluster together (i.e., appear in specific combinations in distinct subgroups). Longitudinal clustering and its association with health outcomes are less well understood.

**Objective:** This is the first study to identify longitudinal clusters of SNAP behaviours and to relate them to health outcomes in older adults.

**Methods:** Using data from Waves 4-8 of the English Longitudinal Study of Ageing (n=3787), we identified longitudinal clusters of SNAP behaviours using latent class analysis. Health outcomes (from Wave 9) included multimorbidity and complex multimorbidity, along with eight body system disorders defined according to the International Classification of Diseases 10th Revision system. To examine how clusters are associated with socio-demographic characteristics and health outcomes, we used multinomial and binomial logistic regressions, respectively.

**Results:** Six clusters with stable within-cluster behaviour trajectories were identified: Low-risk (20.9%), Low-risk but heavy drinkers (11.1%), Low-risk but inactive (22.2%), Do nothing (17.2%), Inactive, heavy drinkers (18.1%), and High-risk smokers (10.5%). Health-risk dominant clusters had lower levels of education and wealth. Women dominated the Low-risk but inactive cluster, whereas men dominated the heavy drinking clusters. Low-risk and Low-risk but heavy drinkers had a lower prevalence of all adverse health outcomes compared to other clusters.

In contrast, the Low-risk but inactive cluster had the most 'negative' outcomes: highest prevalence of multimorbidity, complex multimorbidity, circulatory disorders, and endocrine, nutritional and metabolic disorders. High-risk smokers were most likely to suffer respiratory disorders, while the least physically active clusters were most likely to suffer endocrine, nutritional, and metabolic problems.

**Conclusions:** Health behaviour clusters were strongly but differentially associated with health outcomes, suggesting a complex relationship. Identified clusters can be compared with similar analyses in other countries and used to tailor interventions to specific sub-populations and socio-demographic profiles.

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### Suffering in Silence: Urinary Incontinence among Bangladeshi Women

Quamrun Nahar<sup>1</sup>, Anadil Alam<sup>1</sup>, Farah Rahman<sup>1</sup>, Shusmita Khan<sup>2</sup>, Mizanur Rahman<sup>3</sup>

<sup>1</sup>icddr, Head of Research, 68 Shahid Tajuddin Ahmed Sharani, Mohakhali,

Dhaka 1212, Bangladesh, <sup>2</sup>Data for Impact, University of North Carolina,

Research Associate, "Chapel Hill, Chapel Hill, NC, USA, Based at 68 Shahid

Tajuddin Ahmed Sharani, Mohakhali, Dhaka 1212, Bangladesh", Bangladesh,

<sup>3</sup>Data for Impact, University of North Carolina

**Background and Objective:** Urinary incontinence (UI), the involuntary loss of urine, is a common, distressing condition of women, affecting all ages and across different cultures. Globally, an estimated 200 million women suffer from UI, although the prevalence of UI varies across settings. Research on UI has primarily been conducted in developed countries and there is a paucity of data on UI in developing countries. The objective of this paper is to provide an estimated prevalence of UI, its sub-types and associated factors among ever-married women aged 15-49 years in Bangladesh.

**Methods:** This paper used data from 2016 Bangladesh Maternal Mortality and Health Care Survey, conducted in a nationally representative sample of 300,000 households. Ever-married women aged 15-49 years, residing in these households, who had ever given birth were asked a set of pre-tested questions to identify symptoms of stress and/or urge incontinence. The weighted prevalence of UI, its sub-types, and factors associated with different types of UI were identified using logistic regression. All analyses were conducted in Stata version 15.

**Results:** The prevalence of any UI was 15.8% (95%CI 15.7, 16.0). The most common subtype was stress incontinence, with a prevalence of 13.7% (95%CI 13.5, 13.8), followed by urge incontinence, with a prevalence of 7.6% (95%CI 7.5, 7.8) and mixed incontinence, with a prevalence of 5.5% (95%CI 5.4, 5.6). Age, religion, parity, educational attainment, economic status and residence in certain parts of Bangladesh are the risk factors for women's reporting of different types of UI. **Conclusion:** The study findings are in line with findings from other South Asian country studies. The findings of this study, with its large sample size, population-based sampling and rigorous data collection process, will be useful for making effective plans to reduce the silent sufferings of Bangladeshi women from UI.

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### Health outcomes and physiological adaptations of regular physical activity among young individuals

Marta Wilhelm<sup>1</sup>, Rita Soós<sup>1</sup>, Ádám Gyebrovski<sup>2</sup>, Kitti Garai<sup>1</sup>, Zoltán Ádám<sup>1</sup>, Monika Gordos<sup>3</sup>, Krisztián Kvell<sup>1</sup>

<sup>1</sup>University of Pécs, Institute of Sport Sciences and Physical Education, University of Pécs, Faculty of Sciences, Pécs, "Ifjúság u. 6., 7624 Pécs, Hungary", <sup>2</sup>Doctoral School of Biology and Sportbiology, <sup>3</sup>University of Pécs Regular Physical activity (PA) is important counteracting decline of physiological and molecular parameters in elderly, while among younger age groups it is also crucial maintaining proper age matched physical fitness. According to WHO physical inactivity is one of the most important causes of deaths and long-lasting sicknesses.

The aim of our study was to measure biological effects of regular PA among young healthy adults. Previously inactive individuals, 20-25 years old females (N= 18) enrolled in a six-month exercise program conducted by a personal trainer. During the study 60 min complex exercises were conducted, 3x/week, average time 180 min/week. Intensity of strength training and aerobic exercise was calculated with HRmax, regularly adjusted to the actual fitness of participants.

Field and laboratory tests (body composition, cardiovascular parameters, 6MWT, activity measurements) were applied determining health-related physical fitness. Immune (cortisol, CRP, lymphocytes, hTREC) and metabolic parameters (glucose, insulin, HDL, LDL) were assessed from blood samples.

Body composition, cardiovascular, metabolic and immune parameters showed improvement. After 3 months of training mostly blood parameters changed and correlated significantly, while after 6 months many hormonal and metabolic changes were found in the whole population. Correlation of CRP-CK (P=0.036) was found, CRP-Insulin (P=0.033), WBC-Glucose (P=0.046), Monocytes correlated with RDW (P=0.046), Monocytes-Glucose (P=0.028), Monocytes-MPV (P=0.015). Glucose correlated with MPV (P=0.037), with Biceps (P=0.042), Triceps (0.013). BF% and Muscle mass% (P=0,001) has a strong correlation at each measured time point, just like Cortisol-Insulin levels after sixth months of training (P=0.000). Muscle mass% and BF% (P=0.000) are strongly correlated, insulin level correlated parameters of body composition, muscle mass% (P=0.002), Bodyfat% (P=0.010), and Subscapula (P=0.029). Cortisol-Biceps (P=0.005) correlation was also found. Data show that moderate regular PA is essential to counteract senescence of metabolism and early regression of fitness in young, healthy individuals, becoming the basis of healthy ageing.

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### The role of the built environment in dementia: evolution and adaptation of an innovative care model through the SARS-CoV-2 pandemic

Gaia Ferraguzzi<sup>1</sup>, Mariella Zanetti<sup>2</sup>, Paolo Mazzola<sup>3</sup>, Maria Sandrini<sup>2</sup>, Fulvio Sanvito<sup>2</sup>, Rosetta Gagliardo<sup>4</sup>, Antonio Colaiani<sup>5</sup>, Catia Borriello<sup>4</sup>, Danilo Cereda<sup>4</sup>

<sup>1</sup>Università degli Studi di Milano Statale, Dipartimento di Scienze Biomediche per la Salute, Università degli Studi di Milano Statale, Milano, Italy, <sup>2</sup>Cooperativa La Meridiana, Italy, <sup>3</sup>Università degli Studi Milano Bicocca, School of Medicine and Surgery, Università degli Studi di Milano-Bicocca, Monza (MB), Italy - Acute Geriatrics Unit, San Gerardo Hospital ASST Monza, Monza (MB), Italy, <sup>4</sup>Regione Lombardia, DG Welfare, Regione Lombardia, Milano, Italy, <sup>5</sup>ATS Brianza

Introduction: The first Alzheimers village in Italy rises in Monza named "Il Paese Ritrovato", an innovative long-term care facility dedicated to individuals with mild-to-moderate Alzheimers disease or other Dementias. The total area is 3,360 m<sup>2</sup> and it hosts up to 64 guests divided into 8 apartments (single rooms and private bathrooms). The village includes buildings with highly recognizable features thanks to the careful selection of colors and finishes with classic, almost stereotypical, but familiar and reassuring lines that limit adequately furnished spaces. Every space is designed to stimulate cognitive functions and provide a good quality of life for residents.

Methods: The retrospective cohort study involved 60 subjects. Variables collected from June 2018 to December 2020 included demographic data, cognitive and functional statuses, comorbidities, engagement in activities through the Engagement Social Index, and psychoactive medication use.

Follow-up was performed every 6 months from admission until the Tcovid (starting covid Time) period. Outcomes included any significant changes due to isolation compared with the pre-pandemic period.

Results: The study population had a mean age of 82.5 years (76.7% female), with a predominant diagnosis of AD (65%).

Assessment at Tcovid showed rather different data than those recorded in the first 18 months with accelerated worsening of MMSE and CDR scales, increased prescription of antipsychotics (+5%), antidepressants (+11.7%, p=0.045) and benzodiazepines (+1.7%), and increased number of falls delineating the worsening of functional status accelerated by the pandemic.

Limitations of the study include observational design and small sample size.

Conclusion: The pandemic resulted in an abrupt reorganization of the care model with an orientation predominantly toward the health needs by disrupting the use of shared spaces and any opportunity for cognitive stimulation. This showed how psychosocial activity and appropriate study of the built environment play an important role in the well-being of people with cognitive impairment.

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### Socioeconomic differences in brain white matter microstructure and associated cognitive performance in middle to older adulthood

Stephanie Schrepff<sup>1</sup>, Olga Trofimova<sup>2</sup>, Morgane Künzi<sup>3</sup>, Cristina Ramponi<sup>4</sup>, Antoine Lutti<sup>2</sup>, Ferath Kherif<sup>4</sup>, Adeliya Latypova<sup>4</sup>, Peter Vollenweider<sup>4</sup>, Pedro Marques-Vidal<sup>4</sup>, Martin Preisig<sup>4</sup>, Matthias Kliegel<sup>3</sup>, Silvia Stringhini<sup>5</sup>, Bogdan Draganski<sup>4</sup>

<sup>1</sup>Geneva University Hospitals Switzerland, <sup>2</sup>Lausanne University Hospital and University of Lausanne, <sup>3</sup>University of Lausanne and University of Geneva Switzerland, <sup>4</sup>Lausanne University Hospital and University of Lausanne Switzerland, <sup>5</sup>Geneva University Hospitals, University of Geneva, and University of Lausanne Switzerland

Background and Objective: Previous research examining socioeconomic differences in brain white matter focused on fractional anisotropy or mean diffusivity, which are open to several biological interpretations. Further, pathways linking socioeconomic conditions, white matter, and cognitive performance have rarely been investigated. We aimed to provide a more detailed neurobiological understanding of socioeconomic differences in brain anatomy and cognitive performance.

Methods: We combined quantitative magnetic resonance imaging biomarkers indicative of tissue myelination and iron content with diffusion-weighted brain measures, cognitive performance (processing speed, cognitive flexibility, and fluid intelligence), and socioeconomic data (household income and occupational position) in a sample of community-dwelling individuals (n=751, aged 50 to 91 years). We adjusted the applied regression and structural equation models for the linear and non-linear effects of age, sex, education, cardiovascular risk factors, and depressive, anxiety, and substance use disorders.

Results: Individuals from lower income households showed signs of advanced brain white matter ageing with greater mean diffusivity (MD), lower neurite density (intra-cellular volume fraction; ICFV), lower myelination (magnetization transfer saturation; MT), and lower iron content (transverse relaxation rate; R2\*). The association between household income and MD was mediated by ICFV (B=0.084 (0.029, 0.141), p=0.003) and MT (B=0.019 (0.006, 0.034) p=0.009); MD partially mediated the association between household income and cognitive performance (B=0.017 (0.001, 0.033), p=0.040). Household income moderated the association between white matter microstructure and cognitive performance, such that greater MD, lower MT, or lower ICFV was only associated with poorer cognitive performance among individuals from lower income households. Individuals from higher income households showed preserved cognitive performance in the face of greater MD, lower MT, or lower ICFV.

Conclusion: An individual's household income relates to their white matter brain anatomy and associated cognitive performance in middle to older adulthood, and buffers the adverse effects of white matter decline.

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### Age Differences in Incidence Rates and In-hospital Outcomes among adults with Stroke or transient ischemic attack: a 10-year time-series analysis

Jiaer Lin<sup>1</sup>, Benjamin Yip<sup>2</sup>, Chi Hung<sup>3</sup>, Eng Yeoh<sup>4</sup>

<sup>1</sup>Jockey Club School of Public Health and Primary Care, Chinese University of Hong Kong, Hong Kong SAR, China Rm 503, JC School of Public Health Building, Prince of Wales, Chinese University of Hong Kong Hong Kong,

<sup>2</sup>Jockey Club School of Public Health and Primary Care, Chinese University of Hong Kong, Hong Kong SAR, China, <sup>3</sup>Jockey Club School of Public Health and Primary Care, Chinese University of Hong Kong, Hong Kong SAR, China Hong Kong, <sup>4</sup>Centre for Health Systems and Policy Research, Jockey Club School of Public Health and Primary Care, Chinese University of Hong Kong, Hong Kong SAR, China Centre for Health Systems and Policy Research, Jockey Club School of Public Health and Primary Care, Chinese University of Hong Kong, Hong Kong SAR, China Hong Kong

Background: An emerging trend of increasing strokes has been noted among the younger population. However, studies on the age differences in incidence and in-hospital outcomes are lacking, particularly for the Asian population.

**Objective:** To compare incidence and in-hospital outcomes and to evaluate their 10-year trends according to age and stroke subtype.

**Method:** A total of 137,927 patients with a primary diagnosis of stroke or transient ischemic attack (TIA) in Hong Kong between 2011-2020 were included. Outcomes were incidence, in-hospital deaths, length of stay (LOS), and 30-day unplanned readmission rates by age and subtype. Time-series analysis using cumulative annual percentage changes (CAPC) and statistical process control (SPC) was conducted to examine time trends.

**Results:** Decreasing incidence was observed in all subtypes among old adults (aged $\geq$ 65), who yielded the most dramatic incidence reduction in ischemic stroke (IS) and intracerebral hemorrhage (ICH) (per 100,000 person-years 2011-2020, CAPC; IS: 931 to 424, -54%; ICH: 180 to 101, -44%), compared to young (aged $\leq$ 44) and midlife adults (aged 45-64). TIA incidence increased in young by 19% but declined by 40% in old adults, whereas subarachnoid hemorrhage (SAH) incidence remained steady for young and midlife. In-hospital deaths (10%) and 30-day unplanned readmission rates (9.8%) were highest for old adults with any subtype, while acute LOS was longest in the young (mean [SD] days; IS: 6.1 [13.3]; ICH: 14.6 [47.4]; SAH: 21.9 [60.2]) except TIA. SPC analysis demonstrated a significant rise in in-hospital deaths for all IS. There were longer LOS and more 30-day stroke-cause unplanned readmissions for all subtypes in young adults over ten years, but outcomes did not change in old adults apart from IS and TIA.

**Conclusion:** Age-specific trends in incidence and in-hospital outcomes varied in stroke subtypes. The temporal increase in LOS and readmissions in young strokes highlight the need for age-targeted care improvements.

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### The effect of physical activity on health-related quality of life in older people living in residential care settings: preliminary results from an Italian sample

Alice Conni<sup>1,2</sup>, Mauro De Santi<sup>3</sup>, Esther Rita<sup>4</sup>, Fiorella Lanzillotta<sup>2</sup>, Ornela Nebiaj<sup>2</sup>, Alice Conni<sup>2</sup>, Giulia Baldelli<sup>3</sup>, Andrea Parenti<sup>5</sup>, Ivonne Capelli<sup>6</sup>, Loretta Modelli<sup>7</sup>, Patrizia Farruggia<sup>7</sup>, Laura Dallolio<sup>2</sup>, Giorgio Brandi<sup>3</sup>

<sup>1</sup>Alma Mater Studiorum University of Bologna Department of Biomedical and Neuromotor Sciences, University of Bologna Italy, <sup>2</sup>Department of Biomedical and Neuromotor Sciences, University of Bologna Department of Biomedical and Neuromotor Sciences, University of Bologna Italy, <sup>3</sup>Department of Biomolecular Sciences, University of Urbino Carlo Bo

Department of Biomolecular Sciences, University of Urbino Carlo Bo Italy, <sup>4</sup>De Gioia Department of Biomedical and Neuromotor Sciences, University of Bologna Department of Biomedical and Neuromotor Sciences, University of Bologna Italy, <sup>5</sup>KOS Care s.r.l., Anni Azzurri, Bologna KOS Care s.r.l., Anni Azzurri, Bologna Italy, <sup>6</sup>Villa Giulia s.r.l., Pianoro, Bologna Villa Giulia s.r.l., Pianoro, Bologna Italy, <sup>7</sup>Unit of Hygiene and Quality of Residential Services, Bologna Local Health Authority, "Bellaria" Hospital, via Altura 3, 40139, Bologna, Italy.

**Background and Objective:** One of the most delicate events in an older persons life is the entrance to a residential care facility (RCF). For institutionalized individuals, maintaining autonomy and a good physical, mental and social health is crucial, and this can be achieved through a multidisciplinary approach. A growing literature shows that, in RCFs setting, exercise and multicomponent physical activity (PA) programs can have beneficial effects on these outcomes, in particular on mental health and cognitive functions. The aim of this study is to describe the diffusion of exercise programs in a sample of Italian RCFs and its impact on the health-related quality of life (HrQoL).

**Methods:** Eight RCFs belonging to Marche and Emilia Romagna Regions (Italy) were recruited in 2022. HrQoL was assessed using the Short-Form 12 questionnaire (SF-12).

**Results:** Preliminary results from 89 older adults (age: 84.33 $\pm$ 8.36, 78.7% women) showed that 51% of participants performed at least 1 session of individual PA per week and about 70% of participants performed group PA. Considering the HrQoL score at baseline, a significant higher Mental Component Score (MCS) of SF-12 was observed in patients carrying out more PA group activity (>2 times per week) than in those who practiced less ( $\leq$ 2 per week) (MCS=48.91 $\pm$ 9.90 vs 43.68 $\pm$ 10.08, p=0.03). Considering the individual PA, we observed higher scores of MCS in patients carrying out more sessions per week rather than a single session (48.95 $\pm$ 10.92 versus 45.66 $\pm$ 9.21, p=NS). On the contrary, the Physical Component Score of SF12 remained unchanged based on PA frequency and modality.

**Conclusion:** Our data confirm that continuous group exercise is associated with higher mental wellness among elderly. These results also underline the

importance of PA-based-interventions in this specific setting in order to improve the HrQoL of this vulnerable population.

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### COVID-19 vaccination among older adults in India: a case of underrepresentation

Aravinda Guntupalli<sup>1</sup>, Aravinda Guntupalli<sup>1</sup>, Peter Lloyd-Sherlock<sup>2</sup>

<sup>1</sup>University of Aberdeen United Kingdom, <sup>2</sup>University of East Anglia

**Background:** Older adults are known to experience higher mortality and hospitalisation when infected with COVID-19 due to their increased vulnerability. COVID-19 severely impacted Indian older adults during the first two waves of the pandemic. While India's vaccine coverage is impressive in absolute numbers, the coverage proportion, particularly among older adults, was questioned during the deadly COVID Delta wave. Hence, the analysis seeks to study the policies concerning prioritisation, and vaccine coverage among older adults in India.

**Methods:** Mapping of the COVID-19 policies with the COVID vaccine and mortality data published by the Government of India between December 2019 and December 2022 was carried out to explore the reasons behind the underrepresentation.

**Results:** Nearly 2000 million doses of COVID-19 vaccines were provided to Indian citizens as of mid-December 2022. 92% of older adults aged 60 and above received the first dose of the COVID-19 vaccine. While 88% of older adults received the second dose, only 33% received the booster dose, known as the precaution dose. While the coverage until mid-December 2022 is impressive for the first and second doses, it was not remarkable in 2021. When the COVID pandemic mortality was at its peak until July 2021, only 50% and 19% of older adults received the first and second doses. This was because older people did not receive sufficient prioritisation during the pandemic.

**Conclusion:** COVID-19 vaccination coverage among older adults looks promising based on recent data. However, due to a lack of prioritisation, the coverage was poorer among this vulnerable group during the peak stages of the pandemic. Future pandemic vaccination programmes must consider prioritisation of older adults to reduce overall as well as older adult specific mortality and hospitalisation in India.

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### Socioeconomic predictors over the life course of healthy ageing index in older Eastern Europeans

Martin Bobak<sup>1</sup>, Maleeka Zaidi<sup>2</sup>, Hynek Pikhart<sup>1</sup>

<sup>1</sup>Recetox, Masaryk University Czech Republic, <sup>2</sup>University College London

**Background and Objectives:** Eastern Europe is facing population ageing in addition to health and socioeconomic inequalities that have emerged during post-communist transition. While it is important to consider a life course approach to the socioeconomic predictors of healthy ageing, there have been very few studies exploring this association between socioeconomic position (SEP) across the life course and healthy ageing in the Eastern European context. The aim of this study was to investigate the associations between socioeconomic predictors at different stages of the life course and a composite index of healthy ageing in Eastern European ageing cohorts.

**Methods:** We used data from the prospective cohort study, HAPIEE, comprising of 24,071 individuals from random population samples from urban centres in the Czech Republic, Poland and Lithuania, aged 45-75 years at baseline in 2002-2005 in the Czech Republic and Poland and 2006-2008 in Lithuania. Self-reported SEP indicators used for analysis are childhood amenities (Childhood), education (Early Adulthood), current household amenities, residents per room per room, and deprivation scale (Late Adulthood). Logistic regression was used to investigate the association between SEP across the life course and a recently developed composite Healthy Ageing Index (HAI).

**Results:** Education showed the most pronounced association with HAI, followed by childhood amenities, current deprivation, current amenities and crowding, with some variations between countries. The odds ratios of low HAI in those with the highest vs. lowest quintile of life course accumulation of low SEP was 4.3 (95% confidence interval 3.8-4.9). Odds ratios were higher in females, in participants with older age, without partner, with lower alcohol consumption, and those reporting poor self-rated health.

**Conclusion:** These results have highlighted the significance of SEP at different stages of life in determining healthy ageing. Policy makers must tackle their ageing populations through addressing inequalities across the life course, in particular educational attainment.

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### The role of folate metabolism enzymes snps in non-obstructive azoospermia: A systematic review and meta-analysis

Flavia Beccia<sup>1</sup>, Emanuele La Gatta<sup>1</sup>, Drieda Zaçe<sup>1</sup>, Ilda Hoxhaj<sup>1</sup>, Arianna Panfilì<sup>2</sup>, Luigi Petrella<sup>1</sup>, Maria Di Pietro<sup>1</sup>, Maurizio Genuardi<sup>3</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore Section of Hygiene, Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>2</sup>Università Cattolica del Sacro Cuore Section of Genomic Medicine, Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>3</sup>Università Cattolica del Sacro Cuore Section of Genomic Medicine, Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy

Infertility represents a reproductive public and health issue. Males account for 50% of infertility cases, often considered idiopathic. Single-nucleotide polymorphisms (SNPs) have been investigated in relation to non-obstructive azoospermia (NOA), especially the folate enzymes molecular pathway. This systematic review and meta-analysis aims to evaluate the relationship between SNPs and NOA susceptibility.

PubMed, Scopus, and Web of Science were searched for studies published in English up to October 2022. Case-control studies focusing on SNPs in folate metabolism enzymes were assessed for eligibility. The Q-Genie tool was used to assess the quality of the included studies' quality. SNPs examined in more than two studies for the same genotype underwent random-effect meta-analyses, yielding pooled odds ratios (ORs) and 95% confidence intervals (CIs). I<sup>2</sup> statistic was utilized to evaluate heterogeneity.

Out of 697 search outputs, 13 articles were included, all of good quality, conducted in Caucasian (61.5%) and Asian (38.5%) ethnicity. Eight SNPs were identified and meta-analysis was conducted on four of them. The pooled ORs of SNPs and NOA were: for rs1801133 1.33 (95% CI: 1.02-1.74, I<sup>2</sup> 64.7%) for CT genotype, and 2.03 (95% CI: 1.25-3.28, I<sup>2</sup> 75.1%) for TT genotype; for rs1801131 0.99 (95% CI: 0.78-1.25, I<sup>2</sup> 23.5%) for AC genotype, and 1.01 (95% CI: 0.65-1.57, I<sup>2</sup> 0%) for CC genotype; for rs1801394 was 1.15 (95% CI: 0.79-1.68, I<sup>2</sup> 0%) for AG genotype, and 1.12 (95% CI: 0.61-2.05, I<sup>2</sup> 0%) for AA genotype; for rs1805087 1.47 (95% CI: 1.05-2.05, I<sup>2</sup> 0%) for AG genotype, and 4.28 (95% CI: 2.17-8.44, I<sup>2</sup> 0%) for GG genotype. We report a significant association between rs1801133 and rs1805087 SNPs and NOA. However, to determine the use of these SNPs for genetic testing in clinical and public health practice, more research is required. Identifying populations at higher risk of infertility could guide personalised preventive and diagnostic programs.

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### Prevalence and factors associated with elder abuse in an eastern state of India

Swayam Parida<sup>1</sup>, Pradnya Chandanshive<sup>2</sup>, Sonu Subba<sup>3</sup>, Shree Mishra<sup>3</sup>

<sup>1</sup>AIIMS Bhubaneswar Dept of Community Medicine & Family Medicine Sijua India, <sup>2</sup>Topiwala National Medical College & B.Y.L Nair Charitable Hospital, <sup>3</sup>AIIMS Bhubaneswar Associate Professor Sijua India

**Introduction:** The problem of elder abuse exists in the present society and is considered an important social issue. It usually goes underreported because of the inability of the elderly to seek help and the lack of awareness regarding legal procedures. The consequences of elder abuse are enormous ranging from mental health issues to physical injury and death. Most of the available evidence has found that family members and caregivers are the ones primarily involved in the abuse of the elderly.

**Objective:** To find the prevalence, pattern, and associated factors of elder abuse in an urban area

**Material and Method:** Cross-sectional community-based study conducted between August 2019 to August 2020 in an urban field practice area of the All India Institute of Medical Sciences, Bhubaneswar. A total of 360 participants aged 60 years and above were interviewed using various semi-structured interview schedules and validated study tools such as Geriatric Depression Scale (GDS). The data obtained were analyzed using Statistical Package for the Social Sciences (SPSS) software Version 22.0.

**Results:** Approximately one in five (19.4%) elderly reported some form of abuse. The types of elder abuse reported were physical abuse in 12 (3.3%), verbal abuse in 25 (6.9%), emotional abuse in 40 (11.1%), and financial abuse in 15 (4.2%) elderly participants. The sons and daughters-in-law of the elderly participants were the main perpetrators of the abuse reported. Depression and past history of abuse were found significantly associated with any type of abuse.

**Conclusion:** The prevalence of elder abuse found in this study was considerably high, with 70 (19.4%) out of the 360 elderly participants reporting some form of abuse. Emotional abuse was the most reported, and physical abuse was the least

reported type of abuse. The most common perpetrators were those on whom the elderly depended, like their sons and daughters-in-law.

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### A pilot study on evaluating relationship between steps and motion in a smart home environment

Plinio Morita<sup>1</sup>, Kang Wang<sup>1</sup>, Shi Cao<sup>1</sup>, Plinio Morita<sup>1</sup>

<sup>1</sup>University of Waterloo Canada

**Background:** People worldwide are living longer but have difficulty in getting sufficient healthcare treatment from hospitals. Smart home technology has been proposed as the answer to monitoring, treating and managing chronic health conditions at home. Compared with wearable technology, using smart home devices can effectively reduce individuals' burden in their daily routines and avoid any unfunctional monitoring if older people forget to wear them. The purpose of this study is to evaluate the correlation between steps data from wearable devices and motion data from smart home devices, validating the hypothesis that smart motion sensors can be used to quantify and track individuals' steps count.

**Method:** The study is conducted based on our smart home data ecosystem. Fourteen participants (9 male, 5 female) who are aged between 18 and 34 years old, were recruited in the study. During the experiment, participants were asked to perform basic daily living activities under researchers' instructions. Fitbit can measure participants' steps during the session, while Swidget devices can record motion data through passive infrared sensors at the same time. One whole session for a participant can last [1] three hours while the data time interval is 1 minute. As the data is not normally distributed, the Spearman correlation test was chosen as the test tool for evaluating the association.

**Results:** The Spearman correlation coefficient is  $r = 0.42$  (range 0.35-0.67;  $n=14$ ; PLinks:-----[1] [http://events.decoperate.ca/!](http://events.decoperate.ca/)<https://pic.leetcode.cn/1671116442-KRbXnX-image.png>)

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### Barriers and facilitators for the successful implementation of antimicrobial stewardship interventions in long-term care facilities: a scoping review

Eleonora Cugudda<sup>1</sup>, Costanza Vicentini<sup>1</sup>, Giulia Libero<sup>1</sup>, Carla Zotti<sup>1</sup>, Fabrizio Bert<sup>1</sup>

<sup>1</sup>University of Turin Department of Sciences of Public Health and Pediatrics Italy

**Background and objective:** The spread of antimicrobial resistance in long-term care facilities (LTCFs) represents an important challenge. The objectives were to identify barriers arisen with implementation of antimicrobial stewardship (AMS) programs in LTCFs and to describe novel strategies to overcome them, aiming to provide guidance for effective implementation of AMS programs in LTCFs.

**Methods:** A scoping review was conducted through Ovid-MEDLINE, CINAHL, Embase, Cochrane Central on studies published up to 22 July 2021, considering eligible both quantitative and qualitative studies on adults residents of LTCFs experiencing an AMS program. Outcomes assessed were barriers and facilitators for implementation of interventions, then synthesized using a macro-meso-micro framework.

**Results:** Of 2921 papers, 71 studies met inclusion criteria. The main identified macro-level themes were policy, research, and public engagement. The most frequently cited macro-level barrier was lack of policies, protocols, guidelines and recommendations concerning AMS in LTCFs. The main identified meso-level themes were resources, program characteristics, surveillance; lack of funding and resources for AMS programs was the most cited barrier. The main identified micro-level themes were resources, surveillance, organization of work, clinician factors, patient characteristics, and patient-clinician relationship. Again, the most common theme was lack of resources. The most frequently cited macro-level strategy was developing policies, protocols, guidelines, and recommendations for AMS in LTCFs. Meso-level strategies were including regular auditing and providing feedback to prescribers in AMS programs, tailoring strategies to the local context, addressing site-specific potential implementation barriers, and fostering interprofessional engagement with participatory strategies. Strategies at micro-level were cited by the greatest number of studies; the most commonly cited theme was the organization of work.

**Conclusions:** By categorizing barriers and strategies according to the macro-meso-micro framework, this study could be useful to guide improvements in policy, programs and action, improving healthcare quality and patient safety in LTCFs.

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**Realist evaluation of the impact, viability and transferability of an alcohol harm reduction support program based on mental health recovery: the vitae study: First results**Judith Martin-Fernandez<sup>1</sup>, Sarah Perrin<sup>2</sup>, Nolwenn Stevens<sup>2</sup>, Sarah Moriceau<sup>3</sup>, Fuschia Serre<sup>4</sup>, Marc Auriacombe<sup>1</sup>, Sanpsy France<sup>1</sup>, Linda Cambon<sup>2</sup><sup>1</sup>Université de Bordeaux Université de Bordeaux France, <sup>2</sup>Université de Bordeaux, France, <sup>3</sup>Sanpsy, <sup>4</sup>Sanpsy France

Methods and Analysis

The Vitae study adheres to the theory-driven evaluation framework where the realist evaluation method and contribution analysis are used to explore the effects, mechanisms, and influence of context on the outcomes and to develop and adjust an intervention theory. This study is a 12-month, multi-case, longitudinal descriptive pilot study using mixed methods. It is multi-centered, and carried out in 10 addiction centers. The target number of participants was 100 beneficiaries and 23 professionals.

Results: Among the 29 beneficiaries included in 7 addiction treatment or prevention centers in France, 66% were male (n=19) and the average age was 43 years (SD=10,3). A large majority (96%) had alcohol use disorders according to the DSM-5 criteria. At 12 months follow-up, 10 persons (34%) were retained in the IACA! Program. The unique qualitative materials will be used to describe and analyze the viability of such an intervention.

Conclusion: Viability and transferability of complex health interventions is a major public health topic and remains a highly valuable research field. This study, focusing on an innovative intervention for people with alcohol use disorder implemented in different contexts will provide valuable information for the implementation science but also for the HR field.

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**Association between household air pollution and cognitive health among older adults in India: A multiple mediation approach through depression and insomnia**Subhojit Shaw<sup>1</sup>, Sampurna Kundu<sup>2</sup><sup>1</sup>International Institute for Population Sciences Govandi Station Road, Mumbai 400088 India, <sup>2</sup>Jawaharlal Nehru University JNU Campus, New Mehrauli Road, New Delhi, India

Objectives: The relationship between household air pollution exposure and cognitive outcomes of depression cause sleep disorders, suggests that these could play a multiple mediating role in the association between air pollution and cognitive impairment, and the study aims to speculate on this mediation effect.

Method: The study utilizes data from Longitudinal Aging Study in India (LASI), 2017–2018. We have used a multiple mediating model to understand the relationship between indoor air pollution, cognition mediated through depression and insomnia, while controlling all possible confounders.

Result: Household air pollution was negatively associated with cognitive health ( $\beta = -0.38$ ) in all models, with depression ( $\beta = 0.18$ ) and insomnia ( $\beta = 0.038$ ) acting as mediators. The results show that unsafe cooking practices, indoor smoke from incense sticks, mosquito coils, and secondhand smoking are associated with lower sleep quality and depression among older adults.

Conclusion: The findings suggest that household air pollution is associated with cognitive decline, but this relationship is mediated by a person experiencing depression and/or insomnia. The study lays a foundation for future investigations into this nexus to inform and formulate policies to reduce exposure to air pollutants and improve screening and access to mental health services as a public health priority.

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**Older adults' risk profiles for intense care transition patterns: 15-year results from a swedish population-based study**Susanna Gentili<sup>1</sup>, Amaia Larrañaga<sup>1</sup>, Debora Rizzuto<sup>1</sup>, Davide Vetrano<sup>1</sup><sup>1</sup>Karolinska Institutet Aging Research Center, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet and Stockholm University, Stockholm, Sweden.

Background: Older adults are at higher risk of experiencing frequent healthcare transitions. We aimed to quantify and characterize the care transition patterns of older adults associated to individuals' sociodemographic, clinical and functional characteristics.

Method: Data are from the Swedish National Study on Aging and Care in Kungsholmen and the Swedish Patient Register through which we assessed care

transitions between home, home care, nursing home and hospital in 3,363 older adults  $\geq 60$  years old. Markov multistate models were used to represent the study participants likelihood of moving across various care settings.

Results: Over 15 years, the study participants spent on average after each transition two years at home, one year at home with home care, one year in a nursing home, eight days in hospital and 17 days in post-acute care. On average, study participants experienced ten hospitalizations over the study period. Being unpartnered was associated to a significant higher hazard of transitioning from home to hospital (HR 1.12) and to be discharged from hospital to home with home care (HR 1.18) or to a nursing home (\*\*\*)). Similarly, multimorbidity (2+ diseases) was associated with a higher hazard to transitioning from home to hospital (HR 1.56) and to be discharged at home with home care (HR 2.40). Cognitive impairment significantly increased the hazard to be institutionalized independently from the starting setting (HR range 2.14-3.48). Slow walking speed finally increased the hazard to be hospitalized (HR range 1.14-1.28) and to be discharged at home with home care services (HR 1.20).

Conclusion: Different sociodemographic, clinical and functional characteristics trigger specific care transition patterns of older adults. Preventive strategies addressing individuals with such characteristics should be tested in the attempt to reduce healthcare fragmentation.

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**Impact of COVID-19 on football players' injuries**Vittorio Falcone<sup>1</sup>, Giovanni Guarducci<sup>2</sup>, Gabriele Messina<sup>1</sup>, Nicola Nante<sup>1</sup><sup>1</sup>University of Siena Post Graduate School of Public Health, University of Siena, Italy, <sup>2</sup>University of Siena

Background and Objective: Even in football and in sports, as in every aspect of social life, the balance between preserving health and the economy is the central theme. The public health impact of COVID-19 has resulted in the closure of stadiums for an extended period. The study aims to evaluate the effect of post COVID-19 on Serie A football players.

Methods: Considering two Serie A seasons, namely from 2019-20 to 2020-21, all the players who had played at least one match in both seasons were selected. Players were further divided according to the number of injuries over the two seasons. The information about injuries was obtained from the German website Transfermarkt. We verified whether there was a significant difference in injuries, through Mann-Whitney U Test, by comparing players who had COVID-19, in any of the 19-20 or 20-21 seasons, with those who did not get sick

Results: In the 264 players analysed were not counted as injuries non-purely orthopaedic surgery, intestinal problems, infections and COVID-19. During season 19-20, only 9 players had COVID-19, while in season 20-21, 93 out of 264. Each player who has had COVID-19 lost an average of 18.6 days. For both periods, the players who had COVID-19 had significantly fewer injuries than those who had not ( $p < 0.05$ ).

Conclusion: The analysis focused on post Covid-19 effects on Serie A players, particularly their injury numbers. Physical injuries decreased in players who had encountered the virus. This is probably because every player who had COVID-19 has been away from the football field. This might suggest that professional athletes should have no health problems if they have defeated COVID-19. However, despite the decrease in pandemic restrictions, there are still many doubts about post COVID-19, we cannot lower our guard.

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**Did covid-19 pandemic modify palliative care utilisation in 2020? a retrospective observational study comparing 2020 and 2019 administrative data in tuscany, Italy**Mario Bruschi<sup>1</sup>, Francesca Collini<sup>1</sup>, Francesca Ierardi<sup>2</sup>, Silvia Forni<sup>2</sup>, Alfredo Zuppiroli<sup>2</sup>, Guglielmo Bonaccorsi<sup>1</sup>, Fabrizio Gemmi<sup>1</sup><sup>1</sup>Department of Health Science, University of Florence, 50134 Florence, Italy, <sup>2</sup>Quality and Equity Unit, Regional Health Agency of Tuscany, 50141 Florence, Italy.

Background and objective: The COVID-19 pandemic has highlighted the need for palliative care (PC) to relieve suffering at the End-of-life (EOL). The study aims to assess the early impact of COVID-19 over EOL quality of care received by patients, comparing 2019-2020 data.

Background & objective: The COVID-19 pandemic has highlighted the need for palliative care (PC) to relieve suffering at the End-of-life (EOL).

The study aims to assess the early impact of COVID-19 over EOL quality of care received by patients, comparing 2019-2020 data.

Methods: Retrospective observational study based on administrative data. The

study population includes all Tuscany region (Italy) residents ( $\geq 18$  years) died from 01/01/2019 to 31/12/2020 with a clinical history of cancer and/or with chronic diseases (heart-failure/chronic-pulmonary-disease/dementia/ictus/amyotrophic-lateral-sclerosis/muscular-dystrophy/myotonic-dystrophy/kidney-failure). Patients were divided upon year of death. EOL care quality outcome measures were evaluated. Analysis was performed using STATA-15 (significance  $P < 0.001$ ). Results: 31.758 patients died in 2019, 33.967 in 2020.

Both years patients-selection represented over 70% of Tuscany decedents; 52% of patients being females and more than 70% being over 75 years old.

In last 30 days of life, 2020 group (vs 2019) showed significantly: lower hospital burden: Emergency Department (ED) admission (52.1% vs 56.2%), ED admission (non-hospitalized) (37.9% vs 41.4%), hospitalization (56.0% vs 62.8%), hospital as the place of death (30.5% vs 34.0%), chemotherapy (3.9% vs 5.5%) but higher use of new chemotherapy (3.0% vs 1.9%); higher ICU burden (not significant): ICU admission (69.8% vs 48.4%), use of life-sustaining treatments (22.0% vs 18.4%);

lower utilization of PC services: hospice services (5.7% vs 7.7%; 3.6% vs 5.0% if considering last 7d), opioid therapy (24.7% vs 25.9%), active home PC services (21.0% vs 22.6%), no PC support (70.3% vs 68.8%).

Conclusion: The pandemic, due to fear of the disease, contributed to reducing hospital burden for patient with EOL needs but failed to strength PC response, thus lowering EOL quality of care and contributing to inequalities.

Further studies are needed to evaluate the mid-long term impact of COVID-19 pandemic on quality of EOL care, especially after the introduction of vaccines since 2021.

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### Community-based program focused on social support limits covid-19 mortality: a retrospective cohort study

Giuseppe Liotta<sup>1</sup>, Leonardo Palombi<sup>1</sup>, Olga Madaro<sup>2</sup>, Clara Donnoli<sup>1</sup>, Giulia Picardo<sup>1</sup>, Maria Marazzi<sup>3</sup>, Fabio Riccardi<sup>1</sup>, Leonardo Gialloreti<sup>1</sup>

<sup>1</sup>Biomedicine and Prevention Department, University of Rome Tor Vergata Italy, <sup>2</sup>"Long Live the elderly!" program, Community of Sant'Egidio, Rome, Italy, <sup>3</sup>LUMSA, University of Rome Italy

Background: COVID -19 pandemic mortality hit especially people over 80 years. This paper aims to assess the impact of Community-based pro-Active Monitoring Program (CAMP) on octogenarians' survival, during the COVID-19 pandemic.

Methods: The CAMP "Long Live the Elderly!" supports to the over 80s population living in selected Urban Area (UAs) of Rome. The paper compares mortality in these UAs with the mortality of adjacent neighbourhoods, which were not served by the CAMP program, between October 2020 and March 2021. Mortality was stratified by COVID-19 incidence, percentage of people living alone, and income per capita by means of a Generalized Linear Model weighted for the UAs' > 80s population. The Rome Municipality Statistics Office provided data on mortality.

Results: Between October 2020 and March 2021 the Statistics Office reported 234 (56.5/1000) deaths in the zones served by CAMP and 477 (52.9/1000) deaths for the UZs not served by CAMP. The increase in mortality compared to the same period of the previous year was 37 (22.4%) and 74 (25.2%) respectively for UAs served and not served by CAMP. The absence of CAMP, weighted for the population and adjusted for the COVID-19 incidence, and the percentage of Older Adults >80 living alone, was associated to a 37% increase of deaths ( $p < 0.001$ ).

Conclusions: Mortality among octogenarians increased during Rome's worst phase of COVID-19 pandemic. The implementation of CAMP is associated with a containment of mortality. Social support might be one of the reasons for this result. However, given the limited sample size, further research is warranted.

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### Trends in the geriatric workforce in the romanian healthcare system

Monica Brînzac<sup>1</sup>, Maria-Lorena Vescan<sup>2</sup>, Monica Brînzac<sup>1,3</sup>, Marius Ungureanu<sup>1</sup>

<sup>1</sup>Department of Public Health, Faculty of Political, Administrative and Communication Sciences, Babeş-Bolyai University; <sup>2</sup>Center for Health Workforce Research and Policy, Faculty of Political, Administrative and Communication Sciences, Babeş-Bolyai University; <sup>3</sup>Cluj-Napoca, Romania; <sup>1</sup>Cluj-Napoca, Romania; <sup>2</sup>Department of Public Health, Faculty of Political, Administrative and Communication Sciences, Babeş-Bolyai University Cluj-Napoca, Romania; <sup>3</sup>Center for Health Workforce Research and Policy, Faculty of Political, Administrative and Communication Sciences, Babeş-Bolyai University

### Background & objective

The importance of the geriatric health workforce is pivotal in relation to the aging populations, their constantly expanding needs, and the increasing frailty. Specifically, people over 65 years old are accountable for 18.9% of the romanian population, which is close to the eu level of 20.6%. Additionally, the romanian healthcare system encounters challenges regarding the healthcare workforce, such as human resources migration, the lack of a comprehensive health workforce policy, and assuring adequate numbers and distribution. This paper aims to assess the trends in the geriatric workforce between 2016-2022 in romania, with a particular focus on the differences between regions.

Methods: The study has a quantitative, longitudinal design implying secondary data analysis conducted on doctors specialized in geriatrics. We used the annual report on the activity of healthcare facilities and the national statistical yearbook issued by the national institute of statistics for 2016-2022 population-related data.

Results: At the national level, the number of geriatricians increased by approximately 43%, from 210 in 2016 to 300 in 2022. The results indicate an aging workforce, as the highest share was represented by doctors aged 53, respectively 54 years old. In terms of distribution, the south region holds the highest number of geriatricians, with a 44,8% difference from 2016 (n=125) to 2022 (n=181). alternatively, the west region had the lowest numbers, with a 16,67% increase (n=6 geriatricians in 2016 compared to n=7 geriatricians in 2022). In this region, the ratio of inhabitants aged over 65 years old reported to geriatricians has decreased from 52,98 in 2016 to 51,14 in 2022.

Conclusions: The romanian healthcare system has tremendous differences concerning geriatricians' distribution between counties. Despite the slight increase over the years, the number of geriatricians reported to the aging population should represent an interest for the policymakers.

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### A comparative analysis on the approaches of patients about stem cell treatments in turkey

Ciler Dursun<sup>1</sup>

<sup>1</sup>Faculty of Communication, Ankara University, Cebeci, Turkey

Regenerative and restorative innovations in medicine is one of the contested area for the patients and their relatives in terms of both by offering new treatments and also by carrying some ambiguities through their implementation process. Among these innovations, stem cell treatments are on the front line that patients approach towards it with the curiosity, hope and expectations. In order to measure approaches of patients with diverse demographical features in Turkey, we're conducting nationwide Project entitled as "The Socio Cultural, Economic, Ethical and Law Effects of Regenerative and Restorative Medical Technologies in Turkey" since 2021 with the support of The Scientific Research and Technological Research Council of Turkey. This projects is aiming at a comparative analysis on the differences and similarities of the approaches between the patients with high socio-economical status and the patients with relatively low socio-economical status. In order to obtain diverse approaches, a vast survey is implemented to the patients in Ankara, İstanbul, İzmir and Erzurum which are the four main metropol cities that represents socio- cultural diversity in Turkey. Survey is answered by the 750 patients both in the University hospitals and private hospitals. Ankara University, Ege University and Istanbul University hospitals are representing public hospitals by offering costless health care services in the sample, while two private hospitals are representing paid health care services in Turkey. Preliminary remarks of the survey are displaying that although there are some differences between patients about their general attitudes towards health issues in their life, the approaches of the patients are more similar in terms of supporting innovative medical Technologies and treatments according to their socio-economic status. This Project is also giving some clues on the expectations of the patients with diverse socio-economical and cultural status from the governments about bearing the costs of stem cell treatments in Turkey.

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### Self-rated health status in south africa: the roles of neighborhood disadvantages, social trust and religion

Raega Omar<sup>1</sup>, Thankam Sunil<sup>2</sup>, Xiaohe Xu<sup>1</sup>

<sup>1</sup>University of Texas at San Antonio United States, <sup>2</sup>University of Tennessee, Knoxville United States

Background and objective: Self-ratings about personal health are broad self-evaluations of health status which reflect general dimensions of health including chronic conditions. The construct of Self-rated health is related to multiple

domains of health outcomes such as mortality rates, comorbidities, psychological distress and the numerous psychosocial effects that result from socio-economic inequalities in health. The primary focus of our study is to apply a theoretical framework drawing on the stress process paradigm to examine the central research question: Do religiosity dimensions and social trust mediate and/or moderate against the deleterious effects of one ecological chronic stressor: neighborhood disadvantages?

**Methods:** This study applies nested models using stereotype logistic regression to analyze a random probability sample (n=3531) from the World Values Survey (WVS) in South Africa. Self-rated health was measured in a single survey question: All in all, how would you describe your state of health these days? In response, study participants were asked to indicate where they would put themselves on an ordinal scale (i.e., Very Good; Good; Fair; Poor).

**Results:** (1) Neighborhood disadvantages predicted lower self-ratings of health ( $p < 0.00$ ), controlling for respondents' demographic characteristics, income, employment, religious affiliation and exposure to violence in the past year; (2) the effects of social trust were only limited to mediate against ecological stress; however (3) higher religious engagement predicted more favorable ratings on health status, thus diminishing the negative effects of the stressor.

**Conclusion:** This study contributes to the literature by investigating the interface between self-rated health and ecological chronic stress in sub-Saharan Africa. Our empirical results lend credence to the positive effects of social involvement to mitigate the deleterious effects of neighborhood disadvantages.

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### LISA - Health Literacy cohort study

Sara Dias<sup>1</sup>, Maria Batalha<sup>1</sup>, Rui Passadouro<sup>2</sup>, Estêvão dos Santos<sup>3</sup>, Bartolomeu Alves<sup>2</sup>, Tiago Gabriel<sup>2</sup>, Ana Valentim<sup>4</sup>, Cátia Gomes<sup>4</sup>

<sup>1</sup>Center for Innovative Care and Health Technology, Polytechnic of Leiria  
Center for Innovative Care and Health Technology, Polytechnic of Leiria  
Rua General Norton de Matos, Apartado 4133 Portugal, <sup>2</sup>Unidade de Saúde Pública do ACES Pinhal Litoral Unidade de Saúde Pública do ACES Pinhal Litoral e Politécnico de Leiria, PT Portugal, <sup>3</sup>Unidade de Saúde Pública do ACES Pinhal Litoral, <sup>4</sup>Câmara Municipal de Leiria

**Background and objective:** Health literacy (HL) is the degree to which individuals can find, understand, and use information and services to inform health-related decisions and actions for themselves and others, whether at home, at the workplace, in the community, marketplace, healthcare sector, or the political arena. LISA is a cohort study developed in Portugal, which aims to measure HL in the adult population of Leiria, over the next 10 years. As secondary objectives it is intended to characterize anxiety and depression and metabolic risk.

**Methods:** LISA is a population-based prospective cohort study. It will collect data on HL through European Health Literacy Survey (HLS19-Q12). The study population will be composed by adults ( $\geq 18$  years old) who are non-institutionalized and living in private households in Leiria. The random sample is stratified by gender and age groups. A face-to-face interview will be conducted with the Computer Assisted Personal Interview at baseline. Follow-up will be carried out every 2 years via telephone call. The association between independent variables and health literacy is examined by means of variance analysis with measurement repetition.

**Results:** The measuring instruments will allow a diagnosis of the situation in the municipality of Leiria. It will be possible to develop specific strategies and initiatives to promote HL, that will allow each citizen to make an informed decision, and that contribute to better health outcomes, more efficient use of health services, and decrease in health spending.

**Conclusion:** The HLS-EU revealed that 47.6% of respondents in Europe had limited HL. Given these issues, it is necessary to train and inform about the disease and what everyone should do to fight it and, above all, prevent it. This is the HL process that should empower citizens with knowledge to make conscious and informed decisions about the promotion of individual and collective health.

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### Ethical issues in long-term care in low-, middle- and high- income countries during the covid-19 pandemic

Preet Gandhi<sup>1</sup>, Theresa Nitti<sup>2</sup>, Angel Petropanagos<sup>2</sup>, Andreea Popescu<sup>2</sup>, Nipa Chauhan<sup>2</sup>, Darren Bugaresti<sup>2</sup>, Paula Chidwick<sup>2</sup>, Jill Oliver<sup>2</sup>

<sup>1</sup>University of British Columbia Canada, <sup>2</sup>William Osler Health System, Canada

**Background:** Long-term care (LTC) centres experienced an unprecedented emergency involving exponential mortality during the COVID-19 pandemic, placing residents, staff, families and organizations in a precarious position. Complex

issues surrounding how to best support elderly populations at great risk in the pandemic have highlighted the importance of gathering information on ethical issues to inform effective policy and decision-making. While several national and international reports have documented the multifactorial impact of COVID-19 on LTC residents' living conditions, to our knowledge, no literature currently offers stakeholder-identified ethical issues from across low, middle, and high income countries (LMIC; HIC) and different sociocultural contexts during the pandemic.

**Objective:** In collaboration with the World Health Organization Public Health Emergency Preparedness and Response Ethics Network, this project sought to identify ethical issues faced in LTC by residents, families, staff and organizations. The aim of this survey was to better understand the ethical issues being faced in LTC and inform public health policymaking in future health crises.

**Methods:** Using snowball recruitment and a participatory approach, a survey was distributed in 8 languages including: English, Spanish, French, Hindi, Portuguese, Arabic, Mandarin, and Russian.

**Results:** 305 respondents from 45 countries highlighted the dozens of ethical issues in LTC care during the COVID-19 pandemic. A content analysis found overlap in the themes of responses between stakeholders. Visitation, isolation, harm, staff well-being, and the overall enforcement of policies during the pandemic represented the most often discussed issues. We found overlap in the identification of many ethical issues faced by stakeholders across LMIC and HIC countries.

**Conclusion:** Attention to the nature and impact of this ethical issues is required for an effective pandemic response, towards addressing moral distress for all stakeholders. Future investigation is necessary to further understand how these ethical issues can be addressed and subsequently guide future pandemic policymaking.

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### The rise of a new syndemic: characterising the interactions between dementia, infections and socioeconomic

Angelique Mavrodaris<sup>1</sup>, Angelique Mavrodaris<sup>1</sup>, Christoph Mueller<sup>2</sup>, Carol Brayne<sup>1</sup>, Robert Stewart<sup>3</sup>, Gayan Perera<sup>2</sup>

<sup>1</sup>University of Cambridge United Kingdom, <sup>2</sup>Kings College London, <sup>3</sup>Kings College London United Kingdom

**Background:** Infections in older people are a major cause of mortality and morbidity and may be important modifiers of outcomes for people with dementia. We explored mortality in individuals with dementia admitted to hospital for infections alongside deprivation.

**Methods:** A retrospective cohort analysis was created using secondary care data from one of Europe's largest mental health and dementia care providers in South London (UK). People with recorded dementia between January 2008 and March 2017 were linked to national hospitalisation and mortality data and classified as either admitted for infections, admitted for other causes or no admissions around first recorded dementia diagnosis and followed to death or a census date on 31st March 2019. Multivariate Cox proportional hazards regression with date of first dementia diagnosis as index date were applied.

**Results:** In total 14,375 people diagnosed with dementia were included, of whom 3,480 (24%) were admitted for infections, 3604 (25%) admitted for other causes and 7,291 (51%) not admitted to hospital. Individuals with dementia admitted for infections had lower MMSE scores, higher rates of co-morbidity and ranked significantly higher on deprivation indices compared to those with no admissions. Adjusted multivariate Cox regression models indicated that people with dementia admitted to hospital for infections had significantly higher mortality rates compared to no admissions (Hazard ratio (HR): 2.3; 95% confidence interval (CI): 2.1 - 2.5) and to admissions for other causes (HR: 1.5; 95% CI: 1.4 - 1.6).

**Conclusions:** In people with dementia, admissions for infections are critical events associated with substantial increased mortality risk. Addressing care patterns both before and after admission with a focus on infection could improve outcomes and is a key health research area, with optimisation of care a direct priority.

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### Understanding levels of morbidity, disease pattern, and hospitalization among widowed women in west bengal, India

Sandip Das<sup>1</sup>, T.R. Dilip<sup>2</sup>

<sup>1</sup>International institute for population sciences, <sup>2</sup>International institute for population sciences Govandi Station Road, Deonar, Opposite Sanjona Chamber, Mumbai, Maharashtra 400088 India

**Background and objective:** The health condition among Widowed Women is a serious concern in West Bengal, India. The purpose of the study is to investigate

the levels of self-reported morbidity, disease pattern, and hospitalization among widowed women in West Bengal, India based on the National sample survey data. Methods: Using data from the 75th round of the National Sample Survey Organization (NSSO), we tried to analyze the levels of morbidity, disease pattern, and hospitalization of widowed women across the state of West Bengal in India. Bivariate analysis and Logistic regression analysis were carried out to assess the differentials in reported morbidity, disease pattern, and hospitalization among the widowed women.

Results: Our result shows that there is 64.7% of widowed women lived in Rural and 35.3% lived in Urban areas. Widowed women from urban areas are more like to be reported (OR:1.53,  $p < 0.05$ ) than rural areas. The burden of illness and hospitalization among widowed women was higher in rural areas than in urban areas in West Bengal. The pattern of different morbidity suggests that West Bengal is passing through the advanced phase of epidemiological transition in which non-communicable diseases increase and communicable diseases are being swiftly replaced.

Conclusion: Our study strongly suggests that widowed women especially older widowed Women have more Proportion heading of self-reported morbidity and Hospitalization in West Bengal. Policy interventions should focus on the health of widowed women in the near future.

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### COVID-19 pandemic impact on ncds prevalence among the elderly in Italy

Virginia Casigliani<sup>1</sup>, Benedetta Contoli<sup>2</sup>, Valentina Possenti<sup>3</sup>

<sup>1</sup>University of Pisa Department of Translational Research and New Technologies in Medicine and Surgery via Paolo Savi 10, Pisa Italy, <sup>2</sup>Istituto Superiore di Sanità Valentina Minardi Istituto Superiore di Sanità Italy,

<sup>3</sup>Istituto Superiore di Sanità Italy Maria Masocco Istituto Superiore di Sanità  
Background and Objectives: The COVID-19 pandemic had a severe direct and indirect impact on older adults. In Italy, from 2020 to January 2022, the excess of all-cause mortality was 178,000 deaths, compared to the period 2015-2019, mainly among people aged over 80 (74.6% of the excess). This study aims to assess the Non-Communicable Diseases (NCDs) prevalence among the elderly in Italy after two years of the pandemic.

Methods: We used data on the elderly population (65+) collected from 2016 to 2021 by the Italian ongoing surveillance system PASSI d'Argento to analyze socio-demographic characteristics and NCDs prevalence. We compared pre-pandemic (2016-2019) and pandemic period (2020-2021).

Results: In the pandemic period, 6 of 10 people aged over 65 referred to have been diagnosed with one or more NCDs in their lifetime: 28% cardiopathy, 20% diabetes, and 13% cancer.

A condition of polichronicity (2 or more NCDs) was reported in 1 of 4 cases. People older than 85 years old, residents in the South, having economic difficulties or a lower level of education were at higher risk of having two or more NCDs. Differences by sex were not found significant.

The temporal analysis of the NCDs prevalence did not show significant changes between 2016 and 2019, except for an upward trend in polichronicity. In 2020-2021 there was a reversal of this trend, with differences at the limit of statistical significance: people with poly-chronicity decreased from 62% (60.2-61.6) in 2019 to 59% (58.1-60.7) in 2021. Oppositely, in the age-group 18-64, the NCDs trend remained unvaried.

Conclusion: The NCDs prevalence showed a decrease compared to the pre-pandemic period. It may be explained by the excess of mortality caused by the pandemic. Having an agile system that can monitor changes in the elderly it is essential to identify their needs and implement targeted actions to improve the offer of the national healthcare system.

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### Violence against women in a Brazilian state capital city: a population-based study

Franciéle Leite<sup>1</sup>, Márcia Pedrosa<sup>2</sup>

<sup>1</sup>Universidade Federal do Espírito Santo, Brazil, <sup>2</sup>Universidade Federal do Oeste da Bahia, Brazil

Introduction: Violence against women is a public health problem for which exposure to this phenomenon has negative consequences on the victim's health, regardless of the type. Objective: To estimate the prevalence of intimate partner violence against women throughout life, and its association with life experiences. Methods: This is a cross-sectional, analytical, population-based study carried out in the city of Vitória, capital city of Espírito Santo, Brazil. The

municipality has 79 districts and six health regions. The sample consisted of 1,086 women aged 18 years or older, who had or had an intimate partner in the last 24 months prior to the interview, which took place between January and May 2022. An intimate partner was defined in this study as the partner or ex-current partner and/or boyfriend as long as they maintain sexual relations, regardless of whether it is a formal union or not. Data collection was performed by a properly trained team, all female. The research team also had supervisors. The analyzes were done in the Stata version 15.1 program. The study was approved by the Ethics and Research Committee. Results: The lifetime prevalence of intimate partner violence against women was 47.8% (95%CI 44.8-50.8). Psychological violence was the most frequent (45.2%; 95%CI 42.3-48.2), followed by physical violence (25.6%; 95%CI 23.1-28.3). Sexual violence had the lowest frequency (17.2%; 95%CI 15.1-19.6). Women with a history of mothers who suffered intimate partner violence and who were sexually victimized in childhood had a higher prevalence of psychological, physical and sexual violence committed by an intimate partner ( $p < 0.05$ ). Conclusion: Intimate partner violence is a prevalent event in a woman's life, and is associated with the experience of intergenerational and personal victimization.

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### Older adults' intention to use an electronic decision aid for housing decisions: an online pan-Canadian survey

Maya Fakhfakh<sup>1</sup>

<sup>1</sup>Laval University, Canada

Background: Older adults experiencing disabilities such as frailty and loss of autonomy face the decision of whether to stay at home or move to a healthcare facility such as skilled nursing care facilities. Thus, they may need support for this difficult decision.

Objective: We assessed Canadian older adults' intention to use an electronic decision aid (eDA) for making housing decisions and identified the factors that influenced their intention.

Methods: We conducted a cross-sectional study using an online survey targeting older adults across the 10 Canadian provinces and 3 territories. We adapted 17 Unified Theory of Acceptance and Use of Technology (UTAUT) items to measure respondents' intention to use the eDA for housing decisions, as well as items measuring intention constructs. We also assessed e-Health literacy using subjective and Objective scales. We used descriptive statistics and multivariate linear regression analyses to identify factors influencing the intention to use the eDA.

Results: Of the 1,176 who met the eligibility criteria, 1,000 respondents completed the survey. The mean age was  $72.5 \pm 5.59$  years. Most respondents were male, white, English-speakers and living in Ontario or Quebec in urban areas. Mean scores for subjective e-Health literacy were  $27.8 \pm 5.88$  out of 40 and for Objective e-Health literacy,  $3.00 \pm 0.973$  out of 5. In our sample, the intention score was  $4.74 \pm 1.7$  out of 7. In the final model, factors associated with intention included mother tongue, e-Health literacy, performance expectancy, social influence and facilitating conditions.

Conclusions: Findings from this pan-Canadian online survey suggest that Canadian older adults' intention to use an eDA to make housing decisions are similar to Findings in other studies using UTAUT. Factors identified as influencing intention will guide future strategies for implementing the eDA.

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### Prevention policies to protect the adult population: The project "Vivere nei Parchi" in Apulia, South of Italy

Alessia Quaranta<sup>1</sup>, Maria Balducci<sup>2</sup>, Nehludoff Albano<sup>3</sup>, Onofrio Mongelli<sup>3</sup>, Osvalda Giglio<sup>4</sup>, Maria Montagna<sup>4</sup>

<sup>1</sup>Interdisciplinary Department of Medicine, University of Bari Aldo Moro, Italy, <sup>2</sup>Department of Biomedical Sciences and Human Oncology, University of Bari Aldo Moro, Italy, <sup>3</sup>Department of Health Promotion and Animal Welfare, Apulia Region, Italy, <sup>4</sup>Interdisciplinary Department of Medicine, University of Bari Aldo Moro, Italy

Background and Objectives: Active Ageing is a priority theme in Public Health. In accordance with the objectives of the Regional Prevention Plan (PRP) 2021/2025 on Health Promotion, Apulia Region has approved the project "Vivere nei Parchi - Puglia.M.I.C.A." (Integrated Motor Activity Culture Environment), with the strategic Objective of counteracting sedentary lifestyle and promoting paths for autonomy and psychophysical and social well-being of the Apulian population over 55.

Methods: Regional organizations, regional Parks/Reserves management bodies,

local associations specialized in the promotion and protection of naturalistic, historical-artistic heritage as well as universities are the social actors enlisted in Apulia to implement the document of the project and plan any corrective strategies. The project provides for the next two-year period 2023-2024, the activation of functional paths combining physical activity within the regional Protected Areas with the training of citizens on issues of environmental, food and archaeological/cultural education. All social and health data deriving from the program will be analyzed and monitored in order to verify their adherence with the Objectives set.

**Results:** The expected Results are mainly aimed at the conscious adoption of healthy and active lifestyles by the elderly adult, but they also involve the improvement of the perception of the state of health; empowerment; the enhancement of the resources of the territory; the elimination of health inequalities and socio-cultural integration.

**Conclusions:** Promoting policies oriented to active aging, able to sustain virtuous changes in behavior by the population over time is one of the most difficult challenges to pursue in Public Health, but we do believe that the use of the integrated approach of intervention and the combination of physical activity-training are some of the essential elements to hope to get the expected results.

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### Husbands' cognitive function was associated with the spouse's depression and contact with their children

Jin-young Min<sup>1</sup>, Kyoung-bok Min<sup>2</sup>, Sang-Won Ha<sup>3</sup>

<sup>1</sup>Veterans Medical Research Institute, Veterans Health Service Medical Center, Seoul, Republic of Korea, <sup>2</sup>Department of Preventive Medicine, College of Medicine, Seoul National University, Seoul, Republic of Korea,

<sup>3</sup>Department of Neurology, Veterans Health Service Medical Center, Seoul, Republic of Korea

**Background and Objective:** As people age, cognitive function is an important indicator of health and mortality risk. An important factor affecting cognitive function is family members, especially spouse and children. This study investigated the cross-partner association between depressive symptoms and cognitive function. We further examined the cognitive performance of couples was affected by the frequency of contact with their adult children. **Methods:** The survey was conducted at the Veterans Medical Research Institute in the Veterans Health Service Medical Center. A total of 235 individuals volunteered for this study and provided their informed consent at enrollment. After the selection process, 96 couples participated in the present study. Participants completed a neuropsychological test battery including attention, language and related functions, visuospatial functions, memory, and frontal/executive functions. Symptoms of depression were assessed using the short version of the Geriatric Depression Scale. The number of contacts with children was categorized into  $\geq 1$  per month and  $< 1$  per month.

**Results:** We found a significant association between depression and cognitive function between husbands and wives. Although the association was asymmetric: wives' depressive symptoms were significantly associated with lower executive function tasks by their husbands, whereas the converse association was not significant. Similarly, within a couple, more contact with adult children (more than once a month) was associated with a significantly higher cognitive scores (particularly in visuospatial/executive functions) by husbands. These observed associations were independent of the individuals' age, education, income, smoking status, alcohol consumption, engagement in moderate physical activity, and disease histories. **Conclusions:** Among older married couples, the cognitive functions of husbands tend to be influenced more by their wives' mental health and degree of contact with their adult children. This infers that wives and offspring can act as buffer against the cognitive impairment of older married men.

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### Association between confinement and post-COVID-19 pandemic anxiety

Melissa Fernandez<sup>1</sup>, Vanessa Jimenez<sup>2</sup>, Brian Enrique Contreras Mella<sup>2</sup>, Karen Hernandez<sup>3</sup>, Lourdes Juan<sup>3</sup>, Angel Geronimo<sup>3</sup>, Christian Estudillo<sup>3</sup>, Josue Villegas-Domínguez<sup>3</sup>

<sup>1</sup>Mexico, <sup>2</sup>School of Medicine, Universidad del Valle de Mexico, Mexico,

<sup>3</sup>Universidad del Valle de Mexico, Mexico

**background:** The changes in peoples lifestyle during the COVID-19 pandemic due to the confinement assigned in different countries caused different mental health problems, so it is important to identify the consequences once this stage is over.

**Objective:** To determine the association between confinement and the presence

of post-COVID-19 pandemic anxiety.

**Methods:** A cross-sectional, prospective study was carried out between January and April 2022, three months after return to usual activities free of confinement, including men and women aged between 18 and 50 years, residents of the city of Veracruz, excluding participants with already diagnosed psychological disorder, such as depression or anxiety. A survey was applied through Google Forms, including the Beck anxiety scale (Cronbachs alpha 0.90). SPSS v22 software was used for data analysis, Chi square test with Odds Ratio (OR) and 95% confidence interval (95%CI), assigning statistical significance with  $p < 0.05$  when comparing between people with and without anxiety.

**Conclusions:** The presence of anxiety during the current post-pandemic stage of COVID-19, where the indication of mandatory confinement has been withdrawn, is not associated with the different behaviors carried out during the mandatory confinement stage.

**Key:** Anxiety is a disease that increased during the confinement stage, which, apparently, can be recovered shortly after the withdrawal of this measure. It's essential to be able to generate knowledge and be able to provide comprehensive care to the population in the event of a new epidemic.

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### Prevalence and associated factors of food insecurity among adults in Manaus

Carolina Ferreira<sup>1</sup>, Marcus Silva<sup>2</sup>, Tais Galvão<sup>3</sup>

<sup>1</sup>School of Pharmaceutical Sciences, State University of Campinas, Brazil,

<sup>2</sup>Postgraduate Program of Pharmaceutical Sciences, University of Sorocaba, São Paulo, Brazil, <sup>3</sup>School of Pharmaceutical Sciences, State University of Campinas, Campinas, Brazil

**Background and Objective:** Food insecurity implies lack of access to food necessary for a healthy life, marked by socioeconomic vulnerabilities. We aimed to assess the prevalence and factors associated to food insecurity in Manaus, a city in the Brazilian Amazon. **Methods:** This was a population-based cross-sectional study conducted in 2019 with adults ( $\geq 18$  years-old) selected by a probabilistic sampling in three stages. The presence of food insecurity was measured using the Brazilian Household Food Insecurity Measurement Scale adapted and validated in Brazil to measure food insecurity as mild, moderate, or severe. Descriptive statistics was conducted and the prevalence ratios (PR) with 95% confidence interval (CI) were calculated using multinomial logistic regression, adjusted by significant variables at the level of  $p < 0.10$ . Associations to food insecurity were considered if  $p < 0.05$ . Stata 14.2 and complex design were used in all analyses.

**Results:** Of the 2,321 participants included in this study, 38.0% (95%CI 36.0-40.1%) had mild; 14.3% (95%CI 12.8-15.8%), moderate; and 15.7% (95%CI 14.1-17.2%), severe food insecurity. Mild, moderate and severe food insecurity was more prevalent in women (mild:PR 1.35, 95%CI 1.08-1.68; moderate:PR 1.61, 95%CI 1.19-2.17; severe:PR 1.48, 95%CI 1.09-2.02), poorest individuals (mild:PR 1.56, 95%CI 1.09-2.23; moderate:PR 6.46, 95%CI 3.38-12.33; severe:PR 6.30, 95%CI 3.27-12.13), people with depressive symptoms (mild:PR 1.41, 95%CI 1.04-1.91; moderate:PR 2.59, 95% CI 1.80-3.72; severe:PR 2.50, 95%CI 1.76-3.54) and that suffered life threatening events in the previous year (mild:PR 1.75, 95%CI 1.39-2.21; moderate:PR 3.94, 95% CI 2.63-5.89; severe:PR 4.46, 95%CI 2.94-6.77). Severe food insecurity was also more frequent in people aged from 45-59 years (PR 2.49, 95%CI 1.50-4.15), and unemployed or housewife (PR 2.91, 95%CI 1.76-4.80). **Conclusions:** Food insecurity affected more women, the poorest, people with depression, and those who suffered threatening events. Social vulnerabilities and threatening events seem to add up and worsen the right to access to food.

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### Knowledge and perceptions of Alzheimer's disease among geriatric nurses, geriatric nurses' practitioners and nursing students working in varied health care settings

Anat Romem<sup>1</sup>, Ronit Pinchas-Mizrachi<sup>2</sup>, Beth Zalcman<sup>2</sup>

<sup>1</sup>Jerusalem College of Technology (JCT), Jerusalem, Israel, <sup>2</sup>Jerusalem

College of Technology, Jerusalem, Israel

**Background:** The Global action plan on the public health response to dementia 2017-2025, a adopted by World Health Organization, aims to improve the lives of patients with dementia, their families and caregivers, provide comprehensive care, and implement targeted areas of action (WHO, 2017). Caring for patients with Alzheimer's disease (AD), a subset of dementia, requires specific knowledge, skills, and attitude (Kimzey et al, 2016; World Health Organization, 2020). Assessment of nursing knowledge of, and attitudes related to, caring for AD in different healthcare settings with different levels of education can help create

educational programs and change attitudes towards AD patients.

**Methods:** This quantitative, cross-sectional study explores self-reported knowledge related to AD and personal attitude regarding caring for AD patients. The study utilizes the following validated measures: Alzheimer's Disease Knowledge Scale (ADKS) and the Dementia Attitude Scale (DAS). The study compares between different levels of nursing education and between three healthcare settings: general hospitals, long-term care facilities, and community-based care.

**Results:** Overall mean ADKS score was 78.71%. The highest scores were measured in the community setting, with knowledge graded as 80.45%. The total DAS score among all study participants was 109.56/140 (78%) (SD=15.52). Nursing students' attitude toward AD patients was the lowest among all participant groups, 103.25/140 (73%) (SD=14.88). By level of education, nursing students report feeling the least comfortable with AD patients, while nurse practitioners are the most engaged and comfortable with AD patients.

**Conclusions:** Nursing students need increased exposure to AD patients in geriatric clinical practice as part of their nursing educational program. More knowledge and positive attitudes will facilitate better care for older adults with AD across all healthcare settings, which promotes the global action plan 2017-2025 among the nursing sector.

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### Women and tobacco: smokers clinical characteristics at a Tunisian tobacco cessation consultation during a 10-year-period

Aroua Kamel<sup>1</sup>, Houyem Said<sup>2</sup>, Rania Bannour<sup>1</sup>, Sana Bhiri<sup>1</sup>, Fatimaezzahra Khouya<sup>1</sup>, Arwa Neffati<sup>1</sup>, Emna Hariz<sup>1</sup>, Souhir Ayadi<sup>1</sup>, Soufiene Aidani<sup>1</sup>, Mohamed Rejeb<sup>1</sup>, Salwa Khefacha<sup>1</sup>, Asma Cheikh<sup>1</sup>

<sup>1</sup>Department of Prevention and Safety of Care, Sahloul University Hospital, Sousse, Tunisia, <sup>2</sup>Department of Prevention and Safety of Care, Sahloul University hospital, Sousse, Tunisia

**Introduction:** Smoking is one of the most serious threats to global public health and the most widespread in Tunisia. The incidence of female smokers is increasing through the years, as well as the incidence of hospitalizations for cardiovascular complications and cancers testifying to the high risk in this gender. **Objectives:** To describe the sociodemographic and medical characteristics of female smokers. **Methods:** A longitudinal descriptive epidemiological study was carried out among female smoking patients followed up at the smoking cessation consultation at the Sahloul University Hospital in Sousse, during the period from 2011 to 2021. The collection of socio-demographic and medical data was based on a pre-established synoptic form and validated questionnaires in Arabic and French completed during an interview with the participants.

**Results:** A total of 92 patients were identified. The median age was 37 years (29.25 - 50). Overall, 18.5% of patients had comorbidities, the most common being hypertension (9.9%) and diabetes (5.6%). The median age of the first cigarette use was 18.5 years (16 - 20) and 20 years (17 - 22) for daily smoking. Cross addiction was identified among 6.4% participants. Using the Fagerström score, 38.5% of women were highly dependent. Moreover 41.7% presented a high score of depression score and 25% of anxiety. Smoking cessation prevalence was 9.1% and 20% at 6 and 12 months, respectively. **Conclusions:** Smoking is steadily increasing in women. Therefore, the implementation of smoking cessation interventions targeted to women remains a necessary measure.

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### Factors of high physical dependence on nicotine among Tunisian smokers consulting a smoking-cessation unit in a University Hospital in Tunisia

Emna Mziou<sup>1</sup>, Hela Ghali<sup>2</sup>, Rania Bannour<sup>2</sup>, Sana Bhiri<sup>2</sup>, Salwa Khefacha<sup>2</sup>, Mohamed Rejeb<sup>3</sup>, Asma Cheikh<sup>3</sup>, Houyem Laatiri<sup>3</sup>

<sup>1</sup>Prevention and Healthcare Security Department, Sahloul University Hospital, Sfax, Tunisia, <sup>2</sup>Prevention and Healthcare Security Department, Sahloul University Hospital, Sousse, Tunisia, <sup>3</sup>Prevention and healthcare security Department, Sahloul University Hospital, Sousse, Tunisia

Smoking is an addictive behavior; nicotine is the main substance responsible for physical and moral dependence. The aim of this study was to determine characteristics of Nicotine-physical-dependence among Tunisian smokers. We conducted a descriptive study, over 5 years (2015-2020), including all patients consulting voluntarily the smoking cessation unit in Sahloul University Hospital-Tunisia. The physical dependence on nicotine was measured via the Fagerström test for Nicotine Dependence (Six questions form, summing from Zero to 10). Smokers with a score of 7 to 10 were considered highly dependent on nicotine; score from five to 6 were considered moderately dependent and from 0 to 4 were

not considered dependent. From 2015 to 2020, 450 smokers consulted our unit. When interviewing the patients, their moral dependence (addiction) to tobacco explained by themselves to gestural automatism (81.8%), stressful situations (76.7%) and the need for moral support (70.2%). As for the physical tobacco dependence, the Fagerström scale revealed that 46.2% (n=196) were highly dependent, 34% were moderately dependent and 20% were not very dependent. These highly addicted smokers were most often men (91.3%) had a higher average age than the lower dependency categories and were more often unemployed. The mean nicotine dependence score was 6.16±2.29. It was not associated with gender. It was, however, significantly associated with low level of education (p=0.001) and advanced age with a weak positive correlation (r=0.182, p<10-3). This level of nicotine dependence was, also, significantly associated with a high average number of cigarettes consumed daily (p<10-3), a high level of CO exhaled at each visit (p<10-3) and a high Hospital Anxiety and Depression scale (p<10-3). Smoking cessation requires comprehensive management. Our cost-free unit attracts mostly highly dependent smokers, but also patients with varying level of dependence. Successful quitting depends on factors related to the individual, his environment and the care-quality.

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### Significant role of the nurse in management of pain at oncology patients

Polya Gergova<sup>1</sup>, Stela Georgieva<sup>2</sup>, Eleonora Dimitrova<sup>2</sup>

<sup>1</sup>Department of Nursing Surgical Care, Faculty of Health Care, Medical University, Plevan, Bulgaria, <sup>2</sup>Department of Social Medicine and Health Management, Medical University, Plevan, Bulgaria

**Introduction:** Pain is a significant problem in patients with oncology disease. It is a nursing sensitive indicator, so nurses play a key role in successful pain management. Nurses must learn how to effectively communicate with patients to adequately assess and manage pain. The aim of the study is to investigate patients' and nurses' opinion on the complex role of oncology nurse in assessment of oncology pain to patients with oncology disease.

**Materials and Methods:** The idea about pain assessment examined from a view point of two groups: patients and nurses in oncology departments. Data were collected by direct individual self-administered questionnaire among 67 patients and 49 nurses in the field of oncology pain. Data processing is with Microsoft Office Excel 2016 и SPSS v.25.

**Results:** Proportion of patients with pain is high (69,1%), when moving (34,3%), at rest (10,4%), at night (10,4%), one of 10 patients has constant pain. In this relation, 76,1% respond affirmatively, the nurse responds immediately to their complaints. Therefore, in more than half of patients, expectations are related to physical pain relief (53,7%). Another part deny pain (35,9%). Patients may deny pain due to their perception of pain as a weakness (64,2%), fears that the disease is progressing (47,8%), sleep problems (67,1%) or even the believe that pain is inevitable part of illness or aging (71,7%). On the other hand, significant part of nurses (67,3%) give information on body position for pain relief. More than a half of nurses (61,2%) monitoring the condition of patients with pain, communication about pain medications confirm 42,9% of nurses. Majority, 77,6% of nurses, assess the necessity of actualization of their communication skills for an adequate pain assessment.

**Conclusions:** Improvement of nurse's knowledge with pain assessment is needed be aware of the barriers that can interfere it.

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### Attitude of health professional students as advocates for organ and tissue donation: a community engagement effectiveness study

Jayakumary Muttappallymyalil<sup>1</sup>

<sup>1</sup>College of Medicine, Gulf Medical University, United Arab Emirates

**Background and Objectives:** As organ transplantation serves as a rescue method for patients with terminal diseases, there is a huge demand for organ donation world-wide. This study assessed the attitude of health professional students as an advocate of organ and tissue donation. **Material and Methods:** An interventional study design was adopted among the health professional students at a Medical University in Ajman. A validated, self-administered questionnaire was used to assess the attitude of about organ donation before and after a community engagement activity. Ethical approval was obtained prior to this study. Wilcoxon Signed rank test was used to test whether there is any difference between the attitude scores between and after the community engagement activity.

**Results:** A statistically significant increase in the attitude of the participant towards organ donation (p<0.001) was found. The percentage increase in the attitudinal

score after the community engagement activity was 13.5% in the younger age group and 6.6% among females. The students enrolled under college of Medicine showed a significant increase in the attitudinal scores when compared to the students of other programs. The difference in the median attitudinal scores was statistically significant in students enrolled in programs under College of Medicine and other programs ( $p < 0.05$ ). Conclusions: The study revealed that there was a significant rise in the positive attitude towards organ donation among health professional students after the community engagement activity. Organizing educational activities would improve and create the significance of organ and tissue donation.

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### Exposure to alcohol and risk of dementia: a systematic review and dose-response meta-analysis

Andrea Rossetti<sup>1</sup>, Elena Mazzoleni<sup>2,3</sup>, Tommaso Filippini<sup>2,3,4</sup>, Marco Vinceti<sup>2,3,5</sup>

<sup>1</sup>Environmental, Genetic and Nutritional Epidemiology Research Center (CREAGEN), Department of Biomedical, Metabolic and Neural Sciences, Medical School - University of Modena and Reggio Emilia, Modena, Italy,

<sup>2</sup>Environmental, Genetic and Nutritional Epidemiology Research Center (CREAGEN), Italy, <sup>3</sup>Department of Biomedical, Metabolic and Neural Sciences, Medical School, University of Modena and Reggio Emilia, Modena, Italy, <sup>4</sup>Department of Epidemiology, Boston University, United States, <sup>5</sup>School of Public Health, University of California, United States

**Background:** The relation between alcohol intake and cognitive function risk has been established, especially for high levels of exposure. Conversely, the effects at low-moderate levels is still debated and the aim of this study is to characterize the dose-response relation between different degree of alcohol intake and cognitive decline and dementia. **Methods:** We carried out a comprehensive literature search in PubMed and Embase online databases for cohort and case-control studies investigating the association between alcohol intake on cognitive function. For study identification and selection, we will use the Rayyan online open-source program. Whenever possible, we will conduct a dose-response meta-analysis using the new one stage cubic spline mixed-effects model in order to evaluate the nonlinear relation of such association. According to inclusion criteria, we selected studies on human population with no major comorbidities (e.g. CVD, diabetes, immunological deficits and cancer) and without a diagnosis of dementia and MCI at baseline. Further exclusion criteria were binge drinking and alcoholism, in addition to articles in which no exposure dose was reported.

**Results:** Out of total 3676 articles, we excluded 951 duplicates and after title and abstract screening, we further excluded 2496 records to be subjected to a more accurate analysis. After full-text evaluation, of the 266 resulting articles, we identified 20 eligible studies, with alcohol intake ranging from 0 to 50.4 g alcohol/day and 0 to 4.8 drinks/day. **Conclusions:** The study is currently ongoing; data extraction and prediction of the database for the dose-response meta-analysis will be presented at the Congress.

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### Health literacy for women released from prison in Brazil: construction and validation of educational material

Patrícia Bonato<sup>1,2</sup>, Isabel Craveiro<sup>1</sup>, Carla Ventura<sup>2</sup>, Réka Cane<sup>1</sup>

<sup>1</sup>Institute of Hygiene and Tropical Medicine, NOVA Lisbon University (NOVA-IHMT), Lisbon, Portugal, <sup>2</sup>Ribeirão Preto College of Nursing, University of São Paulo, Brazil

**Background and Objective:** Recent research describes the increased risk of death in the first weeks after the release of prisoners, which is higher in those with limited health literacy skills. In the case of women in conflict with the law, studies have identified that limited health literacy skills intensify experiences of marginalization, isolation and shame. In the State of São Paulo (Brazil), the monitoring of people released from prison is carried out by the Egress and Family Attention Centers (EFAC), but there is no direct health intervention in this public facility. We aimed to develop and validate educational material with health guidelines for women released from the prison system who are assisted at the EFAC in a city of São Paulo.

**Methods:** We designed a multimethodological study with a qualitative approach, whose data will be collected through: an integrative literature review, semi-structured interviews with women released from prison, health professionals and supervisors that assist them (respectively, in the prison unit and in the EFAC), and body mapping. The data will be analyzed using thematic analysis by Braun and Clarke, and the evaluation of the educational material will be carried out using descriptive statistics with the expert judges, as well as with the women released

from prison.

**Results:** A total of 21 women released from prison, 8 health professionals and 2 EFAC supervisors were interviewed, who described the health needs of these women, the main demand being related to drug use, sedentary lifestyle and risky sexual behavior. The body mapping of 6 women revealed the prison marks left on their bodies and minds.

**Conclusions:** We expect to elaborate educational material based on the perspectives of the target group, using a participatory approach, which will contribute to increase health status of women released from prison, using language and symbolic meaningful for them.

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### Trends in prevalence of multimorbidity in Mainland China: a systematic review and meta-analysis

Yang Zhao<sup>1</sup>, Yang Zhao<sup>1</sup>

<sup>1</sup>The George Institute for Global Health, Beijing, China

**Background and Objective:** Multimorbidity, the presence of two or more mental or physical chronic non-communicable diseases (NCDs), is a major challenge for the health system in China, which faces unprecedented aging of its population. To examine the prevalence and trends in multimorbidity among Chinese adults since 1998.

**Methods:** Studies regarding the prevalence of multimorbidity in Chinese people published since 1998 were searched in databases of CNKI, Wanfang, and PubMed, and so on. Meta-analysis was performed to calculate the pooled prevalence of multimorbidity based on random effects. Subgroup or Meta-regression analysis was conducted based on survey time, sex, areas, residence place, education level, marital status, and study quality.

**Results:** A total of 123 papers were included in the analysis, with 7 714 313 participants. The pooled prevalence of multimorbidity in Chinese people was 36.3% (95%CI:32.8% ~ 39.9%). The pooled prevalence was higher in urban than in rural Chinese, and higher in women (36.2%, 95% CI:33.8% ~ 38.5%) than men (33.2%, 95%CI:30.9% ~ 35.5%), but the differences were not significant ( $P \geq 0.05$ ). Between 1998-2019, the increase in multimorbidity did not follow the linear trend. Before 2004, the average prevalence showed 14.5%, with an annual increase rate of around 1.3%. Since 2014, the prevalence of multimorbidity was significantly higher than before ( $P \leq 0.001$ ). Age group difference was found ( $P \leq 0.001$ ), where the prevalence of multimorbidity for Chinese aged 60-79 years old was 38.1% (95%CI: 34.6% ~ 41.5%), followed by those aged 80 years and older, 40-59 years old, and younger than 40 years old.

**Conclusions:** The prevalence of multimorbidity in Chinese has been rapidly increasing since 2014, and is higher in those aged 60 to 80 years than in other age groups. Therefore, efforts and preventive strategies should be adopted for early screening of multimorbidity in high-risk groups.

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### Use of health services and physical activity: evidences from a population-based study with the elderly

Edige Santos<sup>1</sup>, Bruno Ferreira<sup>2</sup>, Elaine Oliveira<sup>1</sup>, Chester Cesar<sup>1</sup>, Camila Monteiro<sup>2</sup>, Moisés Goldbaum<sup>2</sup>

<sup>1</sup>Faculdade de Saúde Pública da Universidade de São Paulo Brazil,

<sup>2</sup>Faculdade de Medicina da Universidade de São Paulo, Brazil

**Background and Objective:** Healthcare for the elderly represents a challenge for Health Services (HS) at global, national and regional levels. It is known that Physical Activity (PA) during leisure decreases the frequency of HS utilization, leading to a decrease in expenses and being able to help control utilization in public emergency situations. However, the influence that each PA domain can provide is still uncertain. Thus, the purpose of this study was to analyze how the different domains of PA and PA-Total are related to the HS utilization.

**Methods:** Cross-sectional data from 1019 participants of the Health Survey of the City of São Paulo-Brazil (ISA-Capital), aged 60 years or older (59.7% female; mean age 69.7 ± 7.7 years), were used. Respondents were classified in each domain of PA and PA-Total (IPAQ-long) and HS utilization (preventively, emergency and hospitalization). For the relationship between the PA domains and time of use of the HS, Spearman's correlation was used. Then, controlling for sociodemographic characteristics, lifestyle habits, quality of life and chronic diseases, using weightings for probabilistic and complex samples, Poisson regression analysis.

**Results:** There was a positive correlation between HS-preventive with PA-Total ( $r = 0.098$ ;  $p < 0.01$ ) and HS-emergency with PA-Transportation ( $r = 0.158$ ;  $p < 0.01$ ). Thus, the more you practice PA (Total and Transportation) the frequency of HS utilization is decreased. When controlling the analysis, active in PA-total and PA-

leisure have 48% (PR=1.48; 95%CI 1.03-2.13) and 35% (PR=1.35; 95%CI 1.06-1.72) of probability of reporting that they consulted preventive in 3 months or more than their inactive peers. Actives in PA-Total have a 50% (PR=0.50; 95%CI 0.29-0.86) probability of not reporting hospitalization in the last 12 months when compared to inactive.

Conclusions: The importance of PA in Healthcare and the support for the implementation of public health policies aimed at increasing the level of PA in the population are highlighted.

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### Burden of diseases and costs attributable to dietary risk factors and excess weight in Brazil

Ísis Eloah Machado<sup>1</sup>, Aline Siqueira Fogal Vegi<sup>1</sup>, Adriana Lúcia Meireles<sup>1</sup>, Mariana Carvalho de Menezes<sup>1</sup>, Mariana Santos Felisbino-Mendes<sup>2</sup>, Carla Eduarda Faustino Rocha<sup>1</sup>, Joice Silva Vieira Leal<sup>1</sup>, Larissa Fernanda Fonseca Guedes<sup>1</sup>, Luane Pinheiro Rocha<sup>2</sup>, Magda do Carmo Parájara<sup>1</sup>

<sup>1</sup>Universidade Federal de Ouro Preto, Brazil, <sup>2</sup>Universidade Federal de Minas Gerais, Brazil

Background and Objective: Obesity and unhealthy eating are modifiable risk factors for chronic non-communicable diseases (NCDs), a serious public health issue in Brazil. Our objective was to estimate the burden of NCDs and the financial costs for the Brazilian Unified Health System (BUHS) attributable to a diet high in processed meats, sugary drinks, sodium, trans fats, and overweight in 2019.

Methods: The methodology included the estimation of population attributable fractions (PAF), obtained by the Global Burden of Disease 2019, whose parameters are intake of each dietary risk factor (RF), mean body mass index (BMI), size of the RF effect for each NCD, and level of exposure associated with lower mortality risk. The PAFs were multiplied by the DALYs (deaths and years of life lost, adjusted for disability) and hospitalization and procedure costs for treating NCDs, which were obtained from the BUHSs Outpatient and Hospital Information Systems.

Results: Sodium intake was responsible for 30814 deaths (mortality rate per 100,000 - MR: 14.2) and 699119 DALYs (DALY rate per 100000 - DR: 322.7) in Brazil. The consumption of trans fats caused 12,616 deaths (MR:5.8) and 29,905 DALYs (DR:138.0). Processed meat caused 5,494 deaths (MR:2.5) and 192263 DALYs (DR:88.7). The consumption of sugary drinks caused 7657 deaths (MR:3.5) and 233436 DALYs (DR:107.7). A high BMI was attributed to 177940 deaths (MR:82.3) and 5817939 DALYs (DR:2685.2). Regarding costs, US\$57,163,245 was attributable to sodium intake, US\$32711912 to trans fats, US\$29017436 to processed meats, US\$14,116,240 to sugary drinks, and US\$300,056,629 to a high BMI.

Conclusion: Brazilians illnesses and the associated financial burden on the BUHS are strongly affected by the consumption of processed foods and being overweight. The estimates made emphasize how urgent it is to put policies, programs, and other initiatives based on evidence of health promotion and compliance into place and to strengthen them.

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### Level of physical activity in Belgrade

Svetlana Mladenovic Jankovic<sup>1</sup>, Gordana Tamburkovski<sup>1</sup>, Aleksandra Andric<sup>1</sup>, Marija Markovic<sup>1</sup>, Andjelka Grujicic<sup>1</sup>, Nevenka Kovacevic<sup>1</sup>, Nemanja Stefanovic<sup>1</sup>, Milena Jakovljevic<sup>1</sup>, Katica Tripkovic<sup>1</sup>, Gordana Belamaric<sup>1</sup>, Dusanka Matijevic<sup>1</sup>

<sup>1</sup>Institute of Public Health of Belgrade, Serbia

Background: Regular physical activity is one of major protective factors influencing individual health and contributes to prevention of leading non communicable diseases, quality of life, and wellbeing. Data has shown that 23% of adults worldwide do not meet the global recommendations on physical activity for health. Differences in level of physical activity are often related to age, gender and socioeconomic status. This study was aimed to assess level of physical activity among adult population in Belgrade.

Method: National health survey based on European Health Interview Survey methodology was implemented as cross-sectional study, in 2019, through two-stage stratified sample of 13.589 adult respondents and response rate of 97%. Data were collected by structured questionnaire administered by interviewer. Statistical analysis of data was performed for Belgrade region separately. Prevalence of physical activity in Belgrade was compared with national data in 2019 and data for Belgrade from national health survey in 2013.

Results: About 20% of adult population in Belgrade practice sport or recreational activity at least 150 minutes per week, compared to 11% in Serbia and 12,5% in 2013. Sedentary activities at the workplace are common for 55% people in Belgrade compared to 41% in Serbia and 61,2% in 2013. Excessive sedentary

style is common for 35% people in Belgrade and 23% in Serbia, most often among youngest and oldest adults, more educated and higher socio economic status. Average daily duration of sitting for adults in Belgrade is 5,8 hours and 4,7 in Serbia. Almost 90% of people in Belgrade recognize that regular physical activity is significant factor for their own health.

Conclusion: Although awareness about significance of regular physical activity is high among adult population in Belgrade, prevalence of everyday practice is lower than national data. Additional research is needed in order to identify factors affecting habits related to physical activity.

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### The relationship between hyperlipidemia and lifestyle factors among adults residing in Ajman UAE: a case-control study

Shatha Alsharbatti<sup>1</sup>, Maryam Alzaabi<sup>2</sup>

<sup>1</sup>Gulf Medical University, Community Medicine Department, College of Medicine, Gulf Medical University, Ajman, UAE, United Arab Emirates,

<sup>2</sup>Directorate Medical Service, UAE, United Arab Emirates

Background: Hyperlipidemia is a significant public health issue, however, there is insufficient information on factors that can determine hyperlipidemia among residents of UAE.

Objectives: This study aimed to determine the association between hyperlipidemia and socio-demography and lifestyle factors and to assess determinants of hyperlipidemia among the study population.

Materials and Methods: A case-control study was conducted during the period between January-May 2020, at a Teaching Hospital, Ajman. The study included 91 adults (41 cases and 50 controls) aged 20 years or above, both genders and all nationalities. Consecutive individuals attending the Laboratory Department were approached, those who had signed the informed consent were included. A researcher-administered questionnaire was used., blood samples were collected, and the lipid profile workup was done according to the laboratory standard procedures. IRB approval was obtained. The SPSS software (version 26) was used for analysis. Chi-square test, independent t-test and logistic regression analysis were used

Results: The highest proportion of cases aged  $\geq 35$  years (87.8%); males (75.6%); Overweight (39.0%); Arab (61.0%); whose average income between 10000 - <20000 (51.2%); married (92.7%); Bachelor or higher level of education (92.7%) and employed (75.6%). The proportions of practicing unhealthy lifestyles were higher among cases than controls for smoking, cigarettes, waterpipe, special diet, and inadequate sleep. Significant associations were found between hyperlipidemia, age ( $p=0.009$ ), marital status ( $p=0.007$ ), and history of hypertension ( $P=0.045$ ) and thyroid diseases ( $P=0.038$ ).

Significantly lower mean values of low-density lipo-protein ( $p\leq 0.001$ ), triglycerides ( $p\leq 0.03$ ) and total cholesterol ( $p\leq 0.001$ ) among cases compared to controls. Age was a significant predictor of hyperlipidemia. The predictors of hyperlipidemia were; age  $\geq 35$  years, having family history of hyperlipidemia and excessive dietary intake of sugar.

Conclusion: The significant predictors for hyperlipidemia are: Age  $\geq 35$  years, having family history of hyperlipidemia and excessive dietary intake of sugar.

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### Association between tooth loss and sociodemographic variables of older people attending community centers of a capital of the southeast region of Brazil

Maria Miotto<sup>1</sup>, Adriana Aguiar<sup>1</sup>, Caroline Thomes<sup>1</sup>, Ana Alvarenga<sup>1</sup>, Angelita Mansur<sup>1</sup>

<sup>1</sup>Universidade Federal do Espírito Santo, Programa de Pós Graduação em Saúde Coletiva Avenida: Marechal Campos. Número: 1468. Cidade: Vitória. Estado: Espírito Santo. País: Brasil. CEP: 29047-105. Brazil

Introduction: Demographic transition is a global phenomenon that reflects the growth of people reaching older age, due to increased life expectancy and a sharp fertility drop. Regarding longevity, it will depend on the opportunities that the health sector can provide to the individual during his/her life.

Objective: To identify an association between tooth loss and sociodemographic variables of older people attending Community Centers.

Methods: Analytical study with cross-sectional design, conducted in Vitória, Espírito Santo, Brazil, with data collection from February to April 2019, developed by three duly trained researchers. The participants were interviewed through structured scripts, previously used in other studies in Brazil, addressing sociodemographic aspects and oral health related factors, the final sample consisted of 402 participants. Descriptive analysis of the data was performed and organized in frequency tables with number and percentage for each of the items

of the research instrument. The Chi-square test was used to evaluate possible associations. A 5% significance level was adopted.

Results: The study showed a high prevalence of tooth loss in the older population. A 54% of the participants lost 11 or more teeth, the vast majority (95.8%) of them had lost at least one dental element. The molar was the most extracted tooth (94.8%), and caries disease was the main cause of tooth loss (69.9%). The factors associated with tooth loss were: gender ( $p=0.024$ ), age group ( $p=0.000$ ), schooling ( $p=0.000$ ), and socioeconomic status ( $p=0.000$ ).

Conclusions: We identified that women, older than 70 years, with up to 10 years of schooling, belonging to classes C/D – E were more affected by tooth loss, evidencing sociodemographic characteristics as determinants of the health-disease process and portray health inequities in the country, since the disadvantaged are the most affected.

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### The Territorial Operative Center: an innovative management for Assisted Hospital Discharges in the health district of Vignola, Modena, Italy

Riccardo Barbieri<sup>1</sup>, Federica Casoni<sup>2</sup>, Valeria Menabue<sup>2</sup>, Elena Righi<sup>1</sup>  
<sup>1</sup>University of Modena and Reggio Emilia, Italy, <sup>2</sup>AUSL Modena, Italy

Background: As part of the National Recovery and Resilience Plan (NRRP 2021), Mission 6 should provide for the creation of proximity networks, structures of intermediate care and telemedicine in order to improve territorial healthcare: these interventions, regulated by Ministerial Decree 77/2022, will lead to the strengthening and the implementation of Community Houses and Hospitals and to the development of Territorial Operative Centers (COT).

Objective: COT is an organizational model that performs a function of coordination of taking care of the patient and connection between services and professionals involved in different settings. The role of the COT is to facilitate transition from the hospital to the territory and to reduce the risk of readmission and improper use of Emergency Department.

Methods: In the health district of Vignola, COT highlights the importance of building an outlined process for taking care of frail patients on assisted hospital discharges (AHD). The management of this process should consider the peculiarities of territory, which is large and heterogeneous, characterized by both flat areas with high population density and mountainous regions with low population density. COT will be placed inside Vignola's new Community House. An analysis of indicators related to the hospitalization of frail patients will be performed after the introduction of the COT, in order to evaluate its impact compared to the current model and to verify an improvement on AHD.

Results: COT's functions on AHD would include:

- \* receive and decode reports from hospital;
- \* evaluate health needs through multidimensional assessment, identifying the most appropriate program for each patient;
- \* verify the start of the personalised program and monitor its progress over time.

Conclusions: The originality of this project is to evaluate the role of the COT in the improvement of frail patient's journey. If the effectiveness were confirmed, this project should be standardized at the provincial level.

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### Workplace gender harassment, illegitimate tasks, and poor mental health: hypothesized associations in a Swedish cohort

Aziz Mensah<sup>1</sup>, Susanna Toivanen<sup>2</sup>, Martin Diewald<sup>3</sup>, Mahmood Ul Hassan<sup>4</sup>, Anna Nyberg<sup>5</sup>

<sup>1</sup>Mälardalen University Sweden, <sup>2</sup>Mälardalen University, <sup>3</sup>Bielefeld University Germany, <sup>4</sup>Stockholm University Sweden, <sup>5</sup>Uppsala University

Background: Workers exposed to gender harassment and illegitimate tasks may experience adverse mental health outcomes such as depression and burnout. However, the longitudinal effects and the complex interrelationships between these variables remain largely unexplored. We therefore investigated the cross-lagged relationships between gender harassment, illegitimate tasks, and mental health outcomes among working adults in Sweden over a period of two years, as well as the gender differences in the cross-lagged effects. Additionally, the study examined whether illegitimate tasks mediated the relationship between gender harassment and negative mental health outcomes over time.

Method: Data were drawn from the Swedish Longitudinal Occupational Survey of Health (SLOSH), covering 2796 working men and 4110 working women in a two-wave analysis from 2018 and 2020. We employed a structural equation model to examine the cross-lagged effects and the mediating effect between gender harassment, illegitimate tasks, and mental health outcomes over time.

Furthermore, we applied a multigroup analysis to determine gender differences in the cross-lagged effects.

Results: The results showed statistically significant cross-lagged (i.e., forward, reverse, and reciprocal) relationships between gender harassment, illegitimate tasks, and mental ill-health (i.e., burnout and depression). There were statistically significant gender differences in these cross-lagged relationships (burnout:  $247=106.21$ ,  $p < 0.01$ ; depression:  $247=80.5$ ,  $p < 0.01$ ). Initial but not later illegitimate tasks mediated the relationship between gender harassment and mental ill-health outcomes over time.

Conclusion: The gender differences in the interrelationships between gender harassment, illegitimate tasks, and mental ill-health outcomes among workers in Sweden indicate that policies, regulations, and interventions that address these exposures in organisations must be tailored to benefit both men and women.

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### Work history as a life course socioeconomic position and its association with depression in mid to later adult life: a systematic review of the evidence

Eun Kim<sup>1</sup>

<sup>1</sup>University College London United Kingdom

Background and Objective: Given the challenging economic climate during the past decades, the ageing workers around the world are more likely to have held multiple lifetime occupations and employments. Thus, the longitudinal observation of an individual's composite work and employment trajectories over lifetime can be considered a potential SEP that can explain the mid- to later life inequalities in depression. Yet, the systematic evidence is limited. Here, I present the systematic evidence for the life course work history as an SEP and its association with depressive symptoms of older adults.

Methods: Results were identified from five electronic databases, which were searched to identify studies from the wider discipline as well as epidemiology. Studies that examine the effect of varying labour force participation pattern over lifetime on later adult life depressive symptoms were identified. The four search concepts were: Concept 1 (Older adults, Age 45+, Midlife to later life), Concept 2 (Depression, depressive symptoms), Concept 3 (Employment history, labour force participation, employment status, adverse career characteristics), Concept 4 (Longitudinal analysis, life course analysis).

Results: The search found 12,166 studies meeting the eligibility criteria, of which 7,008 studies were screened based on their titles, and of which 427 studies screened on their abstracts. 270 full-text articles were assessed for eligibility after screening, and 47 studies were quality assessed based on the risk of bias tool that was derived from the various checklists and criteria used in other systematic review.

Conclusion: Results suggest that lifetime employment continuum has an impact on the depressive symptoms of older adults, and policy strategies that target populations with specific course of employment history is needed, especially in the treatment of depression.

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### Epidemiology of abdominal obesity among adults in rural and peri-urban Bangladesh

Mohammad Rahman Sarker<sup>1</sup>, Md Rahman<sup>2</sup>, Michiko Moriyama<sup>2</sup>, Mohammad Chisti<sup>3</sup>, Shakila Banu<sup>1</sup>, Taiyaba Ananta<sup>4</sup>, ASG Faruque<sup>2</sup>

<sup>1</sup>Technical Training Unit, icddr,b, Dhaka, Bangladesh Bangladesh, <sup>2</sup>Graduate School of Biomedical and Health Sciences, Hiroshima University, Japan

<sup>3</sup>Nutrition and Clinical Services Division, icddr,b, Dhaka, Bangladesh Bangladesh, <sup>4</sup>Govt. College of Applied Human Science, Dhaka, Bangladesh

Background and Objective: Bangladesh is experiencing fast epidemiologic and demographic shifts, as well as changes in lifestyle, food, and physical activity. A small number of researches on abdominal obesity have been carried out in Bangladesh, most of which involved hospital-based and urban populations. We conducted this study to investigate the prevalence of abdominal obesity and its associated factors among rural and peri-urban Bangladeshi populations.

Methodology: This cross-sectional study was conducted in the Mirzapur subdistrict of Bangladesh during January to June 2020. Adult participants were randomly selected from the Demographic Surveillance System (DSS). Interview using a semi-structured questionnaire, physical examination, and anthropometric measurement were done followed by blood and urine testing. According to the World Health Organization, a waist circumference of 94 cm in men and 80 cm in women was considered abdominal obesity.

Results: The DSS enrolled 928 patients; 872 (94.0%) of them completed the study

procedure and were included in this analysis. The overall age in years was 48.2 with a standard deviation of 16.4. Prevalence of abdominal obesity was 39%. In multivariable analysis, significant positive associated factors for prevalent abdominal obesity included those aged  $\geq 46$  years [adjusted odds ratio (aOR) 2.72; 95% confidence interval (CI) 1.21-6.13], hypertension (aOR 1.18; 95% CI 1.28-2.76), hypertriglyceridemia (aOR 2.22; 95% CI 1.49-3.31), female (aOR 7.99; 95% CI 3.58-17.87); however, negative associated factors included undernutrition (aOR 0.03; 95% CI 0.01-0.09), present smokeless tobacco user (aOR 0.59; 95% CI 0.38-0.92) and having no formal schooling (aOR 0.58; 95% CI 0.38-0.89).

Conclusion: Our findings reveal that patients living in rural and peri-urban areas have a higher prevalence of abdominal obesity, in which age  $\geq 46$  years, hypertension, hypertriglyceridemia, and being female have a significant role. Policymakers should step up intervention to reduce abdominal obesity in light of the significant association.

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### Patient experience after a hip fracture in relation to an empowerment-oriented intervention

Lars Tobiesen Pedersen<sup>1</sup>, Bjarke Viberg<sup>2</sup>, Inge Hansen Bruun<sup>3</sup>, Heidi Klakk Egebæk<sup>4</sup>, Pernille Tanggaard Andersen<sup>5</sup>

<sup>1</sup>Department of Physical Therapy and Occupational Therapy, Lillebaelt Hospital, University Hospital of Southern Denmark, Odense, Denmark  
<sup>2</sup>Department of Regional Health Research, University of Southern Denmark, Odense, Denmark Sygehusvej 24, 6000 Kolding, Denmark, <sup>3</sup>Department of Orthopaedic Surgery and Traumatology, University Hospital of Southern Denmark, Odense, Denmark, <sup>4</sup>Department of Physical Therapy and Occupational Therapy, Lillebaelt Hospital, University Hospital of Southern Denmark, Odense, Denmark, <sup>5</sup>Center for Clinical Research and Prevention Denmark, <sup>6</sup>Health sociology and promotion, Department of Public Health, University of Southern Denmark

Background: The consequences of a hip fracture have been well documented and approximately 50% of hip fracture patients has a substantial reduced function one year after their fracture. An increased focus on how to help adults +65 years to remain active and regain control over their everyday life is important. Rehabilitation of Life' is an empowerment-orientated hip fracture intervention focusing on continuous rehabilitation and care, progressive strength training and optimised communication and cooperation between sectors in Denmark. The objective of this study is to understand and explore adults +65 years experiences related to 'Rehabilitation of Life' - an empowerment-orientated hip fracture intervention.

Method: A qualitative design was applied. Data was generated from semi-structured interviews using a pilot tested interview guide. A purposeful sampling from patients included in the intervention 'Rehabilitation of Life' were selected. In total 18 hip fracture patients were interviewed until data saturation. A qualitative content analysis was guided by Graneheim and Lundmans concept.

Results: The analysis resulted in five themes, which the participants emphasized as important to their rehabilitation: Getting information and care when hospitalizes, Early visit from health staff after return to own home, The social aspect of training together with others, Rehabilitation provide by skilled and empathic staff and The reassurance of follow ups after returning to their own home. The content of the 5 themes indicates that adults +65 generally has experienced their rehabilitation after a hip fracture as motivating, reassuring, and has helped them return to their normal everyday lives.

Conclusion: The findings contribute with important knowledge about hip fracture patients experiences related to participating in an empowerment-oriented rehabilitation and how it could help the patients to remain active and being able to regain control over their everyday life after a hip fracture.

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### Association between glycemc levels and a frailty syndrome in the elderly of the longitudinal study of adult health (elsa-brasil)

Elizabeth Barbosa<sup>1</sup>, Rosane Griep<sup>2</sup>, Elizabeth Barbosa<sup>1</sup>, Rosane Griep<sup>2</sup>, Cláudia Szlejf<sup>2</sup>, Maria da Fonseca<sup>1</sup>, Sandhi Barreto<sup>3</sup>, Rosa Telles<sup>3</sup>, Bruce Duncan<sup>3</sup>

<sup>1</sup>National School of Public Health, Oswaldo Cruz Foundation Brazil,

<sup>2</sup>Laboratory of Health and Environmental Education, Oswaldo Cruz

Foundation, Brazil, <sup>3</sup>Federal University of Minas Gerais Brazil

Some studies have reported the relationship between Frailty Syndrome and Diabetes Mellitus (DM), however, there is a lack of studies exploring the relationship between frailty and HbA1c. Thus, the objective of this article was to analyze the association between the of glycemc levels in around 10 years of follow-up and

the prevalence of the frailty syndrome. Data are from the Longitudinal Study of Adult Health (ELSA-Brasil), a multicenter cohort of Brazilian civil servants. Frailty phenotype was defined with five criteria: fatigue, low physical activity, unintentional weight loss, slow walking speed and low handgrip strength. The presence of one or two of these criteria indicated a pre-frailty condition, and the presence of three or more indicated a frailty condition. The glycemc levels clusters had its defined through cluster analysis considering the HbA1c measurements in the three waves of the study: baseline: 2008-2010; wave 2 (2012-2014) e wave 3 (2017-2019). Data from 4,649 participants aged > 60 years were included. From the cluster analysis, 4 clusters of glycemc levels were identified (HbA1c 5.4% and 6.6% and 8.9%). Associations were estimated using multinomial regression models (crude and adjusted for sociodemographic variables and for hypertension). Compared to the elderly classified in the "HbA1c.

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### "CODICE ARGENTO": dedicated care pathway for the frail elderly in the emergency department of cristo re hospital

Martina Sapienza<sup>1</sup>, Anna Bonini<sup>2</sup>, Giovanni Brandimarte<sup>3</sup>, Lucia Matarazzo<sup>4</sup>, Alessandro D'Avino<sup>3</sup>, Pomes Michele<sup>4</sup>, Francesca Pozzi<sup>4</sup>, Piera Benedetti<sup>5</sup>, Gabriella Nasi<sup>5</sup>

<sup>1</sup>Ospedale cristo re Italy, <sup>2</sup>Controllo di Gestione Ospedale Cristo Re Roma - Gruppo Giomi Italy, <sup>3</sup>UOC Medicina Ospedale Cristo Re Roma - Gruppo Giomi Italy, <sup>4</sup>Pronto Soccorso Ospedale Cristo Re Roma - Gruppo Giomi Italy, <sup>5</sup>Direzione Sanitaria Ospedale Cristo Re Roma - Gruppo Giomi, Italy

Background and Objective: The Emergency Department (ED) of Cristo Re Hospital in Rome, to provide the best care for the elderly patient (>75), from January 2021, a multidisciplinary team has been implemented and the Codice Argento has been introduced in the ED for a dedicated pathway for these patients. With this code, such users can be identified very early through a score of a few questions to define a set of defined and validated parameters. In 2022, we implemented the outcomes already identified to increase the quality and safety of care of this target group of patients.

Methods: We evaluated data of ED accesses for >75 years old (first 9 months of 2021 vs first 9 months of 2022).

Results: In 2021, accesses were 2077, for a total of 21% admissions. In the same period of 2022, accesses were 2200, for a total of 17% hospitalizations. Analysis of the data showed:

\* increase:

\* of accesses in patients  $\geq 75$  years old;

\* of % total accesses vs % accesses  $\geq 75$  yr old (13.39% in 2021 vs 13.70% in 2022);

\* of home discharges (74% in 2021 vs 76% in 2022);

\* reduction:

\* of the % of hospitalizations (21% in 2021 vs 17% in 2022);

\* of the length of stay in the PS for orange, blue and green codes;

\* of admission days (faster and more correct clinical framing in the ED);

\* of the behavioral disorders that often accompany hospitalization.

Conclusion: The shared, facilitated and multidisciplinary approach to the frail elderly patient, has improved the outcomes considered by facilitating hospital pathways. We aim to continue monitoring of outcomes, to continue assistance to the frail elderly with the support of telemedicine and teleconsultation by collaborating with the the GPs (e.g. schedule meeting) and to increase the prescription of specialist follow-up.

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### Translation, cross-cultural adaptation and content validity of the model disability survey for the Brazilian population

Núbia Lima<sup>1</sup>, Núbia Lima<sup>1</sup>, Denise de Araújo<sup>2</sup>, Erika Silva, Amanda Medeiros<sup>1</sup>, Shamy de Castro<sup>3</sup>, Indyara Morais<sup>4</sup>, Carla Sabariego<sup>5</sup>, Rodrigues Santos<sup>1</sup>, Romário Fonseca<sup>1</sup>, Dellis Almeida<sup>1</sup>, Monalisa França<sup>1</sup>, Ubiratan Junior<sup>1</sup>, Karolinne Monteiro<sup>1</sup>

<sup>1</sup>UFRN - Federal University of Rio Grande do Norte UFRN - Federal University of Rio Grande do Norte Faculty of Health Sciences of Trairi, Federal

University of Rio Grande do Norte, Vila Trairi St, 435, Centro, Santa Cruz, 59200-000, Rio Grande do Norte, Brazil. Brazil, <sup>2</sup>UFRN - Federal University of Rio Grande do Norte, <sup>3</sup>Federal University of Ceará, <sup>4</sup>University of Brasília (UnB) University of Brasília (UnB) UnB - Brasília, DF, 70910-900, Brazil.

Brazil, <sup>5</sup>University of Lucerne - Luzern University of Lucerne Frohburgstrasse 3, 6002 Luzern, Switzerland Brazil

Background: Although morbidity and mortality are important, health indicators related to functioning should also be incorporated into Brazilian data collection

systems. In this sense, the world health organization designed the model disability survey (mds) based on the biopsychosocial model of the international classification of functioning, disability, and health (icf).

**Objective:** To translate, cross-culturally adapt and analyze content validity of the Brazilian version of the mds.

**Methods:** This cross-sectional was conducted in five steps: Initial translation, synthesis of translations, back-translation, review by an expert committee, and pre-test. For the pre-test, we included people of both sexes aged over 18 years, with or without disabilities and formal education, and with cognitive ability to answer the survey.

**Results:** Mds was considered with 474 items, and 1,896 analyzes were performed according to four equivalences. Of these, 17.25% were partially adequate and inadequate by specialists. A total of 160 items were discussed with other members of the committee. In the pre-test, 22 interviews were conducted in rio grande do norte (73.3%), four in ceará (13.3%), and four in paraíba (13.3%), with average duration of 123 minutes. The target audience was 30 participants, single, young adults, self-declared black or brown, with at least technical education. Most were active workers and lived and lived with three family members. Out of one hundred twenty-seven health conditions cited, the most frequent were anxiety and back pain/herniated disc. Answers were analyzed and 63 items needed adjustments; however, only two were sent to the expert committee because they presented a content validity index of < 0.80.

**Conclusions:** The mds instrument was translated into Brazilian portuguese, cross-culturally adapted for the Brazilian population, and presented adequate content validity. The Brazilian version was entitled mds-Brazil.

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### Language and functioning by icf and slp group intervention: giving voice to people with parkinson disease, a Brazilian experience

Regina Chun<sup>1</sup>, Amanda Zerbeto<sup>1</sup>, Thais Piccoli<sup>1</sup>

<sup>1</sup>University of Campinas (Unicamp) Brazil

**Background and objective:** Parkinson Disease (PD) is a chronic progressive neurodegenerative disease characterized by motor impairments and communication difficulties. The International Classification of Functioning, Disability and Health (ICF/WHO) allows studying the functioning of people with PD. The aim is to investigate language, functioning in PD and the effects of group speech-language pathology (SLP) intervention on the perception of the people with PD, taking the ICF as a conceptual basis.

**Method:** Cross-sectional research, approved by the Ethics Committee, with 10 participants with PD, in SLP group at a specialized care center in Brazil. An interview script and a self-administered questionnaire were developed to collect self-perception in the 33 ICF categories, answered by the participants in three group meetings, approximately 35 minutes each, with the researchers, videotaped. Experience in the ICF classified the answers in the same categories. To establish a reference parameter, SLP with experience in the ICF (judges) classified the answers in the same categories.

**Results:** The participants indicated impairments in Body Functions (voice, articulation, fluency and rhythm of speech, involuntary movements), difficulties in Activities and Participation (speech, conversation, fine use of the hand, walking, dressing, performing household chores, and recreation and leisure) and barriers in Environmental Factors. In 60% of the cases, the agreement between participants and judges was slight, in 30% it was fair, and in one case (10%) was it strong.

**Conclusion:** The results regarding the functioning of people with PD in their perception assume an original character, giving voice to the people themselves, in addition to bringing important subsidies for person-centered care, expanding the biomedical vision centered on the disease, for a biopsychosocial approach proposed by the ICF/WHO.

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### Hospitalizations for malnutrition in Brazilian older adults

Mayara Araújo<sup>1</sup>, Thaiza Nobre<sup>1</sup>, Vilani Nunes<sup>1</sup>, Adriana Oliveira<sup>2</sup>, Felismina Mendes<sup>3</sup>, Gilson Torres<sup>1</sup>

<sup>1</sup>Federal University of Rio Grande do Norte Brazil, <sup>2</sup>Catholic University of San Antonio of Murcia Spain, <sup>3</sup>University of Évora Portugal

**Background and objective:** Some conditions are considered sensitive to primary health care (PHC) as nutritional deficiencies, and it is an indicator of access and the quality of care offered in the PHC. This study aimed to describe malnutrition hospitalizations in Brazilian older adults and to verify the temporal evolution of hospitalizations in the five regions.

**Methods:** This is a descriptive and ecological study of time series, based on

secondary data obtained from the System of Health Indicators and Monitoring of Older Adults Policies (SISAP-Older adults). We used data referring to 2000 to 2019 regarding hospitalizations due to nutritional deficiencies considered avoidable that include the categories E40-E46 and E50-E64 of ICD-10, in men and women aged 60 to 74 years in five Brazilian regions. Data were analyzed descriptively using the software Microsoft Excel®.

**Results:** There were 232,592 malnutrition hospitalizations in Brazilian older adults between 2000 and 2019, and we observed a decrease of 44.6% in the number of hospitalizations. The Southeast and Northeast regions had the highest number of hospitalizations, corresponding to 46.5% and 30.2%, respectively. The North region showed an increase of 16.6% in the number of hospitalizations, while the Center-West region showed a reduction of 52.7%. Regarding gender, 59.5% of hospitalizations were male. The Southeast region concentrated the highest number of hospitalizations for both sexes, 43.3% of women and 48.7% of men. A greater reduction was observed in women's hospitalization in the Northeast region (-58.5%) and men in the Midwest region (-52.2%).

**Conclusion:** A tendency to decrease malnutrition hospitalizations was observed in Brazilian older adults. Although, health actions are needed to strengthen food and nutritional surveillance in primary health care to reduce the risk of hospitalization in the older population.

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### Changes in physical activity and perception of weight gain during covid-19: elsa-brasil cohort

Maria Bisi Molina<sup>1</sup>, Jordana Siqueira<sup>1</sup>, Carla de Oliveira Aprelini<sup>2</sup>, Haysla Martins<sup>1</sup>, Taisa Sabrina<sup>1</sup>, Maria Bisi Molina<sup>2</sup>

<sup>1</sup>Federal University of Espirito Santo Brazil, <sup>2</sup>Federal University of Espirito Santo

**Background and objective:** The COVID-19 pandemic led to social isolation as a non-pharmacological intervention measure. Despite being an effective strategy for reducing transmission of the disease, research has indicated the occurrence of changes in lifestyle and negative repercussions on the health of populations. The objective was to associate changes in physical activity and the perception of weight gain during the COVID-19 pandemic in ELSA-Brasil.

**Methods:** Longitudinal study using the second follow-up of the cohort (2017-18) and Onda-COVID (2020-21) that included civil servants residing in 5 Brazilian capitals. Socioeconomic and lifestyle data were collected. Leisure-time physical activity (LPA) was measured using the International Physical Activity Questionnaire, converted into multiples of metabolic equivalents (METs/week) and classified into tertiles of change. The association between changes in LPA and perceived weight gain was verified by obtaining crude and adjusted odds ratio estimates and 95% confidence intervals using binary logistic regression.

**Results:** The final sample consisted of 3,940 individuals, 58.8% women. Participants who reported weight gain had lower mean age, diet quality and LPA, and higher mean body mass index. When analyzing the LPA change delta between assessments, there was a reduction in the mean METs/week in both genders ( $p < 0.001$ ). Being in the low tertile of LPA change increased the odds of perceived weight gain by 1.5 (95% CI 1.04-1.45) and 1.6 95% (CI 1.04-1.45) times among women and men, respectively.

**Conclusion:** Women and men in the lowest tertile of LPA change were more likely to perceive weight gain during COVID-19.

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### Preliminary data of the model disability survey in Brazil: functioning module

Denise de Araújo<sup>1</sup>, Núbia Lima<sup>1</sup>, Gyovani Lima<sup>2</sup>, Liane Macedo<sup>1</sup>, Aline Fernandes<sup>1</sup>, Shamy de Castro<sup>3</sup>

<sup>1</sup>UFRN - Federal University of Rio Grande do Norte Faculty of Health Sciences of Trairi, Federal University of Rio Grande do Norte, Vila Trairi St, 435, Centro, Santa Cruz, 59200-000, Rio Grande do Norte, Brazil. Brazil, <sup>2</sup>UFRN - Federal University of Rio Grande do Norte, <sup>3</sup>Federal University of Ceará

**Background:** The model disability survey (mds) is a tool based on the biopsychosocial model and aims to measure functionality and human disability. the mds-brasil module (4000) has topics related to peoples ability and performance to carry out daily activities considering physical, psychological and socio-environmental conditions.

**Objective:** To describe data from the pre-test phase of module 4000 (functionality) of the model disability survey brasil (mds-brasil) instrument.

**Methods:** This study included 30 individuals residing in northeastern Brazil, with

or without disabilities, who were cognitively able to respond to the questionnaire, and participants who refused or gave up the interview were excluded from the study. The participant was contacted for invitation and appointment of the date and place of the interview, where the questionnaire, the manual and the mds-brasil presentation cards were used, translated and cross-culturally adapted to the Brazilian population. The responses from module 4000 of the mds-brasil were analyzed.

Results: Of the 30 participants, 73.3% lived in rio grande do norte, 13.3% in ceará and 13.3% in paraíba. Females predominated with 83.3%, single 56.7%, 30% had higher education, 53.3% were considered brown and 26.7% worked for an employer. Some difficulties were reported by them, among which 33.3% of the participants said they had a problem walking short distances, 20% to carry out activities using their hands, 16.7% to do personal hygiene and get dressed, 53.3% for seeing from afar, 73.3% for feeling pain in everyday life, 53.3% for sleeping, 50% revealed difficulties in understanding and 53.3% in remembering to do important things.

Conclusion: The results of the pre-test allowed a first contact with the community and, through module 4000 of the mds-brasil, it was possible to identify the main limitations of activities and social participation that influence human functionality.

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### Swap relations and sense of justice for distribution in agricultural families

Astrid Seltrecht<sup>1</sup>, Vivienne Thomas<sup>2</sup>, Astrid Seltrecht<sup>1</sup>, Vivienne Thomas<sup>1</sup>

<sup>1</sup>University of Magdeburg FHW, Institut 1 Otto-von-Guericke-Universität Magdeburg Zschokkestraße 32 39104 Magdeburg Germany, <sup>2</sup>University of Magdeburg, Magdeburg, Germany

Background and objective: The special structure in old-age security differs agricultural families from other family constellations, for example challenges exist for the upcoming generation, which automatically is responsible for the financial securing of the elder generation when taking over the enterprise. In this analysis the question was pursued, which specifics underlie for families of agricultural economy concerning age and aging processes in the context of intra-familial dependencies.

Methods: The data corpus consists of 25 guided interviews with a high narrative share, which were evaluated with the Grounded Theory (Strauss/Corbin 1996). Within nine families representatives from a minimum of two generations were surveyed.

Results: The main category generation-specific attribution of meanings of the objective contract presents itself within two phenomena, which appear in the perspectives of both generations involved, however one of each is highlighted in one of each generations:

Conclusion: Against the background of the empiric outcome it can be stated that the attribution of meanings of technically objectively regulated issues turn out differently according to a specific generation. The living together is perceived as a swap relation which is experienced more or less satisfying depending on the design. The elder share may utilize services from the younger generation, may demand or ask for services, because in return the elder share have transferred the estate to the younger generation, making it possible to keep up family traditions or leave behind an enterprise in dept and need of redevelopment. For both generations it is progressively a matter of fair distribution in the context of this intra-generational swap relation. However the sense of justice comes out differently in specific generations. Intra-generational dependencies pose a claim.

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### Adult Health Experience with Autism Spectrum Disorder: Self Perception of Functioning in Brazil

Regina Shon Chun<sup>1</sup>, Fernanda Silva<sup>1</sup>, Regina Shon Chun<sup>2</sup>

<sup>1</sup>Campinas State University - UNICAMP R. Tessália Vieira de Camargo, 126 - Cidade Universitária, Campinas - SP, 13083-887 Brazil, <sup>2</sup>Campinas State University - UNICAMP

Justificativa e objetivo

O Transtorno do Espectro do Autismo (TEA) é uma condição do neurodesenvolvimento caracterizada por dificuldades persistentes na comunicação e interação social e padrões de comportamento e interesses restritos e repetitivos. Os sintomas podem causar resultados funcionais adversos na vida doméstica, nas relações sociais, bem como dificuldades nas atividades escolares e de trabalho; dependendo de fatores como nível de desenvolvimento, características pessoais, suporte familiar e tratamentos. Funcionalidade e participação social de adultos com TEA são fundamentais para sua qualidade de vida. No entanto, estes ainda

são temas relativamente negligenciados na literatura. O objetivo deste estudo é investigar o funcionamento de adultos com TEA, com diferentes níveis de suporte, usando o World Health Disability Assessment Schedule 2.0 (WHODAS 2.0).

Método

Trata-se de um estudo descritivo de corte transversal. A amostra contém 65 indivíduos diagnosticados com TEA no Brasil, com idade entre 18 e 25 anos, a maioria do sexo masculino, com pelo menos uma comorbidade e renda familiar mensal não superior a 1.128 USD. O WHODAS 2.0 avalia a funcionalidade e a incapacidade nos domínios da cognição, mobilidade, autocuidado, convivência, atividades da vida e participação. Além disso, dados sociodemográficos e clínicos foram coletados por meio de uma pesquisa semiestruturada.

Resultados

A média amostral (m) para funcionalidade foi de 49,84 com desvio padrão (dp) de 17,4. Do maior para o menor, os escores de funcionalidade/incapacidade por domínio foram: convivência (m:66,9; dp:22,2), atividades da vida (m:63,7; dp:23,8), participação (m:56,4; dp:20,0), cognição (m:48,7; 18,5), autocuidado (m:27,2; dp:22,4) e mobilidade (m:33,1; dp:23,4). A correlação cruzada entre os domínios foi positiva e maior entre os domínios de participação e outros.

Conclusão

Os resultados sugerem que o nível de participação está relacionado com a funcionalidade na convivência, atividades de vida e domínios da cognição. A deficiência em todos os domínios está alinhada com o comprometimento cognitivo-comportamental e de comunicação dentro do TEA. Esses achados são importantes para o melhor delineamento de políticas de saúde e podem contribuir para promover uma melhor assistência à saúde de pessoas com TEA no Brasil e em outros países semelhantes.

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### The actions performed by the sesc women's health team to the city of Conceição de macabu, in a partnership between sesc and the city hall

Thais Madeira<sup>1</sup>, Andreia Bizzo<sup>1</sup>, Suzana Santos<sup>2</sup>, Denise Anjos<sup>3</sup>

<sup>1</sup>Sesc Rio Brazil, <sup>2</sup>Sesc Rio, <sup>3</sup>Sesc RJ Brazil

It was held from January to April 2022, in Conceição de Macabu - Rio de Janeiro. The objective is to report the data and experience of the SESC Womens Health Project with the local population. The project offered joint actions, with: mammography exams, preventive exams and Health Education.

The report was built from the activities experienced by the Womens Health team, whose results were apprehended through a questionnaire, to identify, plan and execute health actions based on local norms. We started with a quantitative investigation, allowing us to evaluate the data obtained through the questionnaires. The next step was the qualitative method, which related the data to the initial investigation.

Total assistance in Health Education: 883; mammography exams: 1029; preventive exam: 412. After data collection, we noted that among the women who underwent mammography, 43.15% declared having Systemic Arterial Hypertension (SAH), surpassing the 33.82% who said they did not have SAH. 23.03% did not answer or did not know. Age, skin color, among others, were also evaluated so that we could profile the women assisted.

From the data obtained through the questionnaires, meetings and examinations carried out, we realize the importance of the SESC Womens Health Project, serving the local population and collecting data that can help them to implement effective prevention practices and change habits, provide improvements in womens quality of life.

The actions carried out were fundamental contributions to prevent and encourage health care, allowing the elaboration of practices, guiding women and helping them in the dissemination of knowledge. It is important to draw attention to the high rate of hypertensive women, and with the continuation of the study, a brief evaluation of the effectiveness of the actions developed is expected, verifying the profile and health habits, to expand access to public health services in a region.

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### Towards a just transition: enabling older populations to mitigate the impact of climate change and maintain wellbeing

Sally Davis<sup>1</sup>, Sadiq Bhanbho<sup>2</sup>, Mei Fang<sup>3</sup>, Andrew Sixsmith<sup>4</sup>

<sup>1</sup>Advanced Wellbeing Research Centre, Sheffield Hallam University, United Kingdom, <sup>2</sup>Centre for Applied Health and Wellbeing Research, Sheffield Hallam University, United Kingdom, <sup>3</sup>School of Health Sciences, University of Dundee, United Kingdom, <sup>4</sup>Department of Gerontology, STAR Institute, Vancouver, Canada

**Background and Objective:** The COVID-19 pandemic demonstrated the vulnerability of older adults through the number of excess deaths across the globe. However, this finding has also demonstrates the importance of building resilience in older communities and has shown the strength, and capacity of older people although this varies widely across geographies, and social and economic determinants. There is now a need to re-imagine a response to social and environmental challenges as experienced and perceived by older adult populations. The 'just transition' is a reference to systems thinking required to engage and enable older populations and communities to de-carbonise, contribute to greener living solutions and participate fully in sustainable development of communities and cities, especially in relation to digital technology as an enabler to health and wellbeing. AGE-WELL is a unique Canadian network that brings diverse stakeholders together to develop technologies and services for healthy aging and the Advanced Wellbeing Research Centre (AWRC) in the UK is developing implementation method focussed on population health, wellbeing, and reducing inequality and the impact of climate change. Combining expertise and experience of both these internationally reputable organisations and its members, the aim of the workshop is to identify capability and assets for further transformative learning and research that recognise the environment as a prerequisite to living well in old age and is based on UN Sustainable Development Goals and ecocentrism. **Methods:** This workshop will use appreciative inquiry [AI] to identify assets through questions and dialogue that help participants identify how older populations engage through their communities, organisations, or households to understand the causes and consequences of climate change. AI is based on a recognised process (the 4D's model) to enable constructive critical thinking and clarity about opportunities for social and policy development. Reference will be made through different scenarios, to climate change and climate shocks in the global south and to variation in social and economic determinants that differentiate older adult circumstance and environmental impact.

**Results:** The workshop will identify a 'minimum-specification'; a vision and set of principles by which researchers and public health professionals will engage with older populations and to identify mechanisms and outcomes for environmental and social sustainability. This can related to a range of continuing participation in communities and households and user need including health and care services. The outcome of the workshop will be shared across participants' networks and published as an implementation strategy for research that implements the 'just transition' for and with older adults. We hope to foster academic networking and further academic collaboration on digital and technological development for population wellbeing.

**Conclusions:** The workshop aims to contribute to support transformative transdisciplinary research that enables implementation and informs planetary and public health and wellbeing. The focus on assets and whole systems approaches that promote inclusion and participation are aligned to the minimum requirements for the social and environmental determinants of health alongside clean air, safe drinking water, sufficient food and secure shelter in old age.

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### Epidemiological transitions in a life-course perspective: challenges and opportunities for healthy ageing

Daniela Soitu<sup>1,2</sup>, Giansanto Mosconi<sup>3</sup>, Laura Cucinella<sup>4</sup>, Giacomo Vigezzi<sup>3</sup>

<sup>1</sup>Department of Sociology and Social Work, Universitatea Alexandru Ioan Cuza, Romania, <sup>2</sup>EC2U Alliance, Romania, <sup>3</sup>Department of Public Health, Experimental and Forensic Medicine, Università degli Studi di Pavia, Italy, <sup>4</sup>Department of Clinical, Surgical, Diagnostic and Paediatric Science, Università degli Studi di Pavia, Italy

Population ageing is perceived as both a challenge and a social problem at worst. Since health trends show increasing disparities, understanding epidemiological transitions and exposures (i.e., social, environmental and biological factors) that summing up across life affect the chance of healthy ageing is a crucial aim for health professionals and researchers. Being able to detect early markers of physiological compensation and social or behavioural adaptations offers opportunities for timely interventions to optimise health promotion and prevention. The workshop will be structured as follows. First, an integrative life-course approach, its challenges and opportunities will build the ground of the presentation. Based on the activity of the EC2U Alliance Virtual Institute for Good Health and Well-being, a comparative approach of the targets associated with the UNSDG3 will stress the protective and risk factors for significant stages of life. Associated social and economic determinants will be envisaged as challenges and opportunities in national and European contexts. By mirroring strengths and weaknesses, the presentation will invite the audience to open the integrative lens in approaching epidemiological transitions. Secondly, we will present data exploring the impact

of leaving parents' homes and starting University for young adults. Using a cross-sectional online survey on university careers, behavioural risk factors, and psychological well-being using validated scales, we investigated students' health status changes. From a 1500-sample, we appreciated the associations between mental health and health behaviours with the final aim of promoting positive adaptations during this phase, which may significantly impair young adults' future life pathways. In the third contribution, we will focus on the role of reproductive milestones in women as modulators of future well-being and opportunities to implement primordial preventive strategies for healthy ageing. Reproductive history, including menstrual pattern, pregnancy complications, menopause timing and duration of reproductive lifespan, offers valuable information to individualise risk assessment in a gendered-oriented approach. In this view, we will report data exploring the impact of reproductive history on cardio-metabolic health in a sample of midlife women transitioning through menopause, highlighting the importance of the reproductive fil rouge in modulating health and diseases in a life-course perspective. The fourth panellist will open up with the health impact of the transition to retirement, which results in a complex set of adjustments, posing both threats and opportunities for physical and mental health. Health behaviours and mental health changes appeared to be among the most relevant mediators affecting life years after the withdrawal from work. Exploring different databases (e.g., SHARE, INAPP Plus), we collected original data to evaluate labour and retirement-associated determinants' role in the well-being of European and global elder populations. The workshop, bringing together experts with topic knowledge on ageing, will provide answers on how to design a culture for well-being across the whole lifespan and how to conduct assessments and measure success. In the end, we will engage in a fruitful discussion with the audience on the data presented and practical public health implications, exploring how they can inform critical policy debates addressing evidence-based prevention strategies for healthy ageing at the global level.

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### Supporting antimicrobial stewardship improvements in a Zambian rural health post through education and digital training

John Gannon<sup>1</sup>, Kerry Greenan<sup>2</sup>, Eleanor Richards<sup>2</sup>, Tom Neale<sup>2</sup>, Fiona Neale<sup>2</sup>, Olivia Duffy<sup>2</sup>, Hannah Raval<sup>2</sup>, Elizabeth Hill<sup>2</sup>, Eunice Sinyemu<sup>3</sup>, Ben Margetts<sup>3</sup>, Rachel Lynch<sup>3</sup>

<sup>1</sup>On Call Africa, World Federation of Public Health Associations, Ireland, <sup>2</sup>On Call Africa, United Kingdom, <sup>3</sup>On Call Africa, Zambia

**Background and Objective:** Overprescribing of antibiotics in rural low-resource healthcare settings in Sub-Saharan Africa is common. Volunteers with a non-governmental organisation (NGO) in Zambia's Southern Province created and delivered interventions in partnership with local healthcare staff, with the aim of sustainable improvements in antimicrobial stewardship in a rural health post which serves 25,000 people.

**Methods:** Antibiotic usage in clinics was measured at three intervals over 16 months (April 2021, March 2022, August 2022). Chart reviews evaluated compliance with national guidelines in decision to prescribe and in choice of antibiotic. Data collection and analysis was approved by the Zambian Ministry of Health. After Audit 1, mentoring sessions were carried out over five weeks by volunteers for staff and patients, including live feedback during consultations. After Audit 2, educational resources were produced including infographics on antibiotic resistance (translated to local language Tonga) and a summary of the Zambian Standard Treatment Guidelines. Staff were also trained to use a free digital stock management system using a tablet device, with offline and online functionality and linked with the District Health Office, aiming to improve consistency of medication supply.

**Results:** A total of 340 consultations were reviewed over the three audits (240, 50 and 50). Ratio of overprescription (antibiotics prescribed: indicated) reduced from 212/59 (3.59:1) to 33/11 (3:1) to 25/9 (2.78:1). Correct antibiotic choice varied from 14/59 (25.9%) to 1/11 (9%) to 3/9 (33%).

**Conclusions:** There was a steady decline in antibiotic overuse following mentoring and educational interventions. Incorrect choice of antibiotic was mostly reported as due to severe lack of medication availability. A key challenge will be continued improvement in antibiotic stewardship standards and reducing stockouts in this Zambian health post without ongoing oversight from the NGO. Findings can inform implementation of similar projects in other rural low-resource healthcare settings.

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### Dispense of non-prescribed antibiotics without prescription from pharmacies in Jhelum: a cross-sectional survey

Saeed Ahmad<sup>1</sup>, Fahmeeda Idrees<sup>1</sup>

<sup>1</sup>Health Services Academy, Islamabad, Pakistan

The main power source for antibiotics is local pharmacies. Our goal was to evaluate the expertise of pharmacy employees and the distribution of non-prescription antibiotics. In Punjab, Jhelum, we carried out a cross-sectional study from April 2022 to July 2022. We employed a conscience, structured, pretested, and authorized multilingual questionnaire and performed statistical analysis using chi-square tests. The study received responses from 100 pharmacy wholesalers in total (95%); 69.4% of them were male and between the ages of 20 and 50. The majority of participants about 34.9% said that community pharmacists frequently supply non-prescription antibiotics, and 53.7% said they were qualified to do so. Approximately 46.3 percent thought this was a role in the rise of antimicrobial resistance. None of the respondent thought that this approach encouraged illogical antibiotic use, and partial (58.0%) thought that antimicrobial resistance was a problem for public health. Only 58.0 % of respondents said they advised patients to seek medical advice before using antibiotics, and 19.1 % said their dispensing procedures minimized the financial patients burden. A little over 44.0 % of pharmacy owners claimed to be knowledgeable about using antibiotics. The most common class of antibiotics given out without a prescription was nitroimidazole. The distribution of injectable and widespread antibiotics may represent a risk to the ability to treat infections. The distribution of antibiotics without a prescription is related to staff knowledge deficiencies. This improper practise has to stop right away.

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### Group B Streptococcus maternal colonization, vertical transmission, serotype distribution and antimicrobial resistance pattern in sub-Saharan Africa: a systematic review and meta-analysis

Minyahil Boltena<sup>1,2</sup>

<sup>1</sup>Armauer Hansen Research Institute, Ministry of Health, Ethiopia, <sup>2</sup>Center for Evidence Based Health Care, Institute of Health, Jimma University, Ethiopia

Background: Although GBS associated maternal, perinatal, and neonatal mortality and morbidity disproportionately affected sub-Saharan Africa, a comprehensive data on GBS are limited in the region. Therefore, we performed a systematic review and meta-analysis that aimed to estimate the prevalence of maternal colonization, vertical transmission, serotype distribution and antimicrobial resistance pattern of GBS isolates in sub-Saharan Africa. Methods: This systematic review was done according to Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines. MEDLINE/PubMed, CINAHL (EBSCO), Embase, SCOPUS, Web of Sciences databases, and Google Scholar were used to retrieve both published and unpublished articles. Two independent reviewers (FW and MTB) screened titles and abstracts and double-checked by a third reviewer (EH). The authors used STATA software version 17 for analysis of the selected articles. Forest plots using the random- effect model were used to present the findings. The heterogeneity was assessed using Cochran chi-square (I<sup>2</sup>) statistics, while Egger intercept was used to assess publication bias.

Results: This systematic review and meta-analysis included 58 studies that fulfilled the eligibility criteria. The pooled prevalence of maternal RVC and vertical transmission of GBS were 16.06 [95% CI (13.94-18.30)] and 43.31% (95% CI: 30.75-56.32) respectively. The highest pooled proportion of antibiotic resistance to GBS was observed in Gentamycin, i.e., 45.58(4.12-91.23), followed by Erythromycin, i.e., 25.11(16.70-34.49). Nonetheless, the lowest antibiotics resistance was observed in Vancomycin, i.e., 3.84 (0.48- 9.22). Our finding indicate that serotypes (Ia/Ib/II/ III/V) cover almost 88.6% of serotypes in sub-Saharan Africa. Conclusions: The estimated high prevalence and resistance to different antibiotic classes observed in GBS isolates from sub-Saharan Africa suggest the need for implementation of effective interventions efforts. Further research on GBS should prioritize high-quality data, antibiotic resistance, sequence type and serotype distributions; these could help to guide the interventions efforts.

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### Digital intervention on the knowledge regarding anti-microbial resistance amongst the school-going adolescents: a non-randomized controlled study

Sweetey Jha<sup>1</sup>, Arista Lahiri<sup>2,3</sup>, Arista Lahiri<sup>4</sup>, Madhumita Dobe<sup>5</sup>

<sup>1</sup>Dr BC Roy Multi Speciality Medical Research Centre, Indian Institute of Technology Kharagpur, Kharagpur, India, <sup>2</sup>Indian Institute of Technology Kharagpur, India, <sup>3</sup>Dr. B. C. Roy Multi-Speciality Medical Research Centre, India, <sup>4</sup>Medical Research Centre, Indian Institute of Technology Kharagpur,

Kharagpur, India, <sup>5</sup>Foundation for Actions and Innovations Towards Health Promotion, Bidhannagar, India

Background and Objective: Emerging and crucial public health issues like Antimicrobial resistance (AMR) need special attention amongst the general population, especially adolescents since it is not typically a part of the school curriculum but is essential for a healthier society. The current study aimed to determine the effectiveness of an online module-based intervention package in improving the knowledge regarding AMR among school-going adolescents. Methods: A non-randomized controlled interventional study was conducted among school-going adolescents aged 15–18 years (standard 9th–12th). In the intervention and control groups, 429 and 428 students were recruited, respectively. An online module-based intervention package comprising a booklet and interactive lectures to improve knowledge of anti-microbial resistance was implemented. A pre-tested and validated questionnaire containing ten multiple-choice questions with a single correct answer (maximum total score of 10) was used in the baseline and the follow-up survey. Generalized linear models assessed the effectiveness of the intervention considering the baseline and the follow-up observations.

Results: The mean age of the intervention and control groups were 15.52 (±1.25) years and 15.51 (±1.18) years, respectively, and 72.20% and 68.53%, respectively, were females. Following the intervention, the participants in the intervention group had a statistically significant improvement in their knowledge regarding AMR. Adjusting for the effects of age, gender, and baseline knowledge, the intervention group had a relative risk (95% confidence interval) of 1.13 (1.09 – 1.18) for scoring at least 5 and 1.26 (1.24 – 1.28) for unit improvement in score in the post-intervention assessment.

Conclusions: School-going adolescents are often the gateway to enlightening society with new knowledge and healthy habits. After the intervention, there was an improvement in the knowledge of the intervention group. Designing an effective school-based intervention package regarding AMR is essential. Intervention at an early age in this regard is critical to building a healthier society.

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### Attitudes towards use of high-importance Antimicrobials-a cross-sectional study of Australian veterinarians

Anna Sri<sup>1</sup>, Kirsten Bailey<sup>1</sup>, James Gilkerson<sup>2</sup>, Glenn Browning<sup>1</sup>, Laura Hardefeldt<sup>1</sup>

<sup>1</sup>Asia-Pacific Centre for Animal Health, University of Melbourne, Australia, <sup>2</sup>Asia-Pacific Centre for Animal Health, University of Melbourne, Melbourne, Australia

The timely implementation of antimicrobial stewardship interventions could delay or prevent the development of higher levels of antimicrobial resistance in the future. In food-producing animals in Australia, high-importance antimicrobials, as rated by the Australian Strategic and Technical Advisory Group (ASTAG), include virginiamycin and third-generation cephalosporins (in individual pigs or cattle). The use of high-importance antimicrobials in companion animals is more widespread and less regulated. There is also potential for more rapid improvement in prescribing and guideline compliance in these areas of practice because much of the current use of high-importance antimicrobials is not guideline compliant and other treatment options are readily available. These sectors have also not traditionally been the focus of significant educational, public or regulatory pressures to reduce unnecessary antimicrobial use. There is no national antimicrobial use surveillance system for animals in Australia. Consequently, there is a gap in the knowledge about reasonable use across all sectors of veterinary practice. This study explored attitudes towards the use in veterinary medicine of antimicrobials with high importance to human health, and determined levels of agreement about the Introduction of restrictions or other conditions on this use. An online survey was distributed via social media and email from June to December 2020 to veterinarians working in Australia. Of the 278 respondents working in clinical practice, 49% had heard of the ASTAG rating system, and 22% used a traffic light system for antimicrobial importance in their practice. Overall, 61% of participants disagreed that veterinarians should be able to prescribe high-importance antimicrobials without restrictions. If there were to be restrictions, there was most agreement amongst all respondents for only restricting high-importance antimicrobials (73%). There is a need for education, guidance, and practical support for veterinarians for prescribing high-importance antimicrobials alongside any restrictions.

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### Infection control in the intensive care unit: the Pavia experience

Alice Sguelgia<sup>1</sup>, Margherita Zeduri<sup>1</sup>, Daniela Girardi<sup>1</sup>, Marina Lanave<sup>2</sup>,

Rebecca Galvi<sup>2</sup>, Alba Muzzi<sup>2</sup>, Anna Odone<sup>1</sup>

<sup>1</sup>Department of Public Health, Università degli Studi di Pavia, Pavia, Italy,

<sup>2</sup>Medical Direction, Fondazione IRCCS Policlinico San Matteo, Pavia, Italy

Health care activities could contribute to the spread of infections when standard precautions are not respected, as the COVID-19 pandemic showed. Every year in Italy 7% of patients contracts a healthcare-associated infection (HAI). HAIs are responsible for more than 10,000 deaths per year, and wards with fragile patients are the most affected. This study aims to highlight the key role of prevention and control of HAIs, especially in critical units. In April 2022, an outbreak of *Acinetobacter baumannii* and Carbapenem-resistant *Klebsiella pneumoniae* occurred within the intensive care unit of IRCCS Fondazione Policlinico San Matteo, Pavia (Italy), affecting 9 patients. To address the issue, Medical Direction (MD) developed a strategy based on the specific biological characteristics of survival of the micro-organisms. The initiative resulted in daily monitoring of cases, observation of adherence to good hand hygiene practices by health professionals (HPs) and performance of rectal screening swabs to all patients, both at the admission and on a bi-weekly basis. Furthermore, recurring microbiological sampling on bronchoscopes were implemented, with an operating instruction being formulated, to deal with the highly operator-dependent nature of their reprocessing. Regarding environmental hygiene, MD provided for the use of Gialcool 70% disinfectant and disposable cleaning material, while the entirety of the area involved was sanitized. Hospital Infection Committee also organized an audit to raise HPs' awareness and train them to comply with good care practices. Thanks to the swift response provided by MD, the outbreak ended on May 29th. Actions to control infection spread were punctually and effectively implemented. COVID-19 pandemic represented an opportunity to increase preparedness to critical events, as the Pavia experience demonstrated. Therefore, it is crucial not to underestimate standard precautions, and to keep operating instructions and training programs updated, to provide high-quality care in an increasingly resilient health system, strengthened by the pandemic experience.

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### Coverage of policies to reduce Antimicrobial resistance in Low and Middle income countries: results from the first Global Expert Survey on Antimicrobial Resistance (GESAR)

Kyaw Ya<sup>1,2</sup>

<sup>1</sup>Swiss Tropical and Public Health Institute, Allschwil, Switzerland,

<sup>2</sup>University of Basel, Switzerland

**Background:** Antimicrobial resistance (AMR) constitutes a major threat to global health security. Overuse of antimicrobials is particularly common in low and middle-income countries (LMICs); however, little is known regarding the extent to which this is due to lacking national efforts to enforce rational antibiotic use in these settings.

**Methods:** To assess the current coverage of policies and interventions reducing the risk of AMR, we invited public health experts from all 138 current LMICs to participate in an online survey. Key coverage measures were compared to those collected in the 2021 Tripartite AMR Country Self-assessment Survey (TrACSS).

**Results:** A total of 352 completed surveys from 118 LMICs were analysed. Out of these 118 LMICs, 67% had a national action plan on AMR, 64% had legislative policies on antibiotic use, 58% had national training programs for health professionals, and 10% had a national monitoring system for antimicrobials. 51% of LMICs had specific targeted policies to limit the sale and use of protected or reserved antibiotics and 64% had policies to reduce the over-prescription of antibiotics by health workers. Even though 72% LMICs had prescription requirements, getting antibiotics without a prescription was reported to be possible in practice in 74% of LMICs.

**Discussion:** The Results presented here suggest that there are major gaps in the implementation and enforcement of policies to reduce the risk of AMR in many LMICs. Improved monitoring of national efforts particularly in the areas of enforcement, as well as improved monitoring of antibiotic use are urgently needed.

**Conclusions:** Legislative policies to restrict the sale and use of antimicrobials appear to be lacking in many LMICs today. Stricter enforcement of existing policies as well as improved surveillance of actual use are likely key to controlling antimicrobials use in LMICs settings. **Keywords:** Antimicrobial resistance, antibiotics, policies, low and middle-income countries

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### The acute toxicity, antimicrobial and anti-inflammatory profile of the ethanolic and acetone extract of the leaves *Teclea nobilis*

Hiwotemedhin Tegegne<sup>1</sup>

<sup>1</sup>Addis Ababa University, Addis Ababa, Ethiopia

*Teclea nobilis*, is a medicinal plant which is believed to have anti-inflammatory and antipyretic properties. In this study, the acute toxicity, the antimicrobial, and the anti-inflammatory profile of the plant are reported. One group served as a control and the other three groups received the different concentrations of the plant extract. 2000mg/kg, 1500mg/kg and 1000mg/kg were used. Weight, % PCV and liver biopsy were done at the end of the study to determine toxicity. All the mice showed increased weight throughout the study period. The % PCV measured at the start and end of the study showed decreased values from the time of the start of the study. The liver biopsy also showed some changes consistent with acute toxicity. For this reason, we recommend caution be taken in use of the plant especially in susceptible population. *Staphylococcus Epidermidis*, *Enterococcus Faecalis*, *Salmonella Typhi* and *Listeria Monocytogenes* were used as test bacteria for the antimicrobial study. Varying doses of the plant extract were used for the test which are 500mg/ml, 450mg/ml and 300mg/ml. The results shows the ethanolic/acetone plant extract has no antibacterial activity towards *S. Epidermidis*, *E. Faecalis* and *L. Monocytogenes*. Nevertheless, it was determined that it has moderate activities toward *S. Typhi*. And we recommend larger scale study be done to determine dosage and associated side effects with the plant. The anti-inflammatory testing was done on 30 mice which were divided in five groups. One group served as the control and received Normal Saline (NS) while the other three groups received different and increasing doses of the plant extract (600mg/kg, 400mg/kg and 200mg/kg) and the last group served as a negative control and only received NS. It was concluded the plant has some anti-inflammatory activity on higher doses. Based on this study we have recommended a largescale study be done.

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### Prescription pattern of antibiotics amongst dentists of Karachi, Pakistan

Juzer Shaikh<sup>1</sup>, Muhammed Hydrie<sup>2</sup>

<sup>1</sup>Karachi, Pakistan, <sup>2</sup>Pakistan

**Background:** In dentistry, antibiotics are recommended for preventative and therapeutic purposes. Most baseless prescriptions of antibiotics have been reported in cases of ear and dental infections. Antibiotic resistance in children and adults may result from erroneous antimicrobials usage by clinicians, which is a critical global health hazard. The development of strict prescription guidelines and educational policies is urgently required. **Objectives:** The study's purpose was to observe whether the dental practitioners are following the established global standards or not and to examine the antibiotics prescription pattern among dentists.

**Methods:** A cross sectional study consisted of 401 participants conducted in government institutes and private teaching institutions of Karachi, Pakistan. The individuals have been questioned by a validated survey form that contains descriptive information and examples of different therapeutic Findings, after obtaining authorized approval, verifying the eligibility standards. SPSS 20 was used to enter and evaluate the data. Chi square test was used for inferential analysis.

**Results:** Participants mean lifespan was 31 ±5.6 years, and 57.6% (n=231) of them were women. The majority of them, or 76.3% (n=306), evaluated to treat 15 or less kids every month, whereas 23.7% dentists (n=95) handled more than 15 kids in a month. Additionally, 82.8% (n=332) of the dentists worked at hospital dentistry, while 44.4% (n=178) saw patients in the public sectors outpatient department. The overall compliance with professional recommendations ranged from 38.6% to 75.6%. **Conclusions:** This study demonstrates that most dental professionals do not follow professional recommendations for prescribing antibiotics to treat pediatric oral infections. The pattern of antibiotic prescription by dentists appears to conflict with the advised professional guidelines. The majority of dental professionals (63.8%) prescribed antibiotics, with female dentists being more likely (57.6%) to follow professional antibiotic standards. Dental practitioners need regular updates and continuing medical education on the subject to adhere with guidelines.

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### Antibiotic residues of drinking-water and its human exposure risk assessment in rural Eastern China

Yingying Wang<sup>1</sup>, Chaowei Fu<sup>1</sup>, Na Wang<sup>1</sup>, Fei Yan<sup>1</sup>, Qingwu Jiang<sup>1</sup>

<sup>1</sup>Fudan University, China

**Background and Objective:** Trace levels of antibiotics were frequently found in

drinking-water, leading a growing concern that drinking-water is an important exposure source to antibiotics in humans. This study was aimed to investigate the occurrence and seasonal variation of twenty-seven antibiotics in tap water and well water in the rural residential areas in Eastern China, and to assess the related human health exposure risks in drinking-water.

**Methods:** A total of 278 tap water samples and 110 well samples were collected for seven consecutive days in August 2020 (Summer) and January 2021 (Winter). Twenty-seven antibiotics were analyzed by ultra performance liquid chromatography-tandem mass spectrometry. The average daily dose (ADD) and the health risk quotient (HRQ) for exposure to detected antibiotics in humans were evaluated using 10000 times of Monte Carlo simulations, based on the parameters from local residents randomly selected from the population cohort previously established in two rural areas of Eastern China.

**Results:** Of 27 selected antibiotics, ten were detected in the drinking-water samples, including five macrolides, three sulfonamides, one phenicols and one fluoroquinolones. Azithromycin showed the highest detection frequencies (79.71-100%), followed by roxithromycin (25.71-100%) and erythromycin (21.43-86.96%). The highest detection concentration of > 2 ng/L was seen for 9 out of 10 detected antibiotics, with the maximum concentration reaching 6.59 ng/L for tilmicosin. Noticeable seasonality was observed for macrolides, sulfonamides and phenicols. The estimated ADD and HRQ for human exposure to a mixture of antibiotic residues through drinking-water was less than 0.01 g/kg/day and 0.01, respectively, which varied over sites, water types, seasons and sex. Macrolides accounted for 46% to 67% of the total HRQs.

**Conclusions:** Antibiotic residues of drinking-water were common with the seasonality, and brought acceptable health risks, in rural Eastern China, while the long-term exposure patterns to low-dose antibiotics from drinking-water should not be ignored.

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### Has *Mycobacterium chimaera* become a public health concern? A bibliometric analysis

Alessia Martinelli<sup>1</sup>, Giuseppina Moro<sup>1</sup>, Paolo Ragusa<sup>1</sup>, Valerio Brescia<sup>2</sup>, Giacomo Scaiolli<sup>3,4</sup>, Davide Minniti<sup>1,4</sup>, Fabrizio Bert<sup>1,4</sup>, Roberta Siliquini<sup>1,5</sup>

<sup>1</sup>Department of Public Health Sciences, University of Turin, Italy,

<sup>2</sup>Department of Management, University of Turin, Italy, <sup>3</sup>Department of Public Health Sciences, University of Turin, Italy, <sup>4</sup>Health Local Unit ASL TO3, Turin, Italy, <sup>5</sup>AOU City of Health and Science of Turin, Italy

**Background and Objective:** *Mycobacterium chimaera* (*M. chimaera*), a slow-growing non-tuberculous member of the *Mycobacterium avium* complex (MAC), was identified as a new species in 2004. Recently, *M. chimaera* has been in the spotlight as a cause of disseminated infection in patients following cardiac surgery performed with contaminated heater-cooler units (HCUs). *M. chimaera* infection has a long lasting latency: many years pass from infection to disease onset. *M. chimaera* is resistant to antimicrobial agents and its infection has high lethality. Thus, the aim of this study is to assess publication and citation related metrics, identify Keywords and most frequently discussed topics, and appraise geographic distribution of published articles. **Methods:** On date 2022/11/15 a directory of all publications containing "*Mycobacterium chimaera*" OR "*M. chimaera*" in all fields was excerpt from Web of Science. Bibliometric analysis was carried out using bibliometrix and biblioshiny packages on RStudio.

**Results:** Total publications were 305 with an annual growth rate of 20.09% from 2004 to 2022. In 2017, a total of 53 articles were produced. Total citations were 4258, with an average of 14.43 citations per document. The most cited paper was about an outbreak after open-chest heart surgery. Only 2.45% of 1475 authors wrote >4 papers about *M. chimaera*, according to Lotka's law. The US and Switzerland were the countries with the largest production, followed by the UK, Germany and Italy. The three most frequent words were "cardiac-surgery", "outbreak", and "valve". Before 2016, Keywords related to cardiac-surgery, heater-cooler units and outbreaks were totally absent. The most relevant sources were "Journal of Hospital Infection" and "Clinical Infectious Diseases". **Conclusions:** Our study sheds light on *M. chimaera* as a pathogen involved in a worldwide alert due to high number of cardiothoracic surgical procedures requiring HCUs. It would be advisable to plan interventions to reduce its burden.

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### An innovative sanification system in the Operating Theatre with a focus on sustainability

Francesco Caro<sup>1</sup>, Giuseppina Moccia<sup>2</sup>, Francesco Caro<sup>3,2</sup>, Oriana Motta<sup>2</sup>, Ornella Piazza<sup>2</sup>, Antonella Maisto<sup>2</sup>, Giovanni Boccia<sup>2</sup>, Mario Capunzo<sup>2</sup>, Walter

Longanella<sup>2</sup>, Emilia Vozzela<sup>2</sup>

<sup>1</sup>Dipartimento di Medicina, Chirurgia e Odontoiatria Scuola Medica Salernitana, Università di Salerno and AOU San Giovanni di Dio e Ruggi d'Aragona, Italy, <sup>2</sup>AOU "San Giovanni di Dio e Ruggi d'Aragona", Italy,

<sup>3</sup>Università di Salerno, Italy

**Background and Objective:** Protecting and promoting public health at a national and global level is a challenge of the medical and scientific societies, that work together in their respective and multidisciplinary fields to promote a healthy world and build a more sustainable future. To guarantee an effective reduced contamination of the Operating Theatre and reduce the environmental impact, the Salerno University- School of Medicine has founded the Green Operating Theatre group, to work together to reduce the footprint of the perioperative environment and enhance the sanification performance of the healthcare system.

**Methods:** Our group has developed a Green Operating Theatre agenda to follow along on the sustainability journey, aimed at implementing: innovative sanification procedures, waste reduction, anesthesia gas management and energy use improvement. Our first action was to reduce mishandled noninfectious waste in OR, in particular the use of disposable shoes covers, for patients and health care workers, since they not only produce non-recyclable waste but are not sufficiently effective at reducing contamination.

**Results:** We implemented the use of a shoes sanitizing station, a system which, through ozone gas and UV light, sterilizes health personnels' shoes at each OR access. This particular system not only guarantee an effective reduced contamination of the Operating Theatre but leads to lower environmental burden with the management of noninfectious waste, thus combining clinical needs and sustainability considerations.

**Conclusions:** This approach is aimed at increasing the level of sanitation of the operating theatres and the healthcare settings, underling a renewed interest in environmentally sound and sustainable sanification practice.

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### Development and sustainability of a digital auditing program to support national antimicrobial surveillance

Steve Christov<sup>1</sup>, Caroline Chen<sup>2</sup>, Ron Cheah<sup>2</sup>, Noleen Bennett<sup>3</sup>, Karin Thursky<sup>2</sup>, Lisa Hall<sup>2</sup>, Courtney Ierano<sup>2</sup>, Rodney James<sup>2</sup>

<sup>1</sup>Melbourne Health - Guidance Group, Australia, <sup>2</sup>Melbourne Health- Guidance Group, Australia, <sup>3</sup>Melbourne Health Guidance Group, Australia

**Background and Objectives:** The National Antimicrobial Prescribing Survey (NAPS) is a novel digital antimicrobial auditing program. The Hospital NAPS, released in 2013, is used to monitor antimicrobials prescribed within a facility and identify targets for quality improvement initiatives. Since 2016, the Hospital NAPS has also become a key component of the Antimicrobial Use and Resistance in Australia (AURA) Surveillance System, providing actionable data at a local and national level to address the challenges of antimicrobial resistance.

**Methods:** The Hospital NAPS uses a standardised point prevalence Methodology and assessment matrix to facilitate data collection on the appropriateness of antimicrobial prescribing and allow benchmarking. Deidentified data is then made available for national reporting and to inform antimicrobial prescribing guidelines and public health policy. Establishment of governance processes under a quality management system framework and ongoing feasibility assessments, have driven improvements in the program's generalisability and sustainability.

**Results:** Since released, over seventy percent of Australian hospitals have contributed across major cities, regional and remote settings. It can now be regarded as a national antimicrobial usage surveillance system with 407 hospitals contributing in 2021. Key findings have informed updates to national prescribing guidelines including respiratory tract infections, surgical prophylaxis and medication safety. The ongoing success of the Hospital NAPS program has driven the development of additional modules, including Surgical, Aged Care, Quality Improvement and Antifungal NAPS.

**Conclusions:** The adaptability of Hospital NAPS has enabled successful pilots in New Zealand, Canada, United Kingdom, Portugal, Malaysia, Vietnam, Bhutan, Nepal, Papua New Guinea, Timor-Leste and Fiji, highlighting its across transferability various geographical locations and settings. Acceptable governance structures, along with robust in-built analysis and reporting capabilities, has supported such sustainability and scalability, ensuring broader impact globally to help address antimicrobial resistance.

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### Impact of new Electronic Health Record on antimicrobial stewardship policies in IRCCS Policlinico San Donato

Demetrio Cescutti<sup>1</sup>, Margherita Zeduri<sup>2</sup>, Carlo Lunetti<sup>1</sup>, Alessandro Meloni<sup>2</sup>, Aurelia D'Acquisto<sup>3</sup>, Laurenzia Ferraris<sup>4</sup>, Giuseppe Caravella<sup>5</sup>, Maria Shishova<sup>5</sup>, Giulia Bisinella<sup>5</sup>, Luca Carpinelli<sup>3</sup>, Anna Odone<sup>6</sup>, Carlo Signorelli<sup>1</sup>, Maria Cuppone<sup>3</sup>

<sup>1</sup>Facoltà di Medicina e Chirurgia, Università Vita-Salute San Raffaele, Italy, <sup>2</sup>Dipartimento di Sanità Pubblica, Medicina Sperimentale e Forense, Università degli Studi di Pavia, Italy, <sup>3</sup>Direzione Sanitaria, IRCCS Policlinico San Donato, Italy, <sup>4</sup>IRCCS Policlinico San Donato, Italy, <sup>5</sup>UO Farmacia, IRCCS Policlinico San Donato, Italy, <sup>6</sup>Dipartimento di Sanità Pubblica, Medicina Sperimentale e Forense, Università degli Studi di Pavia, Italy

**Background:** Appropriate antibiotic prescription is crucial to antimicrobial stewardship, supporting antimicrobial resistance reduction. In Irccs Policlinico San Donato, Milan (Italy), at the start of 2022 a motivated request form for the prescription of several antibiotic and antifungal medications was introduced. Furthermore, Electronic Health Record (EHR) for the management of pharmacotherapies was implemented in several departments of polyclinic in July 2022, allowing a direct monitoring of prescriptions by the pharmacists, which was not possible before. The aim of this study is therefore to evidence the importance of EHR for the direct monitoring of requests, evaluating also the economic loss resulting from the inappropriate prescriptions.

**Methods:** Overall, 55 motivated requests for meropenem, daptomycin and caspofungin sent during September and October to the pharmacists were reviewed. We compared the delivered doses with the relative administrations through the EHR for each patient. We also estimated the economic loss resulting from the doses delivered but not administered.

**Results:** There were 17 motivated requests for meropenem, 7 of which involved 70000 milligrams (mg) of delivered doses but not administered; 157000mg were administered without a corresponding motivated request. Regarding daptomycin, out of 30 requests, 13 involved 26660mg of delivered doses in excess while 37400mg were administered without a request. Out of 8 caspofungin requests, 4 involved 900mg of delivered doses in excess and 2090mg were administered without a request. Overall, €2016 were lost due to the excess delivered doses. **Conclusions:** The introduction of the EHR allowed a direct monitoring of motivated requests appropriateness; this is the first step to manage the inappropriate pharmacological prescriptions. Next step should be to integrate the motivated request form in the software, during the prescription of the medications that require it. This would prevent doctors from submitting wrong or incomplete requests, therefore strengthening antimicrobial stewardship and improving the appropriateness of their usage.

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### Wastewater treatment plant: a hotspot of antibiotic resistance spreading?

Manuela Macri<sup>1</sup>, Manuela Macri<sup>1</sup>, Sara Bonetta<sup>2</sup>, Marta Catozzo<sup>1</sup>, Cristina Pignata<sup>2</sup>, Enrica Mecarelli<sup>3</sup>, Valentina Schiavo<sup>3</sup>, Claudio Medana<sup>3</sup>, Elisabetta Carraro<sup>2</sup>, Silvia Bonetta<sup>1</sup>

<sup>1</sup>Department of Life Sciences and Systems Biology, University of Turin, Turin, Italy, <sup>2</sup>Department of Public Health and Pediatrics, University of Turin, Turin, Italy, <sup>3</sup>Department of Molecular Biotechnology and Health Sciences, University of Turin, Turin, Italy

**Background and Objective:** Antibiotic resistance (ABR) is of primary concern for Public Health. As reported by the European One Health Action Plan against Antimicrobial Resistance, there is the need to monitor the presence of antibiotics, antibiotic resistant bacteria (ARB) and antibiotic resistance genes (ARGs) in the environment, especially in wastewater. Moreover, the global action plan on antimicrobial resistance underlines the need to obtain strong evidence associated to the role of wastewater and environment as contributors to the development and spread of ABR. The aim of this study is to evaluate the ABR spreading in different treatment steps of wastewater treatment plant (WWTP) also considering the possible reuse of effluent in agriculture.

**Methods:** Samples collected at different steps of a WWTP developed for reuse were investigated for the presence of antibiotics (ampicillin, tetracycline, sulfamethoxazole), heavy metals, the antibiotic resistance rate of ARB (ampicillin, tetracycline, and sulfamethoxazole resistant bacteria) and ARGs (blaTEM, tetA, sulII).

**Results:** The Results obtained highlight the presence of ARB and ARGs for the antibiotics tested in WWTP, with a decreasing trend during the wastewater treatment, as also observed for some antibiotics and heavy metals. Although there is generally no significant difference in the ABR rate, a higher average value of this rate is observed during the wastewater production, suggesting a possible positive selective pressure of ARB by some steps of treatment. A correlation was

also observed between the presence of some heavy metals and ABR rate.

**Conclusions:** The results obtained suggest the need to carefully monitor the role of WWTPs in the spreading of antibiotic resistance, also considering the One Health approach. Furthermore, the results obtained could suggest interventions to reduce the human health risk associated with wastewater reuse in agriculture.

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### Antibiotic stewardship: perception of general practitioners regarding emerging challenges

Tabinda Ashfaq<sup>1</sup>, Aisha Ishaque<sup>2</sup>

<sup>1</sup>Iqra University faculty of health sciences 501-B Sea breeze Center boat basin block 5 Clifton Karachi Pakistan, <sup>2</sup>Indus hospital Karachi, Pakistan

**Introduction:** Antibiotics are among the most frequently prescribed classes of drugs all over the world with approximately 50% of it being used without any rationale. This leads to increase antibiotic resistance and further complications. General practitioners are first line of contact and majority of the general population presents to them for their health issues. Their perception and attitude regarding antibiotic prescription plays an important role in emerging antibiotic resistance.

**Objective:** To identify knowledge and perception of General practitioners regarding antibiotic stewardship and associated challenges.

**Methodology:** This is a cross sectional study conducted through online platform conducted through a pretested self-administered questionnaire. It included questions related to location and workplace information. Knowledge and practices of the participants regarding antibiotic use in their clinical practice and experience of health care workers related to patient exposure and protective equipment. Data was entered and analyzed using the SPSS statistical software Version 19.

**Results:** A total of 270 out of 373 agreed to participate in the study with a response rate of 72%. On exploring relevance of importance of antibiotic resistance in daily work majority 81% agreed that it is highly relevant. Similarly when asked about reasons for increasing antibiotic irrational use of antibiotics was a major reason identified by 96% of male and 84% of females.

To explore GPs practice regarding education to patients around 66% of male and 85% of the females agreed that they educate their patients when prescribing while 35% male and 15% female physicians did not educate their patients because of lack of time available for patient education during consultation.

**Conclusion:** Antibiotic resistance is on the rise. General practitioners have limited knowledge regarding rationale use however their practice is limited due to poor accountability, increase demand from patients and to enhance their patient satisfaction

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### Chondrodendron platyphyllum alkaloids as a weapon in the combat of antibiotic resistance

Jaime Ribeiro Filho<sup>1</sup>, Silvio Caetano Alves Júnior<sup>1</sup>, Maria Costa<sup>2</sup>, Ray Silva de Almeida<sup>2</sup>, Ana Pereira da Silva<sup>2</sup>, Irwin Rose Alencar de Menezes<sup>2</sup>, Henrique Douglas Melo Coutinho<sup>2</sup>

<sup>1</sup>Oswaldo Cruz Foundation, Fiocruz Ceará, Eusébio, Ceará, Brazil, <sup>2</sup>Regional University of Cariri, Brazil

**Background and Objective:** Antibiotic resistance is a significant public health problem, contributing to approximately 700,000 deaths yearly worldwide. Due to the rapid spread of multidrug-resistant bacteria (MDR), the arsenal of effective antibiotics has decreased, demanding the urgent development of new drugs. Evidence has indicated that Chondrodendron platyphyllum (Menispermaceae) is a source of compounds with antimicrobial properties. Thus, the present study aimed to investigate the effects of its alkaloids on antibiotic resistance in vitro.

**Methods:** A Total Alkaloid Fraction (TAF) and the primary constituent curine were obtained from the root bark of C. platyphyllum (SisGen registry A84A87E). The antibacterial and antibiotic-enhancing activity of TAF and curine was evaluated by determining their minimum inhibitory concentration (MIC) individually or in combination with antibiotics against standard and MDR strains of Staphylococcus aureus, Pseudomonas aeruginosa, and Escherichia coli.

**Results:** The TAF presented clinically effective MICs against S. aureus 25923 (645 µg/mL), P. aeruginosa 9027 (645 µg/mL), and E. coli 25922 (256 µg/mL) but failed to effectively inhibit the growth of the MDR strains S. aureus 10, P. aeruginosa 24, and E. coli 06 (MIC ≥ 1,024 µg/mL). On the other hand, curine showed promising antibacterial effects against S. aureus 25923 (512 µg/mL), E. coli 25922 (512 µg/mL), and E. coli 06 (813 µg/mL). Regarding the effects on antibiotic resistance, TAF potentiated (p < 0,05) the activity of gentamicin and norfloxacin against MDR strains of S. aureus, P. aeruginosa, and E. coli. On the other hand, curine

potentiated the activity of gentamicin against the gram-negative MDR strains and presented synergism when associated with norfloxacin against *S. aureus* 10 and *P. aeruginosa* 24.

Conclusion: *C. platyphyllum* and curine have antibacterial and antibiotic-enhancing activities against the standard and MDR bacterial strains and, as such, have the potential to be used in the combat of antibiotic resistance.

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### Developing the monitoring and evaluation framework for 'Australia's antimicrobial resistance strategy: 2020 and beyond' using a one health approach

Lisa Hall<sup>1</sup>, Sheleigh Lawler<sup>1</sup>, Tracy Comans<sup>2</sup>, Simon Reid<sup>1</sup>, Ricardo Soares Magalhães<sup>3</sup>, Mark Blaskovich<sup>4</sup>, Julia Henseleit<sup>2</sup>, Alyssa Welch<sup>2</sup>

<sup>1</sup>University of Queensland, School of Public Health, Australia, <sup>2</sup>University of Queensland, Centre for Health Services Research, Australia, <sup>3</sup>University of Queensland, Queensland Alliance for One Health Sciences, Australia, <sup>4</sup>University of Queensland, Institute for Molecular Bioscience, Australia

Background and Objective: Antimicrobial Resistance (AMR) is a growing global concern inextricably linked to human interactions across multiple sectors, including animal health, agriculture, food production, and the environment. Using a One Health lens, to understand the spread and risk of AMR, will be vital to successfully addressing such a complex issue. International efforts are focussed on designing and implementing policy – but developing and implementing comprehensive monitoring and evaluation frameworks for national strategies remains a challenge. Working with a broad range of stakeholders, we aimed to co-design a pragmatic, adaptable monitoring and evaluation (M&E) framework for Australia's AMR Strategy.

Methods: To develop the M&E framework we employed multi-stage, iterative co-design. We undertook a scoping review and interviews with international leaders involved in monitoring national AMR strategies to examine best practice, enablers and barriers. We then engaged an Expert Advisory Group (EAG) with diverse One Health expertise. We undertook a policy analysis of national strategy documents and worked with our EAG to draft program logic models (PLMs) – using backcasting to formulate the inputs, outputs and outcomes required to address AMR. We conducted Delphi surveys (n=15 experts/sector), to get consensus on the importance and feasibility of outcome measures. In early 2023 we will explore the Delphi findings and refine the PLMs in national systems thinking workshops - prioritising what needs to happen next for M&E to be successfully implemented. Workshops will focus on identifying linkages and leverage opportunities between and within sectors.

Results: This co-design approach (using established public health methods) is providing Australia with a systematic, collaborative, and responsive way to create an M&E framework across multiple One Health sectors.

Conclusion: Evaluating the impact of national AMR strategies is complex, takes time, and needs to champion the voices of a range of stakeholders. Systems thinking is useful for facilitating this.

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### Predictors of knowledge, attitude, and dispensing practices of antibiotics among patent and proprietary medicine vendors in Federal Capital Territory, Nigeria

Abara Erim<sup>1</sup>, Yakubu Abdullahi<sup>1</sup>

<sup>1</sup>Nigeria Centre for Disease Control, 24 Amino Street, Galadimawa, Abuja, Nigeria

Background and Objective: Patent and Proprietary Medicine Vendors (PPMVs) are seen as the most reliable sources of healthcare in most rural and hard-to-reach areas even with their low educational qualification. They can sell a limited number of pre-packaged, over-the-counter medicines and medical products, but are prohibited from selling prescription medications including antibiotics. However, studies have shown that people get antibiotics without prescription from patent medicine vendors resulting in irrational antibiotic use in some cases. This study, therefore, assessed the predictors of knowledge, attitude, and dispensing practices of antibiotics among patent and proprietary medicine vendors in the Federal Capital Territory, Nigeria.

Methods: A descriptive cross-sectional study design was employed, and 374 respondents were selected using a multistage sampling technique. A standardized, structured, interviewer-administered questionnaire was used among PPMVs. Statistical Package for Social Sciences (SPSS) version 22.0 was used for data analysis. Chi-square was used for test of association at p0.05.

Results: The majority (53.4%) of PPMVs were females; about four-fifth belonged to

the age group 29 years, and a majority had about 5 years of practice experience. The majority (66.0%) of the respondents had poor knowledge of antibiotics, and almost half (59.2%) of the PPMVs had poor dispensing practices of antibiotics. Sex, educational level, and membership of PPM were found to be predictors of knowledge, while sex and educational level were predictors of dispensing practices of antibiotics among PPMVs. Also, it was found that the majority of the PPMVs had good attitude toward antibiotics prescription.

Conclusion: This study reported a poor overall knowledge and dispensing practice of antibiotics among PPMVs and good attitude towards antibiotics prescription. In order to curb the menace of irrational antibiotic use, strict enforcement of regulations that will limit access to antibiotics by PPMVs and continuous training of the PPMVs on antibiotic use is required.

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### Evaluation of the available apps to support the Italian physicians in the Antimicrobial Stewardship implementation

Giuseppa Russo<sup>1</sup>, Annachiara Petrazzuolo<sup>1</sup>, Marino Trivisani<sup>1</sup>, Giuseppe Virone<sup>1</sup>, Luca Arnoldo<sup>2</sup>, Roberto Cocconi<sup>3</sup>, Laura Brunelli<sup>4</sup>

<sup>1</sup>University of Udine, Department of Medical Area - University of Udine, Udine, Italy, <sup>2</sup>University of Udine, <sup>3</sup>Azienda Sanitaria Universitaria Friuli Centrale, Udine, Italy, Accreditation and Quality Unit, Friuli Centrale Healthcare University Trust, Udine, Italy, <sup>4</sup>University of Udine, "Department of Medical Area - University of Udine, Udine, Italy and Accreditation and Quality Unit, Friuli Centrale Healthcare University Trust, Udine, Italy

Background and Objective: Antimicrobial resistance (AMR) is a serious problem and remains one of the greatest global threats to public health at the beginning of the 21st century. As digital technologies become an important resource for healthcare delivery and public health, we decided to investigate the available apps to support Italian physicians combat AMR.

Methods: A systematic research was performed by four independent researchers in the Apple and Google Play App stores using English and Italian keywords. After excluding content in languages other than Italian or English, gaming, photo and video, paid apps and contents, and advertisement, apps were downloaded and analysed using an 86-item checklist including pathogens/etiological agents, support for diagnosis and therapy, AMR, dashboard function, antimicrobial stewardship (AMS), notes and recordings, network, technical characteristics of app domains as validated by experts.

Results: Of the 115 apps initially identified, 27 (6 for Android, 21 for iOS, 1 for both) were analyzed. No app met all desirable aspects; only one met 36% of the criteria. From highest to lowest scores, domains are support for diagnosis and therapy (37%), technical characteristics of the app (22%), AMS (8%), pathogens/etiological agents (4%), notes and recordings (3%), network (2%), AMR (1%) and dashboard function (1%). Most apps support identification of the drug for targeted therapy against a specific microorganism (78%) and the ability to be used offline (81%).

Conclusions: No available app was able to adequately provide the desired features. To engage all prescribing physicians in the fight against AMR and implement AMS, an app that meets all requirements must be developed.

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### Malnutrition and extended spectrum beta-lactamase-producing Enterobacteriaceae infection: a new lead against antibiotic resistance?

Fabiana Cazzorla<sup>1</sup>

<sup>1</sup>Grenoble Alpes University Hospital and Grenoble Alpes University, France

Background and Objective: Infections with extended-spectrum beta-lactamase-producing Enterobacteriaceae (ESBL-E) are frequent in nursing home for dependent elderly people and several risk factors for ESBL-E infection are described in the literature. In patients hospitalized in nursing homes or healthcare facilities, malnutrition reaches 70%. The objective of this study was to analyse the relationship between malnutrition and ESBL-E infection.

Methods: A retrospective matched case-control study was carried out on adult patients hospitalized at Grenoble Alpes University Hospital between January 2010 and December 2015. Cases presented ESBL-E infection and controls had Enterobacteriaceae infection without ESBL resistance. The exposure factor, malnutrition, was based on national High Authority of Health (HAS) 2019 criteria adapted to French population. Patients without any measurement attesting the malnutrition were considered as not malnourished. The following ESBL-E infection risk factors were included: history of antibiotic prescription, history of hospitalization, risky procedures, history of ESBL-E colonization. The crude and

adjusted odds ratio (OR) and its 95% confidence interval (95% CI) were evaluated by conditional logistic regression.

Results: A total of 16,143 patients had at least one positive clinical sample for Enterobacteriaceae (1,364 ESBL and 14,779 no-ESBL). After matching, 1359 cases and 2663 controls were included in the analysis.

Malnutrition was a significant risk factor for ESBL-E infection in bivariate analysis (OR 1.24; 95% CI 1.08-1.43). By adjusting for risk factors, undernutrition was no longer a significant risk factor (adjusted OR 1.24; 95% CI 1.08-1.43). The usual risk factors: history of antibiotic prescription, history of hospitalization and history of ESBL-E colonization were significant in both analyses.

Conclusion: A significant relationship between undernutrition and the occurrence of ESBL-E infection was observed in bivariate analysis, but this factor is no longer significant when adjusting for other known risk factors. Further investigations, as subgroup analyses, could assess the importance of malnutrition as a risk factor.

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### Impact on antimicrobial consumption of new stewardship policies in IRCCS Policlinico San Donato in 2022

Alessandro Meloni<sup>1</sup>, Demetrio Cescutti<sup>2</sup>, Margherita Zeduri<sup>1</sup>, Carlo Lunetti<sup>3</sup>, Aurelia D'Acquisto<sup>4</sup>, Giulia Bisinella<sup>5</sup>, Maria Shishova<sup>5</sup>, Giuseppe Caravella<sup>5</sup>, Laurenzia Ferraris<sup>6</sup>, Luca Carpinelli<sup>6</sup>, Carlo Signorelli<sup>3</sup>, Anna Odone<sup>1</sup>, Maria Cuppone<sup>6</sup>

<sup>1</sup>Università degli Studi di Pavia Dipartimento di Sanità Pubblica, Medicina Sperimentale e Forense Italy, <sup>2</sup>Università Vita-Salute San Raffaele,

<sup>3</sup>Università Vita-Salute San Raffaele Facoltà di Medicina e Chirurgia Italy,

<sup>4</sup>IRCCS Policlinico San Donato, <sup>5</sup>IRCCS Policlinico San Donato U.O. Farmacia

Italy, <sup>6</sup>IRCCS Policlinico San Donato Direzione Sanitaria Italy

Introduction: antimicrobial stewardship policies are crucial in the fight against hospital-acquired infections (hais) and antimicrobial resistances. A new stewardship program was introduced in irccs policlinico san donato in 2022, consisting in a motivated request form for antimicrobial intravenous medications. The aim of this study is to analyse the daily defined dose (ddd) for every intravenous antimicrobial during the last four years and estimate the pharmacoeconomic impact of the stewardship policies in our hospital.

Methods: The retrospective observation on antimicrobial consumption took place in the period January – October for the years 2019-2021 and a comparative analysis with 2022 was performed. The motivated request form was introduced for all the units and required as mandatory for prescription, along with an infectious disease counseling and microbiological tests. In the second half of 2022 the electronic health record was introduced in the hospital, enabling control on prescriptions. The total costs were calculated per operative unit linked to the requests of antimicrobials and ddd were calculated for each antimicrobial.

Results: Considering the ddd/100 days of hospital stay no reduction was observed in 2022 with 52,22 ddd/100d administered but concerning the prescription pattern we could observe during 2022 a significant drop in consumption of broad-spectrum antibiotics such as ceftriaxone or amoxicillin. A significant drop in total pharmaceutical expenditure was observed too, with a median reduction of 25% of total costs.

Conclusion: New stewardship policies not only led to more appropriate antibiotic usage in every unit but they led to a reduction in total pharmaceuticals costs. The stricter controls on the antimicrobials requests led to a virtuous mechanism of more appropriate antimicrobial choice and length of treatment. In the long run this can result in a drop both in terms of direct costs (medications, nurse working-time) and indirect costs (shorter hospital stayings and less infectious complications).

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### Animals and animal products as sources for antimicrobial resistant bacterial infections in humans: a systematic review and meta-analysis.

Christina Fastl<sup>1</sup>, Carlotta Di Bari<sup>2</sup>, Brecht Devleeschauwer<sup>1</sup>

<sup>1</sup>Department of Epidemiology and Public Health, Sciensano, Brussels,

Belgium, <sup>2</sup>Department of Epidemiology and Public Health, Sciensano, Brussels, Belgium

Background and Objective: Antimicrobial resistance (AMR) is a major threat to modern medicine and expected to become one of the leading global health challenges of the century. Resistant infections in animals are known to be important drivers of AMR in humans, however, the extent of their contribution is not clear. To adequately assess the total economic and public health burden posed by animal diseases, as well as optimally inform effective AMR mitigation and control strategies, a better understanding of the relative impact of animal

AMR on humans is crucial. Source attribution studies are valuable tools for the partitioning of health burdens to specific sources and thus well suited for this purpose. The aim of this systematic literature review is to summarize the available evidence from source attribution studies and other studies that quantify the direct contribution of animal sources of AMR to resistant infections in humans, focusing on bacterial AMR.

Methods: Our initial search of four scientific databases (Pubmed, Web of Science, Scopus and Embase) yielded 16,955 results published between 1957 and 2022. Articles will be selected for eligibility based on whether they attribute bacterial AMR in humans to animal-related sources, which we defined as livestock, aquaculture, foods of animal origin and companion animals. We also intend to perform meta-analyses with the results of relevant studies of animal-related risk factors for sporadic resistant infections in humans to derive population attributable fractions.

Results and conclusion

We will provide an overview of the currently available evidence on the impact of zoonotic AMR on human health, outline important knowledge gaps and discuss suitable methods for future research.

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### The role of a Local Health Unit in fighting antimicrobial resistance: the experience of ASL TO3 in Piedmont, Italy

Alessandro Prinzivalli<sup>1</sup>, Paolo Ragusa<sup>1</sup>, Giulia Libero<sup>1</sup>, Valerio Bordino<sup>1</sup>, Grazia Ceravolo<sup>2</sup>, Elvio Peyrone<sup>2</sup>, Daniela Zeme<sup>2</sup>, Davide Minniti<sup>2</sup>, Roberta Siliquini<sup>3</sup>, Fabrizio Bert<sup>4</sup>

<sup>1</sup>University of Turin Department of Public Health Sciences and Pediatrics Italy, <sup>2</sup>Local Health Unit TO3 Local Health Unit TO3 Italy, <sup>3</sup>University of Turin Department of Public Health Sciences and Pediatrics; A. O. U. City of Health and Science of Turin Italy, <sup>4</sup>University of Turin Department of Public Health Sciences and Pediatrics; Local Health Unit TO3 Italy

Background and Objective: Antimicrobial Resistance (AMR) represents a global health threat which, as reported by recent analyses, could cause 10 million deaths/year by 2050. According to international guidelines, a dedicated Antimicrobial Stewardship (AMS) team was implemented in asl to3, a local health unit in piedmont, in order to process data and to improve good practices related to responsible antibiotic use. The aim of this study is to evaluate the Carbapenem-Resistant Enterobacteriaceae (CRE) 5-years trend in asl to3 as an indicator of AMS strategies implemented.

Methods: CRE laboratory data were extracted through the virtuoso platform. redundancies were eliminated within 28 days, but any "duplicates" per material and any "multiple isolations" were retained. The analysis included stratification by pathogen, E. Coli (EC) and Klebsiella Pneumoniae (KP), and by presence or absence of resistance.

Results: AMS included strategies such as data collection and analysis about antibiotics prescriptions and microbiological tests, medical health records audit and meetings with clinicians. Despite a 9% increase in microbiological testing, an overall decrease in total and stratified cre from 2017 to 2021 was recorded. Total CRE dropped from 222/7368 (3.01%) to 136/8054 (1.68%), KP carbapenem-resistant from 18.86% to 11.74% and EC carbapenem-resistant from 0.71% to 0.09%. Almost all of the CRE bacteremia diagnosed in 2021 was caused by KP (95.6%), and only a small portion by EC (4.4%).

Conclusion: Since the implementation of an AMS program, data related to cre infections has been continuously improving and are currently lower than regional and national trends. A decrease in antimicrobial-resistant microorganisms infections can result in reduced mortality and cost of care. A constructive comparison of the action of several health care settings in the field of AMS can be a weapon in the global fight against AMR.

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### The dual effect of governance quality on antibiotic use and antimicrobial resistance: An analysis of European countries

Antonella Agodi<sup>1</sup>, Andrea Maugeri<sup>1</sup>, Giuliana Favara<sup>1</sup>, Roberta Magnano San Lio<sup>1</sup>, Martina Barchitta<sup>1</sup>

<sup>1</sup>University of Catania Department GF Ingrassia Italy

Background and Objective: Although antibiotic use is one of the most important contributors to antimicrobial resistance (AMR), there is also evidence that their correlation is not always perfect. In fact, other factors (e.g., economic development and governance quality) may explain differences in AMR levels observed between countries. Here, we used ecological data to evaluate how governance indicators relate to antibiotic use and AMR in 30 European countries.

**Methods:** We used data from the World Bank Databank, ECDC atlas, and ESAC-Net databases to compile a dataset of six governance indicators (voice and accountability, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption); AMR proportions for 25 combinations of pathogens and antibiotics; and the amount of antibiotics consumed in the community. AMR proportions and governance indicators were also aggregated into an overall measure of AMR and a governance index.

**Results:** Except for political stability, all governance indicators were inversely correlated with the proportions of: *Acinetobacter* spp. and *Pseudomonas aeruginosa* resistant to all classes of antibiotics under consideration; *Klebsiella pneumoniae* resistant to fluoroquinolones, third generation cephalosporins, and aminoglycosides; *Escherichia coli* resistant to fluoroquinolones and third generation cephalosporins; and *Staphylococcus aureus* resistant to methicillin ( $p$ -values $<0.001$ ). Linear regression analyses showed that an increase in the governance index resulted in significant decreases of overall antibiotic consumption ( $p<0.001$ ) and AMR proportion ( $p=0.006$ ). A mediation analysis showed that the governance index had an indirect effect on AMR via reducing antibiotic consumption, which accounted only for 35% of the total effect.

**Conclusion:** These findings supported the hypothesis that other factors sustain the uncontrolled spread of resistant pathogens in countries with poor governance. For this reason, reducing antibiotic use alone is unlikely to solve the AMR problem, and more interventions are needed to increase governance effectiveness at all levels.

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### The vaccinating hospital: Multiparametric evaluation of the post-vaccinal outcome on the development of infections, antibiotic therapy and resistance

Francesco Giordano<sup>1</sup>, Cristina Genovese<sup>2</sup>, Daniela Lo Giudice<sup>3</sup>, Sebastiano Calimeri<sup>3</sup>, Vincenza La Fauci<sup>2</sup>, Raffaele Squeri<sup>4</sup>

<sup>1</sup>Università degli Studi di Messina, Scuola di Specializzazione in Igiene e Medicina Preventiva Department of Biomedical and Dental Sciences and Morphofunctional Imaging, University of Messina, Messina, Italy, <sup>2</sup>Università degli Studi di Messina, <sup>3</sup>Università degli Studi di Messina Department of Biomedical and Dental Sciences and Morphofunctional Imaging, University of Messina, Messina, Italy, <sup>4</sup>University of Messina Italy

**Background:** The moment of vaccination counseling also represents a very important tool in the hands of the healthcare operator because it gives the possibility to interact directly with the vaccinated person.

**Our aim** is the analysis of perception, attitudes, knowledge of antibiotics and antibiotic resistance in a cohort of chronic patients and the evaluation of the effect of vaccination counseling on these parameters.

**Methods:** A prospective study was conducted in the AOU "G. Martino" of Messina from 1 April 2022 to 1 October 2022, at the vaccination center of the Hospital Hygiene, after collection of informed consent and administration of the chosen vaccination. The study was carried out by completing a questionnaire created ad hoc by phone to evaluate knowledge, attitudes and perceptions of antibiotics as well as the role of vaccination counseling on the posthumous use of antibiotics and on the development of infections.

**Results:** 47 individuals joined the study, 44.68% male and 55.32% female. It was possible to highlight a satisfactory level of knowledge of antibiotics and the concept of antibiotic resistance, with a percentage of just over 80% of the participants who answered correctly to the questions formulated. 23.4% had never heard of antibiotic resistance and more than half of the sample did not know the correct definition.

The counseling carried out after the administration of the vaccine, approximately 47% of the sample used antibiotics, all of these followed the therapy indicated by the doctor and only one case was found to have antibiotic resistance.

**Conclusion:** From the data in our possession, it emerges that vaccination combined with adequate patient counseling by hospital vaccination center operators are activities of fundamental importance in order to reduce the inappropriate use of antibiotics both through the direct effect than indirect especially in the category of patients considered "fragile".

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### Impact of the covid-19 pandemic on multi-drug resistant organisms in a large hospital in palermo (sicily)

Giuseppe Vella<sup>1</sup>, Stefano Pizzo<sup>2</sup>, Valerio De Francisci<sup>1</sup>, Floriana Bravat<sup>1</sup>, Eliana Giambelluca<sup>2</sup>, Dario Genovese<sup>1</sup>, Vincenzo Pisciotta<sup>1</sup>, Giuseppe Calamusa<sup>1</sup>, Emanuele Amodio<sup>1</sup>

<sup>1</sup>University of Palermo Department of Health Promotion, Mother-Child, Internal Medicine and Specialist of Excellence "G. D'Alessandro" (PROMISE), University of Palermo Via del Vespro, 133, 90127 Palermo Italy, <sup>2</sup>University of Palermo

**Background and Objective:** The pandemic has overwhelmed healthcare systems worldwide. Simultaneously, the rise in multi-drug resistant organisms (MDRO) continues to threaten global health through significant morbidity, mortality, and global economic loss.

This study aims to analyze the impact of the pandemic on the spread of some specific MDRO and define the differences between the pre-pandemic and pandemic period.

**Methods:** This is an observational study that included adult patients discharged from the University Hospital of Palermo from 01/01/2018 to 31/12/2021. Hospital Discharge Cards of the recruited study patients were linked with reports from the microbiological laboratory to evaluate MDRO isolations. For each patient the SARS-CoV-2 positivity during the hospitalization was evaluated by consulting the surveillance system of the National Institute of Health. The contribution of several risk factors associated with the presence of MDRO was analyzed through logistic regression analysis.

**Results:**

This study evaluated 58,427 hospitalizations, where half of the patients were over 65 years old (N=26,984) and most admissions were in the medical area (N=31,716). During the hospitalization period, the isolated MDRO were 2,681 (5%), whereas there were 946 subjects (2%) who tested positive for SARS-CoV-2. No statistical difference was found in the prevalence of MDRO in COVID-19 and non-COVID-19 patients. In the multivariable analyses, during 2020 and 2012 there was a statistically significant increased risk of isolation of the following MDRO: *Staphylococcus Aureus*, *Acinetobacter Baumannii*, and *Klebsiella Pneumoniae*. Age, DRG-weight, and length-of-stay were associated to a higher risk of MDRO isolation.

**Conclusion:** In the study period there was an increasing trend of some MDRO isolations, even more so during the pandemic period. However, SARS-CoV-2 positivity did not impact the risk of contracting MDRO. It is imperative to improve and follow hospital protocols to prevent healthcare-associated infections.

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### Using legislation to underpin a one health approach to address antimicrobial resistance

Carmen Bullon<sup>1</sup>, Maarten der Heijden<sup>2</sup>, Ambra Gobena<sup>1</sup>, Camille Loi<sup>3</sup>, Teemu Viinikainen<sup>4</sup>, Valeria Pasarin<sup>5</sup>, Yingjing Li<sup>6</sup>, Kelsey Galantich<sup>7</sup>

<sup>1</sup>FAO Italy, <sup>2</sup>WHO, <sup>3</sup>WOAH France, <sup>4</sup>FAO, <sup>5</sup>FAO Spain, <sup>6</sup>FAO New Zealand, <sup>7</sup>WOAH Botswana

The One Health Legislative Assessment Tool for Antimicrobial Resistance (AMR) (the Tool) has been developed by the legal teams of FAO, WHO and WOAH, with inputs from UNEP, through a process of extensive consultation with a range of legal experts across multiple disciplines. The Tool is currently being implemented in four countries prior to a wider rollout and implementation. The Tool assists countries in the identification of regulatory gaps relevant for AMR, and enables the prioritization of solutions through legal reform. It facilitates the examination of a range of legislative instruments and governance arrangements at local, region/province and national levels. Adopting a One Health approach that integrates and sustainably balances the health of people, animals and ecosystems, the Tool targets key regulatory elements in the following sectors (1) AMR governance (2); human health, (3) animal health and production, (4) food safety, (5) pesticide management, (6) plant health and (7) the environment. Under the Tool, cross-cutting themes and the need for multidisciplinary perspectives are emphasized to ensure multisectoral coordinated action against AMR. This Tool is currently being implemented in four countries prior to a wider rollout and implementation. While legislation is just one facet of the range of AMR responses recommended at international and national levels, legislation is often important or essential for many actions identified as a priority in National Actions Plans for AMR. The implementation of the Tool shows how legislation is used to introduce a One Health approach to manage AMR responses. A One Health approach to AMR requires a multidisciplinary response, among them multisectoral coordination mechanisms. In addition to bringing together a range of stakeholders as part of its development process, legislation formalizes and strengthens governance and accountability at local, regional and national levels within and across sectors and actors.

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### Perspective assessment of the impact of sars-cov-2 pandemic on the use of antibiotics and antibiotic resistance

Caterina Rizzo<sup>1</sup>, Caterina Rizzo<sup>2</sup>, Cristina Genovese<sup>2</sup>, Isabella La Spina<sup>3</sup>, Paola Tripodi<sup>2</sup>, Francesco Giordano<sup>2</sup>, Vanessa Prete<sup>3</sup>, Carmela Biondo<sup>1</sup>, Giovanni Cipriano<sup>1</sup>, Alessandro Nicita<sup>2</sup>, Vincenza Fauci<sup>1</sup>, Raffaele Squeri<sup>1</sup>  
<sup>1</sup>University of Messina Department of Biomedical and Dental Sciences and Morphofunctional Imaging, University of Messina, Italy. Italy,  
<sup>2</sup>University of Messina Department of Biomedical and Dental Sciences and Morphofunctional Imaging, University of Messina, Italy. Torre Biologica, Piano 3 Via Consolare Valeria, snc Policlinico Universitario "G. Martino"  
 Italy, <sup>3</sup>University of Messina

#### Materials and methods

The analysis were performed using two systems: "Faranalysis", which evaluate pharmaceutical expenditure and antibiotic therapy stream both territorial and hospital; "Health Card (TS)" which allows to investigate individual health spending data to the Internal Revenue Service. These data have been stratified by age group and gender.

Results: Through historical comparison of antibiotic consumption, the highest consumption was observed in the 45 to 64 age group, followed by the over 75 age group. During the pandemic phase and the adoption of containment measures have resulted in a drastic decline in antibiotic prescriptions. A difference of -17.75% was observed in our province compared to the pre-pandemic period resulting in a -25% reduction in healthcare expenditure. At the same time, the shortage of first-class antibiotics led to an overprescription of old-use molecules such as Trimethoprim (+12.93%) and amphenicides (+27.27%).

Conclusions: Our study demonstrates how the application of social distancing measures and proper use of protective equipment can affect the transmission of airborne diseases and how communication by professionals in the field can increase the informed use of antibiotic therapy by the population. Italy represents together with Greece the tail-end of Europe, so much so that 7-10% of patients encounter a multi-resistant bacterial infection. This issue, therefore, requires a multidisciplinary strategy that involves taking care of the individual from a One Health perspective.

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### Overcoming the challenges of antimicrobial resistance in developing countries

Muhammad Khan<sup>1</sup>, Afreenish Amir<sup>2</sup>, Amna Ali<sup>3</sup>, Muhammad Waleed<sup>4</sup>, Tarbia Aamir<sup>4</sup>, Aamer Ikram<sup>5</sup>, Rabia Tabassum<sup>4</sup>, Kiran Nisa<sup>4</sup>, Muhammad Khan<sup>4</sup>, Paul Barach<sup>6</sup>

<sup>1</sup>Center of Environmental and Occupational Health (CEOH) - National Institutes of Health (NIH), Pakistan) NIH, Pakistan/CDC National Institutes of Health (NIH) Park Road, Chak Shahzad, Islamabad, Pakistan Pakistan,  
<sup>2</sup>National Institutes of Health, Pakistan NIH, Pakistan/CDC National Institutes of Health (NIH) Park Road, Chak Shahzad, Islamabad, Pakistan Pakistan,  
<sup>3</sup>CEOH-NIH NIH, Pakistan/CDC Pakistan, <sup>4</sup>CEOH-NIH, Pakistan NIH, Pakistan/CDC Pakistan, <sup>5</sup>National Institutes of Health, Pakistan National Institutes of Health, Pakistan National Institutes of Health (NIH) Park Road, Chak Shahzad, Islamabad, Pakistan Pakistan, <sup>6</sup>Wayne State University School of Medicine

Background and objective: Antimicrobial resistance (AMR) is a global health challenge and developing countries are more vulnerable to its impacts. High burden of infectious diseases, poverty, weak governance and health systems, and low awareness remain major challenges in the fight against AMR leading to increased prevalence of HAIs including fungal infections, and superbugs like *Candida auris*. Infection-Prevention-Control (IPC) is a key to reduce the emerging HAIs and enhance healthcare outcomes.

Methods: This participatory design project study, led by the National Institutes of Health (NIH)-Pakistan and funded by the CDC, was to support and improve the early diagnosis and surveillance of *C. auris*. We focused on capacity building in laboratory diagnostics, IPC strategies and implementing robust learning data dashboards with provincial stakeholders to ensure effective implementation. After thorough Gap-assessments through site visits and detailed mixed methods at 12 sentinel sites, representing all regions/provinces of Pakistan, using a phase-wise approach, capacity at each site was enhanced by providing hands-on-training and materials to enhance fungal diagnostics, IPC and surveillance.

Results: In Microbiology Diagnostics readiness we found, 2-advanced, 7-intermediate and 3-inadequate sites. IPC program audited using WHO tools indicated 4-advanced, 2-intermediate, 3-basic and 3-inadequate sites. Fungal pathogen identification and transport of samples was initiated. Data dashboards were developed and implemented ensuring robust data collection and sharing

from all sites. 26 samples were received at NIH for final identification indicating different fungal pathogens in isolates. IPC program was initiated and enhanced at all sites.

Conclusions: NIH devised a National Fungal Disease Surveillance System-(NFDSS) to enable rapid diagnosis and surveillance of prevalent fungal pathogens Nationwide. Antimicrobial stewardship involving robust IPC methods can be exploited towards containing AMR in low- and middle-income settings. Adoption of these strategies will assist developing countries overcome their increased vulnerability to growing AMR.

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### Economic and social burden of healthcare-associated infections

Francesco Mennini<sup>1</sup>, Paolo Sciatella<sup>1</sup>, Angela Ragonese<sup>1</sup>  
<sup>1</sup>Economic Evaluation and HTA (EEHTA CEIS), Department of Economics and Finance, Faculty of Economics, University of Rome "Tor Vergata", Rome, Italy.

Background and objectives: Antimicrobial stewardship (AMS) programs aim to reduce healthcare-associated infections (HAIs) and save healthcare costs associated with antimicrobial resistance (AMR). This study aims to evaluate the economic and social burden of HAIs before and after the implementation of AMS programs, including the use of new antibiotics.

Methods: The study was divided in two phases. In the first phase, the analysis was carried out considering the administrative database of the hospital discharge records from 2006 to 2019. HAIs were detected by selecting all acute hospitalizations with primary or secondary diagnosis related to *Escherichia coli*, *Klebsiella* spp, *Clostridium difficile*, and other unspecified bacterial infections. Data were used to estimate prevalence of HAIs and their impact in terms costs incurred by the NHS. In the second phase, three key opinion leaders (KOLs) were involved: a questionnaire was used to collect additional data on the three Hospital antimicrobial stewardship (AMS) programs, the number of HAIs before and after introducing programs and new antibiotics. Finally, interviews were used to explore the views and experiences of KOLs on AMS and the use of new antibiotics.

Results: HAIs appear on average in 32 cases per 1,000 acute hospitalizations. The occurrence of infections is increasing (22.5 per 1,000 hospitalizations in 2006 and 44.8 per 1,000 in 2019). The valuation of infections resulted in an average annual estimate of approximately € 397 million. The second phase is still ongoing. Preliminary results show a reduction of length of hospital stay (mean 25%, range 14-40%), treatment duration (24%; 14-30%) and antibiotics consumption in DDD (29%; 14-46%).

Conclusion: AMS is a crucial component in the overall effort to combat the spread of AMR. The preliminary results show that implementation of AMS programs reduced antimicrobial use and cost, and lowered the incidence of HAIs.

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### Awareness of antimicrobial resistance: Google Trends™ analysis to test the success of health promotion initiatives

Enrico Errico<sup>1</sup>, Gianfranco Gennaro<sup>1</sup>, Francesca Licata<sup>1</sup>, Silvia Angelillo<sup>1</sup>, Aida Bianco<sup>1</sup>

<sup>1</sup>University of Catanzaro "Magna Græcia" Department of Health Sciences, School of Medicine, University of Catanzaro "Magna Græcia", Catanzaro, Italy Viale Europa, 88100 Catanzaro CZ, Italy

Background and Objective: Antimicrobial resistance (AMR) is one of the major public health threats of the 21st century. The World Health Organization has highlighted the key role of population empowerment in counteracting AMR. The aim of the study is to assess the impact of selected initiatives on public awareness of AMR using Google Trends™(GT) analysis.

Methods: The impact of World Antimicrobial Awareness Week(WAAW) and World Hand Hygiene Day(WHHD) on public awareness of 'AMR', antibiotics and antibiotic resistance in Sweden, United States, Italy, Japan, Spain and Netherlands from 2017 to 2022 was analyzed, using the relative search volume(RSV) of GT as a surrogate. A joinpoint regression analysis was performed to identify a statistically significant time point of a change in trend. The trends in the different countries were compared by calculating the Z-score.

Results: The analysis of the Z-scores showed a comparable upward trend in all investigated countries. The joinpoint regression did not reveal joinpoints around WAAW and WHHD. Decreasing RSVs of "antibiotics" and "AMR" were shown in all investigated countries, in the period March-May 2020, the decrease is more pronounced in Spain and Italy. In Italy, unlike to other nations, spikes in searches for the term "antibiotics" during the flu-season were displayed.

Conclusion: Results highlight that programs taken into consideration(WAAW and

WHHD) seem not to have sufficiently contributed to raise public awareness of AMR. Enhancing public awareness could help in fight against AMR, but more effective strategies to improve awareness are needed. The decreasing of RSVs during 2020 could be due to COVID-19 pandemic, in particular in Italy and Spain, countries most affected by COVID-19 among those analysed. The spike in the search for the term "antibiotics" in Italy during the flu-season suggests the opportunity to launch public health campaigns to highlight that antibiotics have no effect on the flu.

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### Antibiotic use and surgical site infections: A single-center retrospective study

Luigi Fortino<sup>1</sup>, Biagio Santella<sup>2</sup>, Francesco Caro<sup>3</sup>, Gianluigi Franci<sup>1</sup>, Anna Chiara<sup>1</sup>, Domenico Fornino<sup>1</sup>, Claudio Giordano<sup>1</sup>, Riccardo Giorgio<sup>1</sup>, Elisa Palombo<sup>1</sup>, Domenico Pecora<sup>1</sup>, Matilde Perillo<sup>1</sup>, Emanuela Santoro<sup>1</sup>, Walter Longanella<sup>4</sup>, Mario Capunzo<sup>5</sup>, Giovanni Boccia<sup>5</sup>

<sup>1</sup>Department of Medicine, Surgery and Dentistry "Scuola Medica Salernitana", University of Salerno, 84081 Baronissi, Italy, <sup>2</sup>U.O.C. Patologia Clinica E Microbiologica, A.O.U. San Giovanni di Dio e Ruggi D'Aragona, Largo Città di Ippocrate, 84131 Salerno, Italy, <sup>3</sup>Department of Medicine, Surgery and Dentistry "Scuola Medica Salernitana", University of Salerno, 84081 Baronissi, Italy; A.O.U. San Giovanni di Dio e Ruggi D'Aragona, Largo Città di Ippocrate, 84131 Salerno, Italy, <sup>4</sup>A.O.U. San Giovanni di Dio e Ruggi D'Aragona, Largo Città di Ippocrate, 84131 Salerno, Italy, <sup>5</sup>Department of Medicine, Surgery and Dentistry "Scuola Medica Salernitana", University of Salerno, 84081 Baronissi, Italy; U.O.C. Patologia Clinica E Microbiologica, A.O.U. San Giovanni di Dio e Ruggi D'Aragona, Largo Città di Ippocrate, 84131 Salerno, Italy

**Background and Objective:** Healthcare associated infections (HAI) pose a serious threat to public health. The HAI are closely related to antimicrobial resistance (AMR). In 2018 a prevalence study by Suetens et al. coordinated at European level by the ECDC, estimated that 3.8 million patients acquire a HAI each year in Europe, confirming that such infections represent a significant health problem. The consequences that HAI and AMR have on public health can and must be contained with prevention and control actions. In the context of HAI the Surgical Site Infections (SSI) represent one of the most common adverse events occurring in surgical patients. The aim of study is to evaluate the main species involved in SSI and the postoperative antibiotics therapy.

**Methods:** This is a retrospective study conducted in a.o.u. San Giovanni e Ruggi d'aragona hospitals in salerno, from January 2017 to December 2019. All patients who developed wound infection were included in the study. Incidence and common microorganisms of infection were identified. The identification and antibiotic sensitivity tests were performed with vitek 2. The IBM statistical package for social sciences version 22.00 (SPSS Inc., Chicago, IL, USA) was used for data analysis.

**Results:** A total of 82 patients were included in study group. The most common microorganisms isolated were gram-positive (53%) followed by gram-negative (39%) and fungi (8%). Enterococcus spp (30.6%) and Staphylococcus spp (23.5%) were the main isolated among gram-positive. Staphylococcus methicillin-resistant were 45%, and only 1% of Enterococcus spp were vancomycin resistance. Escherichia coli (13%) and Klebsiella pneumoniae (9%) were the most isolated among gram-negative, of these only 35% of isolates were multidrug resistant.

**Conclusion:** These results may help to the choice of empiric therapy and the antimicrobial prophylaxis strategies in SSI.

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### Development of prevention of multidrug resistance organisms transmission management participation model of a tertiary care hospital, Bangkok Thailand

Kampong Kamnon<sup>1</sup>, Kampong Kamnon<sup>1</sup>

<sup>1</sup>Rajavithi hospital 2 PhayaThai Road Khet Ratchathewi Thailand

**Background and Objective:** Transmission of multidrug-resistant organisms in hospitals has a direct impact on patients, health care personnel and the hospital. This study was participatory action research and aimed to development of prevention of multidrug resistance organisms transmission management participation model in a tertiary care hospital and also to evaluate the model effectiveness.

**Methods:** The participation model was used a framework for this study. The model development was composed of three phases. The first phase was concerned with a problem and situation analysis, the second phase of model development and the third phase evaluation model. The model development team consisted of 15

people from the multidisciplinary team and the study sample included 255 people. All data were collected from 51 wards in hospital between November 2021 and September 2022. Data were analyzed using descriptive and content analysis.

**Results:** The result of the research found that the model prevention of multidrug resistance organisms transmission management participation consisted of 6 elements: 1) providing workshops 2) reviewing of knowledge 3) reminding 4) hand hygiene campaigns 5) supporting protective equipment and medical instruments and 6) evaluation and feedback. More than 92% of the study sample extremely agreed with 6 elements used for prevention of multidrug resistance organisms transmission management.

**Conclusion:** The results of the research showed the concept of the participation model could be applied to develop a model for prevention of multidrug resistance organisms transmission management participation of a tertiary care hospital.

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### Antimicrobial resistance surveillance at ospedale policlinico san martino irccs, genoa north-west Italy: A focus on methicillin-resistant staphylococcus aureus

Carlo-Simone Trombetta<sup>1</sup>, Marco Bongiovanni<sup>2</sup>, Giulia Gatti<sup>1</sup>, Barbara Gugliemi<sup>3</sup>, Dorotea Bellina<sup>4</sup>, Marco Cappellin<sup>5</sup>, Roberto Ziffero<sup>3</sup>, Anna Marchese<sup>1</sup>, Andrea Orsi<sup>5</sup>, Nicola Calcavecchia<sup>1</sup>

<sup>1</sup>University of Genoa Dipartimento di Scienze della Salute (DiSSal), University of Genoa, Genoa, Italy, <sup>2</sup>University of Genoa, <sup>3</sup>Hygiene Unit, Ospedale Policlinico San Martino IRCCS Genoa, Genoa, Italy, <sup>4</sup>Hygiene Unit, Ospedale Policlinico San Martino IRCCS Genoa, Genoa, Italy, <sup>5</sup>University of Genoa Dipartimento di Scienze della Salute (DiSSal), University of Genoa, Genoa, Italy; Hygiene Unit, Ospedale Policlinico San Martino IRCCS Genoa, Genoa, Italy

**Background/Introduction:** Methicillin-resistant Staphylococcus aureus (MRSA) is one of the most common causes of hospital-acquired bacterial infections worldwide. Even though the percentage of MRSA is decreasing in European region, resistance levels remain high in some countries, including Italy, where it currently reaches 30%.

**Methods:** Microorganisms isolated at Microbiology Unit of Ospedale Policlinico San Martino IRCCS, Genoa, from 1st January 2014 to 30th June 2022 were included. Blood was the only specimen considered. We excluded same patient cases within 30 days one from another and cases where the antimicrobial resistance (AMR) was not tested. Our surveillance includes the same pathogens monitored in the AMR surveillance by European Centre for Disease and prevention and Control (ECDC). In particular, the analysis also included AMR profile of Pseudomonas aeruginosa, Acinetobacter spp, Streptococcus pneumoniae, Escherichia coli, Klebsiella pneumoniae, Enterococcus faecalis and Enterococcus faecium.

**Results:** Average proportion of MRSA was 54.4% in 2014, 51.3% in 2015, 44.7% in 2016, 41.1% in 2017, 44.2% in 2018, 43.2% in 2019, 40% in 2020, 36.6% in 2021 and 33.1% in first semester of 2022.

The incidence of MRSA was 2.4/10000 patient-days in 2014, 3.1/10000 patient-days in 2015, 2.9/10000 patient-days in 2016, 2.8/10000 patient-days in 2017, 3.3/10000 patient-days in 2018, 2.8/10000 patient-days in 2019, 3.2/10000 patient-days in 2020, 3.2/10000 patient-days in 2021 and 2.9/10000 patient-days in first semester of 2022.

**Conclusions:** Since the beginning of the surveillance (2014) the Incidence of MRSA remained stable (2.4-3.3/10000 patient-days). In comparison to the last ECDC AMR Report (2020), however, the proportion of MRSA significantly decreased, but remained above the European average. Further improvements in our infection-control practices are of paramount importance to limit the high mortality related to MRSA bloodstream infections.

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### A new indicator of prescriptive appropriateness for antimicrobials: The experience of the Cristo Re general hospital antimicrobial stewardship team

Alessandro D'Avino<sup>1</sup>, Martina Sapienza<sup>2</sup>, Daniela Grande<sup>1</sup>, Arcangelo Schiattarella<sup>1</sup>, Paolo Dionisi<sup>2</sup>, Martina Dolce<sup>1</sup>, Giovanni Brandimarte<sup>1</sup>, Micaela Carnali<sup>3</sup>, Gabriella Nasi<sup>1</sup>

<sup>1</sup>"Cristo Re" General Hospital -Rome Italy, <sup>2</sup>"Cristo Re" General Hospital -Rome

**Background:** Antibiotic resistance is being a crucial issue in our hospitals, and its control, which is one of the most challenging task for the future, passes through an appropriate use of antibiotics. To evaluate the prescriptive appropriateness of

antimicrobials, we recently created a new indicator which takes into account the rate of infections together with antimicrobial consumption and the median time of treatment of each event.

Methods: The "Estimated Prescriptive Appropriateness Rate" (EPA-SCORE) " has been calculated for each group of bacteria, as the rate between the observed consumption of an antibiotic (DDD/1000days of hospitalization) and the expected one as if the same antibiotic had been used for 10 days exclusively for the observed infections where it was indicated, according to the following formula:

$EPASCORE = \text{DDD}(\text{observed}/\text{expected}) * (1/N. \text{ of infections})$

Data from January 2020 and June 2022 were collected while restrictive and persuasive strategies of Antimicrobial Stewardship were implemented. Changes in EPA-SCORE were evaluated through the years.

Results: In our hospital, in the first semester of 2022 prevalence of ESBL+ Gram negative-infections was 0.90 cases/1000 doh/year. The observed consumption of drugs indicated for those infections was 86.9 DDD/1000 doh, whilst the expected one for the registered number of infections was 9.01 DDD/1000doh, with an EPASCORE of 10.37%.

Regarding multi-drug-resistant gram negative-infections, prevalence was 1.48/1000doh/year; observed antibiotic consumption for them (whose prescription policy was restricted to ID specialists) was 43DDD/1000doh, whilst the expected DDD was 29.6 DDD/1000doh (EPASCORE 67.7%)

Comparing data between the first semester of 2020 and the same period of 2022, a significant increase in EPASCORE was detected (+4.2% and +7.1% for ESBL+ and MDR Gram-negative infections in 2022 respectively)

Conclusion: Our data demonstrate that the EPASCORE could represent a feasible indicator of appropriateness of antimicrobial prescription, and restrictive strategies of antimicrobial stewardship can help to improve its outcome.

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### Access and use of antibiotics in a group of migrants in a locality of bogota colombia in 2021

Jovana Cañas<sup>1</sup>, Sebastian Rueda<sup>2</sup>, Oscar Acevedo<sup>3</sup>, Juan Cuya<sup>4</sup>, Muhammad Zaman<sup>5</sup>

<sup>1</sup>Facultad de Medicina Universidad de los Andes Profesor Asociado "Cra 1 N° 18A - 12 Bogotá - Colombia Postal code: 111711" Colombia, <sup>2</sup>Facultad de Medicina Universidad de los Andes, <sup>3</sup>Facultad de Medicina Universidad de los Andes Profesor Titular "Cra 1 N° 18A - 12 Bogotá - Colombia Postal code: 111711" Colombia, <sup>4</sup>Facultad de Medicina Universidad de los Andes Investigador Junior "Cra 1 N° 18A - 12 Bogotá - Colombia Postal code: 111711" Colombia, <sup>5</sup>Universidad de Boston

Colombia is host to approximately 1.8 million migrants according to the United Nations High Commissioner for Refugees (UNHCR) by mid-2020, making it the second country worldwide after Turkey to host the largest quantity of migrant population (1) The absence of regulatory policies in Latin America concerning certain types of medication permits the sale and distribution of antibiotics without prescription, thus making self-medication a serious problem (4,5). In the case of antibiotics, the result is not only an increase in antibiotic resistance in the migrant population but also exposing the general population to this issue (6). The objective of this study is hereby to describe the access to and use of antibiotics in a group of migrants in a locality of Bogota, Colombia in 2021, for which we will identify factors that influence both the access to and use of these medications, as well as characterize some perceptions from healthcare professionals concerning antibiotic resistance in this population. The study methodology is observational, and descriptive, the cross-sectional type. In the migrant group, the important percentage of people who do not follow any instructions in specific regarding the duration of treatment, as well as those who use them according to non-professional indications, such as those coming from family members or neighbors, as well as in an "as needed" manner. This could also be a result of the fact that a significant part of the group stops taking their antibiotics when feeling better. Regarding the pharmacist group, issues such as non-professional formation, indications given to clients based only on experience but not on guidelines, and incomplete doses bought from clients, give us an idea about those factors that may be influencing some antibiotic usage patterns that ultimately could have an impact on antibiotic resistance.

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### In vitro antibacterial and antifungal activities of extracts and fractions of leaves of *Ricinus communis* Linn against selected pathogens

Bedaso Kassaye<sup>1</sup>

### <sup>1</sup>Ethiopian Agriculture Authority, Ethiopia

Background and Objectives: Infectious disease impacts are reduced due to the development of antimicrobial agents. However, the effectiveness of antimicrobial agents is reduced over time because of the emergence of antimicrobial resistance. To overcome these problems, scholars have been searching for alternative medicines. *Ricinus communis* is used as a traditional treatment for bovine mastitis, wound infection, and other medicinal purposes. The objective of the present study was to further evaluate the antimicrobial activities of *R. communis* leaf extracts and fractions. Methods: *R. communis* leaves were macerated in methanol and acetone. The methanol extract showed better antimicrobial activity and subjected to further fractionation via increasing polarity of solvents (n-hexane, chloroform, ethyl acetate, and aqueous). Test microorganisms included in the study were six laboratory reference bacteria (*Escherichia coli*, *Staphylococcus aureus*, *Streptococcus agalactiae*, *Klebsella pneumoniae*, *Pseudomonas aeruginosa* and *Streptococcus pyogenes*), two clinical isolate bacteria (*E. coli* and *S. aureus*), and *Candida albicans*. The agar well diffusion method was employed to determine antimicrobial activity. The minimum inhibitory concentrations (MIC) and minimum bactericidal/fungicidal concentrations (MBC/MFC) were determined through broth microdilution.

Results: The results indicated that the best antimicrobial activity for ethyl acetate fraction ranged from 14.67 mm (clinical *E. coli*) to 20.33 mm (*S. aureus*) at 400 mg/ml, however, n-hexane exhibited the lowest antimicrobial activity. Among the tested fractions, ethyl acetate fraction showed the lowest MIC values ranged from 1.5625 mg/ml (*S. aureus*) to 16.67 mg/ml (*Candida albicans*). Conclusions: The ethyl acetate fraction showed bactericidal activity against all tested microorganisms. Hence, ethyl acetate fraction of crude methanol extract exhibited the best antimicrobial activity. Keywords: antibacterial, antifungal, *ricinus communis*, selected pathogens, crude extracts, solvent fractions

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### Disease assessment and antimicrobial prescription patterns in Sonali Chicken cases in Bogura, Bangladesh

Ibrahim Khalil<sup>1,2,3</sup>

<sup>1</sup>Department of Livestock Services (DLS), Bangladesh, <sup>2</sup>Field Epidemiology Training Program for Veterinarians Fellow and Scientific Officers, Bangladesh, <sup>3</sup>One Health Institute, Bangladesh and Field Disease Investigation Laboratory (FDIL), Barishal, Bangladesh

Sonali chicken production increased substantially during the last two decades in Bangladesh. However, different prevalent diseases hampered its normal growth. Irrational and inappropriate use of antimicrobials is commonly occurred which contribute to the development of antimicrobial resistance (AMR). The current study was therefore attempted to assess the burden of diseases along with antimicrobial prescription patterns. A total of 1690 drug prescriptions for infectious diseases in Sonali chickens in Bogura during 2020-2021 was extracted from the e-prescription database of 3769 poultry cases for assessing the disease status and antimicrobial prescription patterns. Data extracts were entered into MS excel and cleaned and sorted before exporting to STATA/SE-13 for epidemiological analysis. The proportion of cases was dominated by mixed diseases of viral, bacterial and other infectious cases (28 %, n=474), followed by viral diseases (17.5 %, 296), bacterial diseases (4.5 %, 76), protozoan disease (4.0 %, 67). Antibiotics were widely prescribed regardless of case type (84.4- 97% cases). The highest proportion of antimicrobials was used in protozoan cases (97 %, 65), followed by viral alone (92%, 273), mixed (91.7%, 435) and bacterial alone (90.8%, 69). Single antibiotics (61.3%, 980) were prescribed widely followed by combined (14%, 224) and double (2.4%, 39). Tylvalosin (42%, 669) was more commonly prescribed for almost all disease types. Different fluoroquinolones and florfenicol were predominantly prescribed for undiagnosed (11.8%, 70) and bacterial cases (16%, 11), respectively. Colistin combined (3.4%, 55) was prescribed highly followed by aminoglycosides (2.4%, 38). Moreover, antiviral drugs were prescribed for 33.5% viral, 33% bacterial, and 30% protozoan cases. Immuno-stimulant was prescribed for 18% viral and bacterial cases. Considering the results, it is practical to include this e-prescription system to existing web-based surveillance system to know the disease rank and antimicrobial use pattern timely, thus support to preventive program and antimicrobial stewardship approach.

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### Mapping and characterizing early warning systems for emerging profiles of antimicrobial resistance in Italy: a national survey

Jessica Iera<sup>1,2</sup>, Chiara Seghieri<sup>3</sup>, Lara Tavoschi<sup>4</sup>, Claudia Isonne<sup>5</sup>, Valentina Baccolini<sup>2</sup>, Daniele Petrone<sup>6,7</sup>, Lorenzo Bandini<sup>6</sup>, Adriano Grossi<sup>6</sup>, Fortunato

D'Ancona<sup>6</sup>

<sup>1</sup>Management and Health Laboratory, Institute of Management - Department EMbeDS, Sant'Anna School of Advanced Studies, Pisa, Italy, <sup>2</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome, Italy, <sup>3</sup>Management and Health Laboratory, Institute of Management - Department EMbeDS, Sant'Anna School of Advanced Studies, Pisa, Italy, <sup>4</sup>Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa, Pisa, Italy, <sup>5</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome, Rome, Italy, <sup>6</sup>Department of Infectious Diseases, Istituto Superiore di Sanità, Rome, Italy, <sup>7</sup>Department of Statistics, Sapienza University of Rome, Italy

**Background and Objective:** Antimicrobial resistance (AMR) surveillance systems available at national level in Italy are currently lacking an alert system to timely detect emerging profiles of AMR with potential relevance to public health. Moreover, early warning systems (EWS) existence at subnational level is unclear. This study aims at mapping and characterizing EWS for microbiological threats at regional level in Italy, focusing on emerging AMR, and at outlining potential barriers and facilitators to their development/implementation.

**Methods:** A web-based survey was developed following consensus among several experts. A three-section questionnaire was then administered, from June to August 2022, to Italian regional representatives for antimicrobial resistance, whose participation was on a voluntary basis.

**Results:** In total, 20 out of 21 Regions and Autonomous Provinces (95,2%) responded to the survey. Among those, nine (45%) reported the implementation of EWS for microbiological threats at regional level, three (15%) reported that EWS are in the process of being developed, eight (40%) reported that EWS are currently not available. EWS characteristics varied widely among the identified systems, concerning both AMR profiles that are expected to be reported and data flow. Technological issues and lack of cooperation among microbiology laboratories emerged as barriers that need to be addressed in the process of strengthening national AMR surveillance systems.

**Conclusions:** The results of this study depict a highly heterogeneous scenario: less than half of Italian regions have implemented alert systems at regional level, differing widely in their characteristics, while EWS for microbiological threats - including emerging AMR - are available mainly at local level, suggesting that more efforts aimed at strengthening national AMR surveillance systems should be made, including the achievement of a strong cooperation between the regional and the central levels.

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### Effectiveness of antimicrobial stewardship programmes on antibiotic consumption - a systematic review and meta-analysis

Kyaw Ya<sup>1,2</sup>

<sup>1</sup>Swiss Tropical and Public Health Institute, Allschwil, Switzerland,

<sup>2</sup>University of Basel, Switzerland

**Background and Objectives:** Antimicrobial resistance (AMR) continues to emerge rapidly globally. Little evidence exists on the impact of antimicrobial stewardship programmes (ASPs) on the consumption of antibiotic across healthcare and income settings. The main objective of this review is to synthesize current evidence in this area.

**Methods:** We searched PubMed, Web of Science, and Scopus databases from 1 Aug 2010 to 1 Aug 2020 and also additional studies from the bibliography sections of previous systematic reviews. We used the Effective Public Healthcare Panacea Project quality assessment tool to assess study quality. We measured the pooled effect of targeted ASP on antimicrobial consumption, using multi-level random effects models. The main outcome measures were proportion of patients receiving an antibiotic prescription and Defined Daily Doses per 100 patient days. **Results:** We identified 52 studies that measured the effect of ASPs on antimicrobial consumption. 40 studies were conducted in high income countries (HICs), and 12 in low and middle-income countries (LMICs). On average, ASPs reduced antibiotic prescriptions by 10% (95% CI [-15% to -4%]), and antibiotic consumption by 28% (RR=0.72, 95% CI [0.56 to 0.92]). ASPs were also associated with a 79% reduction in antibiotic consumption in paediatric hospitals (95%CI [-64% to -5%]) and a 28% reduction in WHO watch groups antibiotics, RR = 0.72, 95% CI [0.56 to 0.92]. Reductions were observed across all broad-spectrum antibiotic classes: fluoroquinolones (42% reduction), Penicillin/beta-lactamase inhibitor combinations (42% reduction), carbapenems (31%), macrolides (26%) and cephalosporins (15%), though these were not statistically significant. No change in penicillin consumption was identified.

**Conclusions:** ASPs are effective in reducing antibiotic consumption in both hospital and non-hospital settings. Impact assessment of ASPs in resource-

limited settings remain scarce; further research is needed on how to best achieve reductions in antibiotic use in LMICs.

**Keywords:** antimicrobial resistance, antibiotic consumption, antimicrobial stewardship programmes

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### Establishing polymerase chain reaction-based diagnostic test for the detection of drug resistant *Salmonella typhi* in a hospital setting in the Philippines

Jan Evangelista<sup>1,2</sup>

<sup>1</sup>School of Tropical Medicine and Global Health, Nagasaki University, Japan,

<sup>2</sup>San Lázaro Hospital-Nagasaki University Collaborative Research Office, Manila, Philippines

With the increasing use of polymerase chain reaction-based technologies to diagnose diseases such as tuberculosis and severe acute respiratory syndrome coronavirus 2 in the Philippines, medical technologists are becoming more familiar with novel molecular techniques. However, development of polymerase chain reaction diagnostic assays based on the identified needs of healthcare facilities and surrounding communities remains uncommon. In this work, we outline the experience and challenges we faced when developing a set of conventional polymerase chain reaction-based diagnostic tests for *Salmonella typhi* and associated sulfonamide (Sul2), chloramphenicol (CatP), penicillin (Tem), and fluoroquinolone (gyrA) drug resistance genes in San Lázaro Hospital-Nagasaki University Collaborative Research Laboratory. This process involved three key components: procuring the necessary reagents, generating a positive control, and optimizing the polymerase chain reaction itself. To generate positive control, we re-cultured 21 archived isolates of *Salmonella* species on MacConkey agar and performed matrix assisted laser desorption ionization-time of flight mass spectrometry. Subsequently, genomic deoxyribonucleic acid was extracted from the identified colonies. Polymerase chain reaction optimization commenced by determining the optimal annealing temperatures. Good intensity of amplicon bands were observed at annealing temperatures 58°C for nested polymerase chain reaction and 45°C for conventional monoplex polymerase chain reaction. During optimization, we successfully detected flagellin gene (fliC) for *Salmonella typhi* and three resistance genes (gyrA, Sul2, and Tem) using positive control. Conversely, CatP gene was not detected. However, when we ran clinical samples, two of 18 *Salmonella typhi* polymerase chain reaction-positive specimens were positive for CatP gene. Our work may serve as a useful example for other laboratories and medical technology professionals in the country in responding to locally identified diagnostic needs. Moreover, early detection of resistance genes can inform both public health decision-making and individual clinical practice.

**Keywords:** conventional polymerase chain reaction, *Salmonella typhi*, drug resistance

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### Genomic comparison of *A. baumannii* isolated from COVID-19 and non-COVID-19 patients admitted to an Intensive Care Unit: preliminary results

Mariateresa Ceparano<sup>1</sup>, Mariateresa Ceparano<sup>1</sup>, Valerio Capitani<sup>2</sup>, Claudia Isonne<sup>1</sup>, Valentina Baccolini<sup>1</sup>, Giuseppe Migliara<sup>1</sup>, Carolina Marzuillo<sup>1</sup>, Paolo Villari<sup>1</sup>

<sup>1</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome, Rome, Italy, <sup>2</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome, Sapienza, Italy

**Background and Objective:** *A. baumannii* is a major responsible of infections in patients admitted to the intensive care unit (ICU). In Policlinico Umberto I in Rome, *A. baumannii* was the main microorganism isolated in ICU SARS-COV-2 patients, and high clonal transmission profiles were documented. The purpose of this study was to compare the clonal profiles detected in COVID-19 patient's samples with those obtained from non-COVID-19 patients admitted to the same unit.

**Methods:** Bacterial isolates of *A. baumannii* were collected between January 2020 and January 2022. The isolates were typed by pulsed field electrophoresis to analyze their homology relationships.

**Results:** A total of 587 COVID-19 patients and 304 non-COVID-19 patients were admitted to the ICU. They were predominantly male (N=398 and N=186, respectively) with a mean age of 63.5 years in the first group and 61.6 years in the second group. Genotypic analysis of 138 isolates in COVID-19 patients revealed two main patterns (A and B) and a few minor patterns. Patterns "A" (59.4%) were found throughout the study period, patterns "B" (35.5%) were isolated from October 2020 to March 2021. In non-COVID-19 patients, 67 isolates that showed

more heterogeneous clonal profiles were typed. However, the pattern "A" (47.7%), was the most frequent pulsotype detected during the study period. The strains had high antibiotic resistance profiles and were isolated mostly from tracheobronchial aspirates and rectal swabs both in COVID-19 (42.8% and 29.6%) and in non-COVID-19 patients (34.3% and 42.8%).

Conclusions: The identification of the pattern "A" in both cohorts of patients, may indicate the possible transfer of related isolates from one ICU to another in the same hospital among patients or through healthcare workers. Therefore, the use of strict infection control strategies to reduce cross-contamination of endemic clones of *A. baumannii* isolates is essential.

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### Emergence of NDM-1-producing ST147 *Klebsiella pneumoniae* strains isolated from bloodstream infections during the COVID-19 pandemic, Southern Italy

Maria Chironna<sup>1</sup>, Daniela Loconsole<sup>1</sup>, Francesca Centrone<sup>1</sup>, Anna Sallustio<sup>1</sup>, Daniele Casulli<sup>1</sup>, Marisa Accogli<sup>1</sup>

<sup>1</sup>University of Bari, Italy

Background and Objective: Carbapenem-resistant Enterobacterales (CRE) infections are a major public health threat worldwide. The presence of NDM-producing-*Klebsiella pneumoniae* (NDM-KP) has increased in several regions, mainly during the COVID-19 pandemic. The study aimed at describing a regional outbreak of NDM-KP identified in bloodstream infections (BSI) in the Apulia region of Italy.

Methods: From January 2020 to September 2022, 459 carbapenem-resistant-KP (CR-KP) strains collected from patients hospitalized with BSI were subjected to molecular characterization at the Laboratory of Molecular Epidemiology and Public Health of the University Hospital Policlinico of Bari (Italy) through a commercial multiplex real-time PCR kit (GeneXpert platform, Cepheid) for the identification of the carbapenemase-encoding genes blaKPC, blaVIM, blaNDM, blaIMP and blaOXA-48. In addition, a subset of 27 NDM-KP randomly selected strains were subjected to NDM variant detection by real-time PCR assay and to multi-locus sequence typing (MLST).

Results: The blaKPC gene was identified in 67.5% of KP isolates, blaVIM in 0.2%, blaNDM in 20.3%, blaOXA-48 in 3.1%. Carriage of multiple carbapenemase genes was reported in 12 isolates (11 blaNDM+blaKPC and one blaKPC+blaVIM). Overall, 104 strains carrying the blaNDM gene were identified (22.6%). The 69.2% was identified in male subjects. The average age was 67 years (range: 29-92) and the province of residence was Brindisi for 35.6%, and Taranto for 41.3% of patients. Forty-four patients (42.3%) were positive for SARS-CoV-2. Further characterization of 27 NDM-KP strains revealed that all the strains were ST147-NDM-1-KP.

Conclusion: The prevalence of NDM-KP in the Apulia region has increased from 0.2% in 2014-2016 to 22.6% in 2020-2022, thus representing a matter of concern. Implementation of molecular epidemiology of CRE is crucial to limit hospital infections. Moreover, timely and appropriate diagnosis, high standards of infection prevention and control, and antimicrobial stewardship are key actions to control the spread of antimicrobial resistance worldwide, particularly in hospital settings.

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### Antibiotic resistance genes and viral genomes assessment in wastewater samples from cabo verde wastewater treatment plants

Isabel Araujo<sup>1</sup>, Tamar Monteiro<sup>1</sup>, Kleidi Monteiro<sup>1</sup>, Maria Barreto Crespo<sup>2</sup>, Mónica Nunes<sup>2</sup>

<sup>1</sup>Universidade de Cabo Verde, Faculdade de Ciências e Tecnologia, Zona K, Palmarejo - Praia, Ilha de Santiago, República de Cabo Verde, 7943-010, Cape Verde, <sup>2</sup>Instituto de Biologia Experimental e Tecnológica, Apartado 12, 2781-901 Oeiras, Portugal

Background and Objectives: Reusing treated wastewater is a sustainable and recommendable strategy, especially in a nation where water shortage is a major issue. As a result, increasing the use of treated wastewater in agriculture is a sine qua non condition. However, conventional wastewater treatment plants are sometimes ineffective in removing emerging microbiological contaminants such as resistant bacteria and antibiotic resistance genes, as well as human pathogenic viruses, and are thus considered sites of antibiotic resistance proliferation and spread.

The aim of this study was to evaluate the presence of antibiotic-resistant bacteria/genes (ARB/ARG) as well as human-pathogenic viral genomes in water from wastewater treatment plants.

Methods: ARG and viral genomes were detected by multiplex qPCR methods in the influent and treated effluent of six WWTPs chosen in the islands of Cabo Verde.

Meropenem or ciprofloxacin were added to a selective medium to help isolate bacteria resistant to these AB, and the EUCAST disc diffusion technique was used to analyse the AB resistance phenotypes of possibly pathogenic bacteria.

Finally, we extracted plasmids (using a kit from Nzytech) from five prominent clones of each influente sample to analyse the variety of Adenovirus and Polyomavirus in Cape Verde.

Results: Polyomavirus, adenovirus, norovirus GII, hepatitis A and hepatitis E genomes were detected at high concentrations (106 gc/L) in either the influent or effluent samples, as were carbapenem and fluoroquinolone resistance genes at concentrations of 1010 gc/L.

Conclusion: These findings indicate that conventional treatments currently being used in the investigated WWTPs are insufficient to effectively remove ARG and viral genomes, which highlights the need for the development and implementation of targeted treatments at full scale in the WWTPs so that the produced effluents can be safely discharged into the environment and/or recycled for uses like agricultural irrigation (ensuring food security).

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### Impact of a structured antimicrobial stewardship program in Cittadella Hospital, Padua, Italy

Emanuela Zilli<sup>1</sup>, Antonio Miotti<sup>1</sup>, Giulia Zavatta<sup>2</sup>, Elisa Baldasso<sup>1</sup>, Giampaola Basso<sup>1</sup>, Mara Carraro<sup>2</sup>, Suada Tikvina<sup>3</sup>, Antonella Ruffatto<sup>1</sup>, Emanuela Zilli<sup>3</sup>

<sup>1</sup>Azienda ULSS 6 Euganea, Hospital Direction, Cittadella Hospital, ULSS 6 Euganea, Via Casa di Ricovero 40, Cittadella, Italy, <sup>2</sup>Azienda ULSS 6

Euganea, <sup>3</sup>Department of Cardiac, Thoracic, Vascular Sciences and Public Health, University of Padua, Italy

Background and Objective: Cittadella Hospital (Padua) has 400 beds and serves a territory of 240,000 inhabitants. Regarding antimicrobial stewardship program, special focus was put on fluoroquinolones, carbapenem and third generation cephalosporins. A reduction > 5% of fluoroquinolones use was directly demanded by the Italian National Action Plan against antimicrobial resistance; third generation cephalosporins are some of the most prescribed antibiotics in the hospital settings.

Methods: Appropriate use of antibiotics was encouraged during periodic multidisciplinary meetings held by the Hospital Infection Control Committee (made up of Hospital Antimicrobial Stewardship Task Force, Infectious Disease Consultant, Microbiologist, Pharmacist etc.).

Results: The Pharmaceutical Service provided a quantitative estimate of antibiotic consumption, expressed in Defined Daily Dose (DDD) per 100 bed-days. Between 2019 and 2022, a large decrease in the consumption of carbapenems in Intensive Care Unit (from 15.3 to 15.2 DDD, - 0.6%) and in Medical wards (from 6.2 to 3.1 DDD, - 50.0%) was reported; a decrease in the consumption of quinolones in Intensive Care Unit (from 22.4 to 13.0 DDD, - 41.9%), Medical wards (from 11.9 to 7.3 DDD, - 38.6%) and Surgical wards (from 12.0 to 7.6 DDD, - 36.6%) was highlighted; a small decline in the consumption of third generation cephalosporins in Medical wards (from 17.4 to 17.2 DDD, - 1.1%) was reported. Finally, a decrease in the consumption of macrolides was reported in the Intensive Care Unit (from 9.7 to 3.1) and Medical wards (from 9.0 to 8.9).

Conclusion: Periodic multidisciplinary meetings aimed at medical referrals for infections, constant monitoring of antimicrobial consumption and timely identifying of warning situations that may need a specific intervention are the cornerstone of Antimicrobial Stewardship programs, together with analyzing data of bacterial resistance rates and infections from multi-drug resistant bacteria.

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### Multidrug-resistant Cause Mortality Rates in infants Infected with Carbapenem Resistant Organisms

Waiswa Moses<sup>1</sup>, Kalembe Janat<sup>2</sup>, Paulson Henderson<sup>3</sup>

<sup>1</sup>Uganda Development and Health Associates, Iganga General Hospital, Iganga, Uganda, <sup>2</sup>Iganga General Hospital, Uganda, <sup>3</sup>School of Clinical Medicine, Makerere University

Background: Multidrug-resistant, Gram negative infections particularly due to Carbapenem resistant organisms (CRO), have increased globally. Few studies have reported on the burden of CRO in infants from hospital settings in Uganda. This study aimed to determine the incidence and mortality rates of culture-confirmed Gram negative infections, with a special focus on CRO in a neonatal unit. Methods: Positive bacterial cultures from the sterile sites of infants admitted in the neonatal clinic from the 1st of January 2018 to 31st December 2019 were reviewed respectively. Type of organism, susceptibility and outcomes were recorded. Data on Gram- negative isolates, including the CRO, were extracted,

rates and outcomes were analysed.

Results: There were 2219 neonates with organisms isolated from sterile sites (blood and cerebrospinal fluid), according for all 30% admissions, giving a neonatal sepsis incidence of 17.9/1000 patient-days. There was a total of 1746 positive isolates (excluding coagulase negative staphylococcus). Of these 1706, (98%) were isolated from blood, and 40 (2%) from cerebrospinal fluid. Overall 1188 (68%) were Gram negative, 371 (21%) Gram-positive and 187 (10.7%) fungal isolates. The common Gram-negatives were *Acinetobacter baumannii* (526/1188:44%) and *Klebsiella pneumoniae* (469/1188:40%). Carbapenem resistance was observed in 359 (68%) of the *Acinetobacter baumannii* (CRAB) and in 103 (18%) of the Enterobacterales (CRE) isolates, with 98% of CRE being *Klebsiella pneumoniae* (CR-*klebs*). Twenty-four 41% of *Pseudomonas* species were carbapenem resistant. Conclusion: We observed a high incidence of positive cultures from sterile sites. The common organism isolated were Gram-negatives, among these carbapenem resistance was high and was associated with high mortality. Mortality was higher in infants with CRE compared to those with Crab.

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### Cost-effectiveness of Imipenem/Cilastatin/Relebactam compared to Colistin-Imipenem for the Treatment of Confirmed Carbapenem Non-Susceptible Gram-negative Bacterial Infections

Andrea Marcellusi<sup>1</sup>, Martina Paoletti<sup>2</sup>, Francesco Mennini<sup>1</sup>, Joe Yang<sup>1</sup>

<sup>1</sup>Centre for Economics and International Studies-Economic Evaluation and Health Technology Assessment, Faculty of Economics, University of Rome "Tor Vergata", via Columbia 2, 00133 Rome, Italy, <sup>2</sup>MSD United States

Background and Objective: Antimicrobial resistance (AMR) is an important public health problem with a strong epidemiological, economic, and social impact. The objective of this analysis was to evaluate the cost-effectiveness of imipenem/cilastatin/relebactam treatment compared to colistin-imipenem in the treatment of hospitalized patients with gram-negative bacterial infection caused by imipenem-resistant pathogens.

Methodology: To simulate a cohort of patients a mixed model was developed, structured in two sections for simulation in the methodology short and long-term evolution of the patients in analysis. Modelled patients were those with hospital-acquired bacterial pneumonia/ventilator-associated bacterial pneumonia (HABP/VABP), complicated intra-abdominal infection (cIAI) or complicated urinary tract infection (cUTI) caused by carbapenem-resistant Gram-negative (GN) pathogens. The model begins with a short-term decision tree describing possible treatment routes and outcomes for patients during the hospitalization period. After treatment, patients are classified as cured, not cured or dead (the proportion of which depends on the data on the efficacy and mortality of the treatments). Patients who have not recovered from the initial treatment remain to receive a subsequent line of therapy. Those who are alive but not cured at the end of the decision tree are assumed to die within one year, which is broadly in line with clinical expert opinion. Patients who are healed in the decision tree in the long-term Markov model, designed to capture the follow-up costs and health-related quality of life (HRQL) of patients healed over their lifetime.

Results: The analysis, conducted on a hypothetical cohort of 1000 patients, highlights how imipenem/cilastatin/relebactam is advantageous. In fact, it is dominant compared to colistin-imipenem both in the National Health System (NHS) and in the social perspective since, compared to an average saving of € 2,800.15 and € 3,174.63 respectively, it would generate an increase of 4.76 years of life and 4.12 quality-adjusted life years (QALY) per patient.

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### "Drug resistance index": A new public health indicator for antibiotic resistance

Riccardo Amicosante<sup>1</sup>, Eleonora Cimino<sup>1</sup>, Raffaella Golini<sup>1</sup>, Riccardo Amicosante<sup>1</sup>, Alessandro Ferranti<sup>1</sup>, Giovanna Micolucci<sup>2</sup>, Anna Lepore<sup>2</sup>, Mario Muselli<sup>1</sup>, Leila Fabiani<sup>1</sup>, Stefano Necozone<sup>1</sup>

<sup>1</sup>University of L'Aquila, Italy, <sup>2</sup>Asl 1 abruzzo Italy

Introduction: In the last years *Klebsiella pneumoniae* (*K. pneumoniae*) showed worrying levels of antibiotic resistance with significant differences between countries. We used the Drug Resistance Index (DRI) with the aim of identifying antibiotic effectiveness differences in the European Region.

Materials and Methods: We calculated, and compared *K. pneumoniae* related DRI in Italy, France, and Spain for the years 2009, 2011, 2013, and 2015. DRI was calculated by multiplying proportion of consumption of selected antibiotic class and proportion of all *K. pneumoniae* resistant to that antibiotic class. Prevalence of resistance data were obtained by consulting the national surveillance

system (Italy), and the ECDC surveillance system (France and Spain). Antibiotic consumption data were extrapolated from the Italian Medicines Agency (Italy) and the Center for Disease Dynamics, Economics and Policy system (France and Spain).

Results: Among the classes of antibiotics considered, the highest prevalence of resistance in Italy was for Cephalosporins; the lowest for Carbapenems. The highest prevalence of resistance in France and Spain was for Fluoroquinolones; the lowest for Carbapenems. In Italy and Spain, the higher consumption was recorded for Fluoroquinolones. In France the consumption of Cephalosporins was the highest.

DRI was different in the countries considered, however the trend was similar: increase from 2009 to 2013 and stabilization in 2015. Italian DRI was 27.4% in 2009 and increased in the following years (45.3% in 2011; 54.0% in 2013; 53.8% in 2015). Spanish DRI was 13.2% in 2009, increasing to 14.9% in 2011, and 20.2% both in 2013, and 2015. French DRI increased throughout the period considered: 20.6% in 2009 to 26.0% in 2011, 28.2% in 2013 and 30.0% in 2015.

Conclusions: Regional and temporal differences in DRI suggest the need for international action to face antibiotic resistance.

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### *Klebsiella pneumoniae* drug resistance index: an indicator evaluated in L'Aquila hospital

Raffaella Golini<sup>1</sup>, Eleonora Cimino<sup>1</sup>, Riccardo Amicosante<sup>1</sup>, Alessandro Ferranti<sup>1</sup>, Giovanna Micolucci<sup>1</sup>, Anna Lepore<sup>1</sup>, Mario Muselli<sup>1</sup>, Leila Fabiani<sup>1</sup>, Stefano Necozone<sup>1</sup>

<sup>1</sup>University of L'Aquila Italy

Introduction: Antibiotic resistance is a critical public health issue, both clinically and economically. *Klebsiella pneumoniae* (*K. pneumoniae*) is a common cause of healthcare-associated infections and has worrying levels of antibiotic resistance. The antibiotic resistance of *K. pneumoniae* was investigated in the L'Aquila Hospital using the Drug Resistance Index (DRI), a measure of antibiotic effectiveness whose validity was subject of discussion.

Materials and methods

DRI was calculated by multiplying proportion of consumption of selected antibiotic class and proportion of all *K. pneumoniae* resistant to that antibiotic class. The DRI in the L'Aquila Hospital for the years 2019 and 2020 have been calculated and then compared to national DRI. Local resistance and antibiotic consumption data were obtained by analysis laboratory of the L'Aquila Hospital, and by the Management Control Office. National data were obtained by the national surveillance system on antibiotic resistance, and by the Italian Medicines Agency.

Results: The local prevalence of resistance to  $\beta$ -lactamases was higher than those to carbapenems in both years: 35.6% vs 15.7% in 2019; 32.0% vs 17.6% in 2020. Prevalence of resistance to  $\beta$ -lactamases showed a reduction from 35.6% to 32.0%; instead, prevalence of resistance to carbapenems increased from 15.7% to 17.6%. L'Aquila Hospital DRI was 29.9% in 2019 and 28.9% in 2020. In Italy, the prevalence of resistance against  $\beta$ -lactamases was higher than those to carbapenems in both years: 60.0% vs 34.7% in 2019 and 57% vs 33.0% in 2020. National DRI was 57.7% in 2019 and 54.3% in 2020. In 2019 and in 2020 the most consumed antibiotics were  $\beta$ -lactamases, the less were carbapenems.

Conclusions: DRI calculated in L'Aquila Hospital was significantly lower than the national, but both showed a downward trend, indicating an improvement in the management of antibiotics.

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### Methicillin-resistant and methicillin-sensitive staphylococcus aureus infections in patients undergoing elective arthroplasty surgery: a prospective observational multicentre study

Pietro Vernaci<sup>1</sup>, Antonino Cannistrà<sup>2</sup>, Gianfranco Barra<sup>2</sup>, Marco Provenzano<sup>2</sup>, Leandro Gentile<sup>1</sup>, Anna Odone<sup>1</sup>

<sup>1</sup>University of Pavia Department of Public Health, Experimental and Forensic Medicine, University of Pavia, Pavia, Italy, <sup>2</sup>San Donato Hospital Group Clinical Institutes of Pavia and Vigevano, Italy

Background and objective: *Staphylococcus aureus* is a leading cause of surgical site infections. Risk factors are age, comorbidity and prolonged hospitalization. Since up to 45% of *S. Aureus* infections are Methicillin-resistant, targeted treatment are required to stop nosocomial infection following surgical procedures. In order to explore the incidence and management of methicillin-resistant and methicillin-sensitive *S. Aureus* (MRSA and MSSA) infections, a prospective observational multicentre study was conducted in patients undergoing elective arthroplasty surgery at the Clinical Institutes of Pavia and Vigevano (Italy).

**Methods:** We examined data flow from screening nasal swabs performed within 30 days before surgery (arthroplasty surgery or prosthetic revision) in patients treated between March and November 2022. Eradication treatment consisted in nasal drainage with Mupirocin twice a day and skin washings with 4% chlorhexidine or 7.5% povidone iodine or 2% triclosan once a day.

**Results:** A total of 737 subjects were recruited, 37% men and 63% women. The average age was 72 years, with the following distribution: 39-52 years, 3.7%; 53-62 years, 13.2%; 63-72 years, 32.5%; 73-82 years, 41%; 83-92 years, 9.6%. Seven (0.9%) patients were MRSA positive and 142 (19.3%) MSSA positive. The outcome of the MRSA eradication treatment will be evaluated through an Active Registry reporting infectious or secondary events (movement impairment, persistent joint pain, inflammation signs) during the follow-up phase performed at 6 and 12 months either on site or by telephone.

**Conclusions:** The early identification of MRSA strains through patients screening allows targeted antibiotic treatment to prevent surgical site infections. Further prospective studies are needed in order to characterise population contamination and define the best therapeutic strategies.

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### Antibiotic resistance in ocular bacterial infections: an integrative review of ophthalmic chloramphenicol

Emmanuel Elebesunu<sup>1</sup>, Emmanuel Elebesunu<sup>1</sup>

<sup>1</sup>University of Nigeria, Enugu, Nigeria Department of Medical Laboratory Sciences, Faculty of Health Sciences and Technology, University of Nigeria, Enugu, Nigeria Faculty of Health Sciences and Technology, University of Nigeria, Enugu Campus, 400105, Enugu, Nigeria

**Background:** Chloramphenicol is a broad-spectrum antibiotic widely used for treating ophthalmic infections, but concerns about rising bacterial resistance to chloramphenicol have been observed due to its frequent use as an over-the-counter medication. This review assessed the rates of drug resistance to chloramphenicol in ophthalmic bacterial infections.

**Methods:** PubMed and Google Scholar databases were searched for relevant publications from the year 2000 to 2022, bordering on ophthalmic bacterial infections, chloramphenicol susceptibility profiles, and drug resistance mechanisms against chloramphenicol. A total of 53 journal publications met the inclusion criteria, with data on the antibiotic susceptibility profiles available in 44 of the reviewed studies, which were extracted and analyzed.

**Results:** The mean resistance rates to chloramphenicol from antibiotic susceptibility profiles varied between 0% to 74.1%, with only 6 out of 44 studies showing chloramphenicol resistance rates higher than 50%, and more than half (23) of the studies showed resistance rates lower than 20%. The majority of the reviewed publications (n=27; 61.4%) were from developed nations, compared to developing nations (n=14; 31.8%), while a fraction (n=3; 6.8%) of the studies were regional cohort studies in Europe with no country-specific drug resistance rates. No cumulative pattern of increase or decrease in ophthalmic bacterial resistance rates to chloramphenicol was observed.

**Conclusion:** To a large extent, chloramphenicol is still active against ophthalmic bacterial infections and is quite suitable as a topical antibiotic for ophthalmic infections. However, concerns remain about the drug becoming unsuitable in the long run due to some proof of high drug resistance rates.

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### Potential risks of pm2.5 and silica pollutants among communities living surround the Bosowa cement plant, Maros Indonesia 2022

Anwar Mallongi<sup>1</sup>

<sup>1</sup>Environmental Health Department, Faculty of Public Health, Hasanuddin University, Makassar, Indonesia

**Background:** This study focused on the assessment of the potential risks of PM 2.5 and silica contaminants exposures on the ecology and communities due to contaminated air inhalation and water consumption around Bosowa cement plant Maros Regency, Indonesia.

**Methods:** The magnitude of PM 2.5 and silica were measured during the period of April-May 2022. The level of PM 2.5 on ambient air sampling was conducted using direct reading HAZ-Dust EPAM 5000, uses a laser analyzer in order to measure particulate level matter. Then sample on air for PM2.5, and silica in water and soil data were used in the form of univariate and bivariate and multivariate analysis using chi square test. PM2.5 and silica levels were determined in samples using graphite furnace and cold vapor atomic absorption spectrometry.

**Results:** High concentration of PM 2.5 in ambient air were 99.13 and 87.30 µg/m<sup>3</sup> where as the high concentration of Silica in well water were station 12 and station

10 with 13.28 and 13.23 mg/l, then in river water with 26.56 and 24.13 mg/l and on surface soil on station 10 and 11 with 159.90 and 154.88 mg/gr, respectively. The potential both ecological and human health risks posed by PM 2,5 in air and silica on all those sites environment were exceed standard and at risks for health. The total carcinogenic risks due to PM 2.5 and silica were within the non acceptable range risks for communities. The potential ecological risks of PM 2.5 and silica where the highest risks value were in surface soil with 10.15 then followed by on air particulate with 9.13 and river water 9.06, respectively. Then highest value of EWI in PM 2.5 was 0.09 and lowest was in 0.01, while the highest value Silica in well water was (0.96).

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### Climate vulnerability, urban health, sexual and reproductive health rights (SRHR) in Bangladesh: an explanatory analysis from Chottogram Metropolitan

Muhammad Rahaman<sup>1</sup>, Zereen Saba<sup>2</sup>

<sup>1</sup>Center for People & Environ (CPE), Mohammadpur, Bangladesh, <sup>2</sup>Center for People and Environ (CPE), Dhaka, Bangladesh

There is increasing evidence that global climate change has adverse effects on human health, mainly among the poorest people in developing countries. Bangladesh is a low-lying country, and Bangladesh is considered one of the most climate-vulnerable countries in the world. As the most vulnerable climatic region in the country, Chottogram Metropolitan is increasingly experiencing climate-change-induced urban problems. For instance, occupancy by climate migrants, drainage congestion, water logging, and reduced freshwater availability are increasing concerns. This study explores the climate vulnerability, heat stress, and health disorders of urban slum dwellers of Chottogram Metropolitan. This study noted that Sexual and Reproductive Health risks of adolescents and women increased from unhygienic and overcrowded living conditions and water and sanitation problems. The slum dwellers often suffer from waterborne diseases, undernutrition and micronutrient deficiencies. Though Sexual and Reproductive Health issues are overreaching, there are no specific interventions in policy to practice level towards sexual and reproductive health rights (SRHR) considering climate vulnerability in urban slums. The study was conducted through a multidisciplinary approach and Methodology, including primary and secondary data. Secondary information was collected from reviewing policies, strategies, and action plans of GoB in terms of climate change and health services in Bangladesh. Primary information was collected through a household questionnaire survey, focus group Discussion, and key informants interview from stakeholders involved with climate-resilient health delivery services. The multi-hazard risk was analyzed using artificial intelligence in the study area. The study reveals that SRHR is far away in Bangladesh in terms of policy and practice for climate-resilient urban health delivery services in Bangladesh.

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### Point-of-care testing, spatial care paths, and enhanced standards of care - preparing island communities for global warming and rising oceans

Samantha Tinsay<sup>1</sup>

<sup>1</sup>Municipality of Bantayan, Cebu, Philippines

**Background and Objective:** The goal of this research is to create point-of-care (POC) strategies that accelerate decision making, increase efficiency, improve outcomes, and enhance standards of care in small-world networks (SWNs) of island communities faced with global warming, rising oceans, population migration, and public health crises. The Philippines lies in the "typhoon alley" of the Pacific and needs assessment was done in the Bantayan Archipelago to map POC testing (POCT), rescue times, and spatial care paths (SCP). Global warming is intensifying the severity of major storms, increasing their frequency, and magnifying the scope of damage. Archipelagos will be increasingly vulnerable and perpetually at risk to rising ocean levels. Every centimeter increase in ocean levels magnifies storm surges and flooding, and poor planning can adversely impact medical outcomes.

**Methods:** Needs assessment was done in the Bantayan Archipelago and other locales on mainland Cebu. Well-established investigational methods conducted in other limited-resource countries were adapted and there was focus on POCT, ambulance rescue, emergency medicine, critical care testing, and the organization of resources in the healthcare SWN.

**Results:** Significant deficiencies included lack of cardiac marker testing for rapid diagnosis of acute myocardial infarction, absence of blood gas testing for support of critically ill patients, and geographic gaps prolonging patient transfers and

delaying treatment. Strengths comprised primary care that can be facilitated by POCT, logical inter-island transfers for which decision making could be accelerated with onboard diagnostic testing, and healthcare SWNs amenable to POC advances that avoid overloading emergency rooms. Healthcare resources must be distributed to archipelago islands, not concentrated in large metropolitan areas inaccessible for emergency interventions.

Conclusions: A point-of-need focus will help improve public health, decrease disparities in mortality among rural islanders, and pave the way for heightened resilience in anticipation of the adverse impact of global warming on vulnerable coastal areas.

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### Health in sustainable development - barriers and drivers in implementing sustainable transport policy in Copenhagen, London, Mumbai, and Shanghai

Jack Haywood<sup>1</sup>

<sup>1</sup>London School of Hygiene and Tropical Medicine, United Kingdom

Background: Anthropogenic-induced greenhouse gas emissions and particulate matter exposure have health impacts both locally and globally. Sustainable transport policy formation and implementation is one way to reduce these. Several cities have sustainable transport policies, with one principle to encourage a shift from private motor vehicles to public and active transport. However, there has been little analysis examining if drivers and barriers of their uptake are acknowledged in policy.

Aim: To assess if known context-dependent barriers and drivers of active and public transport uptake are acknowledged in sustainable transport policy to enable successful implementation and thus improve human health.

Methodology: Transport policies of four cities – Copenhagen, London, Mumbai, and Shanghai – were examined for barriers/drivers of active and public transport uptake. A literature review with systematic approach was then carried out to ascertain evidence-based barriers/drivers in the same four cities. Four academic databases were searched, resulting in 30 peer-reviewed research papers being included in a thematic analysis.

Results: Five dominant themes emerged from the literature review: 1) modifiable social environment, 2) physical environment, 3) transport policy decisions, 4) transport conditions, and 5) individual factors. Cost and speed of active and public transport options were important across all cities. There were differences in focus: for example, crowding in Mumbai, and the symbolism of car-ownership in middle-income cities. The Results also made clear a 'one size fits all' approach will not work due to context-specific heterogeneity, and the gap in middle-income-based literature, particularly around active transport in Mumbai.

Conclusions: Many of the literature review-identified barriers/drivers were not acknowledged in the four city's transport policies. There were also barriers/drivers identified in policy which were not featured in the evidence-base. To ensure successful implementation of policy, context-specific evidence must inform it, with a Health in All Policies approach to ensure health benefits are gained.

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### A time differentiated dietary intervention effect on the biomarkers of exposure to pyrethroids and neonicotinoids pesticides

Elina Ioannou<sup>1</sup>, Konstantinos Makris<sup>1</sup>, Pantelis Charisiadis<sup>1</sup>, Stavros Oikonomou<sup>1</sup>, Nikolaos Efthymiou<sup>1</sup>, Andria Constantinou<sup>1</sup>, Thibaut Delplancke<sup>1</sup>

<sup>1</sup>Cyprus International Institute for Environmental and Public Health, Cyprus University of Technology, Limassol, Cyprus

Tailoring medical models to the right person or risk subgroups delivered at the right time is important in personalized medicine/prevention initiatives. The CIRCA-CHEM randomized 2x2 crossover pilot trial investigated whether the consumption of fruits/vegetables within a time-restricted daily window would affect biomarkers of exposure to neonicotinoids (6-chloronicotinic acid, 6-CN) and pyrethroids (3-phenoxybenzoic acid, 3-PBA) pesticides, a biomarker of oxidative damage (4-hydroxynonenal, 4-HNE) and the associated urinary NMR metabolome. A statistically significant difference ( $p < 0.001$ ) in both creatinine-adjusted 6-CN and 3-PBA levels was observed between the two time dietary intervention windows (morning vs. evening). In the evening intervention period, pesticides biomarker levels were higher compared to baseline, whereas in the morning period, pesticide levels remained unchanged. Positive associations were observed between pesticides and 4-HNE suggesting a diurnal chrono-window of pesticide toxicity. The discovery of a chronotoxicity window associated with chrono-disrupted metabolism of food contaminants may find use in personalized

medicine initiatives.

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### Efficacy of activated carbon for ammonia gas reduction in selected poultry farms in Ido local government area, Ibadan Oyo state, Nigeria

Juliet Shaibu<sup>1</sup>, Godson Ana<sup>2</sup>

<sup>1</sup>University of Ibadan, New Nyanya, Nigeria, <sup>2</sup>University of Ibadan, Nigeria

Background and Objectives: Ammonia gas is one of the major pollutant gases which is toxic to humans and animals when inhaled in high doses. Previous studies have demonstrated increase in ammonia emission levels among poultry farms but there is little information on ammonia gas emission reduction. Hence, this study utilized activated carbon filter in the reduction of ammonia emissions produced in selected poultry farms. Methods: The study adopted a quasi-experimental design and four poultry farms within Ibadan metropolis (renamed A, B, C and D) were purposively selected. Also, a fabricated glass chamber was used to monitor ammonia gas emission and reduction levels in the farm. Measurements of ammonia levels was carried-out six days in a week, three times daily for two weeks. at specific periods of the day with a total sampling period of eight weeks. Activated carbon produced from coconut shells and palm kernel shells was used as ammonia absorbent. Data were analysed using descriptive statistics, T-test and ANOVA at 5% level of significance.

Results: The ammonia emissions (ppm); 1150.67, 953.67, 1068.06, and 859.3 for farms A, B, C and D, respectively were higher than the guideline limits for ammonia gas by NIOSH (25ppm) and OSHA (50ppm). Coconut shells-based activated carbon had a higher absorbency capacity with the average ammonia level reduced from 36.15±30.48 at baseline to 16.38±17.71 at post-treatment level and a percentage reduction of 19.77% while Palm Kernel shells-based activated carbon had 35.80±31.15 at baseline and 18.54±16.85 at post-treatment level, with a percentage reduction of 17.26% across all the poultry farms.

Conclusions: The study showed that activated carbon obtained from coconut shells had a greater absorbency potential for ammonia gas reduction when compared to palm kernel shells activated carbon. Therefore, poultry managers should include activated carbon filters as a mechanism to reduce ammonia levels in poultry farms.

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### Energy conservation practices among undergraduate students of King Faisal University

Hussain Alradhi<sup>1</sup>, Ahmed Abbas<sup>1</sup>, Mohammed Alabadi<sup>1</sup>, Edric Estrella<sup>1</sup>

<sup>1</sup>Public Health Department, College of Applied Medical Sciences, King Faisal University, Saudi Arabia

Background: Energy is very crucial component in the entire process of growth, development, and survival for any country. However, there has been a wide gap between its demand and supply. With the problem of scarcity, conservation efforts should be undertaken by every citizen of every nation. Objectives: The study is conducted with the aim of assessing the knowledge, attitudes, and practices related to energy conservation among undergraduate students at King Faisal University.

Methods: This analytical, cross-sectional study utilized data from 806 students selected through two-stage sampling procedures. Data was collected using online, self-administered questionnaire consisting of 25 items related to knowledge, attitudes, and practices on energy conservation. The proportions of students possessing high level of knowledge, exhibiting positive attitude towards energy conservation, and consistently practicing energy conservation measures were estimated using the Stata MP version 13. The crude association between the level of the knowledge and consistency of practice of energy conservation measures was determined using binary logistic regression.

Results: About 59.30% of the students (95% CI: 55.87, 62.65) had high level of knowledge related to energy conservation. Roughly 57% of the students (95% CI: 53.99, 60.80) possessed positive attitude toward energy conservation while 47.14% of them were consistently practicing energy conservation measures. Students who had high level of knowledge related to energy conservation were 1.38 times more likely to consistently practice energy conservation measures compared with those who possessed low level of knowledge.

Conclusions: The level of knowledge of King Faisal University students was significantly associated with their practices related to energy conservation. However, a large proportion of King Faisal University students were not consistent in practicing energy conservation measures.

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**Conceptualisations of public trust in climate science: a systematic meta-narrative literature review**Loni Ledderer<sup>1</sup>, Antoinette Fage-Butler<sup>2</sup>, Kristian Nielsen<sup>3</sup><sup>1</sup>Department of Public Health, Aarhus University, Aarhus, Denmark, <sup>2</sup>School of Communication and Culture, Aarhus University, Denmark, <sup>3</sup>Aarhus University, Aarhus, Denmark

**Background:** Reflecting the connections between public health and the climate, the World Health Organization recently launched a global knowledge platform dedicated to health and climate to bring together knowledge from practitioners and scientists from various disciplines. Trust mediates the relationship between the public and scientists. There have been concerns that trust in climate science has been negatively impacted over the years by populist denials of climate change, media misrepresentations and misinformation. Public trust in climate science is deemed necessary for ensuring that the public accept and adopt climate-friendly programs and policies. As various conceptualizations of trust may be associated with disciplinary fields, our aim was to investigate how various disciplines have conceptualized public trust in climate science.

**Methods:** We used Greenhalgh and colleagues' systematic meta-narrative review methodology to investigate narratives of trust in climate science. A literature search identified peer-reviewed papers on trust relating to climate science in the databases Scopus, Web of Science, EBSCO, ProQuest and Ovid MEDLINE. The search resulted in 404 papers, 58 of which were included in the final sample. The following categories were used to systematize data from the papers: author(s), location of empirical studies, academic discipline, research aim, method, conceptualization of trust, type of trust and main findings.

**Results:** We identified 10 different academic disciplines in the sample. Most papers used quantitative Methods, were conducted in the United States and did not explicitly define trust. However, based on the papers' context and operationalization of trust, we identified six main conceptualizations of trust: attitudinal trust, cognitive trust, affective trust, contingencies of trust, contextual trust, and communicated trust.

**Conclusions:** Public trust was often characterized as residing in experts or expert institutions, and as being associated with trustworthy information. Public trust in health and climate experts seems crucial for affecting the conditions for health around the world.

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**Community knowledge, practices, and perceptions regarding environmental determinants of health in Melusi, Pretoria, South Africa**Sean Patrick<sup>1</sup>, Joyce Shirinde<sup>2</sup>, Oliver Mhazo<sup>3</sup><sup>1</sup>School of Health Systems and Public Health, University of Pretoria, South Africa, <sup>2</sup>School of Health Systems and Public Health, Faculty of Health Sciences, University of Pretoria, Gezina, South Africa, <sup>3</sup>University of Pretoria, South Africa

**Background:** In order to improve public health policies and services, construct an environmentally resilient health sector, and promote healthy and sustainable communities, extensive study is required. Objectives: This study aimed to determine the Melusi community's knowledge, perceptions, and practices regarding environmental determinants of health and their understanding and contribution to community health and welfare. **Methods:** This cross-sectional survey was done in the Melusi informal settlement, Daspoort neighborhood in the Western suburbs of Pretoria. Using random sampling, 448 persons were interviewed using a structured electronic questionnaire.

**Results:** Over 60% of respondents were aware of various forms of pollution (water, land, and air). Newspapers, radio, and television, as well as the internet and health care workers, were the primary sources of information. Almost 90% of respondents said water was easily accessible. Predictors of water pollution were occupation, income, dwelling, toilet, water source and cooking source. Water source, gas and paraffin as cooking sources were the predictors of air pollution. Determinants of land pollution were pit latrine as a type of toilet, water source (JoJo tank), cooking source (paraffin) and country of birth. Lastly, occupation (unemployed), water source, cooking source and place of birth.

**Conclusions:** This study found a variety of patterns of knowledge, attitudes, and actions regarding environmental health determinants and the risks they bring to communities. There is more work to be done to promote awareness of pollution and climate change, as well as their impact in South African communities like Melusi.

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**Occurrence of cardiopulmonary diseases after the Susa Valley wildfires of 2017**Mattia Russo<sup>1</sup>, Aldo Rosano<sup>2</sup>, Chiara Cadeddu<sup>1</sup>, Alessio Perilli<sup>1</sup>, Luca Regazzi<sup>1</sup>, Davide Ascoli<sup>3</sup>, Davide Vecchio<sup>3</sup><sup>1</sup>Italian Institute for Planetary Health, Università Cattolica del Sacro Cuore, Italy, <sup>2</sup>National Institute for Public Policies Analysis (INAPP), Italy, <sup>3</sup>Dipartimento di Scienze Agrarie, Forestali e Alimentari (DISAFA), Università di Torino, Italy

**Background and Objective:** Cardiovascular and respiratory diseases are among the leading causes of death in Italy. There is currently growing evidence of the association between exposure to fire smoke and the occurrence of cardiopulmonary diseases. According to the 2017 ARPA Piedmont (regional environmental protection agency) report, October was the hottest month in the last 60 years in the area of interest, causing fires and wildfires scattered throughout the Alpine region. These events caused continuous exposure to organic combustion products for 20 days, in the municipalities of Piedmont. This study Aims to assess the cardiovascular and respiratory risk of populations exposed to smoke from the October 2017 forest fires in the Susa Valley.

**Methods:** Hospital Discharge Records were requested to collect outcome data of hospitalizations and emergency department admissions for cardiopulmonary diseases that occurred before and after the fires and demographic data provided by the National Institute of Statistics regarding the resident population. Through air monitoring data from the ARPA Piedmont agency, municipalities will be grouped into 5 clusters by exposure risk, of which one will serve as a control. The assessment will be carried out from October 5th 2017 at 6 and 12 month follow-ups in the most affected areas, while the selected control period is from October 5, 2015 to October 4, 2017.

**Results:** The currently available international literature shows an increase in hospital admissions for cardiopulmonary conditions, including AMI, stroke, heart failure, arrhythmias, COPD, asthma attacks, and pneumonia, in the fire exposure period compared with the control period. No Italian scientific studies, other than descriptive studies from grey literature, are available. Clear and sustained increases in PM10 were found during the exposure periods by ARPA agency.

**Conclusions:** Our study is currently in progress, final results will be available in April 2023.

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**Nine-year exposure to residential greenness and the risk of metabolic syndrome among Luxembourgish adults: a longitudinal analysis of the ORISCAV-LUX cohort study**Marion Tharrey<sup>1</sup>, Olivier Klein<sup>2</sup>, Torsten Bohn<sup>3</sup>, Laurent Malisoux<sup>3</sup>, Camille Perchoux<sup>2</sup><sup>1</sup>Department of Urban Development and Mobility, Luxembourg Institute of Socio-Economic Research, Esch-sur-Alzette, Luxembourg, <sup>2</sup>Luxembourg Institute of Socio-Economic Research, Luxembourg, <sup>3</sup>Luxembourg Institute of Health, Luxembourg

**Background and Objective:** A growing body of research shows a beneficial effect of exposure to green spaces on cardiometabolic health, although the evidence is limited by the cross-sectional design of most studies. This study Aims at examining the long-term associations of residential greenness exposure with metabolic syndrome (MetS) and MetS components, in Luxembourg.

**Methods:** We used data of 395 adults participating in both waves of the population-based ORISCAV-LUX study (Wave 1: 2007-2009, Wave 2: 2016-2017), who had no MetS at baseline. Exposure to total greenness and tree coverage were calculated for each residential address based on satellite derived Soil Adjusted Vegetation Index (SAVI) and Tree Cover Density (TCD) indices. Within- between-effect logistic and linear models were fitted to estimate both within- and between-subject variation of residential greenness on MetS and MetS components (waist circumference, triglycerides, HDL-cholesterol, fasting plasma glucose, blood pressure), respectively. Models were adjusted for several individual and neighbourhood-level confounders and for neighbourhood self-selection.

**Results:** A 10% within-person increase in the residential TCD over a 9-year period was associated with a 74% decrease in the odds of developing MetS and better lipid profiles ( $\beta$ HDL-c=2.32, 95% CI : 1.08, 3.55;  $\beta$ triglycerides= -6.46, 95% CI :-11.85, -1.07). Higher between-subject exposure to SAVI and TCD was associated with lower fasting plasma glucose ( $\beta$ : -1.22, 95% CI: -2.1, -0.35), and higher waist circumference ( $\beta$ : 1.08, 95% CI: 0.13, 2.02), respectively. Effect modification by sex and neighbourhood socioeconomic status were observed for triglyceride and fasting plasma glucose levels.

Conclusions: This study provides new evidence that residential greenness may play a role in preventing MetS. Based on our results, we advocate for urban greening policies and programs that promote greater density of tree cover to generate additional cardiometabolic health benefits.

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### Effect of exposure to quarry dust on the lung function of exposed communities in Edo State, Nigeria

Efe Edeawe<sup>1</sup>, Steve Abah<sup>2</sup>, Alphonsus Aigbiremolen<sup>3</sup>

<sup>1</sup>Institute for Collective Health, Irrua Specialist Teaching Hospital, Nigeria,

<sup>2</sup>Department of Community Medicine, Federal University of Health Sciences, Otukpo, Nigeria, <sup>3</sup>Department of Community Medicine, Irrua Specialist

Teaching Hospital, Irrua, Edo State, Nigeria

Background and Objectives: The health effects of quarry dust on persons living in close proximity to quarries are a public health concern. The impact of community exposure to quarry dust is largely unknown in developing countries. This study assessed exposure to quarry dust and lung function in host communities in Edo State.

Methods: A cross-sectional design was used to study 320 residents of two host communities using multi-stage sampling technique. Each community was divided into three risk zones (RZs) based on the relative distances of the residential houses from the quarry site, RZ1 being the most proximal. A semi-structured questionnaire, portable dust metre and spirometer were used for data collection. Analysis of variance was used to compare mean values.

Results: Mean indoor total suspended particulates (TSP) ranged from 139.7+81.7 in RZ1 to 130.1+79.8 ( $\mu\text{g}/\text{m}^3$ ) in RZ3 whereas mean outdoor TSP ranged from 112.8+37.8 in RZ1 to 87.3+18.5 ( $\mu\text{g}/\text{m}^3$ ) in RZ3. Forced expiratory volume in one second ranged from 71.0 + 18.2% in RZ1 to 82.9 + 113.2% in RZ3. The differences in the above parameters were statistically significant. Residents in RZ1 were most likely to have an abnormal lung function with a risk of 58% compared to those in RZ2 (36%) and RZ3 (26%).

Conclusions: The indoor and outdoor levels of particulate matter were mostly higher than permissible limits and the risk of abnormal lung function diminished with increasing distance from the quarry. Protective measures for quarry host communities are recommended.

Keywords: quarry dust, host community, lung function

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### Analysis of the epidemiological profile of dengue cases in the Municipality of Araras between 2010 and 2021

Amarylis Gardin<sup>1</sup>, Lisie Justo<sup>1</sup>

<sup>1</sup>Faculdade São Leopoldo Mandic Araras, Brazil

Background: Dengue is an arbovirolosis, caused by infection of a virus of the genus *Flavivirus*, which is transmitted by females of two species of mosquitoes *Aedes aegypti* or *Aedes albopictus*, the latter less common in the national territory. It is noted that dengue is prevalent in the Brazilian territory, being endemic in the city of Araras. Objective: To trace the epidemiological profile of dengue in the municipality of Araras/São Paulo/Brazil between 2010 and 2021. Methodology: This is a cross-sectional, quantitative, retrospective, descriptive study based on public domain data extracted from the Notification Aggravation Information System (SINAN) linked to the Department of Informatics of the Single Health System (DATASUS). The cases were selected by the IDAGRAVO with the CID10 A90 (dengue), excluding other aggravations. The period covered was between 2010 and 2021 in the municipality of Araras, interior of the State of São Paulo/Brazil results: In the period studied, 12,006 cases of dengue were reported, the majority being female (55.7%), of white race (82.3%), with full middle education (32.37%). The majority of cases were of classical dengue (42.1%) diagnosed by clinical-epidemiological method evolving to cure (97.6%), and the most prevalent serotype is Dengue 1 (DENV 1) with notification of only 0.1%, most cases are still unknown. Conclusions: It is noted that dengue is still prevalent in the municipality of Araras, the subnotification and incorrect completion of the notification form present a challenge to the fight and characterization of the disease.

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### Modelling the future risk of Japanese encephalitis in Victoria using Geographic Information System

Mariel Lima<sup>1</sup>, Monique Marais<sup>1</sup>, Jacque Cotton<sup>2</sup>, Victor Sposito<sup>1</sup>, Robert Faggian<sup>1</sup>

<sup>1</sup>Centre for Regional and Rural Futures, Faculty of Science, Engineering and

Built Environment, Deakin University, Australia, <sup>2</sup>National Centre for Farmer Health, School of Medicine, Deakin University, Australia

Climate changes effect on zoonotic disease risks is not yet well understood. Japanese Encephalitis (JE) is a viral zoonotic disease endemic in Southeast Asia and the Western Pacific. The spread and transmission are associated with rain, warm temperatures, migratory waterbirds, the presence of pigs as amplifying hosts and a competent vector. In 2022, the virus reached the Australian mainland in an unprecedented outbreak spanning the eastern seaboard. This project aims to accurately identify future high-risk areas for JE transmission in a changing climate and use that information to inform preparedness policy at a state and regional level. A newly developed model, deployed in a geographical information system (GIS), was used to analyse the suitability of the state of Victoria, Australia, for the JE vector *Culex annulirostris*. The parameters considered included rain, temperature, elevation, and the distance to water bodies and piggeries. Future climate projections included in the model were generated using the global climate model ACCESS-CM2, driven by worst- and best-case scenarios SSP126 and SSP585. Monthly risk maps were generated for the current and projected climate in the years 2040 and 2060. The results showed that changes in climate expected for the state of Victoria will indeed influence the risk of JE since the areas suitable for the presence of *Culex annulirostris* will expand. Data on the location of piggeries and water bodies combined with the climate projections allowed us to identify with higher precision local areas where JE has a higher likelihood of becoming endemic. When overlaid with regional jurisdictional boundaries, the analysis also identified regional/provincial governments that need to improve their infectious disease preparedness policies. In Conclusions, climate change will create conditions in Victoria that could help JE to become endemic, indicating the need for greater preparedness.

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### A systematic review of evidence on the association between high temperatures, heatwaves and heat-related illnesses

Clare Faurie<sup>1</sup>

<sup>1</sup>School of Public Health, University of Adelaide, Adelaide, Australia

A large body of scientific evidence has established the impact of increased temperatures on human health. This study aimed to collate the research findings on the effects of extreme heat on direct heat illness (heat illnesses such as heat stroke or heat exhaustion, or dehydration) in a systematic review and meta-analysis and to provide evidence for needed public health intervention. We conducted a search of peer-reviewed articles in three electronic databases, from database inception until January 2022. A random-effects meta-analysis model was used to calculate the pooled relative risks (RRs) of the association between high temperature and direct heat-related outcomes. A narrative synthesis was also performed for studies analysing heatwave effects. Assessment of evidence was performed in three parts: individual study risk of bias; quality of evidence across studies; and overall strength of evidence. A total of 62 studies meeting the eligibility criteria were included in the review, of which 29 were qualified to be included in the meta-analysis. The pooled results showed that for every 1°C increase in temperature, direct heat illness morbidity and mortality increased by 18% (RR 1.18, 95%CI: 1.16-1.19) and 35% (RR 1.35, 95%CI: 1.29-1.41), respectively. For morbidity, the greatest increase was for heat illness (RR 1.45, 95%CI: 1.38-1.53), compared to dehydration (RR 1.02, 95%CI: 1.02-1.03). Heatwave studies also provided strong evidence of increase morbidity and mortality from direct heat illness during heatwaves. We conclude that increased temperature leads to higher burden of disease from direct heat illness. Preventative efforts should be made to reduce direct heat illness during hot weather, targeting on the most vulnerable populations. This is especially important in the context of climate change.

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### Is it time to set skin cancer prevention targets globally?

Monika Janda<sup>1</sup>, Rachel Neale<sup>2</sup>, Jodie Antrobus<sup>3</sup>, Sheleigh Lawler<sup>4</sup>, on Queensland<sup>5</sup>

<sup>1</sup>Centre for Health Services Research, Faculty of Medicine, The University of Queensland, Australia, <sup>2</sup>QIMR Berghofer, Australia, <sup>3</sup>Queensland Health, Australia, <sup>4</sup>The University of Queensland, Australia, <sup>5</sup>Skin Cancer Prevention Queensland, Australia

Background and Objective: Australia has the highest incidence rate of skin cancer in the world. Skin cancer accounts for around 80% of all newly diagnosed cancers, and two in three Australians will be diagnosed before the age of 70. Skin cancer is Australia's most expensive cancer (costing \$1.7 billion annually). Within Australia, the incidence is highest in Queensland, where it is 37% higher than the national

average. Methods: Stakeholders from government, academic, patient advocacy, sports, outdoor workplaces, health and safety, and other settings co-designed skin cancer prevention targets for Queensland. They reviewed the evidence on trends in sun protection and sunburns, successful prevention programs, attitudes towards sun protection, and adoption of sun protective behaviours. They reflected on policy and/or program gaps, overall and for priority populations and settings. Results: In 2020, 49% of adults and 45% of children reported being sunburnt in the previous 12 months. Only 40% of adults used broad-brimmed hats. And fewer than 60% of adults and 80% of children applied SPF 30+ sunscreen when outdoors in summer. Additionally, sunscreen market data suggested that, on average, Australians use only 200 ml of sunscreen per person per year. Randomised trials show that sunscreen reduces sunburn, skin cancer and naevi. Models suggest that optimal sunscreen use could reduce skin cancer rates by a maximum of 30% by 2031. Based on the evidence, realistic (but ambitious) targets for reductions in melanoma and keratinocyte cancer were designed: 5% by 2030, and 25% by 2050. Conclusions: Setting targets for skin cancer reduction is important to drive policy and motivate the population to adjust their sun protection behaviour. To our knowledge, these targets are amongst the first to be set globally and could inspire other countries to follow.

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### Differential impact of life course exposure to PM2.5 species and contributing emission sources on children health in India

Ekta Chaudhary<sup>1</sup>, Franciosalgeo G.<sup>2</sup>, Sagnik Dey<sup>3</sup>, Santu Ghosh<sup>2</sup>

<sup>1</sup>Indian Institute of Technology Delhi (IIT Delhi), Delhi India, <sup>2</sup>St. Johns Medical College, India, <sup>3</sup>IIT Delhi, India

Exposure to air pollution affects the health of people of all age groups around the world, especially children of age under five (U5) years. PM2.5 exposure is a persistent problem in Low Middle-Income Countries (LMICs). The overall anemia prevalence among children (U5) across India is 58%. Ambient PM2.5 exposure has been identified as a potential risk factor for child low birth weight, growth failure, and mortality. Moreover, whether the impact varies with PM2.5 species is not known. Here we examine the impact of life course exposure to ambient PM2.5 components on anemia prevalence among children (U5) across 640 Indian districts. We use NFHS-4 health data, the satellite-based PM2.5 exposure from Dey et al., 2020, whereas the species and sectoral data (WRF-CMAQ model) from Singh et al., 2021. The WRF-CMAQ model dataset provides information on PM2.5 species such as nitrate (NO3), ammonium (NH4), black Carbon (BC), organic carbon (OC), sulfate, dust and various sectors. A multiple logistic regression model adjusted with potential risk factors is used to estimate the effects of PM2.5 species on anemia prevalence. At the aggregate level, for each interquartile range (IQR) of NO3, anemia prevalence increased with an odds ratio (OR) 1.26 (95% UI: 1.24, 1.29). For the corresponding increase in NH4, others, BC, OC, SO4, and soil, anemia prevalence increased by OR 1.19 (95% UI: 1.17, 1.21), 1.16 (95% UI: 1.14, 1.18), 1.15 (95% UI: 1.13, 1.17), 1.11 (95% UI: 1.09, 1.13), 1.12 (95% UI: 1.11, 1.13), and 1.10 (95% UI: 1.08, 1.11), respectively. Furthermore, for every IQR increase in PM2.5 exposures attributable to sectoral emissions, domestic sector showed the highest OR, followed by road dust, international, agricultural waste burning, industry, and transport sectors. This study will support the policymakers to trace specific sectors that are contributing to PM2.5 exposure and other pollutants that in turn, cause lethal health impacts.

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### How can health evidence be packaged to reach actors across a complex system to influence the development of healthy urban environments?

Geoff Bates<sup>1</sup>, Andrew Barnfield<sup>2</sup>, Charles Larkin<sup>3</sup>, Sarah Ayres<sup>2</sup>

<sup>1</sup>Institute for Policy Research, University of Bath, Bath, United Kingdom, <sup>2</sup>School for Policy Studies, University of Bristol, United Kingdom, <sup>3</sup>Institute for Policy Research, University of Bath, United Kingdom

Background and Objective: The urban environment is a key determinant of non-communicable diseases and health inequalities. It is shaped by the complex system of urban development that includes stakeholders across many sectors with different priorities and needs. Consequently, health outcomes are often subordinate to other agendas or overlooked in urban policymaking. We aimed to identify the most effective approaches to package health evidence for actors across the United Kingdom's (UK) complex urban development system to put health at the forefront of decision-making.

Methods: We applied a systems perspective to examine how evidence on non-communicable diseases and health inequalities can be translated and delivered

to inform decision-making in a complex policy environment. We undertook 132 interviews exploring perceptions on how evidence can be communicated so that it lands with critical actors working to influence urban development in the UK. Participants included property developers, urban planners, real estate investors, policy experts, senior civil servants, and local government officials. Data were analysed using a mixed deductive-inductive coding approach and through thematic analysis to identify similarities and differences across stakeholder groups.

Results: Findings reveal that creating evidence-based narratives that target actors' emotions can reach actors across a complex system. Drawing on personal accounts helps to elicit an emotional response and bring health data to life for a wide range of stakeholders. Demonstrating rigour and context are important for ensuring confidence in these narratives. Our analysis indicates that while variation in preferences for data exist, they appear to be determined more by personal values and data expertise than professional sector.

Conclusions: A storytelling approach, supported by a range of data, should be considered to reach actors across a complex system with evidence on non-communicable diseases and inequalities and to bring them together to advance the creation of healthy urban environments.

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### Determining environmental attitudes of medical faculty students and evaluation of environmental behavior

Ezgi Yucel<sup>1</sup>, Sevil Gedik<sup>2</sup>, Feyza Muz<sup>1</sup>, Didem Arslantas<sup>1</sup>, Alaettin Ünsal<sup>1</sup>

<sup>1</sup>Department of Public Health, Faculty of Medicine, Eskisehir Osmangazi University, Türkiye, <sup>2</sup>Eskisehir Odunpazari District Health Directorate, Eskisehir, Türkiye

Background: Environment is a concept that includes interaction between inanimate components like air, water, soil, and living creatures like human, animals. The environmental pollution due to increased and uncontrolled usage of resources, urbanization, industrialization, nuclear power plants, causes serious threats which include death and diseases. It is aimed to determine the attitudes of medical faculty students towards the environment and to evaluate their environmental behavior (EB). Methods: This cross-sectional study was conducted on Eskişehir Osmangazi University Faculty of Medicine students. The questionnaire prepared based on the literature was filled out online by the participants. The study group consisted of 874 students who agreed to participate in the survey. The EB scale was used to assess the level of EB. Mann-Whitney U, Kruskal Wallis, and Spearman correlation tests were used for the non-parametric analyses.

Results: The ages ranged from 17-35, with a mean of 21.62±2.14. In the study, they were found to have higher scores on the EB Scale; those who are 21 and under, women, member of preclinical classes, those who define themselves environmentally friendly, those who have attended any meeting or received education about environmental awareness and environmental health, those who separate the household waste into groups such as organic/ glass/ plastic, those who isolate the wastes that could be harmful to the environment, those who doesn't use cars for short range travels, and those who avoided the use of disposable materials. A moderate positive correlation was found between the scores of EB scale and items about environmental attitudes (r=0.616; p<0.001). Conclusions: In order to achieve sustainability in terms of a clean and healthy environment, one of the most important goals is to increase the awareness of university students. Therefore, in order to improve EB, it is recommended to add special lectures to increase environmental awareness in undergraduate education.

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### Artificial light at night and breast cancer risk: the findings from CECILE study, France

Nirmala Prajapati<sup>1</sup>, Adélie Boileau<sup>1</sup>, Emilie Cordina-Duverger<sup>1</sup>, Elodie Faure<sup>1</sup>, Pascal Guénel<sup>1</sup>

<sup>1</sup>Université Paris-Saclay, UVSQ, Gustave Roussy, Exposome and Heredity Team, CESP (Center for Research in Epidemiology and Population Health), UMR 1018, Inserm, Villejuif, France

Background and Objectives: Light pollution is growing as the newest form of environmental pollution. Experimental and epidemiological studies suggested that exposure to artificial light at night (ALAN), especially to blue light, disrupts the circadian rhythm, inhibits melatonin production, and increases the risk of breast cancer. We assessed the association between exposure to outdoor ALAN and breast cancer. Methods: We used data from a population-based case-control study, including 1185 incident breast cancer cases and 1282 healthy controls enrolled in 2005-2007 from two French departments- Côte d'Or and Ille-et-Vilaine. Data for outdoor ALAN exposure was obtained using calibrated images from

Defense Meteorological Satellite Program (DMSP) for 1995-2006. Exposure was assessed over the 10 years prior to inclusion in the study by cross-referencing the DMSP images and the geocoded locations of residences in ArcGIS. Logistic regression was used to obtain odds ratios (OR) and 95% confidence intervals (CI) for the association, adjusting for sociodemographic, reproductive, and lifestyle-related factors, night-shift work, and urbanization.

Results: The overall OR for breast cancer per 1 standard deviation increase in ALAN exposure (129.29 nW/cm<sup>2</sup>/sr) was 1.05 (95% CI: 0.95-1.17). Subgroup analyses showed slightly higher ORs in post-menopausal women (OR: 1.15; 95% CI: 0.99-1.34) and in women who never worked at night (OR: 1.08; 95% CI: 0.96-1.22). The association was stronger for HER2-positive breast tumors (OR: 1.27; 95% CI: 0.99-1.62). Conclusions: Our study did not find an association between exposure to outdoor ALAN and breast cancer. However, possible associations between outdoor exposure to ALAN and breast cancer risk in specific subgroups were indicated. This study had several strengths, including use of calibrated satellite images for outdoor ALAN assessment and consideration of a large set of potential confounders. Further large-scale studies using improved exposure assessment methods, including measurement of blue light and exposure assessment at the individual level, are required.

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### Ciguatera Fish Poisoning: an economic evaluation of healthcare costs and assessment of current level of awareness among islanders and visitors in three Caribbean Islands

Alessio Perilli<sup>1</sup>, Alisha Morsella<sup>1</sup>, Walter Ricciardi<sup>1</sup>, Chiara Cadeddu<sup>1</sup>  
<sup>1</sup>Università Cattolica del Sacro Cuore, Rome, Italy

Background and Objective: Ciguatera Fish Poisoning (CFP) is the most common seafood-borne intoxication, affecting around 50000 people annually, mostly in tropical coastal areas. It is caused by toxins released by microalgae whose proliferation is promoted by ocean warming, coral bleaching and anthropogenic disturbances. Small Island Developing States are exposed to severe productivity losses and deprivation of food sources as a Results of CFP. However, they show scarce awareness, hindering appropriate preventive behavior, risk management strategies and formal case reporting. The objective of this study is to estimate CFP incidence in three Caribbean islands (Guadeloupe, Martinique, Saint Lucia), assess its economic impact in terms of health costs and productivity loss and the awareness level in both residents and tourists.

Methods: Economic data will be collected through hospital databases and supplemented with interviews with healthcare professionals and managers. Incidence will be estimated through disease notifications and survey data. Two questionnaires were designed to assess knowledge, behavior and intentions concerning CFP. A reliability analysis, and descriptive and inferential statistics will be applied to the responses.

Results: The fisherman survey comprises 57 questions regarding: respondents' general characteristics (14), CFP-related personal experiences (20), knowledge (9), behavior (11) and intentions (3). The tourist version includes 43 questions on: respondents' general characteristics (5), CFP-related personal experience (19), knowledge (9), behavior (7), intentions (3). In February – April 2023, both surveys will be administered to a convenience sample and economic data will be extracted. Preliminary results will be available in May 2023.

Conclusions: The estimated incidence is expected to differ from that available in literature due to the lack of formalized case reporting and awareness. A higher level of awareness is expected among residents rather than tourists. Findings will provide a novel contribution to research and inform policy decisions, especially considering CFP projected expansion.

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### How do neighborhoods influence educational achievement? Reviewing qualitative studies by employing Nussbaum's perspectives

Rita Agdal<sup>1</sup>, Hanne Mikkelsen<sup>1</sup>

<sup>1</sup>Western Norway University of Applied Sciences, Norway

Background: Education is a crucial resource for life chances, with a close correlation with socioeconomic inequalities in health. Providing education for all is an essential part of health promotion. While the effects of neighborhoods on educational achievement have been well researched, studies have tended to ask simplified and unbalanced questions about the value of neighborhoods. Instead, more insightful answers could be derived from questions on understanding the complexity of neighborhoods' influence. Aims: We sought insight into the complexities of neighborhood's influence on educational achievement by reviewing

qualitative literature from Nordic countries emphasizing urban neighborhoods' influence on educational achievement. We also applied perspectives from Nussbaum's capability approach to address these complexities. Methods: This critical systematic qualitative review included studies on the influence of neighborhoods on academic success generated from nine databases using a search string. Two reviewers selected the studies following the preferred reporting items for systematic reviews and meta-analyses (PRISMA) flowchart and inclusion criteria through a blinded process. Out of 7009 extracted records, 17 peer-reviewed articles were examined. We evaluated the scientific quality of the study using EPICURE.

Results: Findings showed three main themes: social support from neighborhood agents, the role of attachment and the reputation of the place, and how policies influence everyday life and educational achievement. The articles were descriptive and built on perspectives regarding social reproduction and social capital. Conclusions: Integrating perspectives from the capability approach to discuss the complexities of neighborhoods' influence on educational achievement may facilitate a shift toward identifying possibilities in neighborhoods.

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### Is the community food environment in Chile associated with fruit and vegetables consumption?

Leticia Cardoso<sup>1</sup>, Laís Botelho<sup>1</sup>, Irene Justiniano<sup>2</sup>, Amy Auchincloss<sup>3</sup>, Mariana Menezes<sup>2</sup>, Maria Pina<sup>1</sup>, Vanderlei Matos<sup>1</sup>, Daniel Skaba<sup>1</sup>, Lorena Garcia<sup>4</sup>, Tamara Herrera<sup>5</sup>

<sup>1</sup>Oswaldo Cruz Foundation, Brazil, <sup>2</sup>Federal University of Ouro Preto, Brazil, <sup>3</sup>Drexel University, United States, <sup>4</sup>Universidad Peruana Cayetano Heredia, Peru, <sup>5</sup>University of Chile, Chile

Diet quality is influenced by many individual and social characteristics, as well as the community food environment. There is evidence in the literature showing associations between food environment and diet, but there is still scarce information for Chilean population. Objective: To explore the relationship between community food environment and diet quality in three Chilean cities. Methods: Food store were geocoded and diet survey data standardized from SALURBAL study were used. The food environment was evaluated by geospatial algorithm based on Google Earth data and density store indicators by different categories were estimated. The personal-level data included socioeconomic, demographic, health and nutrition variables. Diet quality was assessed by daily consumption of Fruits and Vegetables (FV) ( $\geq 5$  servings/day). Two-level with mixed effects binary logistic regression were performed.

Results: 48410 food stores were evaluated, distributed across 2,442 neighborhoods in 51 subcities in three Chilean cities (Santiago, Valparaíso, Concepción). The population sample included 1,292 individuals, of which 84.3% had inadequate consumption of FV. We observed a higher density of ready-to-eat food stores and a low density of FV stores in these cities. Store density increased as population density quartiles and the intra-urban socio-environmental index increased. No association was identified between food environment and FV consumption. Conclusions: The food environment in the evaluated cities is dominated by stores with an unhealthy profile and low availability of FV, but there is no consistent relationship with FV consumption. Other factors may be determinants of FV consumption in this population.

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### The environmental health literacy of Italian general population: the SPeRA cross-sectional study

Marta Gea<sup>1</sup>, Christian Previti<sup>1</sup>, Fabrizio Bert<sup>1,2</sup>, Gregorio Massocco<sup>1</sup>, Giuseppina Moro<sup>1</sup>, Giacomo Scaioi<sup>3,4</sup>, Tiziana Schilirò<sup>1</sup>, Roberta Siliquini<sup>5</sup>

<sup>1</sup>Department of Public Health and Pediatrics, University of Turin, Italy, <sup>2</sup>Health Local Unit ASL TO3, Italy, <sup>3</sup>Department of Public Health and Pediatrics, University of Turin, <sup>4</sup>Health Local Unit ASL TO3, <sup>5</sup>Department of Public Health and Pediatrics, University of Turin, AOU City of Health and Science of Turin, Italy

Background and Objective: Environmental Health Literacy (EHL) includes knowledge of health effects due to environmental exposure and skills to protect health from environmental risks, so it can be a useful tool to prevent diseases. This cross-sectional study investigated for the first time some aspects related to EHL of the Italian adult population (i.e. information sources, risk perception, attitude/adoption of pro-environmental behaviours and barriers to them). Methods: Data were collected through an online questionnaire (n=672) and analysed through descriptive analyses and multivariable logistic regression models.

Results: The results showed that internet and TV were the most used information

sources and that participants with incomplete/insufficient self-perceived knowledge of health effects due to environmental risks verify less information about this topic [adjOR=0.38 (CI95% 0.25-0.59)/0.09 (0.04-0.21); p<0.001/<0.001, respectively], potentially spreading fake news. The self-perceived exposure to pollution was higher in participants living in towns than in rural areas [small, medium, big towns adjOR=2.37 (1.41-3.97), 2.10 (1.11-3.96), 3.11 (1.53-6.31); p=0.001, 0.022, 0.002, respectively], suggesting that pollution is more perceived in urban areas, while it was lower in participants with incomplete/insufficient knowledge about pollution health effects [adjOR=0.54 (0.32-0.92)/0.30 (0.13-0.67); p=0.022/0.004], confirming that knowledge is essential to achieve awareness. Since insufficient self-perceived knowledge of pollution health effects was negatively associated with adoption of pro-environmental behaviours [adjOR=0.37 (0.15-0.90); p=0.028], the role of EHL as virtuous behaviour promoter was proven. Risk perception and attitude toward pro-environmental behaviours varied according to gender and education level, confirming the importance of socio-demographic characteristics for EHL related issues. Finally, lack of institutional support, lack of time and cost were identified as important barriers for many pro-environmental behaviours. Conclusions: This study provided useful data to design prevention programmes, underlined some barriers to pro-environmental behaviours and highlighted the need to promote attitudes and behaviours aimed at contrasting environmental pollution thus protecting human health.

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### Forecasting malaria morbidity to 2036 based on geo-climatic factors in the Democratic Republic of Congo

Ngianga-Bakwin Kandala<sup>1,2</sup>, Elysee Kabongo<sup>3</sup>, Eric Panzi<sup>3</sup>

<sup>1</sup>Department of Epidemiology and Biostatistics, Western University, London, Canada, <sup>2</sup>Schulich School of Medicine and Dentistry, Western University, London, Canada, <sup>3</sup>Institut Supérieur des Techniques Médicales de Kinshasa (ISTM/Kin), Kinshasa, Democratic Republic of Congo

**Background and Objectives:** Malaria is a global burden of morbidity and mortality. In Congo (DRC), malaria prevalence is increasing due to strong climatic variations. Reduction of malaria morbidity and mortality, the fight against climate change, good health and well-being constitute key development targets. We aim to predict malaria morbidity to 2036 based on 2001-2019 data, as a basis of an early detection of anomalies in weather patterns.

**Methods:** Meteorological data from Epidemiological Surveillance Directorate including all malaria cases based on positive blood test results, either by microscopy or by rapid diagnostic test, was used to estimate malaria morbidity and mortality from 2001 to 2019. Time series combining several predictive models were used to forecast malaria epidemic episodes to 2036. The impact of climatic factors on malaria morbidity was modelled using multivariate time series analysis. **Results:** Geographical distribution of malaria prevalence from 2001-2019 shows disparities between provinces with the highest of 7700 cases/100,000 people at risk for South Kivu. Malaria has been most deadly in Sankuru with a case-fatality rate of 0.526%. The stochastic trend model predicts an average annual increase of 6024.07 malaria cases with exponential growth in epidemic waves over the next 200 months of the study, an increase of 99.2%. Associated risk factors were geographic location, total evaporation under shelter, maximum daily temperature at two meters altitude and malaria morbidity.

**Conclusions:** The increase in new malaria cases is statistically related to population density, average number of rainy days, average wind speed, and unstable and intermediate epidemiological facies. We provide relevant information for the government to respond to malaria in real time by setting up a warning system integrating the monitoring of rainfall and temperature trends and early detection of anomalies in weather patterns.

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### Impacts of extreme weather events on enteric infectious disease outbreaks: evidence from New Zealand

Farnaz Pourzand<sup>1</sup>, Simon Hales<sup>1</sup>

<sup>1</sup>Department of Public Health, Health Environment and Infection Research Unit, Otago University, Wellington, New Zealand

In 2016, the largest recorded water-borne outbreak of *Campylobacter* affected thousands of people in the Hawke's Bay region of New Zealand (NZ). Investigations suggested that heavy rainfall had led to contamination of the water supply with livestock faeces. Climate change is already causing changes in the frequency and/or severity of extreme weather with important implications for public health. In this study, we test the hypothesis that enteric disease outbreaks are associated with climate patterns in New Zealand. We have identified outbreaks

of acute gastrointestinal infections (AGI), based on Spatio-temporal analyses of notifications (2000 to 2019). We will estimate the relationship between AGI and weather variables (daily temperature and rainfall), accounting for modifying effects of local factors (e.g. water supply characteristics) using Poisson regression methods. We present our initial Results of the association between extreme precipitation events and campylobacteriosis in the Hawkes Bay region. Our analysis provides a more precise picture of the effect of extreme climate events on AGI outbreaks. It has a practical application as it provides inputs for evidence-based policy to minimise enteric disease risks associated with climate extremes by implementing appropriate actions such as improving water treatment in networked suppliers and climate-based early warning systems.

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### Microplastic-sorbed chemicals: a threat from sand and surface water

Hongrui Zhao<sup>1</sup>, Ileana Federigi<sup>1</sup>, Marco Verani<sup>1</sup>, Annalaura Carducci<sup>1</sup>

<sup>1</sup>University of Pisa, Laboratory of Hygiene and Environmental Virology, Department of Biology, Via S. Zeno 35/39, 56127 Pisa, Italy

**Background and Objective:** Marine environments can be contaminated by various anthropogenic persistent organic pollutants, such as petroleum-related (e.g., polycyclic aromatic hydrocarbons, PAHs), industrial (e.g., polychlorinated biphenyl, PCBs), and agriculture-related (e.g., organochlorine pesticides, OCPs) chemicals. Moreover, microplastic (MPs, particles < 5 mm) pollution of seawater is increasing in recent years and they can behave as a vehicle of chemicals acquired from the surrounding environment. Such MPs role is relevant from a public health perspective, increasing the exposure of beachgoers to harmful chemicals. In this paper, 40 field studies of MPs-sorbed organic pollutants were reviewed with the aim to understand the level of chemical contamination of MPs in the marine compartments.

**Methods:** The literature search was conducted following Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) guidelines. The keywords included microplastic in combination with the organic contaminants that could be adsorbed by MPs.

**Results:** The methodology used for MPs-sorbed chemicals detection showed great differences among the studies, from sampling to analytical techniques. The most frequently searched chemicals were PCBs (55% of the reviewed papers) followed by PAHs (47.5%), and OCPs (42.5%). When such chemicals were searched, they were detected in almost one of the sampling sites included in each study. Overall, PCBs level showed a median concentration of 290 ng/g. The median PAH concentration was 3,595 ng/g, with an extremely high amount of 120,000 ng/g found in MPs from Chinese seawater. Dichlorodiphenyltrichloroethane was the most frequently detected OCP, with a median of 126.9 ng/g.

**Conclusion:** This paper revealed that MPs can accumulate high level of chemicals in the marine environment, thus increasing the human exposure during swimming or rest on the beach. Despite the public health relevance of such human exposure, this topic is still little explored as demonstrated by the lack of standardized method for MPs collection and chemical analysis.

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### Air pollution and oxidative stress in adults suffering from airways diseases. Insights from the gene environment interactions in respiratory diseases multi-case control study

Giulia Squillacioti<sup>1</sup>, Valeria Bellisario<sup>1</sup>, Alessandro Marcon<sup>2</sup>, Pierpaolo Marchetti<sup>2</sup>, Angelo Corsico<sup>3</sup>, Pietro Pirina<sup>4</sup>, Giuseppe Verlato<sup>2</sup>, Roberto Bono<sup>1</sup>

<sup>1</sup>University of Turin, Italy, <sup>2</sup>University of Verona, Italy, <sup>3</sup>University of Pavia, Italy, <sup>4</sup>University of Sassari, Italy

**Background and Objective:** Air pollution is a leading cause of global mortality and morbidity. Oxidative stress is considered a key mechanism underlying air pollution-mediated health effects, especially in the pathogenesis/exacerbation of airways impairments. However, little evidence is available on subgroups at higher risk of developing more severe outcomes. This multi-center study aims to evaluate the association between air pollution and oxidative stress in healthy adults and patients affected by different airways diseases from the Italian GEIRD (Gene Environment Interactions in Respiratory Diseases) multi-case control study. **Methods:** Current analyses include 1841 adults (49% females, 20-83 years) from four Italian centers: Pavia, Sassari, Turin, and Verona. Following a 2-stage screening process, cases of asthma (n=578), chronic bronchitis (n=23), rhinitis (618), or COPD (n=54) and controls (n=568) were identified. Systemic oxidative stress was quantified by measuring urinary 8-isoprostane and 8-OH-dG. Individual exposures to NO<sub>2</sub>, PM<sub>10</sub>, PM<sub>2.5</sub>, and O<sub>3</sub> were derived at residential level during

2013-2015. We investigated the association between oxidative stress biomarkers and air pollution tertiles using multilevel multivariable regression models adjusted by age, BMI, smoking habits, education level and season of sample collection, with centers as random intercept.

Results: The geometric means (ng/mg creatinine) of 8-isoprostane and 8-OH-dG were 0.7 (95%CI:0.68-0.76) and 3.8 (95%CI:3.6-4.0), respectively. Only cases exhibited higher levels of log-transformed 8-isoprostane and 8-OH-dG in association with NO<sub>2</sub> (0.22 95%CI:0.00-0.45 and 0.20 95%CI: 0.03-0.37), PM<sub>10</sub> (0.34 95%CI: 0.12-0.55 and 0.21 95%CI: 0.05-0.37) and PM<sub>2.5</sub> (0.27 95%CI: 0.05-0.49 and 0.18 95%CI: 0.02-0.34) compared to the first tertile of exposure (NO<sub>2</sub>:5-26µg/m<sup>3</sup>, PM<sub>10</sub>: 11-33µg/m<sup>3</sup>, PM<sub>2.5</sub>: 8-24µg/m<sup>3</sup>). No association was observed for O<sub>3</sub>.

Conclusion: Our findings suggest that exposure to air pollution may increase systemic oxidative stress levels in people suffering from airways diseases. Effective prevention strategies should consider early biological effects observed in susceptible people, whom additional risk level might be currently underrated.

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### Risk analysis for the human health derived from sewage management: perspectives for the reuse

Ileana Federigi<sup>1</sup>, Marco Verani<sup>1</sup>, Roberto Salvadori<sup>2</sup>, Simone Lippi<sup>2</sup>, Annalaura Carducci<sup>1</sup>

<sup>1</sup>Laboratory of Hygiene and Environmental Virology, Department of Biology, University of Pisa, Italy, <sup>2</sup>Acque S.p.A., Italy

Background and Objectives: In a changing scenario characterized by extreme weather events and water shortages, a paradigm shift is occurring on wastewaters: from waste to water resource. Europe is moving in that direction through the releasing of a regulation for water reuse in crops irrigation (EU 2020/741) and a profound revision, reuse-oriented, of legislative framework on wastewater management started during 2022. The implementation of reuse practices increases the possibility of human exposure to biological and chemical agents, that needs to be carefully evaluated in a public health perspective. This is the aim of a project funded by the National Operational Programme (NOP) on research and innovation (European Social Fund).

Methods: The project involves a university and a sewerage company in a collaborative effort for the selection of wastewater treatment plants (WWTPs) for reuse purposes. A water safety plan (WSP) is developed using both microbiological and physicochemical data from private repositories and field data obtained from dedicated monitoring campaigns, searching for fecal indicators (*Escherichia coli*, enterococci, bacteriophages) and human pathogens, namely *Salmonella* spp. and enteric and respiratory viruses (adenovirus, norovirus, enterovirus, coronaviruses). The health risk is assessed through the Quantitative Microbial Risk Assessment (QMRA) framework.

Results: In the first phase of the project, two WWTPs has been selected for agricultural and urban reuses. Repository data will be analyzed searching for a chemical proxy for microbial load, whose real-time monitoring allows the application of timely control actions along the sewage treatment (e.g., disinfection process).

Conclusion: The reuse processes are needed for a sustainable development and for adapting to climate change. Wastewater management plays a key role for a safety reuse, limiting health risks. Therefore, there is an urgent need for the application of WSP to sewage treatment in combination with the assessment of human health risks attributable to water reuse.

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### Mortality and hospitalization in Italian contaminated sites of national concern for remediation: the global evaluation

Lucia Fazzo<sup>1</sup>, Fabrizio Minichilli<sup>2</sup>, Valerio Manno<sup>3</sup>, Ivano Iavarone<sup>1</sup>, Marta Benedetti<sup>4</sup>, Paolo Contiero<sup>5</sup>, Alice Maraschini<sup>3</sup>, Giada Minelli<sup>3</sup>, Roberto Pasetto<sup>1</sup>, Paolo Ricci<sup>6</sup>, Amerigo Zona<sup>1</sup>

<sup>1</sup>Italian national Institute for Health - Istituto Superiore di Sanità, Dept of Environment and Health, Istituto Superiore di Sanità, Italy, <sup>2</sup>National Research Council, <sup>3</sup>Italian national Institute for Health - Istituto Superiore di Sanità, Statistical Service, Istituto Superiore di Sanità, Italy, <sup>4</sup>Italian national Institute for Health - Istituto Superiore di Sanità, <sup>5</sup>Fondazione IRCCS Istituto Nazionale dei Tumori, Environmental Epidemiology Unit, Fondazione IRCCS Istituto Nazionale dei Tumori, Italy, <sup>6</sup>Agenzia di Tutela della Salute della Val Padana, Unit of Epidemiology, Agenzia di Tutela della Salute della Val Padana, Italy

Backgrounds and Objective: In Italy, an epidemiological surveillance of the

populations living in the 46 contaminated sites of national concern for remediation (CSs) has been underway, since 2011 (SENTIERI Project). CSs are defined of national concern for their contamination due to the presence of pollution sources, such as chemical industries, petrochemical plants and refineries, landfills. We aimed at estimating the global mortality (2013-2017) and hospitalization (2014-2018) among the populations living in the 46 CSs (316 municipalities; 6,227,531 inhabitants).

Methods: The excess deaths (observed-expected) for the main groups of diseases were calculated for the 46 sites combined. A random effects meta-analysis of the Standardized Mortality and Hospitalization Ratios (SMR/SHR) of each CS was performed for all the sites and their groupings, based on the typology of pollution sources. 90% Confidence Intervals and I<sup>2</sup> value complemented SMR/SHR pooled value. The analyses were performed in general population and age-subgroups.

Results: In the 46 sites, 8,342 exceeding deaths (1,668/year) were estimated, 4,353 in males and 3,989 in females. Pooled SMR and SHR for all causes exceeded in both genders: males: SMRpooled=1.02 (90%CI:1.00-1.04); SHRpooled=1.03 (90%CI:1.01-1.04); females: SMRpooled=1.02 (90%CI:1.00-1.04), SHRpooled=1.03 (90%CI:1.01-1.05). These excesses are mainly attributable to malignant tumours. In subgroups of sites, exceeding SMRs were observed for all malignant mesotheliomas (MM) and pleural MM, lung and colorectal cancers in both genders. SHRs for all causes were in excess in the first year of life (males: SHRpooled=1.08, 90%CI:1.03-1.13; females: SHRpooled= 1.08, 90%CI:1.03-1.14); the hospitalization for all causes exceeded also in 0-19 and 20-29 groups (+3-5%); no excesses of mortality were observed in 0-29 years age-classes.

Conclusion: The results suggest that living in CSs is a risk factor for cause-specific mortality and hospitalization, even if the ecological approach and the mixtures of environmental exposures sources do not allow conclusions on specific etiological hypothesis.

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### What is the carbon footprint of food waste? results from an analysis in a hospital canteen in northeast Italy

Peter Cautero<sup>1</sup>, Daniela Zago<sup>1</sup>, Diana Menis<sup>1</sup>, Federica Fiori<sup>1</sup>, Lucia Lesa<sup>2</sup>, Alessandro Conte<sup>3</sup>, Maria Parpinel<sup>1</sup>, Laura Brunelli<sup>4</sup>

<sup>1</sup>University of Udine, Department of Medicine, University of Udine, Udine, Italy, <sup>2</sup>Azienda Sanitaria Universitaria Friuli Centrale, <sup>3</sup>Azienda Sanitaria Universitaria Friuli Centrale, Medical Directorate, Hospital "Santa Maria della Misericordia" of Udine, Azienda Sanitaria Universitaria Friuli Centrale, Udine, Italy, <sup>4</sup>University of Udine; Azienda Sanitaria Universitaria Friuli Centrale, Department of Medicine, University of Udine, Udine; Accreditation, Quality and Clinical Risk Unit, Azienda Sanitaria Universitaria Friuli Centrale, Udine, Italy

Background and Objective: Attention to economically and environmentally sustainable development has increased in recent years. Fundamental, in pursuing these goals, is attention to reducing food waste, which accounts for about one third of global production. The aim of this study was to evaluate the food waste generated by consumers in a hospital canteen in Italy.

Methods: We analyzed the meals of workers who accessed a northeastern Italian hospital canteen. We photographed trays before and after the consumption for five days in September 2022. We used a modified Comstock visual scale to estimate remaining food, and we estimated the carbon (CF) and water footprints (WF) of food waste using Barilla's SU-EATABLE LIFE database.

Results: We took before and after meal photos of 240 meals. A total of 188 meals (78%) were completely consumed, while 52 of them had waste left over. Food waste accounted for 2% of the total foods served. The average food waste per tray of leftovers was 10% and consisted mainly of salad. On average, 14 g CO<sub>2</sub>eq./tray (CF) and 15 LH<sub>2</sub>O/tray (WF) were generated by the wasted portion of the meal. The median value was 0(0-0) for both CF and WF. A total of 3.3 kg CO<sub>2</sub>eq. was generated for the production of discarded foods, which is approximately equivalent to a 16.5 km car trip.

Conclusion: This study was able to establish that, despite the virtuous behavior of most of the consumers, waste in the observed hospital canteen was limited but not negligible. The degree of personalization of the portions offered by the canteen staff in addition to the standard portion could justify the small amount of food waste. In the future, it would be interesting to consider not only the waste generated by users, but also that one generated during preparation and serving.

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### Different approaches to research on urban health: a meta-narrative review

Evelyn de Leeuw<sup>1</sup>, Jinhee Kim<sup>1</sup>, Ben Harris-Roxas<sup>1</sup>, Peter Sainsbury<sup>2</sup>  
<sup>1</sup>University of New South Wales, Australia, <sup>2</sup>University of Notre Dame, Australia

**Background and Objectives:** Urban health is a multi-disciplinary field of research and practice, and participants address urban health based on different ontological beliefs. Identifying and articulating the different approaches is integral for transdisciplinary research and practice. This meta-narrative review identifies which epistemic traditions have considered the broad topic of urban health. This review further aims to identify the cross-cutting themes that appear across the epistemic traditions.

**Methods:** In this meta-narrative review, we use bibliometric analysis as a guide to identify the different approaches that appear in the scientific literature on urban health. A search in Web of Science Core Collection retrieved 5,926 publications. Bibliometric network analyses of co-citation relationships produced clusters of closely related authors and publications. The highest co-cited publications in each cluster were selected and analysed against conceptual, theoretical, methodological and instrumental parameters.

**Results:** The document co-citation network analysis showed clustering of urban health research activities into five clusters: sustainable urban development, urban ecology, urban resilience, public health and urban planning, and urban green spaces and health. Each cluster has a different approach to the urban health concept. Meanwhile, several cross-cutting themes were found in the methodological and instrumental across all five clusters.

**Conclusion:** Urban health research topics extend beyond the traditional public health and the urban planning centred view. The cross-cutting themes that emerge across all topic areas underpin the paradigmatic differences that require even further efforts for collaboration than the disciplinary differences that require even further efforts for collaboration than the disciplinary differences. For urban health researchers to actively collaborate across diverse disciplines and research traditions, understanding which approaches exist and how these approaches are different and similar is critical. Such endeavours are required to produce the transdisciplinary knowledge for transforming policy.

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### Adaptation planning for climate change: is the health and safety of rural women a priority for local government? a policy analysis

Elena Wilson<sup>1</sup>, Karen Anderson<sup>1</sup>  
<sup>1</sup>La Trobe University, Australia

**Background and Objective:** Recent fires and floods in rural Australia attest to public health challenges of climate change leaving many already vulnerable rural communities in turmoil. Growing evidence that gendered health impacts and increased risk of violence against women are characteristic of the aftermath of disasters is a health equity and justice concern.

The Victorian government in Australia mandates the development of climate change adaptation plans and health and wellbeing plans at local government level. Plans must consider health implications of climate change for each municipality in addition to proposing actions for preventing and responding to family violence, promoting gender equality and conducting gender impact assessments.

The aim of this study was to explore how rural municipalities in Victoria recognise and prioritise women's health and safety in relevant municipal plans.

**Method:** Municipal documents and websites, (191), were accessed for all 48 rural Victorian municipalities. Those which explicitly mentioned climate change and gender or women were included for analysis. Twelve documents (6%) from 11 municipalities met the selection criteria. A content analysis identified any recognition of health impacts on women and proposed adaptation strategies.

**Results:** Eight documents from seven municipalities, demonstrated minimal recognition of health impacts on women arising from climate change. This superficial recognition from a small proportion (15%) of rural municipalities lacked any explanation or actions to mitigate the impacts. Two documents mentioned vague adaptation strategies.

**Conclusion:** Women's health and safety was poorly recognised in the context of climate change suggesting that it has not been a high priority. The lack of a sense of urgency and commitment to adaptation planning is problematic and requires urgent action so that vulnerability of rural women is not exacerbated by disaster. Further research is needed to explore attitudes and capacity for adaptation planning in rural municipalities.

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### Global, local and individual context of climate change: what do medical faculty students think? A qualitative assessment

Merve Akbayrak<sup>1</sup>, Isil Ergin<sup>1</sup>

<sup>1</sup>Ege University Faculty of Medicine, Department of Public Health, Bornova/IZMIR 35100, Turkey

**Background and Objective:** Societies that are aware of the global, local and individual context of climate change can succeed to develop appropriate social, economic and environmental strategies. This qualitative research aimed to determine the opinions of future doctors on; the effects of climate change at global, local and individual levels; the role of industry, states and individuals; awareness raising activities and training options.

**Methods:** Nine focus group interviews were conducted between August-October 2022 among Ege University internship students(n=65). Semi-structured interviews within a framework of five sections (1.definition of climate change-general impact, 2.role of industry, 3.role of states, 4.role of individuals, 5.training suggestions) lasted 43±11 minutes. Ethics Committee approval, consent of the participants were obtained. Records and observation notes were transcribed into written form. By content analysis, emergent themes were obtained. No financial support or conflict of interest existed.

**Results:** Of the participants %32 were women, %38 had rural roots and only 3 attended structured training for climate change. Three leading themes of the five sections were; 1.global warming, drought, impact on agriculture, 2.industry carbon emissions, avoiding responsibility, sustainable technologies, 3.inadequacy of inspections, necessity of sanctions, enabling/disabling preventive practices, 4.reducing water consumption, economic crisis invading the agenda, absence of environmental regulations as a barrier, 5.preschool/primary school education, visual tools in training, continuing education at all ages.

**Conclusion:** The knowledge and individual awareness of future doctors about climate change, its impact at different levels and the roles of different actors were detected to be sufficient yet their motivation to take role and interfere were lacking. Individual agendas invaded by economic crisis and personal needs were in competition with their interest on climate change even for those who were eager to take role. Lack of public solutions lead by local authorities prevents those who are eager to pay individual efforts.

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### Carbon and water footprint of food choices by users of a hospital canteen

Diana Menis<sup>1</sup>, Daniela Zago<sup>1</sup>, Peter Cautero<sup>1</sup>, Federica Fiori<sup>1</sup>, Lucia Lesa<sup>2</sup>, Alessandro Conte<sup>3</sup>, Maria Parpinel<sup>1</sup>, Laura Brunelli<sup>4</sup>

<sup>1</sup>University of Udine, Department of Medicine, University of Udine, Udine, Italy, <sup>2</sup>Azienda Sanitaria Universitaria Friuli Centrale, <sup>3</sup>Azienda Sanitaria Universitaria Friuli Centrale, Medical Directorate, Hospital of San Daniele-Tolmezzo, "Azienda Sanitaria Universitaria Friuli Centrale", San Daniele del Friuli, Udine, Italy, <sup>4</sup>University of Udine; Azienda Sanitaria Universitaria Friuli Centrale, Department of Medicine, University of Udine, Udine, Italy; Accreditation, Quality and Clinical Risk Unit, "Azienda Sanitaria Universitaria Friuli Centrale", Udine, Italy

**Background and Objective:** Food production is responsible for 30% of global CO2 emission, with beef having the largest impact. In Italy the mean value of CF and WF for meal is 1112±867 gCO2eq. and 1083±858 L. Many articles have highlighted the contribution to a sustainable development through the selection of food. The aim of this study was to evaluate the sustainability of food choices in a hospital canteen.

**Methods:** The study was conducted in San Daniele del Friuli hospital for 5 consecutive days in September 2022 taking photo of the lunch trays of workers who have access to the hospital canteen and agree to participate. The participants were also asked to fill in a questionnaire. The photos were taken before the meal was consumed. The carbon footprint (CF) and water footprint (WF) of the recipes were estimated using the SU-EATABLE LIFE database.

**Results:** We analyzed 240 meals, 201 of which were paired with a completed questionnaire. Participants (N=201) were 61 men and 140 women with a mean age of 49±10 years (median=51). The median CF estimated was 778 (604–1085) gCO2eq./tray and the median WF was 892 (668–1170) LH20/tray for the lunch meal. A higher median CF (1076 vs. 797 LH20/tray; p<0.001) and WF (981 vs. 693 gCO2eq./tray; p<0.001) were observed in men compared to women. The 16% of the participants (4 men and 29 women on 201) chose vegetarian and vegan courses.

**Conclusion:** Carbon and water footprint values were lower than those reported in the literature, with women performing better and showing lower propensity to choose meat than men. Our low values could be related to the canteen menu not containing beef and to the high proportion of women in the sample. Targeted interventions for men may be needed to raise awareness on sustainable diet

through food choices.

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### Quantification Of waste in schools: a case study in danang city, Vietnam

Nguyen Huong<sup>1</sup>, Hoang Linh<sup>2</sup>, Nguyen Nga<sup>3</sup>, Tran Trung<sup>4</sup>, Ngo Ngoc<sup>3</sup>, Tran Huan<sup>5</sup>

<sup>1</sup>Phan Chau Trinh University Phan Chau Trinh University 9 Nguyen Gia Thieu, Dien Ban district, Quang Nam province Viet Nam, <sup>2</sup>Da Nang University of Medical Technology and Pharmacy 99 Hung Vuong street, Hai Chau district, Da Nang city Viet Nam, <sup>3</sup>Center for adaptive capacity building research Center for adaptive capacity building research Viet Nam, <sup>4</sup>Center for adaptive capacity building research Nguyen Tran Anh Vu Center for adaptive capacity building research Center for adaptive capacity building research Viet Nam, <sup>5</sup>Da Nang University of Medical Technology and Pharmacy

**Background:** Waste is a major problem that can affect the environment and health; especially in developing countries where there is often a lack of an appropriate system for waste treatment. Understanding the current situation of waste, its common type, and its amount are important to develop appropriate strategies for waste control, especially in a school-based setting. This study has been conducted to identify common types of waste that are disposed of in schools and quantify such waste.

**Methods:** This study used an audit method to identify the common types of waste and quantify such waste in Da Nang in 2021.

**Results:** There were four schools with a total number of 3064 students who participated in this study. The average total volume of waste that schools discharge in a day is 460kg (accounting for 7542 liters of storage volume); in which, organic waste has the most enormous volume of 261kg (57% of total volume) accounting for 2262 liters (30% of total volume); non-recyclable waste weights 175kg (38% of the total volume) and a maximum volume of 4524 liters (60% of the total volume); recyclable waste has a weight of only 22kg (5% of total volume) and accounts for 719 liters (10% of total volume); The remaining types of waste are insignificant. This study also showed the presence of a large number of plastic bags (2128 pieces), multi-layer packaging (2036 pieces), milk cartons (1047 boxes), straws (772 pieces), plastic bottles (670 bottles), foam boxes (531 pieces), plastic spoon (400 pieces), polypropylene plastic cup (327 pieces) in the total waste produced in 01 days of these schools.

**Conclusions:** Schools are emitting a large amount of waste, significantly plastic waste. Intervention programs in school-based settings are needed to reduce waste to ensure childrens health and protect the environment.

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### Eco-anxiety, its determinants and the adoption of pro-environmental behaviors: Preliminary findings from the Generation XXI cohort.

Ana Isabel Ribeiro<sup>1,2,3\*\*\*</sup>, Inês Morais Vilaça<sup>4\*\*\*</sup>, Ana Henriques<sup>1,2,3</sup>, Alicia Matijasevich<sup>5</sup>, Maria Pastor-Valero<sup>6,7</sup>, Henrique Barros<sup>1,2,3</sup>

**\*\*Equal contributors; Apresentador: Inês Morais Vilaça**

<sup>1</sup>EPIUnit - Instituto de Saúde Pública, Universidade do Porto, Rua das Taipas, n° 135, 4050-600, Porto, Portugal, <sup>2</sup>Laboratório para a Investigação Integrativa e Translacional em Saúde Populacional (ITR), Rua das Taipas, n° 135, 4050-600 Porto, Portugal, <sup>3</sup>Departamento de Ciências da Saúde Pública e Forenses e Educação Médica, Faculdade de Medicina, Universidade do Porto, Alameda Prof. Hernâni Monteiro, 4200-319 Porto, Portugal, <sup>4</sup>Unidade de Saúde Pública Grande Porto VII - Gaia, Serviço Nacional de Saúde, Rua das Fábricas, 282. Canidelo, 4400-712 Vila Nova de Gaia, <sup>5</sup>Departamento de Medicina Preventiva, Faculdade de Medicina FMUSP, Universidade de São Paulo, SP, Brazil, <sup>6</sup>Department of Public Health, History of Science and Gynaecology, Faculty of Medicine, Miguel Hernández University, Sant Joan d'Alacant, Alicante, Spain, <sup>7</sup>CIBER in Epidemiology and Public Health (CIBERESP), Madrid, Spain

**Background and Objective:** Eco-anxiety describes the mental distress resulting from extreme concern about environmental circumstances as well as the effects of climate change. The study aims to measure eco-anxiety, identify its determinants, and assess the associations between eco-anxiety and health, as well as pro-environmental behaviors in participants of Generation XXI birth cohort at the ages of 16/17 years.

**Methods:** A cross-sectional evaluation based on a web-based questionnaire is currently on-going in the entire cohort (N= 8647). Eco-anxiety was assessed using Hogg et al. scale (2021), which was translated and culturally adapted to Portugal.

The Beck Anxiety Inventory was used to assess generalized anxiety. The adoption of pro-environmental behaviors was evaluated using an adapted version of the Kaiser et al. (2007) instrument. Eco-anxiety scale was categorized in quintiles. Linear and logistic regression were used to estimate associations.

**Results:** We found that 18.5% of the participants have some degree of eco-anxiety, scoring higher than 9 (scale from 39). Individuals in the top quintile (quintile 5) of eco-anxiety were more likely to be females [OR=3.9, 95%CI 1.9-8.1] and have poor self-rated health [OR=2.4 1.0-5.6] when compared to those with lower scores (quintiles 2-4). Higher levels of generalized anxiety were associated with higher eco-anxiety scores [ $\beta=0.16$ , 0.12-0.21]. Participants scoring higher in the eco-anxiety scale engaged more often in collective (e.g., activism [ $\beta=0.03$ , 0.01-0.04], nature conservation initiatives [ $\beta=0.06$ , 0.04-0.08]) and some individual pro-environmental behaviors (e.g., reduced meat consumption [ $\beta=0.06$ , 0.04-0.09], recycling [ $\beta=0.04$ , 0.01-0.07]). They also more frequently read/look for information about environmental problems [ $\beta=0.08$ , 0.05-0.10].

**Conclusions:** These preliminary results showed that eco-anxiety is more common in females and seems to be associated with generalized anxiety and poorer self-rated health. Eco-anxiety appears to prompt adolescents to adopt some proactive behaviors. Because the data collection is still ongoing these results should be interpreted with caution.

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### Per- and polyfluoroalkyl substances (pfas) and depression: Associations stratified by body fat level

Geraldo Neto<sup>1</sup>, Gorazd Stokin<sup>2</sup>, Anna Bartoskova Polcova<sup>3</sup>, Martin Bobak<sup>3</sup>, Ludek Blaha<sup>4</sup>, Juan Rivas<sup>5</sup>, Jana Klanova<sup>3</sup>

<sup>1</sup>International Clinical Research Center Of St. Anne's University Hospital Brno (FNUSA-ICRC) Pekařská 53, 602 00 Brno Czech Republic, <sup>2</sup>International Clinical Research Center Of St. Anne's University Hospital Brno (FNUSA-ICRC), <sup>3</sup>Research Centre for Toxic Compounds in the Environment (RECETOX), Faculty of Science, Masaryk University, Brno, Czech Republic. Kamenice 753, 625 00 Bohunice Czech Republic, <sup>4</sup>Research Centre for Toxic Compounds in the Environment (RECETOX), Faculty of Science, Masaryk University, Brno, Czech Republic, <sup>5</sup>The International Clinical Research Center of St. Anne's University Hospital in Brno (FNUSA-ICRC) Pekařská 53, 656 91 Brno Czech Republic

**Background and Objective:** The extensive use and bioaccumulation of per- and polyfluoroalkyl (PFAS)-containing substances over time raise concerns about their health impacts, which include mental issues such as depression. However, there is a lack of studies about this relationship, especially in middle-aged and older adults. Thus, the present study aims to evaluate the association between PFAS and depression. In addition, considering the importance of PFAS in the promotion of adipogenesis, and the fact of obesity and depression share about 12% to 20% of pleiotropic genes, the analyses will also be stratified by the body fat status.

**Methods:** A cross-sectional study with 479 subjects (56.4% women, 25-89 years) was conducted. Four PFAS were measured in serum: perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), and perfluorooctane sulfonate (PFOS). The depression was assessed by the Patient Health Questionnaire (PHQ-9) or the Center for Epidemiologic Studies Depression scale (CES-D). The body fat percentage was predicted on a scale with multi-frequency bioelectrical impedance analysis.

**Results:** The prevalence of high body fat and depression were respectively, 41.1% and 7.9%. The fully adjusted model included the co-variables: age, sex, educational level, income, smoking, physical activity, and the questionnaire to assess depression. Only PFOA was significantly associated in the whole sample (Prevalence Rate - PR:1.95 Confidence Interval-CI 95%:1.04-3.65). However, in the group with normal adiposity, PFOA (3.11, CI95%:1.53-6.34), PFNA (2.54, CI 95%:1.32-4.90), and PFDA (2.10, CI95%:1.09-4.01) were also significant.

**Conclusion:** After stratifying the sample, associations with depression became more apparent in three of the four PFAS in the group with normal adiposity. Future research should investigate the role of obesity, as well as the biological plausibility and possible mechanisms increasing the limited number of evidence on the effect of PFAS on public mental health.

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### Evidence and practical insights on participation of vulnerable population groups and transdisciplinarity in the context of urban health

Janna Leimann<sup>1</sup>, Patricia Tollmann<sup>1</sup>, Heike Köckler<sup>1</sup>, Eike Quilling<sup>1</sup>

<sup>1</sup>University of Applied Sciences Germany

**Background and Objective:** Social inequities in health are increasing in cities, particularly affecting certain sociodemographically defined communities, which are therefore more vulnerable than others. The urban health approach offers opportunities to promote health equity. Therefore, the participation of vulnerable groups is a promising strategy.

A transdisciplinary project on urban health in the Ruhr area (MUHR) investigates the international state of research on participation of vulnerable groups in the context of urban health. The objective is to present results on participation methods used, stakeholders involved, and the role of transdisciplinary collaboration.

**Methods:** To meet this objective, a systematic review was conducted and complemented by focus groups with experts from different disciplines related to urban health and participation. To adequately represent multisectoral aspects, social, medical and health science databases were systematically searched (PubMed, AgeLine, CINAHL Complete, APA PsychArticles and PsychInfo, SocINDEX, LIVIVO). International publications of the last ten years in English and German were considered. Two researchers screened independently considering defined exclusion criteria. The focus groups will address the identified research gaps and take place within a transdisciplinary forum.

**Results:** Of initially 841 manuscripts found, eight met the inclusion criteria and were included in the qualitative analysis. It can be increasingly seen that different disciplines are involved in the creation of healthy cities in the sense of transdisciplinarity and that the commitment to work together can represent an opportunity to support citizen empowerment. Commonly used methods for participation include Photo Voice, workshops, co-creation or community forums. The results of the focus groups will be available in February 2023 and will enrich the results with practical content.

**Conclusion:** The findings provide insights into the opportunities of urban health to promote health equity and public health in general. They represent direct impetus for structural change i.a. towards more community engagement in cities.

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### The case for indoor temperature in heat health warning systems: deployment of a real-time indoor temperature data ecosystem in community housing

Arlene Oetomo<sup>1</sup>, Jasleen Kaur<sup>1</sup>, Kang Wang<sup>1</sup>, Zahid Butt<sup>1</sup>, Peter Berry<sup>2</sup>, Plinio Morita<sup>1</sup>

<sup>1</sup>University of Waterloo Canada, <sup>2</sup>Health Canada

Heat waves are a major global public health concern and present a significant challenge to society, especially to underserved populations and those aged 50+, due to their increasing frequency and intensity. They also add significant burdens to the healthcare systems resources, and it has been shown that most deaths occur indoors. Still, our warning systems are based on outdoor temperature measurements. We have developed a real-time indoor temperature alert ecosystem that can capture indoor temperatures that may aid in assessing and responding during a heat wave. We placed ecobee smart thermostats into community housing homes with community housing partners and local health authorities (N = 70), recorded indoor temperature data in near real-time, and administered three surveys during the study period. We investigated: (i) indoor temperatures trends during the heatwave season of 2022 in Vancouver and Ottawa, Canada; (ii) behaviours of participants during this period; (iii) housing characteristics; (iv) delivery of time-sensitive temperature alerts to enable check-ins on participants, and (v) perceptions to heat risk and methods of communication. Initial results shows different observations that includes: a) unsafe indoor temperatures were reached and persisted (above 26°C and 31°C) despite a milder heat wave season than the previous year (in BC); b) gaps in understanding of best practices to stay safe exist; c) home characteristics increase risk of overheating; d) coordinating with community housing to check-in can protect individual health; and e) ensure individuals are protected during extreme heat events. Results suggest that implementing indoor temperature provides vital information to inform heat health response plans. The smart thermostat technology can be retrofitted into homes in Canada as it is commercially available. This study presents a scalable solution for monitoring indoor temperatures. It demonstrates how smart thermostats can monitor indoor temperature exposure conditions to prevent deaths during extreme heat events.

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### Modelling the Impact of Seasonal Climate Variability on Health Sector in Mozambique

Américo José<sup>1</sup>, Tatiana Marrufo<sup>2</sup>, Rachid Muleia<sup>3</sup>, Eduardo Gudo<sup>1</sup>, Kathryn Colborn<sup>1</sup>, Genito Maure<sup>4</sup>, James Colborn<sup>5</sup>

<sup>1</sup>National Institute of Health of Mozambique Ministry of Health of Mozambique Estrada Nacional Nacional N°1, Bairro da Vila - Parcela n° 3943, Marracuene, Mozambique Micronesia, Fed States, <sup>2</sup>National Institute of Health of Mozambique, <sup>3</sup>Eduardo Mondlane University Ministry of Science and Technology 3453 Avenida Julius Nyerere, Maputo Mozambique, <sup>4</sup>Eduardo Mondlane University Ministry of Science and Technology Estrada Nacional Nacional N°1, Bairro da Vila - Parcela n° 3943, Marracuene, Mozambique Mozambique, <sup>5</sup>Clinton Health Access Initiative United States

**Introduction:** Seasonal climate variability impacts the health of millions of population around the world. The incidence of malaria increase in many regions of the world, mainly in Mozambique, as a result of variability in rainfall, minimum and maximum temperatures. Malaria is a Public Health problem in Mozambique. **Methodology:** Weekly Malaria data were extracted (2008 – 2022) from the Weekly Epidemiological Bulletin provided by Ministry of Health of Mozambique and climate data were derived from the European Center for Medium-Range Weather Forecasts. Pearson Correlation Coefficient (r) was used to determine the correlation between rainfall, minimum and maximum air temperature and weekly malaria incidence. We used the Distributed Lag Non-Linear Models (DLNMs) to estimate the favorable thresholds of climatic variables to increase the relative risk (RR) of weekly malaria incidence. The “Generalized Additive Model (GAM)” was applied to estimate positive cases of malaria in the rainy season (October – March) in Mozambique.

**Results:** In the northern region of the country, the province of Nampula had the highest positive correlation for the increase of malaria with the rainfall at lags around 4 and 5 (r=0.47), mainly when the rainfall reaches 250 mm (RR=85%) and 15 oC (RR=75%) of minimum in a given epidemiological week. In the central region, positive cases of malaria are severely impacted by rainfall in Zambézia province, at lags 3 or 5 (r=0.20&r=0.18) and reach their peak prevalence of the disease when 400 mm of rainfall (RR=88%) is recorded. In the southern region, the province of Inhambane increased the malaria incidence when the rainfall was at lags 1 and 11 (r=0.80 Climate; Malaria).

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### Cardiovascular health effects of outdoor air pollution in the most polluted city, Mongolia

Nandin-Erdene Bayart<sup>1</sup>, Gavin Pereira<sup>2</sup>, Christopher Reid<sup>1</sup>, Krassi Rumchev<sup>1</sup>

<sup>1</sup>Curtin University Institute of Medical Sciences, Mongolian National University of Medical Sciences, Ulaanbaatar, Mongolia Kent St, Bentley, WA 6102, Australia Australia, <sup>2</sup>Curtin University

**Background:** Cardiovascular disease (CVD) are the leading cause of death globally. A major contributor to CVD mortality and morbidity is ambient air pollution (AAP) exposure. The AAP level in the capital city of Mongolia is considerably higher than the World Health Organisations air quality guideline. The main source of AAP is related to the traditional houses where people burn raw and processed coal for heating and cooking purposes. Although several studies have reported the association between AAP and CVD outcomes worldwide, scientific evidence in Mongolia is lacking. The purpose of this study is to evaluate associations between air pollution and CVD mortality in Ulaanbaatar.

**Methods:** We collected air pollution and meteorological data from the Centre for Environmental Monitoring and mortality data from the Health Development Centre between January 2014 and December 2021. Six criteria air pollutants were measured at 15 monitoring stations, including particulate matter with an aerodynamic diameter  $\leq 2.5 \mu\text{m}$  and  $\leq 10 \mu\text{m}$  (PM<sub>2.5</sub> and PM<sub>10</sub>), nitrogen dioxide (NO<sub>2</sub>), sulphur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>) and carbon monoxide (CO). An ecological time-series analysis was applied to examine the relationship between exposure and outcome variables.

**Results:** The highest concentrations of AAP, except ozone, were reported in winter. The average concentration of PM<sub>2.5</sub>, PM<sub>10</sub>, NO<sub>2</sub>, SO<sub>2</sub>, O<sub>3</sub> and CO were 118.2±73.8  $\mu\text{g}/\text{m}^3$ , 219.8±119.6  $\mu\text{g}/\text{m}^3$ , 76.1±20.3  $\mu\text{g}/\text{m}^3$ , 71.9±52  $\mu\text{g}/\text{m}^3$ , 21.9±19.8  $\mu\text{g}/\text{m}^3$ , 1.8±1.07 mg/m<sup>3</sup> respectively. A total of 33,931 deaths were identified, most of which occurred during cold seasons. In a multiple pollutant model, PM<sub>2.5</sub>, PM<sub>10</sub> and SO<sub>2</sub> were significantly correlated (P-value<0.05) with CVD death, accounting for seasonal variations after adjusting other pollutants.

**Conclusion:** This research found evidence of a positive association between short-term exposure to PM<sub>2.5</sub>, PM<sub>10</sub> and SO<sub>2</sub> and CVD mortality. These study findings provide evidence-based information for further research and policymakers to reduce current air pollution level in Mongolia.

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### Gender-specific variables of climate-change related health

**Impacts: a global south perspective**Nilanjana Ganguli<sup>1</sup>, Nilanjana Ganguli<sup>2</sup>, Ann LeHolland<sup>3</sup><sup>1</sup>Dahdaleh Institute for Global Health Research Canada, <sup>2</sup>Dahdaleh Institute for Global Health Research, York University Canada, <sup>3</sup>University of California, Irvine

**Background and objective:** Gender is critical for assessing the economic and social costs associated with climate change. Health impacts of climate change on women differ from impacts on men owing to complex social contexts and adaptive capacities. The objective of this study is to identify interactions within and across four subsystems—food security, communicable and non-communicable diseases, ecological services, and extreme weather—and their influence on gender-specific health impacts.

**Methods:** A systematic literature review guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) framework was conducted to generate the database. From 62 included articles, information was extracted on health-related variables, climate induced change in the variable (positive or negative), exposure pathways and their resulting health impacts. An Influence Diagram was then developed to visualize the cause-and-effect relationships within variables and help explain the change in variables over time. A bibliometric analysis was conducted to understand the status of gender-focussed research in climate-change and health.

**Results:** 53 gender-specific variables were identified, with socio-economic variables playing a more dominant role than environmental. Gender was discussed most in relation to food security and least in relation to communicable and non-communicable diseases. The bibliometric analysis showed an upward trend in studies focussed on gender and climate change since 2015, and 53% of the articles were a collaboration between male and female authors.

**Conclusion:** Overall, women and girls are more susceptible to climate change. In certain situations, men have shown higher vulnerability to climate change than women. Hence, generalization of women to be the highest at-risk category in all climate change related situations should be consciously avoided. Understanding the complexity arising from multiple interacting variables requires holistic and context-specific research approaches.

**Popul. Med. 2023;5(Supplement):A192****DOI: 10.18332/popmed/164463****Legionella contamination and human health: the risk of wastewater reuse in agriculture**Sara Bonetta<sup>1</sup>, Cristina Pignata<sup>2</sup>, Lisa Richiardi<sup>1</sup>, Silvia Bonetta<sup>3</sup>, Elisabetta Carraro<sup>2</sup><sup>1</sup>University of Torino Department of Public Health and Pediatrics, University of Torino, Torino Italy, <sup>2</sup>University of Torino, <sup>3</sup>University of Torino Department of Life Sciences and Systems Biology, University of Torino, Torino Italy

**Background and objective:** Wastewater reuse is a promising alternative source of water supply considering the water scarcity related to climate change. However, if not adequately treated, wastewater represents a source of microbiological health risk. The wastewater reuse in agriculture can promote the production and dispersion of aerosol containing pathogens such as Legionella opening new risk profiles for human health. The purpose of the study was to investigate risks related to Legionella occurrence in wastewater samples reused in agriculture.

**Methods:** Legionella (spp. e pneumophila) were monitored using both culture and molecular (qPCR) methods in influents (n=21) and effluents (n=21) of 3 wastewater treatment plants (WWTPs) equipped with treatments suitable for wastewater reuse (WWTP1 and WWTP2 with membrane bioreactor-MBR system and WWTP3 with ClO<sub>2</sub> disinfection)

**Results:** The qPCR revealed Legionella spp. presence in all samples. L. pneumophila was detected in 86% and 57% of the WWTP1 and WWTP2 influents and in all pre-disinfected samples of WWTP3, while only some WWTP3 effluents were contaminated. A significant reduction in Legionella contamination was obtained only with MBR highlighting that this treatment allows to control Legionella contamination. A lower Legionella contamination was observed with culture method respect to molecular one. The significant correlation between Legionella presence and physicochemical characteristics of wastewater (BOD-biochemical oxygen demand, COD-chemical oxygen demand, TSS-total suspended solids) highlights the possibility that these parameters support the risk evaluation of Legionella occurrence in wastewater.

**Conclusion:** Results obtained highlight the need to carry out further investigation on Legionella contamination in wastewater samples when the reuse of the effluents in agriculture is purposed. The use of molecular method could allow more precautionary risks estimation. This is particularly important considering that aerosol formation from wastewater contaminated by Legionella could represent an occupational health risk associated with reuse.

**Popul. Med. 2023;5(Supplement):A193****DOI: 10.18332/popmed/164474****Arboviral transmission risk as driven by aedes aegypti resistance to insecticides and eco-bio-social factors in disease foci, côte d'ivoire**Julien Zahouli<sup>1</sup>, Claver Adjobi<sup>2</sup>, Pie Müller<sup>3</sup><sup>1</sup>Centre Suisse de Recherches Scientifiques en Côte d'Ivoire, Abidjan, Côte d'Ivoire. Vector Control Unit "Adiopodoumé, KM 17, Route de Dabou 01 BP 1303 Abidjan 01 Côte d'Ivoire" Ivory Coast (Cote D'Ivoire), <sup>2</sup>Centre Suisse de Recherches Scientifiques en Côte d'Ivoire, Abidjan, Côte d'Ivoire., <sup>3</sup>Swiss Tropical and Public Health Institute Vector Biology Unit Switzerland

**Background:** Our ability to deal with Aedes mosquito-borne arboviral outbreaks in Africa is still limited. Thus, we assessed the risk of transmission arboviruses (e.g., dengue and yellow fever) and Aedes aegypti susceptibility to insecticides and breeding eco-bio-social determinants in disease foci in Côte d'Ivoire.

**Methods:** We sampled Ae. aegypti larvae and breeding sites, and household socio-ecological data in arboviral foci in Côte d'Ivoire from June to December 2020. We collected Aedes mosquito samples in two rubber tree areas (Koffikro and Samo), two oil palm areas (Ehania, and Agbaou), and two urban neighbourhoods (Bingerville and Cocody). Aedes larval indices (container index: CI, household index: HI and Breteau index: BI) were determined. Moreover, we tested Ae. aegypti larvae and adults against insecticides (DDT and deltamethrin), and recorded the mortality.

**Results:** The most productive Ae. aegypti breeding sites were tyres, discarded cans, water storage containers and rubber latex collection cups. Stegomyia indices were highest in urban areas, followed by rubber areas and oil palm areas, with HI of 98.3, 81.2 and 67.82 CI of 69.7, 57.3 and 29.5, and BI of 99.7, 65.9 and 13.8, respectively. Ae. aegypti showed possible resistance to deltamethrin (mortality: 87,3-90.8%) rubber and oil palm areas, and resistance to DDT (mortality: 57,3-60.1%) in urban neighbourhoods and permethrin (mortality: 79.5-85.4%) in rubber and oil palm areas. Ae. aegypti larval infestation was correlated with complex community behaviours, including water storage practices and solid waste management. Ae. aegypti breeding sites' positivity was associated with unmanaged solid waste, water supply interruptions, water storage duration and insecticide-susceptibility status.

**Conclusions:** In Côte d'Ivoire, Ae. aegypti larval indices and arbovirus transmission risk were correlated with socio-ecological factors and insecticide-resistance level. Integrated community-based vector control is recommended.

**Popul. Med. 2023;5(Supplement):A194****DOI: 10.18332/popmed/164514****Prevalence of environmental certificates in unhealthy foods commercialized in Brazilian retail**Carolina Kikuta<sup>1</sup>, Camila Borges<sup>2</sup>, Ana Duran<sup>3</sup><sup>1</sup>State University of Campinas Brazil, <sup>2</sup>Center for Epidemiological Research in Nutrition and Health, <sup>3</sup>Center for Food Studies and Research Brazil

**Background and Objectives:** Environmental certification used by food industries has been increasing aiming to show concern with environmental impact. Consumers' interest in green products is also increasing. This study aims to analyze the most prevalent environmental certification types on food and beverages packaging marketed on Brazilian retail and analyze their nutritional profile.

**Methods:** The analysis was conducted with 7,726 products founded in Brazilian retail between 2018 and 2021. Data were collected by trained researchers using images from all sides of the package. The products were classified by the NOVA classification in unprocessed and minimally processed foods, culinary ingredients, processed foods and ultra-processed foods. Nutritional profile was analyzed according to Pan-American Health Organization (OPAS). Were calculated the prevalence of types of environmental certificates according to NOVA and the proportion of products with certifications and high in critical nutrients.

**Results:** A total of 1,753 products had environmental certification on food packaging (22.7%). The most prevalent type was related to conservation of fauna and flora as the following certifies: FSC Mix, Projeto Tamar, SOS Mata Atlântica, Certified Humane Brasil, Dolphin Safe and Best Aquaculture Practice (45.9%), followed by transgenic certified (33.4%) and organic certified (10.5%). Environmental certifications were more prevalent on ultra-processed foods (81.9%) than processed foods (7.5%), culinary ingredients (2.6%) and unprocessed and minimally processed foods (19.7%). The most frequent certification on ultra-processed foods were related to conservation of fauna and flora (36.7%), and transgenic (30.9%). Between the products with environmental certifications, 22.8% of the ultra-processed and 19.0% of the processed were high in at least one critical nutrient.

Conclusion: Ultra-processed foods high in at least one critical nutrient showed more environmental certification on their packaging. This fact can cause misunderstanding among consumers who are concerned about environmental issues since ultra-processed foods are unhealthy.

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### Incidence tendencies and projection of climate sensitive diseases in mozambique

Oswaldo Inlamea<sup>1</sup>, Érico Langa<sup>1</sup>, Tatiana Marrufo<sup>1</sup>, Américo José<sup>2</sup>

<sup>1</sup>Instituto Nacional de Saúde Mozambique, <sup>2</sup>Instituto Nacional de Saúde Oswaldo Inlamea Mozambique

Background and objective: Changes in climate patterns have been reported around the world. There is evidence that such changes can affect human health, particularly with climate sensitive diseases like Malaria and diarrhea. These effects are exacerbated in low and middle-income countries such as Mozambique. Thus, this study aimed to determine climate sensibility of Malaria and Diarrhea as well as the behavior they can take in the face of climate change.

Methods: Eight districts of Mozambique were selected. Malaria and diarrhea incidence data was obtained at Weekly Epidemiological Bulletins. Pearsons Correlation Coefficient was determined and Poisson's regression with distributed lags was used to determine relationship between the incidences, temperature and precipitation. Projections of climate change impact were determined based on IPCC emission scenarios. All analyzes performed using the R statistical software. Results: Positive correlation between diarrhea cases and precipitation and negative correlation between Malaria and maximum temperatures were observed. There is a high probability of an increase in the incidence of diarrhea if precipitation above 50 mm occurs. Thresholds of minimum temperature that favor an increase in Malaria vary from 17°C in Lichinga to 24 °C in Angoche, Beira and Tete. The models indicated a possible increase in the incidence of Malaria in the low emissions scenario in all districts, except in Angoche and Moamba, where the low emissions scenario show a probable decrease in the incidences. The models also showed a possible increase of diarrhea in the long term, with up to 35% increase in Mabalane district.

Conclusions: The analyses showed weak to moderate correlation between climatic variables and studied diseases. Precipitation most influences diarrhea cases, while Malaria is most influenced by minimum temperatures. According to the models, the incidence of both diseases will probably increase in most studied districts.

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### Does the proportion of children with limited day-to-day activities affect the provision of accessible and inclusive public playground in London?

Hynek Pikhart<sup>1</sup>, Katerina Pikhartova<sup>2</sup>, Aissa Gomez<sup>2</sup>, Jitka Pikhartova<sup>3</sup>

<sup>1</sup>UCL London United Kingdom, <sup>2</sup>The Manchester School of Architecture United Kingdom, <sup>3</sup>UCL IEHC London United Kingdom

Whilst play is a fundamental right of every child, and has been continually shown to provide opportunities for social, physical, cognitive and emotional development, a general lack in play provisions for children with disabilities has been reported in the past. Additionally, it has been suggested that the word 'inclusive' is regularly misused in playground guidance and play equipment providers. The study aim was to investigate the playground provision in London, and to assess whether boroughs, with the highest, mid- and lowest proportion of children with limited day-to-day (LDTD) activities (as classified by ONS), offer residents accessible and inclusive public play areas, and whether there are any differences between these boroughs. Four boroughs were selected to represent each of the three categories, and 20% of randomly selected playgrounds were then thoroughly investigated in each borough for accessibility and inclusivity. Borough-level analysis was conducted to assess the association between proportion of children with LDTD activities and average playground inclusivity scores. This analysis was then adjusted for different social and economic indicators including Index of Multiple Deprivation (IMD). Results showed that 1% increase in the proportion of children with LDTD activities was associated with a 0.82point decrease in the borough's average playground score. Further analysis suggested that this association may be, at least partly, due to the socioeconomic characteristics of the different boroughs. When the analysis was adjusted for the 2019 IMD the effect was reduced to 0.19points, (77% reduction of original association). Accounting for IMD data, a clear trend emerged showing that boroughs with lower financial deprivation commit more resources to providing accessible playgrounds for their residents. The study further highlights that designing for 'inclusive' spaces is generally poor

in London, even poorer in more deprived areas, suggesting designers should be more proactive in engaging with existing resources related to children's play.

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### A novelty strategy on adaptation for climate change in defense of climate justice was made in antioquia, colombia

Eliana Herrera<sup>1</sup>, Camilo Molina-Betancur<sup>2</sup>, Eliana Martínez-Herrera<sup>3</sup>, Camilo Molina-Betancur<sup>4</sup>

<sup>1</sup>National School of Public Health Professor "62 St # 52 -59 33rd Building Medellin, Colombia, <sup>2</sup>National School of Public Health UA, Colombia, <sup>3</sup>National School of Public Health UA Professor Colombia, <sup>4</sup>National School of Public Health Researcher Colombia

The implementation of strategies and actions to reduce social, economic and environmental health risks and vulnerabilities due to the climate crisis was possible in Antioquia because of the declaration of the emergency in the territory. In the formulation process, 4 major components were identified, a baseline or diagnosis, a vulnerability analysis, a strategic component to act against these problems and the transversally to the previous components through a participation, dissemination and public communication mechanism. Some important findings at the departmental level have to do with low institutional capacities in environmental health at the municipal level. It was identified how certain productive sectors (mining, agriculture and construction) increase the impacts on water, air and soil, increasing the probability of further damage in the face of the growing increase in extreme weather events such as fires, windstorms and floods, and increasing in turn the rates of morbidity and mortality from related diseases. Thus, the need for promotion and prevention programs in environmental health is evident to reduce the effects on health due to the effects of climate change. 45 adaptation strategies were formulated with short, medium and long-term actions, where strategies that provide mitigation co-benefits stand out, others are those based on socio-ecosystems and communities, or on the improvement of basic infrastructure and development sectors, coordination with risk management and those that promote the strengthening of institutional and community capacities. They were held many roundtables with the participation of more than 1,200 people, where the participating actors recognized the effects of climate change related them to health. This has been an opportunity to recognize that health must be transversal in all policies, which strengthens intersectoral and transectoral dialogue and synergies can be generated in resources, not only financial, but also human and technical knowledge.

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### Assessing the impact of air pollution on health outcomes using IOT sensors

Shahan Salim<sup>1</sup>, Plinio Morita<sup>2</sup>

<sup>1</sup>University of Waterloo Canada, <sup>2</sup>University of Waterloo

Background and Objectives: Air pollution is a global public health concern. It is responsible for a cascade of adverse health outcomes ranging from minor physiological impacts to deaths from respiratory and cardiovascular diseases. Despite these increasing threats, current surveillance ecosystems cannot monitor indoor and outdoor air pollution levels to provide early warnings for high-risk individuals. Air pollution alerts are based on ecological data collected from outdoor air quality monitoring stations, limiting the ability to monitor individual-level exposure and provide recommendations on managing the impacts of air pollution.

The advancement of IoT and big data technologies can now allow public health officials and researchers to monitor air pollution levels and take appropriate and rapid actions to mitigate the harm.

Methods: We have partnered with UNICEF Mongolia to assess the impact of air pollution on health. Air pollution data were collected from 12 air quality monitoring stations placed across Ulaanbaatar, Mongolia. The National Center for Public Health (NCPH) provided public health data in form of ICD-10 codes for 2019 and 2020.

Results: We tested for exposure-outcome relationship using logistic regression models. Preliminary results indicate a mean PM10 is 139.7; and PM2.5 is 71.7. Results indicate hypertension (ICD I10) to be the most prevalent disease in the population. Acute tonsillitis (J03), acute bronchitis (J20), acute nasopharyngitis (J00) round out the top 4 diseases. We did not observe any relationship (OR 1.01; 95% CI 0.9-1.04) between high exposure to air pollution with rates to hypertension. Other outcomes are still being explored.

Conclusion: This study is a stepping-stone for using IoT based air pollution data to assess its impact on human health at a population level.

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### Estimating the environmental impact of antibiotics through drug utilisation and eco-toxicological data: The Italian context

Carlotta Lunghi<sup>1</sup>, Valentina Giunchi<sup>1</sup>, Michele Fusaroli<sup>1</sup>, Emanuel Raschi<sup>1</sup>, Elisabetta Poluzzi<sup>1</sup>

<sup>1</sup>University of Bologna Italy

**Introduction:** Antibiotics use in Italy is among the highest in Europe. This overuse can lead to anti-microbial resistance and harm humans, animals, and plants. Their accumulation in surface waters, and its consequent toxicity for animals and plants, is an emerging problem. This study aimed to estimate antibiotics environmental impact on the Italian surface waters.

**Method:** We integrated drug utilisation and eco-toxicological data to assess antibiotics burden on the Italian surface waters. We extracted the predicted no-effect concentrations (PNEC) from the European Medicines Agency (EMA) and the Swedish Medicines Agency (FASS) environmental risk assessment reports. We then estimated the Italian predicted environmental concentrations (PEC). We used Italian drug utilisation data for 2020, the total number of inhabitants on January 1st, 2020, and the default values proposed by the European Chemical Agency for wastewater production and disposal. We calculated the environmental risk as PEC/PNEC ratio and classified it as high (>10), moderate (>1), low (>0.1), and insignificant (≤0.1).

**Results:** We obtained the environmental risk for 56 antibiotics for which Italian consumption data were available. We found a high environmental risk for one glycopeptide (vancomycin: PEC/PNEC=71.002), two penicillins (ampicillin: 43.376; amoxicillin: 41.346), one cephalosporin (cefazolin: 26.201), and one macrolide (azithromycin, 10.263). The risk was moderate for two fluoroquinolones (levofloxacin: 8.333; ciprofloxacin: 3.371), three cephalosporins (ceftriaxone: 5.823; cefepime: 2.147; cefixime: 1.867), two penicillins (piperacillin: 3.194; flucloxacillin: 1.377), and one macrolide (clarithromycin: 2.917). Vancomycin, azithromycin, ciprofloxacin, levofloxacin, ceftriaxone, cefixime, piperacillin, and clarithromycin are also on the Watch group of the AWaRe classification.

**Conclusions:** Multiple antibiotics have a high/moderate environmental impact on Italian surface waters, most of which have a relatively high risk of selecting bacterial resistance (those in the Watch group). Appropriate prescription and adherence practices of these antibiotics may reduce the negative impact on the environment and improve purification procedures and green drug development.

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### Lead exposure is associated with reduced brain electrical activity in cognitively unimpaired older adults

Kyoung-Bok Min<sup>1</sup>, Jin-Young Min<sup>2</sup>

<sup>1</sup>Department of Preventive Medicine, College of Medicine, Seoul National University, Seoul, Republic of Korea, <sup>2</sup>Veterans Medical Research Institute, Veterans Health Service Medical Center, Seoul, Republic of Korea

**Background and Objective:** Lead is a ubiquitous environmental pollutant affecting the central nervous system. Many studies have provided evidence that exposure to lead causes reduced cognitive performance or structural changes in the brain. Despite these neuroscientific studies, no study has yet investigated the association between body lead level and the brain electrical activity (which indicates cognitive dysfunction in the brain). This study examined the association between blood lead level and electroencephalography (EEG) in cognitively unimpaired older adults. **Methods:** A total of 93 cognitively unimpaired older adults (60 years or older) was included in this study. The level of cognitive function or impairment was evaluated by neurologists diagnose. EEG is a non-invasive method that records the brain electrical activity via electrodes placed on the scalp. A cap-type wireless EEG device was used for EEG recording, with linked-ear references based on a standard international 10/20 system. Blood lead levels were measured by inductively coupled plasma mass spectrometry. Multiple linear regression was employed to analyze relationships between lead and EEG features of the frontal, central, parietal, temporal, and occipital regions.

**Results:** The mean age of study population was 71.5 years, and 46.2% were female. The mean blood lead level was 1.60 µg/dL. We found a significant association between lead and EEG features. Specifically, elevated blood lead levels were significantly and negatively associated with EEG activity in the brains central, temporal, and occipital regions. The most robust finding was observed in occipital lobes, which are located at the very back of the brain and responsible for the visual processing area of the brain. The association was independent of covariates (i.e., age, gender, income, health behaviors, and chronic conditions). **Conclusions:** Environmental exposure to lead may be associated with cognitive performance

via reduced brain electrical activity in the central, temporal, and occipital lobes.

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### Dengue fever complex over climate change scenario in Rio de Janeiro state (Brazil)

Antonio Carlos Oscar-Júnior<sup>1</sup>, Pedro Henrique de Castro<sup>1</sup>

<sup>1</sup>Rio de Janeiro State University, Rio de Janeiro, Brazil, <sup>2</sup>Programa de Pós-Graduação em Geografia, Rio de Janeiro State University, Rio de Janeiro, Brazil

Dengue fever is currently considered the most important arbovirus in the world and since its reintroduction in Rio de Janeiro, in 1986, it has become endemic, with epidemic periods. In 2022, there are 1.3 million probable cases and 951 confirmed deaths across Brazil. It is a disease strongly associated with urban characteristics and climate due to the adaptation and development characteristics of the *Aedes aegypti* vector. Given this background, this study evaluated the relationship between global climate change and the risk of dengue fever diseases for the state of Rio de Janeiro. The projection of future climate susceptibility to vector proliferation in the scenarios RCP 4.5 (stabilization level) and 8.5 (high level) between 2011-2040 and 2041- 2070 were assessed using two models: Eta HadGEM2-ES and EtaMIROC5 considering relative humidity (RH), annual percentage of days with minimum temperature higher than the 90th percentile (TN90p), days in the year with precipitation higher than 10mm (R10), grouped by seasons. The results indicate that the tendency of thermal and hygrometric elevation may have repercussions on the intensification and spatial expansion of the risk of arboviral diseases in the state of Rio de Janeiro, since there is a spatial and temporal expansion of the optimal environmental conditions for the development of the vector. Such findings affect, above all, public health strategies, which are still based on the prevalence of the disease in summer and autumn. Both models used (Eta HadGEM2-ES and Eta MIROC5) point to an intensification of the dengue fever risk in all state of Rio de Janeiro, including Mountain Region, nowadays the lower in cases. This intensification results mainly from the gradual increase of the minimum temperature and warm nights over the future periods, important conditions for the spread of the disease, since they favor the development of the vector-mosquito.

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### Urban environment walkability and its relation with Noncommunicable Diseases: a scoping review

José García-Abajo<sup>1</sup>, Marilina Santero<sup>2</sup>, Ivan Solà<sup>3</sup>, Gerard Urrütia<sup>3</sup>, M. Puig<sup>1</sup>

<sup>1</sup>Hospital de la Santa Creu i Sant Pau, Spain, <sup>2</sup>Iberoamerican Cochrane Centre, Biomedical Research Institute Sant Pau, Spain, <sup>3</sup>Iberoamerican Cochrane Centre, Biomedical Research Institute Sant Pau (IIB Sant Pau), Spain

**Background:** The walkability of the urban environment is the facility of walking around the urban area. This includes the availability of safe and well-designed roads, air quality, green spaces, and cycling infrastructure among other features of the environment. Walking is proven to improve health, but not all urban spaces are equally walkable.

**Aim:** To explore the impact of the urban environment walkability on the prevalence and development of chronic non-communicable diseases (NCDs).

**Methods:** A scoping review will be conducted following the standards of the Joanna Briggs Institute and PCC framework. The results will be reported in accordance with the PRISMA-ScR statement. The review will contain articles published between 2001 and 2020 in the Medline and Embase databases. Systematic reviews, ecological studies, clinical trials, quasi-experimental and observational studies that meet the eligibility criteria will be included. The impact on outcomes such as physical activity, obesity, blood pressure, hypertension, diabetes, and others like mental health, quality of life, and healthy behaviors will be explored. **Expected results:** This study will help to identify how walkable environments are associated with NCDs. Furthermore, emphasize how the importance of considering indicators of the walkability of the urban environment when planning, designing and implementing public health interventions. This scoping review will identify the feasibility of urban environments to promote physical activity and better health outcomes.

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### The benefits of walkability: application and limits of the Walking Suitability Index of the Territory in L'Aquila

Melissa Corradi<sup>1</sup>, Riccardo Mastroantonio<sup>1</sup>, Stefano Greco<sup>2,3</sup>, Leila Fabiani<sup>1,2</sup>

<sup>1</sup>Department of Life, Health and Environmental Sciences, University of L'Aquila, Italy, <sup>2</sup>Italian Society of Hygiene, Preventive Medicine and Public Health, Italy, <sup>3</sup>ASL Teramo, Italy

**Background:** There is an interdependence between the favorable environment and the state of individual and collective well-being, also determined by physical activity, for this reason the new concept of city should provide places that encourage active mobility: "point models" can be used to assess whether a city facilitates it and compare zones or cities. The University of L'Aquila wants to evaluate and compare the walkability of areas in the city of L'Aquila.

**Methods:** Applying the model on three areas of the city of L'Aquila, Pettino, Coppito, hospital area, and analyzing practicability, safety, urbanity and pleasantness, each category was divided into three indicators, which were assigned a numerical rating from very bad to very good: through the model formula, the Walking Suitability Index of the Territory (T-WSI) for each category and the Street Index-SI1 for each zone have been calculated.

**Results:** The application of the algorithm allowed to obtain the following average values on base 100.

Practicability Safety Urbanity Pleasantness SI1 34.2 43.9 5.1 81.7 41.2 COPPITO 46.3 15.5 15.5 83.5 40.3 PETTINO 56.68 64.46 15.5 83.7 55.4 HOSPITAL The data indicate in Coppito quantity and quality of pavements very bad in almost half of cases, the area of the hospital is on average safer than the other two but in a quarter of cases received a vote of 0. It is, however, the urbanity (breadth, furniture and activity in the streets) to be globally more lacking, while the pleasantness is the parameter where the three areas have higher scores, hosting green areas not approachable.

**Conclusions:** The strong limit in the model method is represented by not having discriminated green areas usable by areas that are not, describing the suburbs as livable. Future project is to critically analyze the T-WSI considering urban maps that discriminate the different types of green areas.

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### The future risk and prevention of climate-change induced arboviral diseases in the European Union through a planetary health perspective: a systematic literature review

Lena Mende<sup>1</sup>, Pierre Thomas<sup>2</sup>

<sup>1</sup>Maastricht University, The Netherlands, <sup>2</sup>Maastricht University, Netherlands

**Introduction:** Climate Change redefines the spread of arboviral diseases. The European Union is becoming increasingly active in implementing adaptation and mitigation strategies, to limit greenhouse gas emissions and prevent adverse climate change effects.

**Methods:** A systematic literature review of 139 Reports using the PRISMA flowchart was performed to gather secondary data.

**Results:** The arboviral species Ixodes ricinus ticks, Aedes aegypti- and Aedes albopictus mosquitoes, their spread, and the associated infectious diseases of dengue, zika, and chikungunya, tick-borne encephalitis, and Lyme borreliosis, are identified as the most important vectors in Europe. The European Union is increasingly reliant on One Health approaches to enact environmental policy, and aims at improving surveillance and data sharing, as a spread of arboviral diseases resulting from Climate Change is expected.

**Discussion:** The spread of the assessed arboviral diseases is predicted, current models however fail to predict the spread at the regional level. European Policy is present, but a more coherent shared vision is needed to enable better local, national and supranational decision-making. Inclusion of planetary health, one health and Nature-based Solutions offer increased biodiversity, human, environmental and animal health protection. The effectiveness of recent EU action remains to be established.

**Conclusions:** The European Union needs enhanced surveillance systems that can predict high-risk areas for the emergence and spread of diseases are necessary, to effectively protect the European region from the growing infectious disease risk. Nature-based Solutions hold the capacity to protect human and environmental health better, and, if efficiently researched and implemented, incorporate cross-sectoral decision-making and lower intervention costs.

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### Effect of climatic factors favoring dengue transmission in Islamabad Capital Territory, Pakistan, 2022

Nadia Noreen<sup>1</sup>

<sup>1</sup>Directorate of Central Health Establishments(DOCHE), Ministry of National Health Pakistan, Islamabad, Pakistan

**Background:** Dengue fever (DF) is a national public health problem in Pakistan.

Dengue is a crucial vector-borne viral human disease widespread throughout the tropical region, with local risk variations affected by rainfall, temperature, humidity, and unplanned rapid urbanization. The dengue epidemic is a major public threat in Pakistan since 2005. Dengue fever is now endemic in Pakistan throughout the year circulation of four dengue serotypes with a peak incidence in the post-monsoon period (September-November). This study investigates the impacts of climatic factors (temperature and rainfall) on DF transmission in the Islamabad Capital Territory, through statistical approaches.

**Methods:** A time series analysis of the climatic factors was used to explore the climatic variability from 2015 to 2022. Furthermore, multiple linear regression analysis was used to measure the simulating effect of climatic factors on dengue outbreaks in ICT from 2015 to 2022.

**Results:** The time series analysis revealed significant annual and monthly variability in climatic factors, favoring a dengue-supporting environment. A positive temporal relationship between climatic factors (rainfall and increased temperature) and DF was observed. Moreover, a substantial monthly relationship between climatic factors and dengue incidence was revealed by the regression analyses. The linear regression of rainfall versus dengue showed monthly R<sup>2</sup> = 21.3%, whereas temperature versus dengue presented R<sup>2</sup> = 42.1%. A monthly significance R<sup>2</sup> = 54.6% was observed by the multiple regression analysis.

**Conclusions:** This study provided a substantial consensus on climatic factors influences on dengue transmission in the Islamabad Capital Territory, Pakistan. An increasing dengue transmission risk is associated with frequent climate changes. The disease prevention strategies by public health authorities should emphasize the integration of the health prediction modeling of dengue regarding influences of climate variability which can be replicated and applied in other subtropical and temperate climates zones of Pakistan.

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### Epidemiological profile of dengue in State of São Paulo/Brazil from 2010 to 2021

Lisie Justo<sup>1</sup>, Amarylis Gardin<sup>1</sup>, Heber Babosa<sup>1</sup>, Luiza Carminatti<sup>1</sup>, Otavio Ravazzi<sup>1</sup>

<sup>1</sup>Faculdade São Leopoldo Mandic de Araras, Brazil

**Background and Objective:** It is known that climatic changes and the urban mobility are increasing the numbers of dengue cases. In 2019, were registered 5,2 million new cases, and World Health Organization aim to reduce mortality caused by this disease until 2030. Dengue is the main arbovirolosis disease, being a viral infection transmitted to human through by infected mosquitoes, mainly Aedes Aegypti. In the last 12 years, were notificaded 16,942538 cases in Brazil, whereupon São Paulo is the most prevalent state (26.9%). The objective of the study was to establish epidemiologic profile of dengue in the State of São Paulo/Brazil, in the last 12 years. **Methods:** This is an observational, descriptive, cross-sectional, and retrospective study, which was carried out through the analysis of secondary data collected from the National System of Notification Appeals (SINAN) and from SUS Computer Department (DATASUS).

**Results:** The total number of reported cases was 4,558,369 and 2015 was the year with the highest cases (1,033,070). The cases were predominant in the female sex (53.7%), white people (54.4%), high school completed (16.1%) and clinical and epidemiological criteria of confirmation (63.8%). Concerning hospitalization rates, there was a limited necessity of admissions (2.2%), as well as few deaths due to the notified disease (1557). **Conclusions:** There was a significant growth in the number of dengue cases in Brazil from 2019, during pandemic COVID-19, which represents a public health problem. Health promotion and prevention actions should be intensified in primary health care.

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### Monitoring of enteric viruses in treated and untreated civil and livestock sewages in the Piemonte Region - Italy

Cristina Pignata<sup>1</sup>, Marco Panizzolo<sup>2</sup>, Marta Gea<sup>2</sup>, Angelo Romano<sup>3</sup>, Claudio Caruso<sup>4</sup>, Ilaria Gorrasi<sup>5</sup>, Manila Bianchi<sup>6</sup>, Lucia Decastelli<sup>6</sup>, Giorgio Gilli<sup>2</sup>, Silvia Marro<sup>7</sup>, Bartolomeo Griglio<sup>8</sup>, Silvia Bonetta<sup>9</sup>

<sup>1</sup>Department of Public Health and Pediatrics, University of Torino, Italy,

<sup>2</sup>Department of Public Health and Paediatrics, University of Torino, Italy,

<sup>3</sup>Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'

Aosta, Torino, <sup>4</sup>Animal Health Department, Local Sanitary Service Cuneo 1,

Racconigi (CN), Italy, <sup>5</sup>Department of Prevention, Food and Nutrition Hygiene

Service, ASL CN1, Fossano, Italy, <sup>6</sup>Istituto Zooprofilattico Sperimentale

del Piemonte, Liguria e Valle d'Aosta, Torino, Italy, <sup>7</sup>Local Health Unit ASL

T05 - Ce.I.R.S.A., Torino, Italy, <sup>8</sup>Prevention, Veterinary Public Health and

Food Safety Department, Public Health & Welfare Directorate, Piemonte Region, Italy, <sup>9</sup>Department of Life Sciences and Systems Biology, University of Torino, Italy

**Background and Objective:** Enteric viruses are among the main causes of waterborne infectious diseases, therefore their monitoring in waters is crucial for public health. In the present work, financed by the Piemonte Region, the occurrence of seven enteric viruses was monitored in urban sewages of two Wastewater Treatment Plants (WWTP) and in livestock sewages of three farms (beef cattle, dairy cattle and pigs).

**Methods:** The nucleic acids of 16 influent end effluent samples of the two WWTPs were concentrated and extracted using eGeneUP® with magnetic silica, while the nucleic acids of 12 livestock manure samples were extracted using the AllPrep® PowerViral® DNA/RNA. The presence of enteroviruses (EV), adenoviruses (AdV), noroviruses (NoVs) GI/GII, hepatitis A virus (HAV), hepatitis E virus (HEV) and rotavirus (RV) was evaluated by PCR.

**Results:** All municipal wastewater samples (100%) tested positive for at least one viral pathogen. 93.7% of samples tested positive for RV (93.7%), followed by NoV GII (68.7%), and AdV (43.7%). High percentages of positive samples were also detected for EV, HEV and NoV GI (37.5%), while HAV was not identified. For all viruses, except RV, the percentage of positivity in the effluent was lower than in the influent of the two WWTPs. 91.6% of the livestock manure samples tested positive for at least one viral pathogen with RV being the most present pathogen (83.3%). HAV, HEV, EV, AdV, and NoV GI, were detected in 33.3%, 33.3%, 25%, 8.3%, and 8.3% of the samples, conversely NoV GII was not found.

**Conclusions:** Since WWTP effluents are discharged in surface waters and livestock sewages can be reused as soil fertilisers, the results highlighted the need to consider and manage these matrices as potential sources of virus spread in the environment in order to protect humans in a one-health approach.

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### Public health impact of new sustainable agronomic practices: the TOMRES project

Elisabetta Carraro<sup>1</sup>, Silvia Bonetta<sup>2</sup>, Veronica Porro<sup>1</sup>, Elisa Gasparro<sup>1</sup>, Lisa Richiardi<sup>1</sup>, Cristina Pignata<sup>3</sup>

<sup>1</sup>Department of Public Health and Pediatrics, University of Turin, Italy,

<sup>2</sup>Department of Life Sciences and Systems Biology, University of Turin, Italy,

<sup>3</sup>Dept. of Public Health and Pediatrics, University of Turin, Italy

**Background and Objective:** Agricultural crops require high volumes of water and fertilizers. Nowadays, water resources are scarce, also for climate changes, and fertiliser production requires large amounts of non-renewable resources such as phosphorus. The TOMRES project (Horizon 2020, n. 727929) involved 25 partners from 10 European countries with the aim of increasing tomato tolerance to the combination of water and nutritional stress. Sustainable management strategies suitable for water and nutrients absorption from soil were tested and optimised, including fertilisation, irrigation techniques, symbiotic microorganisms and biostimulants use. With the purpose of assessing the effects on Public Health, the evaluation of the hygiene and sanitary impact of the new cultivation method was investigated.

**Methods:** Microbiological indicators and pathogens, ecotoxicological indicators, pesticides and heavy metals contamination were analysed on soil samples in relation to the agronomic techniques applied in the project trials. To evaluate the hygiene and sanitary impact a statistical comparison of the Results obtained in soil samples between pre- and post-cultivation (t-test) and among the different cultivation strategies applied in each trial (ANOVA) was carried out.

**Results:** The overall Results showed that the reduction of water and fertiliser use leads to a reduction of bioavailable heavy metals, microbiological contamination and ecotoxicity. However, the results underlined that the use of these sustainable agronomic practices should be managed with particular attention in areas where there may be over-fertilization due to previous agricultural activities because of the risk of toxic substances mobilization in the soil.

**Conclusions:** The agricultural practices evaluated in the TOMRES project are promising as they limit heavy metals mobility, microbiological contamination and ecotoxicity. So, resilient tomato cultivars could grow using new crop management techniques with a reduction of water and nutrient consumption that is a fundamental goal for linking the growth of the world population with climate changes.

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### Climate change and wastewater treatment: human pathogens and microbiological indicators in Alpine aquatic environments

Silvia Bonetta<sup>1</sup>, Silvia Bonetta<sup>1</sup>, Manuela Macri<sup>1</sup>, Marta Catozzo<sup>1</sup>, Silvia Bertolotti<sup>1</sup>, Anna Marino<sup>1</sup>, Elisa Falasco<sup>1</sup>, Marco Minella<sup>2</sup>, Francesca Bona<sup>1</sup>, Stefano Fenoglio<sup>1</sup>

<sup>1</sup>Department of Life Sciences and Systems Biology, University of Turin, Italy,

<sup>2</sup>Department of Chemistry, University of Turin, Italy

**Background and Objective:** Recent research highlighted the negative impact that climate change has on social and environmental factors that determine human health, such as availability and quality of water resources. In particular Alpine rivers, frequently utilized for different human activities (e.g. drinking and irrigation), are more altered by climatic change showing a general flow rate reduction that can affect water quality. In fact, during the more frequent periods of drought, emissions from anthropogenic sources such as wastewater treatment plant (WWTP) discharges are less diluted determining an increase in the concentrations of pathogenic microorganisms. The aim of this study is to evaluate the wastewater discharge effect on spreading of human pathogens in Alpine rivers in relationship to flow rate reduction.

**Methods:** Samples upstream (U), downstream (D) and at discharge (W) of WWTPs in three Alpine streams were collected monthly for one year. Parameters investigated are: coliforms, enterococci and *Escherichia coli* quantification using Quanti-Tray™ 2000 (IDEXX Laboratories), *Clostridium perfringens* spores enumeration using membrane filtration method, presence/absence of *Salmonella* spp. and verocytotoxin-producing *E. coli* (VTEC) by PCR. Moreover, also ecological, chemical and hydrological aspects are investigated.

**Results:** Discharge samples (W) showed high contamination by the different indicators, but the effect of WWTP is mainly evidenced in one of the investigated rivers which shows an increase respect to U samples. *Salmonella* spp. was present in all rivers investigated, but similarly among U and D samples except for one river, indicating other contamination sources. VTEC presence seems to be not related to WWTP discharge.

**Conclusions:** The results obtained so far indicate that WWTP effect is detectable but strongly related to the sampling site underlining the need to monitor the microbiological contamination in river impacted by climatic change reducing human pathogen circulation and the possible indirect effect on human health.

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### Epidemiological update of human cases of Toscana Virus infections in the Emilia-Romagna region in the period 2010-2022

Daniela Azzalini<sup>1</sup>, Elena Righi<sup>1</sup>, Giuseppe Diegoli<sup>2</sup>, Giulio Matteo<sup>2</sup>, Andrea Mattivi<sup>2</sup>, Gian Belloli<sup>2</sup>, Giovanna Mattei<sup>2</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>Regional Health Authority, Emilia-Romagna Region, Bologna, Italy

**Background and Objective:** Toscana virus (TOSV) infection often occurs asymptotically or with mild symptoms (asthenia, fever, headache) but it can also generate neurological clinical pictures (meningitis, encephalitis). This epidemiological update describes the trend of human confirmed cases of tosv in the period 2010-2022 in Emilia-Romagna region and the main characteristics of the population involved.

**Methods:** The elaborations refer to the notifications of infectious diseases, on the regional web-based system "Surveillance of Infectious Diseases" (SMI), provided by ministerial decree 15/12/90, based on the Arboviroses surveillance system (dgr 531/2022) of the 2022 Emilia-Romagna regional plan for the surveillance and control of Arboviroses (PSCA).

**Results:** In the period 2010-2022, 568 confirmed cases of TOSV were notified. The trend of reports of TOSV infections was variable: a minimum number of cases in 2011 (15 cases) and two peaks in 2013 and 2022 (88 cases and 109 cases, respectively). During the period 2010-2021 we observed a peak of cases in August, in 2022 the peak was observed one month later. In all years, TOSV infection was prevalent in males. In terms of incidence the most affected age group was 25-44 years followed by 45-64 years and over 65. Referring to 2022, we observed a wide overlap between the areas where more human TOSV infections were notified and the areas where more sandflies were caught. During the period 2013-2022 TOSV infections manifested mainly with meningitis, except in 2018 when we recorded more cases of encephalitis.

**Conclusions:** TOSV infections represent an emerging public health concern. The aim of the PSCA and the Emilia-Romagna region surveillance system is to rapidly identify TOSV infections' cases and to stimulate behaviors aimed at individual protection and prevention of the vector's spread in order to correctly invest future resources.

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### Exposure to neighbourhood greenness and hypertension in adults: a cohort study in Taiwan

Yi Zeng<sup>1</sup>, Marc Chong<sup>1</sup>, Xiang Liao<sup>1</sup>

<sup>1</sup>Jockey Club School of Public Health and Primary Care, The Chinese University of Hong Kong, Hong Kong, China

**Background and Objective:** There is limited information on the health effects of long-term exposure to neighborhood greenness in a longitudinal setting, especially in the Asian area with high population densities. This study aims to investigate the association between long-term exposure to neighborhood greenness and hypertension among adults from Taiwan.

**Methods:** We selected 125537 participants (≥18 years of age) without hypertension from Taiwan who joined the standard medical examination program between 2001 and 2016. Neighborhood greenness was estimated by normalized difference vegetation index (NDVI) derived from satellite images at a resolution of 250 m<sup>2</sup>. The two-year average of NDVI within a 500m buffer around participants residences was calculated. A time-varying Cox regression model was used to investigate the association between greenness and incident hypertension. Mediation analyses were performed to investigate whether the association was explained by air pollution, physical exercise, and body mass index (BMI).

**Results:** Compared to participants living in the areas with the first quartile of neighborhood greenness, participants living in the areas with the second, third, and fourth quartiles of neighborhood greenness were associated with a lower risk of hypertension, with a hazard ratio (HR) (95% confidence intervals) of 0.95 (0.91, 1.00), 0.95 (0.90, 0.99), and 0.93 (0.88, 0.97), respectively. Each 0.1-unit increase in NDVI was associated with a 24% lower risk of developing hypertension (HR:0.76, 95%CI: 0.66, 0.87). The associations were stronger among males and individuals with higher education levels. BMI slightly mediated the association, but there was no evidence of mediating effects of air pollution and physical exercise.

**Conclusions:** Our findings suggest the protective effects of neighborhood greenness on hypertension development, especially in males and well-educated persons. Our findings reinforced the importance of greenness for the neighborhood environment.

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### Biomonitoring the estrogenic effect of wastewaters: role of extraction phase and assay type

Marta Gea<sup>1</sup>, Tiziana Schilirò<sup>2</sup>, Federica Spina<sup>3</sup>, Roberta Revello<sup>2</sup>, Giovanna Varese<sup>3</sup>

<sup>1</sup>Department of Public Health and Pediatrics, University of Turin, Turin, Italy, <sup>2</sup>Department of Public Health and Pediatrics, University of Turin, Italy, <sup>3</sup>Department of Life Science and Systems Biology, University of Turin, Italy

**Background and Objective:** Endocrine disruptors, emerging contaminants of concern, are mainly spread in the environment through effluents of wastewater treatment plants (WWTPs), so an efficient monitoring of effluents is needed. Biological monitoring through estrogenic activity assays has been suggested to improve water quality assessment. This monitoring can evaluate the overall endocrine activity, considering all chemicals with the same mode of action. However, it could be influenced by many factors. This study compared the estrogenic activity of wastewaters extracted with different extraction phases and analyzed with different assays to establish whether phase and/or assay may affect monitoring results.

**Methods:** The effluents of six Italian WWTPs were collected in four seasonal samplings and extracted using two phases (HLB, C18). The extracts were tested using gene reporter assay on mammalian cells and yeast estrogen screen assay (YES). To assess whether the estrogenic activity posed an acceptable risk, Results of the cumulative effluent (discharged in surface waters) were compared with safe estrogenic levels reported in literature.

**Results:** The estrogenic activity of effluents extracted with HLB was significantly different from the estrogenic activity of effluents extracted with C18, showing that phase type can affect monitoring results. Moreover, the Results were also affected by the assay type. Using the gene reporter assay the estrogenic activity was generally higher than using YES, confirming that mammalian cell-based assays are more sensitive than yeast-based assays. Finally, gene reporter data suggested that estrogenic activity of the cumulative effluent might pose a risk to the receiving waters, while YES data suggested that it does not represent an environmental threat.

**Conclusions:** This study highlighted the need to define a standardized approach to assess the endocrine disrupting potential of waters and provided data that could be useful to choose the most appropriate extraction phase and assay to safeguard environment, thus protecting human health.

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### Evaluation of healthy housing: a strategy to improve environmental health

Laurent Gerbaud<sup>1,2,3</sup>, Aurélien Alfaré<sup>4</sup>, Anna Shojinimaeva<sup>5</sup>, Aline Bonnet<sup>6</sup>

<sup>1</sup>Institut Pascal, CHU Clermont-Ferrand, SIGMA Clermont, Université Clermont Auvergne, France, <sup>2</sup>CNRS F-63000 Clermont-Ferrand, France, <sup>3</sup>Service Santé Universitaire - UCA, France xxxUniversité Clermont Auvergne, CHU de Clermont-Ferrand, Inserm, Clermont-Ferrand, France, <sup>4</sup>REVELEO, Paris, France, <sup>5</sup>Communauté de communes de Brioude, Brioude, France, <sup>6</sup>Centre Hospitalier de Brioude, Brioude, France

**Background and Objective:** Environmental quality of housing is a part of health protection. It combines reduced exposures to pollutions and access to available resources for protection and care services. In France, many local authorities lack of financing capacities or political will to improve housing, except for tourism (hotels, etc.) a key for local economy development. We developed a tool (Reveleo) able to check the environmental quality of the housing and applied it to tourism facilities (hotels, guest houses...) to check the feasibility and acceptability of both tourism holders and local authorities.

**Methods:** Reveleo combines open sources data (ie exposure to air polluting, noise,...) from French Governmental agencies and a questionnaire dedicated to the quality of buildings and close environment. We have tailored the questionnaire so that to clarify health issues and make it fillable by any tourism holder. We tested it, in an urban and rural area of 17000 inhabitants and also checked how it could match the question of tourism development policies.

**Results:** Among the 18 tourism holders, 10 answered. Hotel holders did not answer mainly due to the lack of employees they had to face. All the questionnaires were fulfilled, with 78% of the items answered. The scoring for quality of environmental housing goes from 18,6 to 100 (the best possible score). We presented the results to the technical and political staffs of the area which decided to continue the experiment and were able to see the kind of actions they can take. **Conclusions:** We need to make some improvement to our tool, for answers difficult to get. But, for now, its feasibility and acceptability are good, and there are good hopes that it will help improve or build better healthy environment policies.

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### The association between lead exposure and crime: a systematic review

Maria Talayero Schettino<sup>1</sup>, C. Robbins<sup>1</sup>, Maria Talayero Schettino<sup>1</sup>, C. Robbins<sup>1</sup>, Carlos Santos Burgoa<sup>1</sup>, Emily Smith<sup>1</sup>

<sup>1</sup>The George Washington University Milken Institute School of Public Health, United States

**Background and Objective:** Prior research has demonstrated an association between lead exposure and criminal behavior at the population-level, however studies exploring the effect of lead exposure on criminal behavior at the individual-level have not been reviewed systematically. The intent of this study is to complete a systematic review of all studies assessing individual-level exposures to lead and the outcomes of crime and antisocial behavior traits.

**Methods:** We included peer reviewed studies that were published prior to August 2022 and were classified as cohort, cross-sectional, or case-control. Studies measuring the outcomes of crime, delinquency, violence, or aggression were included. The following databases were searched using a standardized search strategy: ProQuest Environmental Science Database, PubMed, ToxNet and the Public Affairs Information Service (PAIS).

**Results:** Seventeen manuscripts met our inclusion criteria. Blood lead was measured in 14 studies, bone lead in 3 studies, and dentine lead levels in 1 study. This systematic review identified a consistent and statistically significant association between exposure to lead in the prenatal and 5 - 6 y period and later delinquent and criminal behavior, with increasing blood lead concentrations in childhood prospectively associated with later arrests and convictions in six studies.

**Conclusion:** There is limited data at the individual level on the effects of prenatal or childhood lead exposure and later criminal behavior and more evidence is necessary to evaluate the magnitude of the associations seen in this review. Our review, in conjunction with the available biological evidence, suggests that an excess risk for criminal behavior in adulthood exists when an individual is exposed to lead in utero or in the early years of childhood.

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### The global diet quality score's correlation with the EAT-Lancet

### Sustainable dietary guidelines in Brazil

Marina Norde<sup>1</sup>, Leandro T Cacau<sup>2</sup>, Sabri Bromage<sup>3</sup>, Dirce M L Marchioni<sup>2</sup>, Ana Vasques<sup>2</sup>, Aline M de Carvalho<sup>2</sup>, Megan Deitchler<sup>4</sup>, Licio A Velloso<sup>5</sup>, Edward Giovannucci<sup>6</sup>, Bruno Geloneze<sup>5</sup>

<sup>1</sup>University of Campinas, Obesity and Comorbidities Research Center, University of Campinas, Campinas, SP, Brazil, <sup>2</sup>School of Public Health, University of Sao Paulo, Sao Paulo, SP, Brazil, <sup>3</sup>Institute of Nutrition, Mahidol University, <sup>4</sup>Intake-Center for Dietary Assessment, FHI Solutions Washington, DC, United States, <sup>5</sup>Obesity and Comorbidity Research Center, University of Campinas, Campinas, SP, Brazil, <sup>6</sup>Harvard T. H. Chan School of Public Health, Harvard University, Boston, MA, United States

**Background and objective:** The world faces a global syndemic, in which diet is an important risk factor. The Global Diet Quality Score (GDQS) is a simple, timely and low-burden tool to track the contribution of diet to undernutrition and overnutrition globally. The Planetary Health Diet Index (PHDI) is an indicator of adherence to the EAT-Lancet Commission sustainable dietary guidelines. The present study aimed at investigating the correlation between the GDQS and PHDI in the Brazilian diet, to highlight concordances between them and shed light into the GDQS' potential as a sustainable diet metric.

**Methods:** The study was conducted in a nationally representative sample of 44,744 individuals aging  $\geq 10$  from the Household Budget Survey of Brazil, in which dietary data collection took place between 2017-2018, by trained interviewers using two 24-hour recalls per participant. The GDQS and PHDI were scored from the two 24-hour recall means of intake. Spearman's correlation coefficient between the GDQS and PHDI was estimated for the whole sample and across sex, age, and income strata.

**Results:** The correlation coefficient between the GDQS and PHDI was 0.21 ( $p < 0.001$ ), varying from 0.17 to 0.29 by strata. Women, elderly individuals, and the highest income strata had the strongest correlation between metrics (0.23, 0.26, and 0.29, respectively). Classification of food components into healthy, unhealthy in excessive amounts or unhealthy was discordant between metrics for vegetable oils, fish and seafood, low fat dairy, eggs, poultry and substitutes, red meat, and deep orange tubers.

**Conclusion:** The GDQS is positively correlated with the PHDI in Brazil. Sources of discordances between metrics notably rely on the definitions of optimum intake of animal products, which should be subject to further evaluation.

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### Situation analysis of drinking water quality and sanitary conditions in small scale water supply systems in rural areas in Serbia

Dragana Jovanovic<sup>1</sup>, Vesna Karadzic<sup>1</sup>, Milena Vasic<sup>2</sup>

<sup>1</sup>Institute of Public Health of Serbia "Dr Milan Jovanovic Batut", Dr Subotica 5, Serbia, <sup>2</sup>Faculty of Dentistry Pancevo, Serbia, "Zarka Zrenjanina 179, 26000 Pancevo", Serbia

**Background and objective:** Small scale water supply systems (SSWS) in rural areas in Serbia are facing with many challenges in providing safe drinking water to rural population, likewise in entire pan-European region. This was the first comprehensive situation analysis aimed at assessing the drinking water quality and the sanitary condition conducted in Serbia. Drinking-water quality monitoring in rural areas is less enforced in the Monitoring programme on drinking water quality in Serbia, hindering a comprehensive understanding and systematic assessment of the situation of SSWS, as well as the effective planning and implementation of adequate improvement measures at national and local levels.

**Methods:** This national survey was undertaken in rural areas of the Republic of Serbia in 2016 and on the basis of the WHO rapid assessment methodology. The total number 1,136 of small piped systems were inspected, using sanitary inspection forms for each water technologies and in total 1,168 of water samples were taken and analyzed for E. coli and selected physico-chemical parameters against national standards for drinking water quality.

**Results:** Only 66.9% of water samples taken from SSWS were in compliance with the National standard regarding E.coli, 55.6% were in compliance regarding physico-chemical characteristics, while overall compliance was 36.9%. The most prevalent identified sanitary risks were: absence of fence in 73%, managing by unqualified personnel in 70%, close vicinity to the source of contamination in 64%, and unsatisfactory technical conditions in 55%.

**Conclusion:** This study pointed to the high health risk for rural population in Serbia as a consequence of microbiological contamination of drinking water from rural

SSWS and revealed poor sanitary conditions. It is crucial to develop an action plan at national and local level for the improvement of the situation on small-scale water supply systems in rural areas.

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### Sustainable and green hospital project in the province of Padua, Italy

Emanuela Zilli<sup>1</sup>, Suada Tikvina<sup>2</sup>, Guido Di Gregorio<sup>3</sup>, Davide Bonaldo<sup>3</sup>, Antonella Ruffatto<sup>3</sup>, Marzia Serafini<sup>4</sup>, Luisa Fontana<sup>4</sup>, Tommaso Caputo<sup>4</sup>

<sup>1</sup>Azienda ULSS 6 Euganea, Hospital Direction, Hospital of Cittadella, ULSS 6 Euganea, Padua, Italy, Via Casa di Ricovero 40, Cittadella (Padua), Italy, <sup>2</sup>Department of Cardiac, Thoracic, Vascular Sciences and Public Health, University of Padua, Italy, <sup>3</sup>Azienda ULSS 6 Euganea, Department of Reanimation and Intensive therapy, Hospital of Cittadella, ULSS 6 Euganea, Padua, Italy, Via Casa di Ricovero 40, Cittadella (Padua), Italy, <sup>4</sup>Azienda ULSS 6 Euganea, Quality manager, ULSS 6 Euganea, Padua, Italy

**Background and Objective:** Cittadella's Hospital in the province of Padua, currently under construction, offers 400 beds. Given the changes in the population and environmental demand, more functional and secure areas of healthcare were needed. The new structure is set to be completed in 2026 introducing interesting features in order to project a safe, modern and green hospital concept.

**Methods:** An innovative approach was used in the design of this new structure, dedicating the utmost attention to environmental sustainability, green materials, insertion in the urban and social context, enhancement of existing buildings, functional organization of the treatment areas and circulation zones, accessibility for all people, and humanization of the hospital experience.

**Results:** The interior design was inspired by the external environment (sun movement, climate, landscape). Areas of care and diagnostic-treatment paths were reorganized according to guidelines set during the pandemic. There is an extensive use of renewable energy (solar panels, geothermal heat pumps, photovoltaic-battery hybrid system), a 4th-generation heating system and practical and easy to sanitize surfaces were designed. There is particular focus on the quality of the staff areas, which include spaces dedicated to psycho-physical well-being (relax points, yoga gym), and areas to encourage collaborative work (study rooms, centralized conference room). Outdoor recreational spaces and gardens for music and watercolor therapy were included and a Tai-chi gym is dedicated to oncology patients. Integration in the urban and social context is emphasized through window placement towards the gardens (maternal-infant, mental health and rehabilitation wards) and the city medieval walls.

**Conclusion:** Green healthcare provides benefits to patients, healthcare professionals and the environment. The use of renewable energy, a fourth-generation heating system, safety in air quality and ventilation, easily sanitized and maintainable surfaces and green materials contribute to the reduction of emissions into the atmosphere for a more sustainable future on the planet.

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### Spatial injustice: the imbalance between supply and demand for Ecosystem Services

Nausicaa Berselli<sup>1</sup>, Maria Gatti<sup>2</sup>, Claudia de Luca<sup>3</sup>

<sup>1</sup>University of Modena and Reggio Emilia, Department of Biomedical, Metabolic and Neural Sciences, Via Campi 287, 41125, Modena, Italy, <sup>2</sup>Ausl Modena, Epidemiology and Risk Communication Unit, Department of Public Health, Strada Martiniana 21, 41126, Modena, Italy, <sup>3</sup>Alma Mater Studiorum University of Bologna, Department of Architecture, Viale del Risorgimento 2, 40136, Bologna, Italy

**Background and Objective:** Ecosystem Services (ES) are benefits that natural systems generate and contribute to human well-being. The study intends to map the supply and demand of an important ES for climate regulation, the cooling given by green infrastructures, in the province of Modena (northern Italy), in order to identify situations of spatial injustice.

**Methods:** The cooling capacity given by green infrastructures (supply of ES) was calculated using the InVEST (Integrated Valuation of Ecosystem Services and Tradeoff) software, which calculates the heat mitigation index based on shading, evapotranspiration at albedo and distance from the green infrastructure. The characteristics of vulnerability to heat (demand of ES) considered were age over 80 or under 14, condition of fragility in old age, status of foreigner and low per capita income, obtained through demographic registers or surveillance systems. The cooling capacity given by green infrastructures and the heat vulnerability characteristics were achieved for each municipality in the province of Modena, thus building maps of the supply and demand of the ES.

**Results:** The study shows the presence of a lower cooling capacity and, at the same time, a greater concentration of subjects more vulnerable to high temperatures, in the city center and in the flat municipalities, especially the most industrialized. The comparison between the supply and demand maps of ES highlights a situation of social injustice, in which the greatest demand is present in places where the climatic mitigation given by greenery is minimal and where summer heat waves occur.

**Conclusion:** This study is a guide for policy makers for a correct urban redistribution and the implementation of nature-based solutions in areas where the demand is higher, using small-scale solutions (e.g. vertical greenery, green roofs) where there is no possibility to increase public green spaces.

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### Evaluation of indoor air quality and its architectural, environmental, and occupational determinants in a primary health care center - a research protocol

Francisca Pulido Valente<sup>1</sup>, Diogo Cortes Lopes<sup>1</sup>, Dinis Loyens<sup>1</sup>, Ana Baptista<sup>1</sup>, Francisco Barcelos<sup>1</sup>, Maria Borges<sup>1</sup>

<sup>1</sup>Public Health Unit of Amadora Portugal

**Background and Objectives:** Indoor air quality (IAQ) is a significant determinant of health and well-being. Most people spend 90% of their time inside, so maintaining a high level of IAQ is essential. As primary healthcare facilities serve large populations and have many employees, it is especially critical to characterise their IAQ. However, scant research has been done on this topic, and there is no specific legislation regarding IAQ in these locals. In this study protocol, it is proposed to determine what factors contribute to poor IAQ at Amadora Primary Health Care Center (PHCC).

**Methods:** Using the environmental monitor EVM-7, PM2.5, PM10, CO2, total volatile organic compounds, temperature, and relative humidity will be measured in the treatment rooms, waiting rooms, and consultation rooms of the functional units of the PHCC of Amadora. Buildings and rooms will be characterised according to their architectural features, surroundings, and occupation, utilising the form explicitly developed for this purpose. IAQ will be described by referring to Portuguese IAQ legislation. Using the statistical analysis software Stata® 17, multilevel regression models will identify statistically significant associations between the variables.

**Results:** Results are expected to provide insight into how buildings, facilities, and occupant behaviour affect IAQ at PHCC of Amadora. Additionally, they will enable the development of recommendations designed to protect patients and workers health, quality of life, and well-being.

**Conclusion:** IAQ in PHCC has not been sufficiently studied, and research has been primarily focused on the hospital context and microbiological parameters. This protocol will identify architectural infrastructure and human occupation as determinants of poor IAQ in PHCCs and stimulate discussion on the need to revise Portugal's air quality legislation. A collaborative approach is emphasised between the public health sector and engineering, architectural, and occupational health.

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### An ecological study on climate vulnerability and health in India- case for an improved risk index

Jaya Kshatri<sup>1</sup>, Kavitha Ak<sup>1</sup>, Sanghamitra Pati<sup>1</sup>

<sup>1</sup>Indian Council of Medical Research (ICMR) "ICMR RMRC Nalco Square Chandrasekharpur, Bhubaneswar" India

**Background and Objective:** Climate change has the most direct and immediate effect on a population's health, highlighting the need for assessing vulnerability of communities towards this effect. This study examines the relationship between common health outcomes and a 'climate vulnerability index (VI)' used in India to assess its predictive capability.

**Methods:** This was an ecological study using districts of India the unit of analysis. Secondary data of four nationally representative datasets obtained from the National Data Analytics Platform was used in this study: fifth round of the National Family Health Survey (NFHS-5), National Health Missions Health Management Information System (HMIS), estimates of district vulnerability, and the latest Census of India. We used some common health outcomes available with these datasets to estimate their correlation with the districts Vulnerability Index (VI), which was the exposure of interest.

**Results:** The VI of the districts was between 0.34 and 0.75. Among them 222 districts were classified as Very highly and highly vulnerable (VI: 0.59-0.75), 258 as moderately vulnerable (VI: 0.51- 0.59) and 132 districts as low or very low vulnerable (VI: 0.34 – 0.51). There was a statistically significant correlation

between VI and prevalence of obstetric complications including gestational diabetes mellitus, still births, spontaneous abortions as well as the incidence of childhood pneumonia, asthma, and sepsis. However, the VI had few health parameters in its construction and is not suitable for predicting health related outcomes.

**Conclusion:** The vulnerability index used in India to classify districts did not significantly or consistently correlate with measures of population health, making it unsuitable for use in health impact assessments.

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### Effects of mud-therapy on pain, function and quality of life in patients with rheumatic and dermatologic diseases: A systematic review and meta-analysis

Maria Facchini<sup>1</sup>, Stefania Paduano<sup>1</sup>, Francesco Venturelli<sup>2</sup>, Michele Antonelli<sup>3</sup>, Valentina Mingrone<sup>1</sup>, Isabella Marchesi<sup>1</sup>, Federica Valeriani<sup>4</sup>, Maria Bassi<sup>5</sup>, Annalisa Bargellini<sup>1</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Italy, <sup>2</sup>Epidemiology Unit, Azienda USL-IRCCS di Reggio Emilia, Italy, <sup>3</sup>Department of Public Health, Azienda USL-IRCCS Reggio Emilia, Italy, <sup>4</sup>Department of Movement, Human and Health Sciences, Public Health Unit, University of Rome 'Foro Italico', Italy, <sup>5</sup>Medical library, Azienda USL-IRCCS di Reggio Emilia, Italy

**Background and Objective:** Various studies examined mud-therapy in the last twenty years, but mechanisms of action of these non-pharmacological treatments (mudpack or mud-bath) are still almost unknown and it is difficult to establish the efficacy of mud-therapy approach.

The aim of this meta-analysis is to offer an update of the existing literature on the efficacy of mud-therapy in rheumatic and dermatologic diseases.

**Methods:** Electronic bibliographic databases (PubMed, Embase, Medline, Central, Scopus, Pedro) were screened for articles published in English or Italian from January 2000. Studies that compared mud-therapy (alone or combined with drug or thermal or physical therapies) to any other intervention or to no intervention in adults (≥18 years) with rheumatic and dermatologic diseases were selected.

The main outcomes were pain, function, quality of life, adverse events. Randomized clinical trials, non-randomized trials, and comparative cohort (prospective and retrospective) were eligible if they assessed at least one main outcome. Non comparative case series and case reports were included for safety outcome only. For categorical outcomes, the effect measure is synthesized calculating Risk Ratio and Risk Difference and for continuous outcomes calculating Mean Difference or standardized Mean Difference. A meta-analysis is performed based on heterogeneity between included studies, assessed statistically.

**Results:** Of the 3332 articles screened after duplicates removing, 76 studies satisfied the eligibility criteria and were included. Preliminary analysis showed an improvement in 29/35 (82.9%) articles evaluating quality of life in adults treated with mud-therapy; this improvement was reported as significant in 54.3% (19/35). Similar evidence was found in studies evaluating function (36/48, 75.0% of improvement; 28/48, 58.3% of significant improvement) and pain (37/46, 80.4%; 31/46, 67.4%, respectively). Meta-analysis is ongoing.

**Conclusions:** These preliminary results suggest a therapeutic effect of mud-therapy for rheumatic and dermatologic diseases. Meta-analysis is necessary in order to reach definitive conclusions on the current evidence.

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### Gender differences in the Effects of Urban Greenness on Cardiovascular Disease Outcomes

Alessandro Bianconi<sup>1</sup>, Angela Coa<sup>1</sup>, Giulia Longo<sup>1</sup>, Matteo Fiore<sup>1</sup>, Davide Gori<sup>1</sup>

<sup>1</sup>University of Bologna Department of Biomedical and Neuromotor Sciences Italy

**Background and objectives:** Cities are expected to host more than two third of the world population by the half of XXI century. Some aspects of the built environment in the urban context, such as residential greenness, may impact citizens' health. Many studies highlighted how urban greenness (UG) is correlated to better cardiovascular health. Built environment is experienced differently by genders. Aspects of greenness design, such as visibility and maintenance state, are more impactful on perceived safety on women than in men. The aim of this study is to assess if the effects of UG on cardiovascular diseases (CVD) is the same in both men and women.

**Methods:** The PRISMA Statement guidelines were followed while conducting this systematic review. A systematic search of the current literature was performed

through Scopus and PubMed databases. Primary research studies analyzing associations between residential UG exposure measures and CVD outcomes were searched. Only study presenting stratified analyses by gender were finally included.

Results: Eight studies that performed stratified analyses by gender were found. Five studies found a protective effect of UG exposure on CVD outcomes that was statistically significant only in men. Two studies found no statistically significant effect of UG on cardiovascular outcomes in both male and female. One study highlighted an inverse correlation between residential UG and CVD morbidity in both men and women.

Conclusion: This study suggests the presence of underlying gender-specific mediators on UG impacts on CVD outcomes. Since the small number of literature examples of gender-stratified impacts assessment of UG on cardiovascular health, further studies are needed to understand the explanatory mechanisms involved.

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### Heatwaves perceived impacts and adaptive behaviours - results of a cross-sectional study in pakistan

Farman Ullah<sup>1</sup>, Francesco Barone-Adesi<sup>2</sup>, Ives Hubloue<sup>3</sup>, Luca Ragazzoni<sup>1</sup>, Martina Valente<sup>2</sup>

<sup>1</sup>Università del Piemonte Orientale CRIMEDIM - Center for Research and Training in Disaster Medicine, Humanitarian Aid, and Global Health - Università del Piemonte Orientale (UPO), 28100 Novara, Italy | Piano, Via Bernardino Lanino, 1, 28100 Novara NO Italy, <sup>2</sup>Università del Piemonte Orientale, <sup>3</sup>Vrije Universiteit Brussel (VUB), Brussels, Belgium Research Group on Emergency and Disaster Medicine (REGEDIM), Brussels, Belgium

The frequency and severity of heatwaves have been on the rise, thus seriously posing a great challenge to human health and societal well-being. To find out how people perceive impacts and adapt to heatwaves, this cross-sectional study was carried out across Pakistan.

Data was collected using a standardized questionnaire using Likert Scale technique. Heatwaves perceived impacts were measured using a total of five items using a scale i.e., Not at all "1", Less likely "2", Fairly "3", Very Much "4", A great deal "5". Whereas individual adaptation was measured using a total of 14 statements using a five-point Likert scale of Never "1", Rarely "2", Sometimes "3", Very Often "4", and Always "5" respectively. Demographic information included age, gender, marital status, education, employment, income, ethnicity, living arrangements and type of residence.

A total of 698 responses were received with the majority belonging to urban areas (60.64%) compared to rural areas (39.36%); with most of the respondents being male (71.14%) compared to female (28.86%). Majority of the respondents were from ethnic background "Pashtun" (34.99%) followed by Punjabis (17.78%), other ethnicities (17.20%), Urdu Speakers (16.47%) and Sindhi and Baluchi (13.56%).

Results for perceived impacts suggest extreme impacts in terms of a higher perceived negative personal health impacts, increased perceived negative health impacts on relatives, extreme worry about overall heatwaves impacts in general, high perceived likelihood of heatwaves events and high perceived negative consequences of heatwaves in Pakistan.

Respondents' individual adaptive behaviours were measured using fourteen statements, for example "Use an umbrella/cloth when walking outside" (Cronbach's alpha=0.91). The total individual adaptive behaviour score was then dichotomized into low (14-43) and high (44-70) at "midpoint". The study results can play an important role in targeting certain activities at the grassroots level keeping in mind the vulnerable situation of different ethnic groups.

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### Overcoming the challenges of problem identification in complex systems of urban health

Geoff Bates<sup>1</sup>, Daniel Black<sup>2</sup>

<sup>1</sup>Institute for Policy Research, University of Bath, Bath, United Kingdom, <sup>2</sup>Bristol Medical School, University of Bristol, United Kingdom

Brief outline of the overall workshop: Global public health challenges such as climate change, non-communicable diseases, and health inequalities are driven by innumerable interacting factors. Tackling these challenges is increasingly recognised as requiring new and large teams from a wide range of disciplines and sectors spanning large and complex systems, who must identify and agree the root causes of problems to target. The challenge of problem identification becomes substantially greater in complex systems, and for large teams with heterogeneous backgrounds, expectations, and priorities. This workshop looks at how large research teams can identify and develop shared understandings of problem areas

in complex systems, with a view to fostering effective collaboration with critical, targeted stakeholders. Through presentations introducing key concepts followed by structured small group work and whole group debate, participants will hear and contribute to Discussions on problem identification within large research teams and approaches to targeted stakeholder engagement in complex systems. The workshop draws on the presenters' critical reflections from TRUUD (Tackling the Root Cause Upstream of Unhealthy Urban Development), a five-year collaboration between five universities in the United Kingdom and their partners in industry, government, and the public.

Specific Aims/ Objectives and Component Parts: This workshop aims to develop knowledge and ideas that can support large teams to develop shared conceptualisations of complex public health problems. Key objectives are i) to share knowledge about the challenges of problem identification in large research teams and understand why this is critical for tackling complex public health challenges, ii) to define what constitutes good co-production of problem identification with stakeholders in a complex system, and iii) to improve knowledge of the processes and tools that can support large teams to develop shared understandings on these issues. The workshop will include a mixture of presentations, audience questions, and structured discussions in small groups. Firstly, facilitators will share their learnings from the TRUUD project on problem identification and developing shared understandings in inter- or trans-disciplinary teams, and stakeholder engagement in complex systems. Secondly, workshop attendees will be invited to ask questions to the facilitators and to share their reflections on key concepts. Thirdly, attendees will be divided into small groups to debate issues in engaging the wide range of stakeholders relevant to research on complex public health problems, including how to identify stakeholders and when engagement should occur. The session will conclude with a final plenary session where groups will feed back their ideas and we will identify areas of consensus for approaches to stakeholder engagement in a complex system.

Key questions that the workshop will seek to address: The workshop will explore the overall question 'How can large research teams conceptualise and develop shared understandings of complex health problems to support intervention development?'. Sub-questions include: 1. How can researchers from multiple disciplines develop shared understandings of complex problem spaces? 2. How can stakeholder engagement be managed to help identify and understand problem spaces in complex systems? 3. What tools, methods, and processes help teams to coalesce around specific problems in complex systems?

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### How can the public health community support litigation to protect public health in the context of climate change and other environmental threats to health?

Farhang Tahzib<sup>1</sup>, Stephen Holgate<sup>2</sup>, Brigit Toebes<sup>3</sup>, David Patterson<sup>4</sup>

<sup>1</sup>UK Faculty of Public Health, United Kingdom, <sup>2</sup>University of Southampton School of Medicine, United Kingdom, <sup>3</sup>Aletta Jacob School of Public Health, Netherlands, <sup>4</sup>Groningen Centre for Health Law, The Netherlands

Outline: Climate change and environmental health are important cross-cutting issues to address within the public health sector. Encouraged by wins on asbestos and against big tobacco, the public health community and environmental advocates are turning to litigation to sue governments and private sector interests for public health harms from environmental pollution and climate change. Climate litigation can be supported using essential public health functions while simultaneously raising awareness about the health impacts on planetary health. Increasingly, climate cases submitted to courts include a focus on health. Yet there remains a lack of awareness and training among the public health community. In October 2021 the European public health association (EUPHA-law) co-hosted a webinar on public health, climate change and strategic litigation which highlighted how strategic partnerships between public health practitioners, environmental advocates, legal experts and affected communities are needed. In response to this, the UK faculty of public health, EUPHA-law, and the Groningen Centre for health law (in collaboration with lancet countdown, Greenpeace, and other stakeholders) will publish a toolkit for public health practitioners on supporting litigation to protect public health in the context of climate change and other environmental threats to health. The toolkit will answer common questions from public health practitioners: legal systems are as varied as health systems, yet there are principles common to all jurisdictions. In particular, the choice of legal forum is key: which court is best placed to hear a given case? Who can initiate legal proceedings? What is the most suitable legal basis for the claim? It could be under a national constitutional protection of the right to life, a human rights treaty, or environmental or tort law. And, what evidence is required and what evidential standard should be met?

**Workshop Aim:** The workshop will provide an overview of how the public health community can better support climate change litigation. Sound scientific evidence is as critical to successful litigation as to effective public health policies. Increasingly, public health practitioners are asked to testify in court about the known health impacts of environmental threats. Collecting this evidence requires foresight, meticulous record-keeping, peer support, and the courage to withstand questioning of professional capacity. The workshop will provide an overview of the toolkit content and its proposed uses, building on collaboration with environmental and legal organisations. Opportunities to engage with public health practitioners in the global south will be explored. Participant feedback will be welcomed. The key questions that the workshop will address the workshop will address three key questions: 1) how can the public health competencies be strengthened to understand and support climate change litigation 2) what essential public health functions can contribute to litigation in the context of climate change and other environmental threats to health?, and 3) how can public health professionals work better with lawyers and communities to protect population health in the context of climate change?

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### Climate, migration and health: questions of ethics and public health

Gözde Ercan<sup>1</sup>, Edith Haghazarian<sup>2</sup>, Colleen Kraft<sup>3</sup>, Roger Worthington<sup>4</sup>

<sup>1</sup>University Of Health Sciences Sancaktepe Training And Research Hospital, Dept. of Child Health and Diseases, Turkey, <sup>2</sup>Emergency Department, Los Angeles Children's Hospital, United States, <sup>3</sup>University Of Southern California, Keck School of Medicine, United States, <sup>4</sup>Higher Education Sustainability Initiative, SDG Fellows Groups, 6 St Georges Court, Tunbridge Wells, TN 4 9GX, United Kingdom

**Background and Objective:** Migration is being increasingly driven by climate change, and the aim of the workshop is to:

consider the ethical implications of migration caused by climate change to help prevent unnecessary harm and suffering consider learning needs for healthcare professionals treating migrants consider leadership issues to help ensure sustainable global and public health policy as these trends become more marked. **Methods:** The workshop will begin with a short introduction, followed by small group discussion, ending with a plenary.

Delegates in small groups will consider:

Moral obligations on populations to accommodate migrants forced to relocate because of climate change making it impossible for them to continue living in areas affected by persistent drought, extreme heat and/or frequent/widespread flooding Continuing professional development needs for healthcare professionals treating migrants from different countries, cultures, and climates Policy implications for healthcare leaders faced with increasing demand for public health services, for example, in relation to SDGs 3, 4, 5, 6 and 13

**Results:** Each group will summarise their findings and feedback to the plenary.

**Conclusion:** During the plenary discussion, facilitators will seek to identify key findings that can be shared and used to prepare for anticipated changes in public health policy and provision in response to climate-related migration.

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### COP 27: African Perspective

Osahon Enabulele<sup>1</sup>, Harsha Somaroo<sup>2</sup>, Armand Nkwescheu<sup>3</sup>, Lwando Maki<sup>4</sup>, Lwando Maki<sup>4</sup>

<sup>1</sup>Coalition of African Medical Associations-Coalition of African Medical Associations Abuja Nigeria" Nigeria, <sup>2</sup>Public Health Association of South Africa, Cape Town, South Africa, <sup>3</sup>African Epidemiological Association, Abuja, Nigeria, <sup>4</sup>South African Medical Association South African Medical Association "Pretoria South Africa" South Africa

**Background and Rationale**

Globally, climate-related disasters killed thousands of lives, affected nearly 100 million people, and a financial cost of US\$310 billion in 2019 alone[1]. South Africa has been witnessing catastrophic manifestations of climate change, including unseasonal snows, veld fires, droughts, and floods.

The United Nations Framework Convention on Climate Change (UNFCCC) is an international treaty that compels its signatories to develop national programs to reduce their emissions of greenhouse gases. The Congress of the Parties (COP) is the supreme decision-making body of the UNFCCC. African countries are signatories to the UNFCCC, the Kyoto Protocol, and the Paris Agreement. The COP held its 27th Conference in Africa at Sharm el-Sheikh Climate Change Conference, held from 6 November until 20 November 2022. Health-related civil society from

around the world attended with PHASA being one from Africa.

The World Health Organisation (WHO); World Federation of Public Health Association (WFPHA) and the Public Health Association South Africa (PHASA) recognise climate change as a threat to individual and population health; acknowledge the environmental footprint of the global healthcare sector; and are acting to reduce waste and prevent pollution to ensure healthcare sustainability. PHASA, therefore, holds membership in the Global Climate Health Alliance Board and has a special interest. PHASA, as one of the leading Public Health organisations in South Africa, sees the professional and moral need to leverage WFPHC to engage its African and Global stakeholders on the African perspectives of addressing the climate crisis to ensure sustainable health systems. PHASA seeks to achieve this by hosting a workshop event at the World Congress of Public Health 2023, in collaboration with current and developing strategic partners.

**Objectives:** Create a platform to advocate for climate and health related mitigation and adaptation in Africa and globally;

Create a platform to advocate for climate and health related capacity building in Africa and globally;

Create a platform to interrogate the latest data and literature on climate change impacts on health and wellbeing in Africa;

Propose strategies to educate/ raise awareness among health professionals on impact of climate change on health;

To raise the relevance of addressing social determinants of health (SDH), including environmental determinants, to address the climate and health risks, in communities in Africa.

**Methodology:** A Panel discussion, with moderation.

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### What does the future of public health need to know about climate-health?

Laurent Chambaud<sup>1</sup>, Karl Conyard<sup>2</sup>, Mary Codd<sup>3</sup>, John Middleton<sup>4</sup>, Tara Chen<sup>1</sup>

<sup>1</sup>Association of Schools of Public Health in the European Region France, <sup>2</sup>Association of Schools of Public Health in the European Region (ASPHER), Ireland, <sup>3</sup>UCD School of Public Health Physiotherapy and Sports Science, Ireland, <sup>4</sup>ASPHER United Kingdom

**Synopsis**

The climate crisis is a public health emergency. Evidence has highlighted climate change impacts to the social and environmental determinants of health- from clean air, safe drinking water, food security, and even, the built environment. The public health systems have an important role in preventing and reducing these health impacts, requiring further understanding of the intersection of climate change and public health. Climate change brings complex and multi-faceted challenges for public health. Trainees and new graduates are not equipped with the tools to develop effective climate change responses. Academic institutions and public health authorities in the European region have received the call for action to support climate-health training through the EU Health Policy Platform, ASPHER Joint Statement. The joint statement has accelerated leadership buy-in, but the challenge to move forward is exacerbated by the implementation process. ASPHER is currently partnered with various agendas and roadmaps at European and planetary level to move forward with driving climate health conversations which vary from moving forward with deskilling/upskilling the workforce, and reviewing the job market to match workforce needs. This workshop looks to provide the latest research, agendas and policies in the European region from ASPHER and partners, and to share and advocate for climate-health education for the future public health, health workforces and policy makers.

**Format**

The workshop will be held in a roundtable discussion with three invited panellists who will provide a brief overview of activities from the perspectives of ASPHER (organization), Competencies (education), and Workforce (young professional). Throughout the presentation, there will be intentional opportunities to engage and explore with the audience to understand their background, and their sense of what they see in action and believe is missing in the role of public health in the climate crisis.

**Specific Aims/Objectives:** • To increase the knowledge of delegates around the latest developments by ASPHER and its partners • To share and reflect the climate-health competencies results with delegates and identify reactions across different roles and countries • To link individuals in the space with the wider network of climate-health advocates in public health • To propose some common actions at European and worldwide level to propel moving forward with climate-health needs

**Key Questions**

- What is the role of public health systems in climate change?
- What is the role of public health professionals across different career trajectories in the climate

crisis? • How can we support the future public health workforce in education and training?

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### Following the COVID19 playbook and battling another infodemic: Conspiracy beliefs around human Monkeypox among the Lebanese population

Dalal Youssef<sup>1</sup>

<sup>1</sup>Ministry of Public Health, Beirut, Lebanon

**Introduction:** The non-endemic multicountry outbreak of monkeypox (MPX) has emphasized the issue of conspiracy theories that go viral in times of societal crisis. Given the adverse consequences of conspiracy beliefs, this study aimed to assess the extent of endorsement of MPX conspiracy beliefs among the Lebanese population and to identify its associated factors. **Methods:** Using a convenience sampling technique, a web-based cross-sectional was conducted among Lebanese adults. Data was collected using an Arabic self-reported questionnaire. Multivariable logistic regression was performed to identify the factors associated with the MPX conspiracy beliefs scale.

**Results:** Conspiracy beliefs regarding emerging viruses including MPX were detected among 59.1% of Lebanese adults. Participants endorsed particularly the conspiracy theories linking the virus to a deliberate attempt to reduce the size of the global population (59.6%), gain political control (56.6%) or pharmaceutical companies financial gain (39.3%), and the manmade origin of MPX (47.5%). Remarkably, the majority of surveyed adults exhibited a negative attitude toward the governments preparedness for a potential MPX outbreak. However, a positive attitude was revealed toward the effectiveness of precautionary measures (69.6%). Female participants and those having a good health status were less likely to exhibit a higher level of conspiracy beliefs. Divorced or widowed adults, those having a low economic situation, poor knowledge level, and negative attitude toward the government and precautionary measures were more prone to disclose a higher level of conspiracy beliefs. Notably, participants relying on social media to get information about MPX were also more likely to have a higher level of conspiracy beliefs compared to their counterparts. **Conclusions:** The widespread extent of conspiracy beliefs endorsement regarding MPX among the Lebanese population urged the policymakers to find ways to reduce people's reliance on these theories. Future studies exploring the harmful impacts of conspiracy beliefs on health behaviors are recommended.

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### Cholera outbreak investigation among children in Nishter Town District Lahore, Pakistan - May- June 2022: a retrospective cohort study

Shamaila Usman<sup>1</sup>

<sup>1</sup>CDC, Rawalpindi Cantt., Pakistan

In April 2022, National IHR Focal Point of Pakistan reported laboratory confirmed outbreak of Cholera. District Lahore reported highest number of Cholera cases from May – August 2022 in Province Punjab thus been epicenter of Cholera. WHO Global Task Force on Cholera Control focuses on containing Cholera outbreaks. In this regard joint field investigation team was formed of FELTP fellows, Communicable Disease & Epidemic Control Department and WHO to assess magnitude of outbreak, evaluate associated risk factors and recommend Prevention control measures. Retrospective Cohort study was designed on AWD/suspected Cholera cases enrolled from Children hospital. Cholera suspected case was defined as any child up to 12 years of age presenting with acute watery diarrhea of three or more loose watery (non-bloody) stools and severe dehydration within 24-hour period resident of Nishter town from 15th May -30th June 2022. Pre tested Questionnaire was adopted for Epidemiological Analysis. Environmental drinking Water and stool samples were sent to Public Health Lab for microbiological analysis. Descriptive analysis, attack rates and Risk factors were evaluated by applying logistic regression at CI=95% and p-value<0.05. Out of 288 AWD cases, Vibrio Cholera was isolated in 30 cases (Attack rate 10.4%). The mean age was 3.8 years (Range: 1 -12 years) included 163 (56.5%) male. Data Analysis showed Clustering of Cholera cases in age group 0-2 years( AR= 48%). Among five water sources used by residents, filtration plant water (AR=22%)(RR;4.6 95%CI=2.0-8.2 ) Municipal water (AR=16.6%)(RR;1.7; 95%CI=0.5-4.9 ) and Underground water (AR=4%)(RR;0.18; 95%CI=0.08-0.42 ) had highest water specific attack rates. On Logistic regression AOR 6.77 (CI=2.7-16.7) for filtration plant water was found significantly associated with cholera. Microbiological Examination of Filtration plant water reported E-coli and Coliform growth. **Conclusions:** This was point source outbreak due to Filtration plant mixed with sewage water. Multisectoral

approach and Community awareness on WASH is suggested.

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### Incidence and determinants of loss to follow-up of human immune virus pre-exposure prophylaxis among key and priority population groups in Addis Ababa health centers, Ethiopia

Addisu Aragaw<sup>1</sup>

<sup>1</sup>GAMBY medical and buisness collage, Addis Ababa, Ethiopia

**Background:** 'Loss of follow-up' is a significant public health concern globally. Retention in preventive care among at-risk key and priority population groups is critical for the successful prevention of Human immune virus acquisition. Loss to follow-up of individuals has countless negative impacts on Human immune virus prevention outcomes. There is, however, limited information about the incidence and predictors of loss to follow-up in the study area. Thus, this study aimed to determine the incidence rate and predictors of loss to follow-up among pre-exposure prophylaxis users.

**Methods:** A retrospective cohort study was undertaken using 240 pre-exposure prophylaxis users between May 2020, and May 26, 2022, at Addis Ababa selected health centers. All eligible clients who fulfilled the inclusion criteria were included in the study.

**Results and Discussion:** A total of 240 participants with a median age of 32.0 years (interquartile range [IQR]: 27.0 to 40.0) had a median time since initiation of pre-exposure prophylaxis 21.2 months (IQR: 6.5 to 22.1). Almost half 122 (50.8%) were married, Being male is associated with 1.77 times in risk of getting lost than female (ARR=1.77, 95% CI =1.12-2.79). those who had no adherence counseling were associated with 1.86 times in the chance of LTFU as compared to those who had adherence counseling (ARR=1.863, 95% CI =1.184, 2.930, P-value=0.003). 86 (35.8%) experienced loss to follow-up and the overall incidence rate of loss to follow-up was 7.3 (95% CI: 4.3-12.6) per 100 person-years of observation (PYs). PrEP adherence strategies should developed and designed as a holistic approach, acknowledging the contextual factors of key population groups.

**Conclusions:** About 35.8% of clients became lost follow-up of pre-exposure prophylaxis users. the overall incidence of 7.3(4.3-12.6) per year of observation. Research preparedness involving key and priority population groups should be strengthened for Human immune virus prevention intervention evaluations in Ethiopia.

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### Tsetse flies infected with trypanosomes in three active Human african trypanosomiasis foci of the Republic of Congo

Irina Bamba<sup>1</sup>, Arsene Lengua<sup>2</sup>, Herman Awono-Ambene<sup>3</sup>, Christophe Antonio-Nkondjio<sup>3</sup>

<sup>1</sup>Marien Nguouabi University, Democratic Republic of Congo, <sup>2</sup>Marien Nguouabi University, Congo, <sup>3</sup>Organization for the Coordination of the Fight Against Endemic Diseases in Central Africa (OCEAC), Cameroon

Human African Trypanosomiasis (HAT) is a neglected tropical disease still endemic in the Republic of Congo. Despite the continuous detection of HAT cases in the country, there is still not enough data on trypanosome infections in tsetse flies, trypanosome species and tsetse flies' species distribution in endemic foci. The present study is intended to fill this gap and improve understanding of trypanosome circulation in three active foci in the centre and south of Congo. **Methods:** Pyramid traps were set in various places in villages to collect tsetse flies both during the rainy and dry seasons. Once collected, tsetse flies were identified using morphological keys. DNA extracted from flies was processed by PCR for species identification and for detection of trypanosome presence. A second PCR was ran for different trypanosome species identification.

**Results:** A total of 1291 tsetse flies were collected. The average apparent density of flies per day was 0.043 in Mpouya, 0.73 in Ngabé and 2.79 in Loudima. *Glossina fuscipes quazensis* was the predominant tsetse fly collected in Ngabé and Mpouya, while *Glossina palpalis palpalis* was the only tsetse fly found in Loudima. A total of 224 (17.7%) flies were detected infected by trypanosomes; 100 (7.91%) by *Trypanosoma congolense savannah*, 22 (1.74%) by *Trypanosoma congolense forest*, 15 (1.19%) by *Trypanosoma vivax*, 83 (6.56%) by *Trypanosoma brucei* (s.l.) and 2 (0.16%) undetermined species. Loudima recorded the highest number of infected tsetse flies. **Conclusions:** The study provided updated information on the dynamics of tsetse fly populations as well as on the transmission of trypanosome species in the different active HAT foci in Congo. These data suggest a high risk of potential transmission of animal trypanosomes in these foci stressing the need for active surveillance in this endemic area.

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### Assessing malaria transmission and vector dynamic in a context of larviciding trial in the city of Yaoundé, Cameroon

Patricia Doumbe-Belisse<sup>1</sup>, Carmène Ngadjou<sup>2,3</sup>, Nadège Sonhafouo-Chiana<sup>4,5</sup>, Abdou Talipou<sup>4,2</sup>, Landre Djoumouko-Djonkam<sup>4,6</sup>, Hermann Awono-Ambene<sup>7</sup>, Charles Wondji<sup>8</sup>, Flobert Njikou<sup>9</sup>, Christophe Antonio-Nkondjio<sup>10</sup>

<sup>1</sup>University of Yaoundé I, Yaoundé, Cameroon, <sup>2</sup>University of Yaoundé I, Cameroon, <sup>3</sup>Organisation de coordination pour la lutte contre les endémies en Afrique Centrale(OCEAC), Yaoundé, Cameroon, <sup>4</sup>Organisation de coordination pour la lutte contre les endémies en Afrique Centrale (OCEAC), Cameroon, <sup>5</sup>University of Buea, Cameroon, <sup>6</sup>University of Dschang, Cameroon, <sup>7</sup>Organisation de coordination pour la lutte contre les endémies en Afrique Centrale(OCEAC), Cameroon, <sup>8</sup>Centre for research in infectious disease, Vector Group Liverpool School of Tropical medicine Pembroke Place, Cameroon, <sup>9</sup>Centre for research in infectious disease, University of Yaoundé I, Cameroon, <sup>10</sup>Organisation de coordination pour la lutte contre les endémies en Afrique Centrale(OCEAC), Vector Group Liverpool School of Tropical medicine Pembroke Place, Cameroon

Malaria remains a public health problem in Cameroon. The prevention of this disease is slowing down by insecticide resistance, mosquito changing behaviour and the fast demographic growth of urban population. To manage those challenges, larval control could be effective. In the frame of a larviciding trial in the city of Yaoundé, a study was conducted in 26 districts from March 2017 to November 2020 to assess its impact on adult anophelinae densities, malaria transmission dynamic and prevalence. A baseline survey was performed during one year then the larviciding was applied in 13 districts while the 13 others served as control. Entomological surveys were carried out once every two months to collect adult mosquitoes using CDC light traps and Human Landing Catches. Mosquitoes were identified up to the species level via PCR then analysed for plasmodium falciparum infectivity via ELISA. Two parasitological surveys were also conducted through malaria testing using blood smears and RDTs while dried blood spots were collected on filter papers to identify Plasmodium species. Slides were stained with Giemsa and examined by microscopy for malaria parasites detection. Indoor and outdoor anophelinae densities recorded with CDC declined by 69.13% and 61.55% respectively during the larviciding treatment. The same trend was observed with HLC densities regarding the reduction rate of 79.99% and 63.47% recorded. Results also show that the spatio-temporal distribution of anophelinae species in the city was affected by the treatment. In the same way, larviciding reduced indoor and outdoor transmission by 68.97% and 61.77% respectively. The intervention was also associated with a reduction in malaria prevalence. The study highlights the efficacy of larviciding in reducing anophelinae density, malaria transmission and malaria prevalence in the city of Yaoundé Cameroon. This approach could be undertaken to sustain the efficacy of existing tools.

Keywords: larviciding, malaria, transmission, Yaoundé, Cameroon

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### Association between house characteristics and community practices on anophelines distribution and malaria prevalence during a larviciding program in the city of Yaoundé-Cameroon.

Carmène Ngadjou<sup>1</sup>, Abdou Talipou<sup>1,2</sup>, Patricia Doumbe-Belisse<sup>1,3</sup>, Landre Djoumouko-Djonkam<sup>4,2</sup>, Parfait Awono-Ambene<sup>5</sup>, Sevilor Kekeunou<sup>1</sup>, Charles Wondji<sup>6</sup>, Christophe Antonio-Nkondjio<sup>2</sup>

<sup>1</sup>Faculty of Sciences, University of Yaoundé I, Yaoundé, Cameroon, <sup>2</sup>Laboratoire de Recherche sur le Paludisme, Organisation de Coordination pour la lutte Contre les Endémies en Afrique Centrale (OCEAC), Yaoundé, Cameroon, <sup>3</sup>Laboratoire de Recherche sur le Paludisme, Organisation de Coordination pour la lutte Contre les Endémies en Afrique Centrale (OCEAC), Yaoundé, Cameroon, <sup>4</sup>Vector Borne Diseases Laboratory of the Biology and Applied Ecology Research Unit (VBID-URBEA), Department of Animal Biology, Faculty of Science, University of Dschang, Cameroon, <sup>5</sup>Laboratoire de Recherche sur le Paludisme, Organisation de Coordination pour la lutte Contre les Endémies en Afrique Centrale (OCEAC), Yaoundé, Cameroon, <sup>6</sup>Vector Group Liverpool School of Tropical medicine Pembroke Place, Liverpool, United Kingdom

The most efficient malaria vectors bite and rest inside houses, hence houses play a determinant role in malaria transmission. During the implementation of additional vector control tools such as larviciding, individual disease risk perception could be affected. We carried out this study to evaluate the influence of house structures, community knowledge and practices on anophelines diversity and malaria prevalence, before and during a larviciding program. The study was

conducted before and during larviciding intervention in 26 districts. Indoor CDC light traps were used to collect mosquitoes. Questionnaires were administered to collect data on house characteristics and to evaluate the impact of larviciding on population knowledge and behaviour. After morphological identification, anophelines were tested by ELISA to detect infection to Plasmodium parasites. RDT was used to test the blood samples of participants. Binary analyses were used to assess the correlation between different variables. The majority of houses were made with cement walls. The most abundant anophelines was *An. coluzzii*, followed by *An. gambiae* s.s, with the highest densities in traditional houses before the treatment in control sites, whereas, they were most abundant in modern houses in treated sites. Opened eaves and absence of ceiling exposed people to anophelines bites. Possession of LLINs before the treatment in control sites exposed people to anopheline bites while they were protected in treated sites. Infection to Plasmodium and malaria prevalence were highest in modern houses found in control sites; while in treated sites, infection to Plasmodium was highest in modern houses, but malaria prevalence was the same in both house types. People who lived in treated sites knew more about malaria prevalence and mosquito breeding sites, and the latter used fewer LLINs. Well-built houses protect people against anophelines species. The implementation of larviciding control improved the knowledge of people and decrease their personal protection against mosquito bites.

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### Assessing dengue and chikungunya infections among febrile patients visiting four healthcare centres in Yaoundé and Dizangué, Cameroon

Stella Nana-Ndjangwo<sup>1</sup>, Borel Djiappi-Tchamen<sup>2,3</sup>, Ruth Mony<sup>4</sup>, Maurice Demanou<sup>5</sup>, Joyce Keumezeu-Tsafack<sup>6,3</sup>, Roland Bamou<sup>7</sup>, Parfait Awono-Ambene<sup>8</sup>, Charles Bilong<sup>4</sup>, Christophe Antonio-Nkondjio<sup>8</sup>

<sup>1</sup>University of Yaoundé I, Cameroon, <sup>2</sup>University of Dschang, Dschang, Cameroon, <sup>3</sup>Organisation de Coordination pour la lutte contre les Endémies en Afrique Centrale (OCEAC), Cameroon, <sup>4</sup>University of Yaoundé I, Yaoundé, Cameroon, <sup>5</sup>World Health Organization, IST West Africa, Ouagadougou, Burkina Faso, <sup>6</sup>University of Douala, Cameroon, <sup>7</sup>OCEAC (Organisation de Coordination pour la lutte contre les Endémies en Afrique Centrale), University of Dschang, Dschang, Cameroon, <sup>8</sup>OCEAC (Organisation de Coordination pour la lutte contre les Endémies en Afrique Centrale), Yaoundé, Cameroon

Dengue and chikungunya are widely distributed in Cameroon but there is still not enough information on their prevalence in different epidemiological settings. This study was undertaken to assess dengue and chikungunya prevalence in both urban and rural settings in Cameroon using 3 diagnostic tools. From December 2019 to September 2021, willing febrile (temperature >38°C) outpatients visiting 4 healthcare facilities in the cities of Yaoundé and Dizangué were screened for dengue and chikungunya. Clinical symptoms were recorded and blood samples collected in EDTA tubes were centrifuged to obtain plasma, then analysed using rtRT-PCR, RDTs and ELISA. Odds ratios were used to determine the level of association between socio-demographic factors, clinical features and the infection status. Kappa statistic permitted to assess the level of agreement between RDTs and ELISA. Overall, 301 patients were recruited: 198 in Yaoundé and 103 in Dizangué. The prevalence varied according diagnostic tool. For dengue, 110 patients were positive to rtRT-PCR: 90 (45.45%) in Yaoundé and 20 (19.42%) in Dizangué. The prevalence of dengue IgM using ELISA varied from 22.3% in Dizangué to 30.8% in Yaoundé. Dengue positivity rate using RDTs was 7.6% in Yaoundé and 3.9% in Dizangué. For chikungunya, one (0.5%) patient (Yaoundé) was tested positive to rtRT-PCR. The prevalence of chikungunya IgM with ELISA varied from 18.4% in Dizangué to 21.7% in Yaoundé, while using RDTs, it was 4.5% in Yaoundé and 12.6% in Dizangué. RDTs for either chikungunya or dengue displayed very poor sensitivity. Abdominal and retro-orbital pains were significantly associated to acute dengue infection. All the four dengue serotypes were recorded with a predominance of DENV-3 (35.45%) and DENV-4 (25.45%). This study further confirms endemicity of both dengue and chikungunya in Yaoundé and Dizangué. These data stress the need for active surveillance of cases to prevent outbreaks occurrence across the country.

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### Tuberculosis-related knowledge, practices, perceived stigma and discrimination, and adherence to anti-tuberculosis medication among patients with tuberculosis

Rana Hamawi<sup>1</sup>

**<sup>1</sup>GHD Eastern Mediterranean Public Health Network (EMPHNET), Jordan**

Background: Tuberculosis is ranked among the top 10 causes of death worldwide and is the leading cause of death from a single infectious agent. Tuberculosis knowledge, practices, adherence to treatment, perceived stigma, perceived family and health workers support among patients with tuberculosis are key factors in management of the disease. This study aimed to assess tuberculosis related knowledge and practices, perceived stigma, discrimination and their associated factors, adherence to medication and its associated factors, reasons for diagnosis/treatment delay, perceived family and health workers support, perceived level of satisfaction with healthcare services and impact of COVID-19 among patients with TB in Jordan.

Methods: A cross-sectional study was conducted among patients who were under treatment for Tuberculosis in Jordan. A structured questionnaire was developed, and pilot tested among 10 patients with tuberculosis. Categorical variables were described using percentages and quantitative variables were described using means and standard deviations. General linear procedure and binary logistic regression were used to determine association with different variables.

Results: The majority of patients with tuberculosis had low to moderate overall tuberculosis-related knowledge score. The duration between the onset of tuberculosis symptom(s) and diagnosis had a mean of 43.2 days and the duration between diagnosis and treatment had a mean of 6.4 days. The majority of patients with tuberculosis thought that there was a delay in diagnosis and/or treatment of tuberculosis.

Conclusions: Efforts should be made to increase public awareness and knowledge about tuberculosis and to educate them about the importance of seeking early care. A patient centric approach, where motivational counseling and patient support groups should be adopted.

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**The first national prevalence survey of soil transmitted Helminths in Pakistan**

Waleed Rabbani<sup>1</sup>

<sup>1</sup>Interactive Research and Development, Lahore, Pakistan

Objective: WHO estimates, 21.7 million School Age Children in Pakistan are infected with STH, along with 9.3 million preschool-age children. However, prior to implementing the large-scale deworming program, it was necessary to determine the geographical distribution of STH in the country. The Objective of the survey was to report the prevalence and intensity of STH across Pakistan and provide information to the government for evidence-based interventions.

Methods: WHO's sentinel site approach was used to estimate the baseline prevalence of STH infections. Schools were considered sentinel sites whereby one school was selected for every 300,000 children aged 5-10 years in each of the nine ecological zones of Pakistan. Mobile lab teams with technical and non-technical members were deployed in four provinces (Punjab, Sindh, Baluchistan, and Khyber Pakhtunkhwa (KPK)) as well as the territory of Azad Jammu and Kashmir (AJK). A total of 77 schools across the country were approached, and 5188 parents consented to their child's stool being analyzed for STH using the Kato-Katz Methodology.

Results: The weighted prevalence of STH in the different ecological zones ranged from 0% to 37.5%, there are regions where the prevalence is significantly higher. Rawalpindi and Gujrat have a prevalence of 56% and 36%, respectively, representing the highest prevalence in the Northern Regions of Punjab. STH is endemic across Northern regions of KPK, with the highest prevalence around the district of Swat (37%). Much of the Southern Region of Pakistan has low levels of infection, with the notable exception of the Karachi area where prevalence reaches 20%. The survey also revealed that hygiene and sanitation infrastructure and basic hygiene practices at schools and households across all areas were poor.

Conclusions: There are regions with a sufficiently high prevalence of STH that indicate that mass deworming programs should be conducted that subsequently renders a multi-dimensional impact on health, education, and livelihood.

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**Adherence and factors associated with Cotrimoxazole preventive therapy among adult human Immunodeficiency Virus (HIV) Patients attending antiretroviral clinics in Jigjiga Hospitals**

Shyamkumar Sriram<sup>1</sup>, Seada Kasim<sup>2</sup>

<sup>1</sup>Ohio University, Ohio, United States, <sup>2</sup>Jigjiga University, Ethiopia

Background: Co-trimoxazole, a fixed-dose combination of two antimicrobial drugs offers a synergistic effect with a broad spectrum of antimicrobial action. Adherence to cotrimoxazole preventive therapy has been found to reduce

the incidence of opportunistic infections and other AIDS-related illnesses. Cotrimoxazole preventive therapy is self-administered, and therefore, adherence cannot be insured, and the adherence has been low and opportunistic infections continue to be the major cause of mortality and morbidity in HIV, accounting for 47% of AIDS-related deaths. This study aimed to assess adherence and factors associated with cotrimoxazole preventive therapy (CPT) among adult human immunodeficiency virus (HIV) patients attending antiretroviral clinics in Jijiga hospitals.

Methods: Institutional-based-cross-sectional study was conducted from November to December, 2021 among 422 randomly selected adult HIV-positive patients attending Jijiga hospital. The collected data was entered into EPI-data version 3.1 and exported to SPSS version 24 for analysis. Binary and multivariable logistic regressions were used to identify factors associated with CPT adherence. Results: 417 patients with HIV participated in the study with an overall adherence of CPT of 76.3% with 95% confidence interval (CI): 72.4%-81.3%; level of education can read and write (AOR= 1.50, 95% CI: 1.39-2.73), taking substance (AOR= 1.88, 95% CI: 1.22-2.93), distance of the health facility greater than 5km (AOR= 1.79, 95% CI: 1.07-2.98), residence being rural (AOR =1.90, 95% CI: 1.14-3.17) not receiving counseling at refill (AOR= 1.33, 95% CI: 1.13-2.80), duration of ART less than 6 years and not disclosing HIV status to other family members (AOR =5.40, 95% CI: 3.42-8.14, and 3.30, 95% CI: 2.12-5.41 respectively) were significantly associated with magnitude of CPT.

Conclusions: To improve the adherence, continuous education and counselling, giving group service support for clients and patients having trends to disclose HIV status to other members of the family are some of the possible solutions.

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**Measles seroprevalence national survey among a sample of the Tunisian population: is there an explanation for the 2019 measles epidemic in a mostly vaccinated population?**

Emna Mziou<sup>1</sup>, Mouna Safer<sup>2</sup>, Aicha Hchaichi<sup>3</sup>, Fatma Youssef<sup>3</sup>, Hejer Letaief<sup>3</sup>, Sonia Dhaouadi<sup>2</sup>, Leila Bouabid<sup>2</sup>, Sondes Derouiche<sup>2</sup>, Rym Mhadhbi<sup>2</sup>, Souha Bougateg<sup>2</sup>, Olfa Bahri<sup>4</sup>, Nissaf Alaya<sup>5</sup>

<sup>1</sup>National Observatory of New and Emerging Diseases, Sfax, Tunisia,

<sup>2</sup>National Observatory of New and Emerging Disease, Tunis, Tunisia,

<sup>3</sup>National Observatory of New and Emerging Diseases, Béja, Tunisia,

<sup>5</sup>Department of Microbiology and Biochemistry, Hopital Aziza Othmana,

Tunis, Tunisia, <sup>6</sup>Observatoire National des Maladies Nouvelles et

Émergeantes, Tunis, Tunisia

In Tunisia, the measles vaccine is included in the national-immunization-programme. An outbreak of measles occurred with 3896 notified cases and 39 deaths in 2019. We conducted this study to estimate measles IgG-antibodies seroprevalence before the occurrence of 2019-outbreak. We conducted a national seroprevalence survey of measles immunity using blood samples serotheque collected during the 2014-2015 National Viral Hepatitis cross-sectional survey. Written informed consent for using the sera for further analysis was obtained from participants (parents for minors). A subsample of 3500 individuals was included based on expected seroprevalence of 85%, a precision of 0.2% and 95%CI. ELISA was used to detect IgG antibodies against measles. Participants with serum positive for measles antibody were considered protected or immune to measles disease. From 3454 serum samples tested, 3279 were positive for measles IgG antibodies, representing a seroprevalence of 94.9% (95%CI: 94.3%-95.6%). Seroprevalence was significantly lower in rural area (p<0.001). The prevalence of measles IgG antibodies was different by age (p<0.001). The seroprevalence among children aged 0-5 years was 94.7%. It was 96% for both 5-10- and 10-15-year-old populations. However, it declined significantly among 20-30 years population, 1982-1997 birth cohort, with a seroprevalence of 83.2% (95%CI: 79.7%-86.1%). Among 40-50, 50-60 and >60-year-old populations, seroprevalences were to 98.1%, 99.2%, and 98.6% respectively. In this context, during 2021, the Tunisian government, provided and recommended getting a booster dose targeting adults born between 1982-1997(20-30 years), and advancing the first dose for children from 12 to 9 months, in order to ensure a sufficient immunization rate. This study, a pre-epidemic measles seroprevalence survey, showed that seroprevalence among vaccinated population aged 20-30 years in Tunisia was low. To prevent future outbreaks, a nationwide-vaccination-campaign was implemented in 2021, aiming to boost immunity against measles. It was delayed for 2022, as a consequence of the COVID-19 pandemic.

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**Short hospital stays for malaria cases despite gaps in**

### management: case scenario for high and low malaria endemic counties of Kenya, 2021

Nassoro Mwanyalu<sup>1</sup>, Freshia Waithaka<sup>2</sup>, Dorcas Mutiso<sup>3</sup>, Maurice Owiny<sup>3</sup>

<sup>1</sup>Field Epidemiology and Laboratory Training Program, Zoonotic Disease Unit, Ministry of Health, Nairobi, Kenya, <sup>2</sup>Field Epidemiology and Laboratory Training Program, Ministry of Health, Kenya, <sup>3</sup>Field Epidemiology and Laboratory Training Program-Ministry of Health, Kenya

**Introduction:** Kenya Malaria Strategy(KMS) 2019–2023 targets to reduce malaria incidences and deaths by at least 75% by 2023. In 2020, there was a decline in facilities reporting inpatient malaria data by 18%, reducing the number of malaria admissions in the country. Therefore, we aimed to assess inpatient Malaria cases, case management and Data Quality Audits in low and high malaria endemic counties of Kenya.

**Methods:** We used a mixed-method approach in Makueni, Taita-Taveta and Lamu counties. We retrieved reports from Kenya Health Information System(KHIS), reviewed inpatient registers and medical records for malaria data from admitting facilities. All malaria records for clients attended, 2020-2022 were eligible. We administered questionnaires to healthcare workers in the visited facilities to assess malaria case management. Descriptive statistics were performed.

**Results:** Of the 23 inpatient facilities visited, only 52% reported into the KHIS platform; Makueni at 45%(5/11) and Lamu at 36%(4/11) contributed the highest number of facilities not reporting. A total of 131 malaria records were abstracted, ages ranging from three months to 72 years(median 22 years), with a Case fatality rate of 2.3%. Makueni county being a low-risk county, had more cases than Lamu county at 33%(44/131). On diagnosis, 46%(60/131) were uncomplicated, while 1.53% were clinical malaria admissions. Those treated with Artemether-lumefantrine(AL) and Artesunate drugs were 61%(80/131) and had the shortest hospital stay, 1–7 days. Only 51%(36/70) of healthcare workers were trained in malaria case management, and 44%(16/36) were clinicians. On International Classification of Diseases 10/11, 59%(13/22) of Health records officers were trained, and 36%(10/28) of laboratory officers were not conducting malaria species quantification.

**Conclusions:** Patients treated with both Artemether-lumefantrine and Artesunate drugs were below the 80% KMS target and had shorter hospital stay. There were gaps in malaria diagnosis and management of cases.

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### The effectiveness of the prevention and control methodsapplied towards the elimination of malaria in Botswana

Collen Saudu<sup>1</sup>

<sup>1</sup>Young Leaders Organization, Johns Hopkins University, United States

**Background:** In 2008 the Ministry of Health (MOH) in Botswana was inspired by an overall decline of malaria prevalence within the population from 4.2% in 2000 to less than 1% in 2008. These Results motivated the government of Botswana to embark on complete elimination of malaria by 2015. Heavy rainfalls in 2017 led to an epidemic which caused a huge setback to this elimination target, due to the malaria cases reported in the South-East District, a region not classified as endemic in Botswana. This study examines the progress, effectiveness, and challenges of prevention and control methodsfor a successful elimination of malaria in Botswana.

**Materials and Methods:** Retrospective data about cases of malaria in Botswana covering endemic districts, and data about Indoor Residual Spray (IRS), Long lasting Insecticides Nets (LLINs) and larviciding from 2000 to 2018 were obtained from the Botswana MOH. Rainfall data from the Department of Metrological Services were also obtained. Intervention datasets were compared against rainfall amount and number of cases to establish their relationship.

**Results:** There was a direct proportion between percentage of malaria incidence and percentage of mean annual rainfall. Intensifying interventions in Botswana had no effect on number of cases based on this study. IRS coverage and intensity increased over years to 80%, yet one heavy rainfall season Resulted in increased cases of malaria in Botswana.

**Conclusions:** Improved forecasting can be used to predict malaria in Botswana, indicating malaria in Botswana is heavily dependent on the climate . IRS, LLINs and larviciding should be carried out at the right time, not after mosquito bites and consistently without failure, to eliminate malaria. The steep decline of cases of malaria from 2000 to 2013 was due to the dry weather, not control methodsapplied.

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### The increasing problem of Tuberculosis in Nepal

Prabin Shrestha<sup>1</sup>

<sup>1</sup>Young Professional Development Society Nepal, Nepal

**Background and Objective:** Tuberculosis (TB) is a major public health problem in Nepal. It is a major cause of ill-health, one of top ten causes of deaths and leading cause of death from single infectious agent. Government of Nepal has put TB as a priority program and is committed to eliminate TB. The aim of the study was to describe the problem of TB epidemic in Nepal. **Methods:** Different literatures, reports, policy documents and guidelines were reviewed and the Results were presented through descriptive analysis.

**Results:** In 2018/19, Nepal conducted the first National TB Prevalence survey, which showed higher prevalence, incidence and mortality of TB than the previous estimations. The TB prevalence was estimated to be 416/100000 with around 117000 people with TB disease in the country living. Similarly, the incidence was found to be 245/100000 with an estimated of 69000 cases. The mortality was also found to be 3.1 times higher than the previous estimates. In the year 2020/21, National TB Programme (NTP) registered 28,677 (38% females and 62% males) cases with nearly 58% missing cases than the projected cases showing higher incidence notification gap. The missing cases were higher among elderly due to challenges in access to health care services. Of the registered cases, the proportion of childhood TB was found to be 6.6% which was low suggesting existence of high TB transmission and requiring early diagnosis and treatment of childhood TB. The case notification rate (CNR) was 95 per 100000 population and 9 districts were considered to be high TB burden districts based on the CNR. **Conclusions:** There exists a huge gap between the estimated and notified cases. NTP must work to reduce the gap and identify the missing cases through accountable, equitable, quality, universally accessible and patient centered care and services.

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### Knowledge of Monkeypox among medical students in the Eastern Mediterranean Region

Assem Gebreal<sup>1</sup>, Samar ElHafeez<sup>2</sup>, Shaimaa Abdelmoneim<sup>3</sup>, Ramy Ghazy<sup>4</sup>

<sup>1</sup>Faculty of Medicine, Alexandria University, Egypt, <sup>2</sup>Epidemiology Department, High Institute of Public Health, Alexandria University Egypt, Egypt, <sup>3</sup>Alexandria Clinical Research Administration, Alexandria University, Egypt, <sup>4</sup>Tropical Health Department, High Institute of Public Health, Alexandria University, Egypt

**Background and Objective:** Human monkeypox epidemic represents a public health emergency. In epidemics, medical students act as alert and reliable public information sources. This study aimed to assess knowledge of Monkeypox among medical students recruited from the Eastern Mediterranean Region

**Methods:** A cross-sectional study was performed between August-October, 2022. Data was collected through an online predesigned questionnaire that was distributed via social media. The questionnaire consists of two sections; the first is on the sociodemographic characteristics (gender, age, educational year), and the second section included 30 items to assess the knowledge on HMPX (five items on the source and nature of HMPX, 7 items on the mode of transmission of HMPX, 6 items on the clinical manifestation, 8 items on the prevention and control, and 4 items on treatment modalities). The level of knowledge was classified into high (80-100%), moderate (60-80%), and low (less than 60%). For analysis, descriptive statistics were performed.

**Results:** A total of 1,740 medical students participated in the study. The mean age of the participants was 21 years, 63% were females, and 47% of them were in the fifth and fourth-year. Only 10% received a training program on human monkeypox. The findings from this study showed that the majority of participants 848 (48.73%) had a moderate level of knowledge regarding HMPX, 274 (15.747%) had poor knowledge, and 618 (35.49%) had high knowledge. Almost one-third (32%) had knowledge of the availability of the licensed monkeypox vaccine. There was no significant association between knowledge and education year, country of residence, or area of residence (urban/rural) ( $p=0.23$ ), ( $p=0.92$ ), ( $p=0.07$ ) respectively.

**Conclusions:** The study emphasized that knowledge towards human monkeypox introduced to currently enrolled undergraduate medical students in the Eastern Mediterranean Region is inadequate and should be increased to enhance the prevention and control of monkeypox.

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### Case of yellow fever in the Manankoro area, Bougouni health district, Sikasso region, December 2019

Soungalo Diakite<sup>1</sup>

<sup>1</sup>Responsible for Epidemiological Surveillance of Infectious Diseases,

### Ministry of Health and Social Development of Mali, Mali

**Introduction:** Following the confirmation of two (2) cases in the health district of Bougouni on 03/12/2019. We conducted an investigation whose objective was to describe the cases of yellow fever in the Manankoro health area in time, place and people and to put in place control and prevention measures against the epidemic. **Methodology:** We conducted a cross-sectional descriptive study in December 2019, a case of yellow fever was any person who stayed in Manankoro or surrounding village between October 20 to December 05, 2019 and who presented during this period the following signs: Fever or notion of fever in the previous days and jaundice in the 2 weeks following the onset of the signs. We conducted a search for other unreported cases based on data collected using a questionnaire. The data was analyzed in time, place and person.

**Results:** Case confirmed by the laboratory, this is a 25-year-old adult, farmer, male gender, residence Kémingouara / Republic of Côte d'Ivoire, came on November 06, 2019 for consultation at the Lafia cabinet in Manankoro in a table of coma and referred to the CSRéf of Bougouni for better care where he died 11 hours after his blood sample on 08/11/2019. **Conclusions:** The investigation made it possible to identify 12 additional cases among which 3 cases of death, the age group of 30 to 34 years was the most represented, that is to say 33%. The male sex was predominant with 10 cases. Fever, jaundice and vomiting were the most frequent symptoms. The *Aedes* species responsible for yellow fever was not found during this investigation.

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### Role of genetic variability in Toll-Like receptors (TLR2, TLR4 and TLR9) in HIV-1 disease progression

Gaurav Kaushik<sup>1</sup>, Richa Vashishtha<sup>2</sup>

<sup>1</sup>Department of Allied Health Sciences, Sharda University, India, <sup>2</sup>All India Institute of Medical Sciences (AIIMS) New Delhi, Rajnagar, India

**Background:** It has been demonstrated that TLR2, TLR4 and TLR9 which were initially known for recognizing bacterial product are involved in detection of viral components. It was planned to undertake a prospective longitudinal study among ethnically homogenous ART and ATT naïve HIV-positive patients representing the north Indian population. The aim of the study was to investigate the influence of TLR2, TLR4 and TLR9 polymorphism in HIV disease progression. **Methods:** Present study was designed to investigate genetic polymorphism in TLRs (TLR2, TLR4 and TLR9) among HIV-infected patients with and without TB co-infection. The study population consisted of two groups (i) HIV-positive patients without TB infection and disease (n=223, HIV+ patients); (ii) HIV-positive patients with latent tuberculosis infection (n=150, HIV+LTBI patients). These subjects were of either gender between 18-60 year of age and treatment naïve for both TB and HIV. HIV+ and HIV+ LTBI patients were longitudinally followed-up for the period of two years to study HIV disease progression.

**Results:** On comparing TLR2 and TLR4 allelic and genotypic frequencies between 306 HIV+ patients (no TB/AIDS) and 47 HIV+ patients progressed to active TB/AIDS, no significant difference was observed between two groups. The frequency of 'A' allele in TLR9 was found to be significantly increased in 47 HIV+ patients who progressed to active TB/AIDS (61.7%) as compared to 42.16% in 306 HIV+ patients (no TB/AIDS), (p<0.001). Also, a significant increased frequency of 'AA' genotype in TLR9 was observed in 47 HIV+ patients progressed to active TB/AIDS (55.32%) as compared to 20.26% in HIV+ patients (no TB/AIDS). **Conclusions:** Findings of the present study revealed that genetic variability in TLR9 may influence the HIV disease progression. The AA genotype in TLR9 may be associated with progression to TB/AIDS during 2-year time period in HIV+ patients.

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### Demographic and housing factors in Lassa fever transmission in a high disease burden State in Nigeria

Alphonsus Aigbiremolen<sup>1</sup>, Faith Ireye<sup>2</sup>, David Anderson<sup>3</sup>, Stephanie Hsieh<sup>3</sup>, JaMuir Robinson<sup>3</sup>, Danny Asogun<sup>4,5</sup>

<sup>1</sup>Department of Community Medicine, Irrua Specialist Teaching Hospital (ISTH), Irrua, Edo State, Nigeria, <sup>2</sup>World Health Organization, Asaba, Nigeria, <sup>3</sup>Walden University, Baltimore, United States, <sup>4</sup>Department of Community Medicine, ISTH, Irrua, Edo State, Nigeria, <sup>5</sup>Irrua Specialist Teaching Hospital (ISTH), Irrua, Edo State, Nigeria

**Background and Objective:** Lassa fever is endemic in Nigeria and there are yearly outbreaks in many areas including Edo State with associated severe morbidity and high mortality rates. Empirical evidence on the contribution or otherwise of socio-demographic characteristics to transmission of the infection is sparse. This study was designed to determine demographic and housing factors related to Lassa

fever transmission in Edo State, Nigeria. **Methods:** This was a cross-sectional study in which a sample of 336 adults was drawn from 6 Local Government Areas (LGAs) in the state using multi-stage sampling technique. A questionnaire was used to obtain information from respondents. Analysis of data was done using SPSS version 25 and relationship between demographic and housing characteristics and transmission of Lassa fever were tested with Chi square and multi-nomial logistic regression.

**Results:** Majority of respondents (76.5%) lived in rural areas. More than two-thirds (69.9%) resided in brick houses, 54.8% reported presence of rodent entry points in their houses, and more than one-third were observed to have bushy or littered house surroundings. Urban residence, ethnicity, and poor housing were significantly associated with high Lassa fever transmission (X<sup>2</sup>= 54.490, p<0.001; X<sup>2</sup>= 66.648, p<0.001; X<sup>2</sup>= 25.435, p<0.001 respectively). Rural residence increased the odds of low transmission by 6.991 times (B= 1.945, 95% CI: 3.580-13.651). **Conclusions:** There is a significant relationship between some demographic and housing characteristics with transmission of Lassa fever. Effective and sustainable control strategies for the deadly disease require strong consideration of these factors. **Keywords:** Lassa fever, demographic factors, housing, Edo State

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### The case for collecting, analysing, and utilizing sex-disaggregated data and gendered data to inform outbreak responses, a systematic review of the literature 2012-2022

Emelie Phillips<sup>1</sup>, McKenzie Gales<sup>2</sup>, Shirin Heidari<sup>3</sup>, Leah Pao<sup>2</sup>, Marie-Amélie Degail<sup>4</sup>, Christine Dubrey<sup>2</sup>, Clara Ribas<sup>4</sup>, Marie Meudec<sup>5</sup>, M. Siddiqui<sup>6</sup>, Simone Carter<sup>7</sup>

<sup>1</sup>Epicentre, Türkiye, <sup>2</sup>Centers for Disease Control, United States, <sup>3</sup>GENDRO, Switzerland, <sup>4</sup>World Health Organisation, Switzerland, <sup>5</sup>Institute of Tropical Medicine Antwerp, Belgium, <sup>6</sup>UNICEF, United Kingdom, <sup>7</sup>UNICEF, Democratic Republic of Congo

**Introduction:** Understanding sex-related differences and gendered roles in outbreak dynamics is critical to deliver an effective response. We examined the extent to which sex-disaggregated data and gendered data for outbreak analytics and responses are collected, analyzed, and utilized in low-and middle-income countries (LMIC).

**Methods:** A systematic literature review was conducted. Five databases were searched for peer-reviewed literature examining sex- and gender-specific outcomes for communicable disease outbreaks, published in English between January 1, 2012, and April 12, 2022. Results were independently screened, and all articles meeting the inclusion criteria were included in the review.

**Findings:** A total of 71 out of 15,601 screened articles were included in the analysis. The literature describes sex- and gender-related differences in outbreak susceptibility, risk of exposure, symptoms, severity of illness, healthcare-seeking behavior, and access to treatment and support services. Findings varied by disease, setting, and population. Gaps in the analysis and use of sex-disaggregated data and gendered data in outbreak response were identified. The analysis showed that identified sex and gender-related differences were not systematically utilized to address sex and gender-related barriers to health, implement sex and gender-specific prevention messaging, and adapt disease detection and treatment across all aspects of the outbreak response.

**Conclusions:** Despite existing recommendations and minimum requirements, collection, analysis, and use of sex-disaggregated data and gendered data, including operational analytics, are seldom included in outbreak response. While sex data is often collected during outbreaks in LMIC, few publications disaggregated outcomes by sex or discussed gendered roles in outbreak dynamics, and even fewer examined the implications of the observed differential outcomes. Mounting evidence calls for an approach to outbreak prevention, detection, response, and recovery that includes sex and gender specificities. Context-specific guidance for the systematic collection, analysis, and utilization of sex-disaggregated data and gender data is urgently needed.

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### Screening campaign for the elimination of the Hepatitis C virus in the generic risk population born between 1969 and 1989 in an Italian Local Health Authority - preliminary data

Doriana Vallone<sup>1</sup>, Samantha Rollo<sup>1</sup>, Vincenzo Allegretti<sup>1</sup>, Catia Sias<sup>2</sup>, Luca Casertano<sup>3</sup>, Giuseppe Luzio<sup>1</sup>, Giancarlo Pizzutelli<sup>1</sup>

<sup>1</sup>Department of Prevention, ASL Frosinone, Frosinone, Italy, <sup>2</sup>Department of Clinical Pathology, ASL Frosinone, Frosinone, Italy, <sup>3</sup>Medical Management, ASL Frosinone, Frosinone, Italy

**Background and Objective:** Chronic infection caused by the hepatitis C virus (HCV) represent the main causes of morbidity and mortality related to liver disease. An estimated 3.9 million individuals are chronically infected with HCV in EU/EEA countries. In Lazio it's estimated about 53000 patients with chronic active HCV infection who have not yet been treated with antiviral therapy. The purpose of this free screening, promoted by the Ministry of Health and launched also in the Lazio Region, is to identify, among the subjects enrolled in our Local Health Authority of Frosinone (ASL), the positivity to HCV antibodies (HCVAb) and reflex testing for HCV RNA by serological testing, for start them the assessment to free specific treatment.

**Methods:** In our Asl, this screening started on 4 Oct 22 and will end on 31 Dec 23. The target population is represented by subjects born between 1969 to 1989. Therefore, circa 140000 subjects in the Province of Frosinone are eligible. The team of the HCV screening coordination provide through an active phone-call and by sending an ordinary mail to invite the eligible subjects to participate at the screening, fixing an appointment for the blood test in one of the centers of our ASL, based on the residence; eligible subjects can still self-booking on "Salute Lazio".

**Results:** The preliminary data as of 2 Dec '22, shows that out of n. 570 exams booked in our ASL: n. 384 subjects tested negative for HCV AB; only n.1 subjects tested positive for HCV Ab and negative for HCV RNA. No positive reflex testing for HCV RNA was currently found.

**Conclusions:** Without an effective hepatitis C vaccine, this screening can detect undiagnosed HCV infections and improve early diagnosis for health care coverage policies and clinical decision making; as well as interrupting the circulation of the virus, preventing new infections.

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### Private sector care-seeking pathways and delays in TB care in India, Indonesia and Nigeria in times of COVID-19

Charity Oga-Omenka<sup>1</sup>, Nathaly Vasquez<sup>2</sup>, Angelina Sassi<sup>2</sup>, Rishav Das<sup>3</sup>, Madhukar Pai<sup>2</sup>, Lavanya Huria<sup>4</sup>, Bony Lestari<sup>5</sup>

<sup>1</sup>University of Waterloo, Canada, <sup>2</sup>McGill University, Canada, <sup>3</sup>McGill University, Canada, <sup>4</sup>McGill International TB Centre, Canada, <sup>5</sup>Department of Epidemiology and Biostatistics, Universitas Padjadjaran, Indonesia

India, Indonesia, and Nigeria have the 1st, 3rd, and 6th highest burden of TB globally. Combined, they accounted for 44% of new cases and 50% of deaths from TB globally in 2021. In these countries, a majority (71% on average) of initial TB care-seeking are with private providers, yet private providers accounted for only 15-31% of TB notifications. The WHO reported that there are 1.8M (or 43% of global total) people with TB that are were not diagnosed in these countries. Reports also show that COVID-19 pandemic has reversed years of progress in the TB response due to control measures and overwhelmed healthcare systems. Our study in these 3 countries show how care-seeking pathways for TB care has changed in 2021, and what implications these changes have for health system recovery post-pandemic. We used cross-sectional surveys with 529 patients in India (n=200), Indonesia (n=149) and Nigeria (n=180) to find onset of symptoms, care-seeking pathway, TB diagnosis and treatment initiation, healthcare use during COVID-19, and the impact of COVID-19 on their care. The results showed significant increases in care-seeking delays, and in numbers of encounters with public and private sector providers. Our study highlights the need to strengthen public-private partnerships, equip the private sector with more access to TB testing tools, implement effective bidirectional screenings for TB and COVID and increase training for private providers on TB detection.

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### Candida auris: a bibliometric analysis of an emerging global health threat

Paolo Ragusa<sup>1</sup>, Simone Pizzini<sup>1</sup>, Alessandro Prinzivalli<sup>1</sup>, Giulia Libero<sup>1</sup>, Giuseppina Moro<sup>2</sup>, Valerio Brescia<sup>3</sup>, Giacomo Scaioni<sup>1</sup>, Davide Minniti<sup>4</sup>, Roberta Siliquini<sup>1</sup>, Fabrizio Bert<sup>5</sup>

<sup>1</sup>Department of Public Health Sciences, University of Turin, Italy, <sup>2</sup>Department of Sciences of Public Health and Pediatrics, University of Turin, Italy, <sup>3</sup>Department of Management, University of Turin, Italy, <sup>4</sup>Health Local Unit ASL TO3, Turin, Italy, <sup>5</sup>University of Turin, Department of Public Health Sciences, Italy

**Background and Objective:** Candida auris (CA) is an emerging fungus identified in 2009 that, given its worldwide spread and unique characteristics, has been classified as an urgent global health threat: it resists to common antifungal drugs and decontamination procedures; identification requires specific tools; transmissibility and mortality are high in healthcare settings, especially for

patients in intensive care units. Infection and colonization can be long-lasting, leading to problems in isolation procedures and the risk of outbreaks. This study aims to evaluate publication and citation related metrics, identify major Keywords and topics, and assess geographic distribution of published articles.

**Methods:** A list of all publications containing "Candida Auris" in all fields was extracted from Web Of Science on date 2022/11/18. Bibliometric analysis was conducted using the bibliometrix and biblioshiny packages on RStudio.

**Results:** Total publications (TP) were 1234 with an annual growth rate of 51.58%. Only 12.7% of 4859 contributing authors published  $\geq 3$  articles about CA. Total citations were 26901, with an average of 21.8 citations per paper. The core sources are 9 out of 317, according to Bradfords law. In only 42 countries where CA was identified, articles on the topic were published (89%). The origin of TP is heterogeneous: 31% Europe, 29% North-America, 25% Asia, 8% South-America, 4% Africa, 3% Oceania. Trending topics about CA include epidemiology, identification and resistance.

**Conclusions:** Our analysis shows a growing interest in scientific literature on the topic of CA, led by Europe. In some countries where CA has been identified, no papers have been published. Despite the multidrug-resistance of CA, the topic of therapy is not much debated. Our findings highlight the need to increase focus on CA in order to promote health systems' preparedness and to properly address the spread of this worrisome pathogen.

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### Epidemiological and clinical differences of cases of MPOX at the Chilean outbreak

Alejandra Acevedo<sup>1</sup>, Marcela Valdebenito<sup>2</sup>

<sup>1</sup>Magíster en Epidemiología, Universidad de los Andes, Santiago, Chile,

<sup>2</sup>Departamento de Epidemiología y Estudios en Salud, Universidad de Los Andes, Clínica Universidad de los Andes, Chile

**Background:** In the present MPOX outbreak, differences related to clinical and epidemiological features have been observed with respect to historical evidence. In Chile, the first case was reported in June and until now, there are more than 1400 cases. **Objective:** To identify differences between confirmed and discarded cases of MPOX during 2022 Chilean outbreak. **Methods:** This is a retrospective case-control study from the Institute of Public Health database from all suspected cases between June 1st and September 30th of 2022. Patient samples were processed by real-time PCR at the same Institute. RStudio and Microsoft Excel were used for statistical analysis. Means, frequencies and percentages were calculated. Fisher's test was used to compare groups.

**Results:** We collected 1456 suspected cases. 87% were men between 30-39 years. Positivity increased from 20% at the start to 73% at the peak. 100% had exanthema. The proportion of lymphadenopathy (31% vs 12%), fever (42% vs 29%), myalgia (35% vs 25%), and type of lesion: pustule (36% vs 27%), scab (25% vs 17%) and umbilicated lesion (24% vs 7%) was mayor in positive than negative case ( $p < 0.05$ ). In the confirmed cases, the most frequent site of lesion was genital and anal area, 48% had multiple sexual partners and 14% having had contact with a positive case. 41% have a history of sexually transmitted diseases (HIV=39%). **Conclusions:** Main differences between confirmed and discarded cases were lesion features and distribution. Principal risk factors were previous contact with another positive case and multiple sexual partners. The current case definition seeks to be highly sensitive to capture the largest number of cases, being strategic at the beginning to detect an outbreak. We postulate that, for sustained epidemiological surveillance, a more specific definition in accordance with findings of current outbreak could be formulated.

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### A qualitative exploration of challenges in childhood TB patients identification and diagnosis in Bangladesh

Malabika Sarker<sup>1</sup>, Sharmin Shitol<sup>2</sup>, Sharmin Shitol<sup>2</sup>, Avijit Saha<sup>2</sup>, Mrittika Barua<sup>2</sup>, Kazi Towhid<sup>3</sup>, Akramul Islam<sup>4</sup>

<sup>1</sup>BRAC James P Grant School of Public Health, Bangladesh, <sup>2</sup>BRAC James P. Grant School of Public Health, Bangladesh, <sup>3</sup>National Tuberculosis Control Programme, Bangladesh, <sup>4</sup>Communicable Diseases, Water, Sanitation, and Hygiene (WASH), Integrated Development, and Humanitarian Crisis Management, BRAC, Bangladesh

**Background and Objective:** As childhood TB is difficult to identify and diagnose, the experiences of the caregivers and healthcare providers of childhood TB patients remain a potential area of study. This study aims to illustrate the challenges caregivers and healthcare providers encounter in identifying and diagnosing childhood TB in two sub-districts of Bangladesh.

**Methods:** We conducted semi-structured in-depth interviews with eight caregivers of childhood TB patients and key informant interviews with 36 healthcare providers from July 2019 to June 2020 from different levels of the TB control program in Keraniganj (with high childhood TB cases notification), Faridpur Sadar (with low childhood TB cases notification), and Dhaka city.

**Results:** There is a dearth of understanding among caregivers about childhood TB. Passive case finding process and focus on cough during community mobilisation contribute to delay in childhood TB identification. The stigmatisation that caregivers anticipate and experience has an impact on their mental health and implies that there are misunderstandings about tuberculosis in the community. Furthermore, diagnostic dilemma among healthcare providers accounts for diagnosis delays. Some, but not all, institutions in different geographical locations provide free diagnostic tests and have GeneXpert devices. **Conclusions:** Awareness should be raised in the community on childhood TB. The identification and diagnosis mechanism of childhood TB should be strengthened to minimise challenges faced by the caregivers and the healthcare providers so that children with TB can have an early identification, diagnosis, treatment initiation, and successful completion of treatment. Overall, addressing the challenges would lead to better case identification and diagnosis.

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### Vaccination strategies against seasonal Influenza in long term care setting: lessons from a Mathematical Modelling study

Matteo Ratti<sup>1</sup>, Diego Concina<sup>2</sup>, Maurizio Rinaldi<sup>3</sup>, Ernesto Salinelli<sup>2</sup>, Agnese Brisco<sup>4</sup>, Daniela Ferrante<sup>2</sup>, Alessandro Volpe<sup>2</sup>, Massimiliano Panella<sup>2</sup>  
<sup>1</sup>University of Eastern Piedmont, Italy, <sup>2</sup>Department of Translational Medicine, University of Eastern Piedmont, Italy, <sup>3</sup>Department of Pharmaceutical Science, University of Eastern Piedmont, Italy, <sup>4</sup>Department of Studies for Economics and Business, University of Eastern Piedmont, Italy

**Background:** Despite specific vaccination campaigns, many outbreaks of seasonal influenza like illness (ILI) in long term care (LTC) facilities are occasionally reported. We explored the dynamics of influenza starting from real data collected from a nursing home located in Italy and a mathematical model. Our aim was to identify the best vaccination strategy to minimize cases among the guests. **Materials and Methods:** The model consists of a classical SEIR part describing the spreading of the influenza in the general population and a stochastic agent based model that formalizes the dynamics of the disease inside the institution. After a model fit of a baseline scenario, we explored the impact of varying the HCW and guests parameters (vaccine uptake and vaccine efficacy) on the guest attack rates (AR) of the nursing home.

**Results:** The aggregate AR of ILI in the nursing home was 36.4% (ward1 = 56%, ward2 = 33.3%, ward3 = 31.7%, ward4 = 34.5%). The model fit to data returned a probability of infection of the causal contact of 0.3 and of the shift change contact of 0.2. We noticed no decreasing or increasing AR trend when varying the HCW vaccine uptake and efficacy parameters, whereas the increase in both guest vaccine efficacy and uptake parameter was accompanied by a slight decrease in AR of all the wards of the LTC facility. **Conclusions:** We can conclude that a nursing home is still an environment at high risk of influenza transmission but the handover situation carry no higher relative risk. Therefore, additional preventive measures in this circumstance may be unnecessary. Finally, in a closed environment such as a LTC facility, the vaccination of guests, rather than HCWs, may still represent the cornerstone of an effective preventive strategy.

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### Diagnosis and treatment of febrile children in a Ghanaian hospital

Lydia Rautman<sup>1</sup>, Benno Kreuels<sup>2</sup>, Oumou Maiga-Ascofaré<sup>2</sup>, Jürgen May<sup>2</sup>, Ralf Krumkamp<sup>2</sup>

<sup>1</sup>Infectious Disease Epidemiology, Bernhard-Nocht Institute for Tropical Medicine, Germany, <sup>2</sup>Bernhard-Nocht Institute for Tropical Medicine, Germany

**Background and Objective:** While a large proportion of fever among children in sub-Saharan Africa is accompanied by malaria, malaria is not always the main cause of fever. In areas of high malaria prevalence, antimalarials are frequently over-prescribed. Our objective was to achieve a better understanding of malaria infection dynamics and hospital diagnoses in an area where malaria is highly endemic. **Methods:** The fever without source study was conducted 2013-2015 at Agogo Presbyterian Hospital (APH) in Agogo, Ghana. Febrile children under 15 admitted to the pediatric ward were recruited to the study. Demographic, clinical, and laboratory data were collected and analyzed descriptively and graphically in R.

**Results:** A total of 1503 admissions were included in the analysis. Malaria parasites were detected in a majority (59%) of patients but analysis of changes in practitioner diagnoses from admission to discharge revealed that sepsis and malaria were frequently over-diagnosed: almost one-third of malaria and over 80% of sepsis admission diagnoses were not confirmed at discharge. Among children with malaria parasites detected in the blood, 95% received antimalarial treatment and 52% received antibiotics. Among those without malaria parasites, 30% were given antimalarials and 95% were given antibiotics.

**Conclusions:** Adherence to World Health Organization guidelines for the management of malaria and clearer diagnostic guidelines for the diagnosis of non-malarial febrile illness are needed. Further development of these guidelines could improve hospital diagnoses, reduce delays in treatment, and minimize unjustified antibiotic prescription.

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### Toxigenic diphtheria cases in North Queensland, Australia

Allison Hemenstall<sup>1</sup>, Jay Short<sup>2</sup>, Valmay Fisher<sup>1</sup>, Caroline Taunton<sup>1</sup>, Annie Preston-Thomas<sup>3</sup>, Tonia Marquardt<sup>3</sup>

<sup>1</sup>Torres and Cape Hospital and Health Service, Australia, <sup>2</sup>Townsville Hospital and Health Service, Australia, <sup>3</sup>Cairns and Hinterland Hospital and Health Service, Australia

**Background and Objective:** Diphtheria is predominantly caused by toxigenic *Corynebacterium diphtheriae* and presents as both respiratory and cutaneous disease. Locally acquired tox-gene-carrying diphtheria is rare in Australia and cases have all but disappeared from the country since the 1950s with widespread uptake of the diphtheria toxoid vaccine. Since 2018, there has been an increase in locally acquired cutaneous and respiratory cases of toxigenic C diphtheriae across North Queensland, Australia with whole genome sequencing of specimens identifying a genetically-linked cluster of cases in the region. Here we present the epidemiology of this outbreak.

**Methods:** We retrospectively reviewed all notifications of confirmed *Corynebacterium diphtheriae* cases occurring in the North Queensland region between 2000 and 2022. Demographic, clinical and exposure source details were extracted from Queensland Health's Notifiable Conditions System and laboratory typing results obtained from Queensland Health Forensic and Scientific Services. Data were de-identified and analysed using Microsoft Excel 2021. The Townsville Human Research and Ethics Committee approved the study.

**Results:** There have been 29 notified cases of genetically linked tox-gene-carrying diphtheria across North Queensland since 2020, 23 of which occurred in 2022. Three cases presented with classic respiratory diphtheria, four with mild respiratory diphtheria and 22 with cutaneous diphtheria. All infections were acquired in Australia and all cases had epidemiological links to the North Queensland region. A total of 86% of cases (25/29) identified as Aboriginal and/or Torres Strait Islander people. All cases were managed with penicillin or azithromycin, vaccination, and diphtheria antitoxin (DAT) where appropriate. Household contacts were screened for symptoms, administered chemoprophylaxis, and offered a diphtheria-containing vaccination if due.

**Conclusions:** This outbreak contributes to the broader global concerns for increasing diphtheria outbreaks. Timely vaccinations in children, adolescents, pregnant women, and eligible older people remain of utmost importance. Australian clinicians and public health professions should remain vigilant for future cases.

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### Facilitators and barriers to integrated malaria prevention in Wakiso district, Uganda: a photovoice study

David Musoke<sup>1</sup>, David Musoke<sup>1</sup>, Grace Biyinzika Lubega<sup>1</sup>, Filimin Niyongabo<sup>1</sup>, Suzan Nakalawa<sup>1</sup>, Rhoda Wanyenze<sup>1</sup>, Moses Kanya<sup>2</sup>

<sup>1</sup>Makerere University School of Public Health "New Mulago Hospital Complex P. O. Box 7072, Kampala, Uganda" Uganda, <sup>2</sup>Makerere University School of Medicine "New Mulago Hospital Complex P. O. Box 7072, Kampala, Uganda" Uganda

**Background and Objective:** Malaria continues to cause significant morbidity and mortality particularly in Sub-Saharan Africa. Appropriate combinations of non-chemical and chemical methods of malaria vector control in the context of integrated vector management have been recommended by the World Health Organization. Integrated malaria prevention, which promotes the use of several malaria prevention methods holistically, is being explored. The aim of the study was to explore facilitators and barriers to using integrated malaria prevention in Wakiso district, Uganda

**Methods:** The qualitative study employed photovoice among 20 community members in Kasanje Town Council, Wakiso District. The photos taken by participants for a period of 5 months using smartphones were discussed monthly with the researchers. The discussions were audio-recorded, and resulting data analysed using thematic analysis with the support of NVivo (2020).

**Results:** Various conventional and non-conventional measures were being used for preventing malaria such as: insecticide treated nets; clearing overgrown vegetation and draining stagnant water near houses; mosquito coils; smoldering of cow dung; spraying insecticides; plant repellents near houses; as well as closing doors and windows on houses early in the evening. Facilitators to using several malaria prevention methods holistically included: low cost and convenience of some methods such as slashing overgrown vegetation; and support provided for certain methods such as receiving free mosquito nets from the government. Barriers to using several malaria prevention methods holistically included: inadequate knowledge of some methods such as housing improvement; allergic reactions to chemical-based methods such as insecticide treated nets; unaffordability of some methods such as insecticide sprays; and inaccessibility of certain methods such as body repellents.

**Conclusion:** Several barriers to using integrated malaria prevention were identified. These barriers need to be addressed so as to contribute to malaria prevention efforts in endemic communities.

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### Outbreak investigation of cholera at district Quetta, Baluchistan 2022

Aabad Khan<sup>1</sup>, Ehsan Larik<sup>1</sup>, Rabia Baloch<sup>1</sup>, Shahkoh Mengal<sup>2</sup>

<sup>1</sup>Provincial Health Directorate, Balochistan FELTP Health Department, Balochistan Director General Health Services, Sariab Road Quetta, Pakistan,

<sup>2</sup>Health Department of Balochistan, Government of Balochistan, Civil Secretariate of Balochistan, Zarghoon Road Quetta, Pakistan

**Introduction:** Unusual occurrence of 10 suspected Cholera cases at Pashtoon Bagh Quetta were reported to Provincial Disease Surveillance and Response Unit Quetta on 18th May 2022. FELTP team was deputed to investigate and recommend preventive measures for outbreak.

**Methodology:** A descriptive followed by matched case control study was conducted to investigate Cholera outbreak at District Quetta. Case was defined as any person living at District Quetta who had suffered 3 or more, loose watery stool in last 24 hours from 18th May to 12th October. We reviewed hospital records and active case finding was conducted through house-to-house survey. Matched for age and sex neighborhood controls were taken with the ratio of 1:1 and interviewed. We collected stools and water samples for microbiological testing. We performed associated risk factor survey. We calculated Odd Ratios (OR) at 95% confidence interval (95% CI). Data was analyzed using Epi Info 7.

**Results:** We identified 48 positive Cholera cases. There were 28 (58%) hospitalizations. Males (67%) were more affected than females. Median age was 09 years (range: <1-61 years) with highest Attack Rate among <01-to-09-year old's (54%). Attack rate was 4.1/1,000,000 with 2% mortality rate. Drinking contaminated pipeline water was strongly associated (OR: 12.8, P value <.05, CI 4.9-33.7) with illness. While drinking Tube well water was protective (OR=0.12, 95%CI=0.05-0.29). The water samples of damaged water pipeline confirmed the fecal contamination and Cholera isolation from 10 samples out of 15.

**Conclusion:** This cholera outbreak was associated with drinking pipeline water likely contaminated after monsoon rains. Outbreak probably resulted from insufficient access to clean water & poor sanitation. A robust surveillance system placed with support of partners. Intersectoral response and WASH cluster activated. We conducted 30 health education sessions. OCV drive conducted based on this study recommendation. We recommended Sustained health education and provision of purified water.

**Key Words:** Outbreak Investigation, Cholera, Case Control, Quetta, Baluchistan

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### Active provision of influenza vaccination in diabetic individuals aged 18-64 years in ASL Rome 1: experience and evaluation of results in the 2020-2021, 2021-2022 and 2022-2023 influenza vaccine campaigns

Mattia Macino<sup>1</sup>, Marta Marino<sup>1</sup>, Marta Marino<sup>1</sup>, Mattia Macino<sup>1</sup>, Fabiola Valentini<sup>1</sup>, Raffaella Mosco<sup>1</sup>, Sara Ciampini<sup>1</sup>, Aurora Santagata<sup>1</sup>, Paolo Maggolini<sup>1</sup>, Patrizia Cortesi<sup>1</sup>, Anna Zoppegno<sup>1</sup>, Lelio Morviducci<sup>1</sup>, Patrizia Chierchini<sup>1</sup>, Gennaro D'Agostino<sup>1</sup>, Antonietta Spadea<sup>1</sup>

<sup>1</sup>Azienda Sanitaria Locale Roma 1 Italy

**Introduction:** The Ministry of Health Circular "Prevention and control of influenza: recommendations for the 2022-2023 season" identifies diabetics as being at higher risk of contracting invasive infectious diseases and developing serious complications.

**Materials and Methods:** During the 2020-2021 flu season, influenza vaccination was actively offered to diabetic individuals aged 18-64 years.

GPs and pediatricians were invited to actively call their diabetic patients.

In the 2021-2022 flu vaccination campaign, mass mailing of letters via postal service was carried out to the 17,121 diabetic patients identified by the Lazio Region to promote their immunization.

Finally, a comparison was made with what was done in the three metropolitan Local Health Authorities (ASL Roma 1, 2 and 3).

The 2022-2023 immunization campaign is still ongoing and the results will be presented at the conference

**Results:** During the 2020-2021 influenza season, 3,624 subjects were vaccinated by GPs and vaccination centers.

In the 2021-2022 CVA, despite the general decline in adherence in all target categories, there was an increase in the absolute number of vaccinated diabetics with 4,437 subjects.

This figure corresponds to 15.18% of what was achieved in the Lazio Region, but when compared with what was achieved in the Roman ASLs (1, 2, and 3), the figure recorded in Asl Roma 1 corresponds to 34.44%, in line with the residence data.

**Conclusions:** In the light of the results achieved, we can affirm that the strategy of active calling of the target population, based on a principle of proximity, has proved successful and makes the need to create synergies with the territory to reach capillarly the immunizable subjects more and more evident.

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### Influenza vaccination in healthcare workers in Asl Roma1: best practices, outreach offer, and trend assessment of CVA 2020-2021 and 2021-2022 and 2022-2023

Sara Ciampini<sup>1</sup>, Antonietta Spadea<sup>1</sup>, Aurora Santagata<sup>1</sup>, Mattia Macino<sup>1</sup>, Marta Marino<sup>1</sup>, Francesca Speranza<sup>1</sup>, Giuseppe Furia<sup>1</sup>, Paolo Maggolini<sup>1</sup>, Valentina Ungari<sup>1</sup>, Anna Zoppegno<sup>1</sup>, Andrea Barbara<sup>1</sup>, Paolo Parente<sup>1</sup>, Patrizia Chierchini<sup>1</sup>, Gennaro D'Agostino<sup>1</sup>, Raffaella Mosco<sup>1</sup>, Antonietta Spadea<sup>1</sup>

<sup>1</sup>Azienda Sanitaria Locale Roma, Italy

**Introduction:** The Ministry of Health Circular "Prevention and Control of Influenza: Recommendations for the 2021-2022 Season" recommends influenza vaccination coverage for Health Care Workers of at least 75%, so as to ensure reduction of individual risk of illness, risk of transmission to individuals at high risk of complications/hospitalization, reduction of social costs related to morbidity and mortality and related absenteeism.

**Materials and Methods:** Informative/training meetings were held at all the corporate Presidia of Asl Roma1 to raise awareness of influenza vaccination among health care workers, and vaccination was actively offered and on site.

**Results:** During the 2020-2021 flu season, 18,753 health care workers were vaccinated in our Company out of a total of 50,798 vaccinated in the Lazio region, or 36.9%. Achieved coverage data were compared with those of the three ASLs in the urban area of metropolitan Rome, in which 34,996 workers were vaccinated. In the 2021-2022 flu season, there was a decline in the adherence of all target groups, including health workers: 10,586 vaccinated in our company out of 30,635 workers vaccinated in the region, or 34.56 percent. Following the same comparison with the three metropolitan Rome ASLs, the ratio was 53.3 percent. The 2022-2023 campaign is ongoing and the results will be presented at the conference

**Conclusions:** It is widely documented that health worker vaccination has multiple values: it reduces the infectious risk of workers, protects patients from infection in care settings, and protects the operation of care services. Therefore, it is a priority to encourage the co-administration of influenza and anti-SARS-CoV-2 vaccination, to encourage vaccination promotion policies aimed at increasing awareness of the risks associated with the disease, and to promote on-site vaccination, training and information events of health care workers by validating the 5 C model (Confidence, Constraints, Complacency, Calculation and Collective responsibility).

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### Epilepsy care in resources-constrained settings: the nodding syndrome alliance experience in three clinics in Western Equatoria, South Sudan

Beatrice Sgorbissa<sup>1</sup>, Chiara Scanagatta<sup>2</sup>, Jacopo Rovarini<sup>3</sup>, Stephen Jada<sup>4</sup>, Beatrice Sgorbissa<sup>2</sup>, Francesca Tognon<sup>2</sup>, Fabio Manenti<sup>2</sup>, Giovanni Putoto<sup>2</sup>

<sup>1</sup>Doctors with Africa CUAMM; Department of Public Health, University of Padova (ITALY), Italy, <sup>2</sup>Doctors with Africa CUAMM Italy, <sup>3</sup>Amref Health Africa Italy, <sup>4</sup>Amref Health Africa South Sudan

Nodding Syndrome (NS) is a degenerative neurological disease with poorly understood etiology which mainly affects children in some regions of Sub-Saharan Africa. Since 2019, a consortium of NGOs (the "Nodding Syndrome Alliance"), led by Amref Health Africa, has been working with the Ministry of Health of South Sudan to respond to the multi-sectoral needs of people with epilepsy (PWE), including NS, in three counties of Western Equatoria. Three clinics were set up, at Lui Hospital, Maridi Hospital and Mundri Primary Health Care Centre, supported by Doctors with Africa CUAMM.

Descriptive statistical analysis was conducted from patients' databases maintained in Microsoft Excel at the clinics. Between May 2020 and August 2022, 3454 patients were enrolled, majority of them during the first year (increase of 160' of patient admissions from May 2020 to May 2021). Among all the patients, 963 (27.8%) were under 18 years old, the most represented age group was 15–24 (56.1%) and 48.2% were Female. 7 patients received a diagnosis of confirmed NS, based on the WHO case definition. Patients with probable NS accounted for 61.7% of the total (n. 2131), while the rest were diagnosed with other forms of epilepsy. Mortality rate among the enrolled patients was 1.3%. Carbamazepine was administered in 1906 (55.2%) patients, followed by Phenobarbital (787; 22.8%), Phenytoin (506; 14.6%) and Valproic Acid (252; 7.3%). The monthly average defaulter rate during the last six months of the project was 37.5%. Among all patients, 90% reported an improvement of their quality of life after receiving treatment (47% described it as much better and 43% as better) and 90% reported a reduction in seizures frequency. Epilepsy, including NS, represent a health, social and economic burden for the affected population. Further studies are needed to better investigate etiology, epidemiology, efficacy of treatments and prevention interventions.

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### Global burden of anthrax: a systematic review

Carlotta Di Bari<sup>1</sup>, Carlotta Di Bari<sup>1</sup>, Christina Fastl<sup>1</sup>, Brecht Devleeschauwer<sup>1</sup>

<sup>1</sup>Sciensano, Belgium

Background and Objective: Bacillus anthracis, the etiologic agent of anthrax, primarily infects herbivores and is transmitted to humans through contact with infected animal products. Despite its clinical impact, there is currently no global estimate of its disease burden. We aimed to identify incidence and clinical data to contribute towards calculating a Disability-Adjusted Life Years estimate for anthrax.

Methods: 14,146 articles published between January 1990 and December 2021 were identified from eight databases relating to human anthrax. In addition, we also reviewed international surveillance databases. We derived appropriate disability weights for anthrax from the Global Burden of Disease study.

Results: Sixteen studies from the review provided information on incidence, and 45 on clinical manifestations. Data were available for 30 countries in Europe, the Middle East, Sub-Saharan Africa, Asia and the Caribbean. Anthrax incidence varied widely between countries, ranging from 0.03 in Ghana to 1.4 in Georgia per 100,000 inhabitants. Based on the literature, we assumed that 95% of all cases are cutaneous and that the remaining 5% are gastrointestinal. For the disease model, we summarized the clinical manifestations into three main forms of cutaneous anthrax – mild (DW 0.074), moderate (DW 0.228), and severe (DW 0.597), and two health states for gastrointestinal anthrax – oropharyngeal (DW 0.223) and intestinal (DW 0.550). The duration was estimated following the same clinical manifestation, with a time frame between two for the less severe forms and eight weeks for the critical ones.

Conclusion: Epidemiological and clinical data are essential for accurate assessments of the burden of disease. For anthrax, urgent efforts are needed to fill in the missing data in developing countries, specifically focusing on the duration of the post-acute phase and underreporting. Meanwhile, an integrated approach to disease surveillance involving human health and veterinary services would allow for a better understanding of disease dynamics.

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### Prevalence of hepatitis C virus among hemodialysis facilities: national screening study in Tunisia, 2021-2022

Ilhem Bouaziz<sup>1</sup>, Marwa Mekki<sup>2</sup>, Hamdani Faten<sup>2</sup>, Nawel ElMili<sup>2</sup>, Fares laamouchi<sup>2</sup>, Dhekra Zahi<sup>2</sup>, Amen Zouayti<sup>2</sup>, Sondes Derouiche<sup>2</sup>, Mouna Safer<sup>2</sup>, Nissaf Bouafif ép Ben Alaya<sup>3</sup>

<sup>1</sup>National Observatory of New and Emerging Diseases, 5-7 Rue Elkhartoum,

Immeuble Diplomate, 13ème étage, Tunisia, <sup>2</sup>National Observatory of New and Emerging Diseases, Tunisia, <sup>3</sup>National Observatory of New and Emerging Diseases, Full professor, 5-7 Rue Elkhartoum, Immeuble Diplomate, 13ème étage, Tunisia

Background and Objective: Hemodialysis Facilities (HF) are high-risk environments for the spread of Hepatitis C Virus (HCV). This study aimed to detect HCV in hemodialysis patients as part of the National Plan for the Elimination of VHC in Tunisia.

Methods: We conducted a national screening study in all HF from Mars 2021 to November 2022. Hemodialysis patients more than 18 years of age, were enrolled in this study. All samples were screened for HCV antibody by Enzyme linked immunosorbant assay (ELISA) and HCV RNA by Polymerase chain reaction (PCR). Results: A total of 11653 patients (mean age 56,8 years) from 187 HF were enrolled among them 9985 patients completed HCV screening (86,3%). The overall prevalence of HCV antibody was 3,2% ranging from 0% to 27,9% : 0% in 56 centers, 0,1 to 5% in 88 centers and more than 5% in 36 centers. The prevalence was 3,5% among Female and 3% among male. The mean age of positive patient was 57,3 years. Only 28,1% of HCV antibody positive patients were positive for HCV RNA by PCR.

Conclusion: Early detection of new HCV infection, the prevention of the infection transmission by the application of universal hygienic precautions program and the treatment of all screened patients are needed to achieve the objective of HCV elimination in Tunisia.

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### Determining levels of knowledge, worry, anxiety and intention to get vaccinated during the recent monkeypox outbreak: a cross-sectional study from the United Arab Emirates (UAE)

Basema Saddik<sup>1</sup>, Rouba Zeidan<sup>2</sup>, Ankita Shukla<sup>2</sup>, Amal Hussein<sup>2</sup>, Hamzah AlZubaidi<sup>2</sup>, Mohamad-Hani Tamsah<sup>3</sup>, Mohamed Alhajjaj<sup>2</sup>, Najlaa Al-Bluwi<sup>2</sup>, Manal Awad<sup>2</sup>, Hawra Alsayed<sup>4</sup>, Narjes Sharif-Askari<sup>2</sup>, Zahraa AlHano<sup>2</sup>, Qutayba Hamid<sup>2</sup>, Raibh Halwani<sup>2</sup>

<sup>1</sup>University of Sharjah, Department of Family and Community Medicine;

Sharjah Institute of Medical Research; University of New South Wales-

School of Population Health, United Arab Emirates, <sup>2</sup>University of Sharjah,

<sup>3</sup>King Saud University, Saudi Arabia, <sup>4</sup>Dubai Health Authority, United Arab

Emirates

Background: Monkeypox cases increased in non-endemic countries in May 2022, raising global concerns. Past outbreaks of infectious diseases, including COVID-19, have been associated with several psychosocial effects due to a lack of knowledge and the rapid spread of misinformation and fear. In this study, we examined knowledge, worry, and anxiety levels among the general population about monkeypox, as well as their willingness to receive a vaccine.

Methods: An online cross-sectional survey of adults in the UAE was conducted in June 2022. Information on monkeypox-related beliefs, perceived risks, knowledge, worry, anxiety, previous COVID-19 infection and vaccination status, and willingness to receive a vaccine for monkeypox was collected. Bivariate and logistic regression analysis determined associations and predictors between dependent and outcome variables.

Results: A total of 959 participants were included in the analysis. A median knowledge score of (12/19) indicated suboptimal knowledge. Only a quarter of participants believed they were at high risk of monkeypox infection; however, 46% believed that infection would have a significant impact on their health, and 57% believed that fear of monkeypox in the community was justified. Knowledge scores were higher among women, healthcare workers, and those whose sources of information were considered reliable. Perceived high risk of infection, changes in precautionary measures, and belief that treatment would be difficult predicted higher levels of worry and anxiety among participants. Participants with higher levels of worry and who had received two or more doses of the COVID-19 vaccine were more likely to take a vaccine once it became available.

Conclusion: These findings demonstrate low levels of knowledge and high levels of worry and anxiety among the UAE population and highlight the need for raising public awareness regarding monkeypox and future outbreaks. Additionally, these findings will inform policymakers and health regulators on the promotion of vaccination campaigns.

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### Descriptive epidemiology of visceral leishmaniasis in Afghanistan, 2018-2022

Mohammad Tamim<sup>1</sup>, Khwaja Saeed<sup>2</sup>

**'Malaria and other Vector Borne Diseases Program of Afghanistan (MVDP), Head of Epidemiology and Surveillance of Malaria and Other Vector Borne Diseases (MVDP) & AFETP fourth cohort resident, Darulaman Road, Sanatorium street, MVDP, Kabul, Afghanistan, <sup>2</sup>FETP, MoPH**

**Background/Objective:** Visceral Leishmaniasis (VL) is fatal if left untreated in 95% of cases. An estimated 50,000 to 90,000 cases of VL occur worldwide annually. Afghanistan is an endemic country for V. This study aims to illustrate the epidemiological profile of VL and report treatment outcomes in Afghanistan. **Methodology:** A descriptive study using secondary data was conducted to reflect the epidemiological profile of VL in Afghanistan. It covers period of 2018-2022 using a paper-based surveillance system at Malaria and other Vector Borne Diseases (MVDP) for VL cases. The study included 18 provinces with confirmed diagnosis. The treatment outcomes were collected by phone calls. Epi Info V7.2.1 was used for data analysis.

**Results:** Totally 77 VL cases were recorded during 2018-2022 of whom 48 (62%) were males. More than half of 45 (58%) were in age group of 1-3 years while 3 (4%) were in age group of 10-13 years. Geographically, 28 (36%) were reported from Faryab followed by Baghlan 9 (12%) compared to Ghazni 1(1.2%). Four (5%) and 7(9%) cases reported family member with cutaneous leishmaniasis VL respectively. Fever 75 (97%), splenomegaly 71 (92%) and weight loss 26 (34%) were common clinical manifestations. Upon follow-up, 42 out of 77 total cases responded of whom 31 (74%) were cured and 11 (26%) had died. Apparently, 22 (85%) with early diagnosis were cured compared to 9 (56%) with late diagnosis. **Conclusion:** Most of the cases were recorded from northern region with high burden in males. Splenomegaly was a prominent clinical feature. Early diagnosis had good outcome compared to late diagnosis. Further study is required to identify the risk factors. Additionally, access to diagnosis is recommended for the betterment of outcome.

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### **The effect of a conditional cash transfer program on AIDS morbidity and mortality among the poorest: a quasi-experimental study of a cohort of 22.7 million Brazilian**

Daive Rasella<sup>1</sup>, Andréa Silva<sup>2</sup>, Ines Dourado<sup>3</sup>, Iracema Lua<sup>4</sup>, Gabriela Jesus<sup>5</sup>, Nathalia Guimarães<sup>6</sup>, Gabriel Morais<sup>7</sup>, Rodrigo Anderle<sup>7</sup>, Julia Pescarini<sup>8</sup>, Daiane Machado<sup>8</sup>, Maria Ichihara<sup>8</sup>, Mauricio Barreto<sup>8</sup>, Laio Magno<sup>9</sup>, Luis Souza<sup>3</sup>, James Macinko<sup>10</sup>, Daive Rasella<sup>1</sup>

<sup>1</sup>Institute of Collective Health, Federal University of Bahia (UFBA); Center for Data and Knowledge Integration for Health (CIDACS); IGlobal, Hospital Clinic - Universitat de Barcelona, Barcelona, Spain, <sup>2</sup>Collective Health Institute, Federal University of Bahia (UFBA); Center for Data and Knowledge Integration for Health (CIDACS) Gonçalo Moniz Institute, Oswaldo Cruz Foundation (FIOCRUZ), Salvador, Brazil, <sup>3</sup>Rua Roque Moraes de Brito, 986, Granjeiro, Crato, Ceará, Brazil, <sup>4</sup>Institute of Collective Health, Federal University of Bahia (UFBA), Salvador, Brazil, <sup>5</sup>Institute of Collective Health, Federal University of Bahia (UFBA), Center for Data and Knowledge Integration for Health (CIDACS), Brazil, <sup>6</sup>Faculty of Medicine, Federal University of Bahia (UFBA), Brazil, <sup>7</sup>Institute of Collective Health, Federal University of Bahia (UFBA), Brazil, <sup>8</sup>Federal University of Bahia (UFBA), Brazil, <sup>9</sup>Center for Data and Knowledge Integration for Health (CIDACS), Brazil, <sup>10</sup>Institute of Collective Health, Federal University of Bahia (UFBA); Department of Life Sciences, State University of Bahia (UNEB), Brazil, <sup>11</sup>Departments of Health Policy and Management and Community Health Sciences, UCLA Fielding School of Public Health, Los Angeles, California, USA., United States

**Background and Objective:** Poverty is a risk factor for HIV/AIDS but previous studies on the impact of conditional cash transfer programs (CCT) have shown inconsistent results. We evaluated the effects of one of the world's largest CCTs, the Programa Bolsa Família (PBF), on all sequential AIDS outcomes, using data from a nationwide cohort of the poorest Brazilian people on the Unified Registry for Social Programs (Cadastro Único).

**Methods:** We analyzed a cohort of 22.7 million low-income Brazilian people for the period between 2007 and 2015, comparing PBF beneficiaries and non-beneficiaries, using a quasi-experimental impact evaluation design. We used inverse probability of treatment weighting (IPTW) to adjust for selection into receipt of BFP benefits and then fitted multivariable Poisson regressions, adjusted for all relevant socioeconomic and demographic confounding variables, to estimate the effect of PBF on AIDS incidence, mortality, and case-fatality rates. We also performed subgroup analyses.

**Results:** Exposure to PBF was associated with a lower incidence of AIDS (RR: 0.59; 95% CI: 0.57-0.61), mortality (RR: 0.61; 95% CI: 0.57-0.64) and case-fatality rates

(RR: 0.75; 95% CI: 0.66-0.85). PBF associations were significantly stronger among individuals living in extreme poverty, in comparison with those experiencing poverty (RR0.53 versus RR0.84 for incidence; RR0.54 versus RR0.90 for mortality, and RR0.72 versus RR1.00 for case-fatality). PBF impact was also stronger among females and adolescents.

**Conclusions:** Conditional cash transfers could significantly reduce AIDS morbidity and mortality, especially in extremely poor populations. During the current dramatic rise in global poverty, due to the COVID-19 pandemic, CCT investments could protect against potential increases in the HIV/AIDS burden, and contribute towards achieving AIDS-related Sustainable Development Goals (SDGs).

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### **Tracking patient pathway for assessing public health and financial burden to community of Pulmonary Tuberculosis: Pointer from Central India**

Dr Sinha<sup>1</sup>

<sup>1</sup>Pt. JNM Medical College Raipur, Ayush University Raipur Chhattisgarh, 401 A block aditya heights ring road 1 telibadha, India

**Background:** Pulmonary TB predominantly act as reservoirs of its transmission. Delays in seeking care may worsen the disease with increase risk to death. The National Tuberculosis Elimination Programme (NTEP) offers timely TB care without out-of-pocket expenses i.e. free diagnosis and treatment. Objective of this study was to document deferent delays in seeking TB care and calculate the out of pocket expenses pertaining to Pulmonary TB care in Raipur district of Chhattisgarh.

**Material and Methods:** This cross-sectional study was conducted among randomly selected 252 TB patients from Nov - Oct 2022 by taking in-depth interview following informed verbal consent. Their journey from initial symptoms until they reached the public health facility and their 'out-of-pocket expenditure' (OOPE) pertaining to TB care were documented.

**Results:** Total TB care delay on average was 91±72 days, while isolated patient delay 31±45 days (median: 15 days, IQR: 0 days to 43 days); diagnostic delay; 57±60 days (median: 42days, IQR 14-78 days), treatment delay 19 ± 18 days (median: 15days, IQR: 11-19 days). A patient delay (> 30 days) was significantly associated with ignorance about classical symptoms of pulmonary TB, adoption of self-medication, illiteracy, and middle and lower social class. Diagnostic delay was significantly higher among those who contacted private health facilities, were unaware of signs and symptoms, had more than 2 consultations and not getting an appropriate referral for TB care. Almost all (97%) had Out of Pocket Expenses (OOPE) with median total expenses were INR 6155 (IQR: 2625-15175) and were showed upward trend with delays in seeking care. (r =1).

**Conclusion:** Delay in TB care due to low awareness about signs and symptoms of TB and poor seeking care, lack of proper consultation and appropriate referrals with out of pocket expenses leads to remarkable public health and financial burden is still in unacceptable range.

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### **Networking of public health and clinical laboratories: a successful strategy to uncover promptly two enterovirus D68 outbreaks in Lombardy region (northern Italy), July 2021-November 2022**

Laura Pellegrinelli<sup>1</sup>, Federica Giardina<sup>2</sup>, Sara Uceda Renteria<sup>3</sup>, Ferruccio Ceriotti<sup>3</sup>, Arlinda Seiti<sup>1</sup>, Guglielmo Ferrari<sup>2</sup>, Cristina Galli<sup>1</sup>, Claudio Farina<sup>4</sup>, Marco Arosio<sup>4</sup>, Fabio Sagradi<sup>5</sup>, Diana Fantì<sup>6</sup>, Federica Novazzi<sup>7</sup>, Sergio Ivano Malandrini<sup>8</sup>, Annapaola Callegaro<sup>9</sup>, Danilo Cereda<sup>10</sup>, Sandro Binda<sup>1</sup>, Antonio Piralla<sup>2</sup>, Fausto Baldanti<sup>11</sup>, Elena Pariani<sup>1</sup>

<sup>1</sup>Department of Biomedical Sciences for Health, University of Milan, Italy, <sup>2</sup>Microbiology and Virology Department, Fondazione IRCCS Policlinico San Matteo, Pavia, Italy, <sup>3</sup>Fondazione IRCCS Ca' Ganda Ospedale Maggiore Policlinico, Milano, Italy, <sup>4</sup>Microbiology and Virology Laboratory, ASST "Papa Giovanni XXIII", Bergamo, Italy, <sup>5</sup>Laboratorio di Microbiologia e Virologia ASST Cremona, Italy, <sup>6</sup>S.C. Microbiologia Clinica- ASST Grande Ospedale Metropolitano Niguarda, Italy, <sup>7</sup>Department of Medicine and Surgery, University of Insubria, Varese, Italy; Laboratory of Microbiology, ASST Sette Laghi, Varese, Italy, <sup>8</sup>S.C. Microbiologia, ASST Monza, Monza, Italy, <sup>9</sup>Laboratory Medicine Department, Asst Bergamo Est, Bergamo, Italy, <sup>10</sup>Direzione Generale Welfare Regione Lombardia, Milano, Italy, <sup>11</sup>Microbiology and Virology Department, Fondazione IRCCS Policlinico San Matteo, Pavia, Italy; Department of Clinical, Surgical, Diagnostic and

**Pediatric Sciences, University of Pavia, Pavia, Italy**

**Background:** In Lombardy (a region in northern Italy, 10 million inhabitants), a network of public health and clinical laboratories was established to tackle and respond to emerging human infectious diseases. This study aimed at: 1) detecting and investigating the role of EVD68 in respiratory infections in Lombardy from July-2021 to November-2022; 2) describing the epidemiological features of EVD68.

**Methods:** From July-2021 to November-2022, respiratory samples were collected from: i) outpatients with influenza-like illness (ILI) in the framework of influenza surveillance network, ii) inpatients with severe acute respiratory infection (SARI) in 8 hospitals in Lombardy. Samples were tested for EV-RNA by all virological laboratories; the EV-positive sample were promptly tested for EVD68 by 2 second-level laboratories.

**Results:** 347 laboratory-confirmed EV-positive samples were detected: 139 from ILI and 208 from SARIs. EVD68 was identified in 38.6% (n=134) of EV-positive specimens. EVD68-positive individuals had a median age of 3 years (IQR: 4.5 years). EVD68-positive rate among SARI cases was statistically higher than that observed in ILIs (46.2% vs. 27.3%; p<0.0001), with a risk of infection from EVD68 3-fold higher (OR:3.0; 95%CI:1.9-4.8) in SARIs than in ILIs.

EVD68 circulated with two consecutive epidemic waves. The first wave – accounting for 25% of EVD68s- started in September-2021, peaked at end of November, ended in March-2022; the second wave –accounting for 72.6% of EVD68s- started in July-2022, reached a peak in the beginning of October-2022 and is still ongoing.

**Conclusion:** The tight collaboration and close networking of public health and clinical laboratories allowed disclosing in real-time two EVD68 outbreaks in Lombardy over the last year. A greater contribution of EVD68 was observed in SARIs than in ILIs. Collaboration and networking of public health and clinical laboratory through molecular surveillance need to be advocated and endorsed as a successful key strategy to uncover and respond to emerging pathogens.

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**Respiratory Syncytial Virus: a preliminary analysis of epidemiological data in Verona University Hospital**

Nicola Sorio<sup>1</sup>, Diana Dalla Valle<sup>1</sup>, Adele Olivieri<sup>1</sup>, Silvia Colpo<sup>1</sup>, Francesco Zunino<sup>1</sup>, Francesca Moretti<sup>1</sup>, Stefano Tardivo<sup>1</sup>

<sup>1</sup>University of Verona, Italy

**Background and Objectives:** In the United States (US), an unexpected wave of Respiratory Syncytial Virus (RSV) has hit pediatric wards in 2022. In November 2022, a seasonal increase in RSV cases is also observed in Europe. The present work is a preliminary analysis on the epidemiology of RSV, using data from the Integrated University Hospital of Verona (AOUI VR). We compared the epidemic curve in the 2022-2023 season with the previous ones. Furthermore, the temporal trend will be compared with the current primary epidemiological data (European Centre for Disease Control ECDC and Centre for Disease Control CDC).

**Methods:** Data about number of RSV-positive patients were collected via Hospital Discharge Forms of AOUI VR (ICD9-CM diagnosis codes: 079.6, 480.1, and 466.11). We analyzed seasons from 2018-2019 to 2022-2023, with specific focus on the 0-4 age group. ECDCs Atlas platform and CDCs RSV-NET interactive dashboard were compared.

**Results:** In 2018-2019 and 2019-2020, the trend of the AOUI RSV remained similar over time: an abrupt start of the epidemic was observed in December, followed by a peak of about 40 monthly hospitalized cases in January and a significant decline in March. Conversely, in 2020-2021, no RSV cases were hospitalized in AOUI. The epidemic resumed in the 2021-2022 season, starting in October, peaking in November and ending in January. In contrast, the first cases of the 2022-2023 season were already detected in September, without any significant increase (<5 new cases monthly) until now. Data collection is in progress.

**Conclusions:** Although the RSV epidemic season is still ongoing, differences between 2018-2023 AOUI data and the epidemic trend in the US are detectable. Given these preliminary results, an increased focus on acquiring additional data through a dedicated national surveillance network could significantly improve RSV epidemic management.

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**Tuberculosis in the Local Health Authority (LHA) of Cagliari: study of epidemiology for a qualitative approach to the prospects of improvement in public health management**

Wisam Salameh<sup>1</sup>, Alberto Lai<sup>2</sup>, Maria Zedda<sup>1</sup>, Serenella Secci<sup>2</sup>, Federica Schirru<sup>2</sup>, Alessia Raggio<sup>2</sup>, Martina Lallai<sup>2</sup>, Alessandra Murgia<sup>2</sup>

<sup>1</sup>University of Cagliari Italy, <sup>2</sup>ASL Cagliari Italy

**Materials and methods**

An anonymized database of TB cases was created. The cases were reported through the notification forms and received by the LHA of Cagliari from 2017 to 2021, carrying out a descriptive statistical analysis of the data.

**Results:** 307 notification forms were received (average incidence of confirmed cases 2.44/100,000 inhabitants per year) with an average age of 45, male prevalence and Italian citizenship over foreign citizenship. The median between the day of onset of symptoms and the start of therapy is 47 days: it is higher in those born in Italy than in those born abroad (67 days vs 27 days). In most cases, no treatment monitoring report was received from the physician.

**Conclusions:** The epidemiological study on the spread of Tuberculosis, particularly among the categories at risk, is one of the LHA's priorities. The diagnostic delay, particularly for those born in Italy, presents a data higher than the Italian average and the target value set by international organizations: the LHA of Cagliari intends to propose a study with a qualitative approach on the attitudes and knowledge of general practitioners in order to organize a training course aimed at the needs identified. The lack of data on the outcome of the treatment underlines the need to share a health care procedure with an ad hoc public health measure.

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**Reporting trends of measles cases in Italy, January 2013 to November 2022, and progress towards elimination**

Martina Manso<sup>1</sup>, Antonietta Filia<sup>1</sup>, Maria Rota<sup>1</sup>, Antonino Bella<sup>2</sup>

<sup>1</sup>Istituto Superiore di Sanità Italy, <sup>2</sup>Istituto Superiore di Sanità Italy Italian measles epidemiological surveillance network Italian local and regional health authorities Italy

**Background and Objectives:** Measles is a vaccine-preventable contagious acute viral illness targeted for elimination in all six WHO Regions. Elimination requires high two-dose vaccination coverage in the population. In Italy, vaccination uptake in 2021 was 93.8% among two year-old children (one dose) and 85.6% for two doses at 5-6 years. Measles cases are reported to the national integrated measles and rubella surveillance system, implemented in 2013 and coordinated by the National Health Institute. The aim of this study is to describe measles epidemiology in Italy in the last decade.

**Methods:** We analyzed reporting trends in measles cases with symptom onset during January 2013 to November 2022.

**Results:** During 1 January 2013 to 30 November 2022, 14,913 measles cases were reported to the Italian national integrated measles and rubella surveillance system, of which 2,270 in 2013, 1,695 in 2014, 256 in 2015, 862 in 2016, 5,397 in 2017, 2,683 in 2018, 1,622 in 2019, 105 in 2020, 8 in 2021 and 15 in 2022. Epidemic peaks of over 300 cases occurred in the months of June 2013 and January 2014, March 2017 (973 cases), April 2018 (495 cases) and April 2019 (309 cases) From May to December 2019 there was a progressive decrease in the number of reported cases but an increasing trend was observed in the first months of 2020, followed by a drastic decline during the COVID-19 pandemic (range 0-4 monthly cases from April 2020 to November 2022). Overall, 74% of reported cases were laboratory confirmed, 13% of cases were probable cases and 13% were classified as a possible cases.

**Conclusion:** Widespread circulation of measles occurred in Italy during 2017 to 2019, as in other EU/EEA countries. This was followed by an abrupt decrease in the number of reported cases since April 2020. Measles vaccination coverage remains suboptimal.

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**An unusual outbreak of acute infectious gastroenteritis**

Fionn Donnelly<sup>1</sup>, Eimear Burke<sup>2</sup>

<sup>1</sup>Department of Public Health, South East St Canice's Hospital Lacken Co. Kilkenny Ireland, <sup>2</sup>Department of Public Health, South East

**Introduction:** We present the case of a large outbreak of gastroenteritis with a food and beverage premises as the source. This outbreak had more than 100 suspected cases although only a sample of these were tested and interviewed by Public Health.

**Case description**

This investigation was prompted by several complaints of acute gastrointestinal illness made by members of the public to the Environmental Health service and the Food Safety Authority of Ireland. All complaints had a common exposure history and the majority had symptoms which developed within 48 hours of being in the premises. Initial investigations identified contaminated water and ice as the likely source of infection and a further rapid case/control study confirmed this.

The premises were fully inspected by the local council and Environmental Health officers and the water supply was found to have extremely high levels of bacterial contamination. This was despite the fact that the water supply to the premises came from the local mains water supply and not from a private well. The premises in question did have a private well but water from this was only used for watering plants and washing outdoor equipment according to the business operator. Of the stool samples tested from affected patrons, five were positive for Norovirus, and none had evidence of bacterial infection.

#### Discussion

This outbreak presented a particular challenge to the Health Protection team as due to the scale of the outbreak it was impossible to interview and test all of those affected. In addition, despite only isolating Norovirus from the stool samples, it seems improbable that the levels of bacterial contamination seen in the water samples would not have been responsible for much of the illness caused.

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### High consequence infectious diseases in Europe - the need for an expert clinical support service

Arne Brantsæter<sup>1</sup>, Svein Henriksen<sup>2</sup>, Catherine Lepout<sup>3</sup>, Bente Lund<sup>4</sup>, Ingebjørg Skrinde<sup>2</sup>, Marta Mora-Rillo<sup>5</sup>, Timo Wolf<sup>6</sup>, Jake Dunning<sup>7</sup>, Francesco Vairo<sup>8</sup>

<sup>1</sup>Oslo University Hospital Department of Acute Medicine and Department of Infectious Diseases Norway, <sup>2</sup>Directorate of Health, <sup>3</sup>Paris Cité University Infectious diseases, 1137 research unit France, <sup>4</sup>Directorate of Health Norway, <sup>5</sup>La Paz University Hospital IdiPAZ, CIBER-Infec Spain, <sup>6</sup>Universitätsklinikum Frankfurt Medizinische Klinik II, Infektiologie Germany, <sup>7</sup>Royal Free NHS Foundation Trust Department of Infectious Diseases United Kingdom, <sup>8</sup>National Institute for Infectious Diseases, Italy

**Background and objective:** During the 2014 Ebola virus disease outbreak in West Africa, the Centers for Disease Control and Prevention and the World Health Organization hosted telephone conferences for an ad hoc network of clinicians involved in the care of medically evacuated patients to Europe and the US. This informal network has also proved valuable during subsequent outbreaks and has revealed the need for a digital communication platform for clinical consultation and information sharing. Work package (WP) 10 of the EU Joint Action SHARP addresses case management and infection prevention and control in response to high consequence infectious diseases (HCIDs). Among the WP activities, a feasibility study of an expert consultation platform for HCIDs is ongoing. Here we report our preliminary results.

**Methods:** We searched literature for references to existing digital platforms and consulted colleagues and authorities in Europe about their experiences. We solicited legal and technical advice, and drew on experiences from the COVID-19 pandemic.

**Results:** The use of a digital expert clinical support service remains challenging with respect to availability of technical solutions, legislation, and funding. A digital platform should feature facilities for clinical consultations and information sharing among experts, but may also provide a channel for other requests, e.g. international referral, and deployment of equipment, staff, and therapeutics. The European Reference Network (ERN) operates a digital platform that has many of the required features. Some legal challenges remain, but these may be resolved by further development of European Health Union legislation, e.g. the European Health Data Space.

**Conclusion:** There is a need for a formal network of European clinicians with expertise in HCIDs, a need for a digital platform meeting defined technical and legal criteria, and a need for long-term funding. One solution could be to establish a new clinical network for HCIDs within the ERN.

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### Multi-country Viral Hepatitis COMMunity Screening, Vaccination, and Care (VH-COMSAVAC): Project outline

Angelo Pezzullo<sup>1</sup>, Pietro Lampertico<sup>2</sup>, Camila Picchio<sup>3</sup>, Leonardo Villani<sup>1</sup>, Domenico Pascucci<sup>1</sup>, Roberta Pastorino<sup>1</sup>, Matteo Pumpo<sup>1</sup>, Lena Van Selm<sup>3</sup>, Delfina Boudou<sup>3</sup>, Davide Fortin<sup>3</sup>, Giorgos Kalamitsis<sup>4</sup>, Giuseppe Colucci<sup>2</sup>, Antonio De Belvis<sup>1</sup>, Carlo La Vecchia<sup>5</sup>, Stefania Boccia<sup>1,1</sup>, Jeffrey Lazarus<sup>1,1</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore Italy, <sup>2</sup>Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico Italy, <sup>3</sup>Barcelona Institute for Global Health (ISGlobal) Spain, <sup>4</sup>Hellenic Liver Patients Association "Prometheus" Greece Massimo Colombo Hospital San Raffaele Italy, <sup>5</sup>University of Milan, Italy  
Chronic viral hepatitis infection caused by hepatitis B and C viruses (HBV and HCV) is a major public health challenge. In high-income countries, HBV and HCV

infections are more prevalent among marginalized communities, such as migrants and refugees. The EU4Health program has funded Multi-country Viral Hepatitis COMMunity Screening, Vaccination, and Care (VH-COMSAVAC) to reduce the liver cancer burden caused by HBV and HCV infections in the European Union (EU). In line with "Europe's Beating Cancer" plan, the project seeks to leverage established partner networks offering community-based HBV and HCV screening and appropriately link people to specialist care and vaccination. An economic assessment of the impact and value of these interventions on the liver cancer burden will be performed to inform future policies and guidelines. VH-COMSAVAC activities will take place in three EU member countries: Greece, Italy and Spain. The project employs effective and established community-based care models for hard-to-reach, marginalized populations, specifically migrants and refugees, to adapt and scale up early HBV and HCV screening using simple and innovative diagnostic tools, decentralized vaccination against HBV and linkage-to-care with hospitals specializing in the treatment of viral hepatitis. It is expected that migrant and marginalized populations included in the project will benefit by knowing their HBV and HCV status, being offered the first dose of the HBV vaccine in situ if appropriate, and being provided with an expedited referral to specialist care for treatment initiation and management if needed. Process, outcome, and cost indicators will be collected. The results of the community-based screening program will provide evidence to inform guidelines for tailored, person-centred models of viral hepatitis care. The results obtained from the interventions will provide clinical and economic effectiveness data to contribute to developing a roadmap to reducing the liver cancer burden associated with HBV and HCV infections in the EU.

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### The implementation of the international health regulations on vector-borne diseases - a scoping review of the qualitative evidence performed worldwide

José Durão<sup>1</sup>, Carlos Quelhas<sup>2</sup>, Inês Subtil<sup>3</sup>, Tiago Adrego<sup>4</sup>, Ana Alho<sup>5</sup>  
<sup>1</sup>Public Health Unit - Almada-Seixal Health Centres Cluster Public Health National School (NOVA University Lisbon) Portugal, <sup>2</sup>Public Health Unit - Arco Ribeirinho Health Centres Cluster, <sup>3</sup>Public Health Unit - Loures-Odivelas Health Centres Cluster Public Health National School (NOVA University Lisbon) Portugal, <sup>4</sup>Public Health Unit - Pinhal Interior Norte Health Centres Cluster Public Health National School (NOVA University Lisbon) Portugal, <sup>5</sup>Public Health Unit - Lisboa Norte Health Centres Cluster

**Background and objective:** The International Health Regulations were created by the World Health Organization with the purpose of preventing the international spread of diseases. The 196 signatory countries are bound by this international agreement. In this article we performed a review of the literature on the implementation and operationalization of measures at a continental and national level to prevent the spread of vector-borne diseases. The purpose was to understand the main strategies and policies adopted and how they have been operating.

**Methods:** Out of an initial search on PubMed™, SCOPUS™ and Web of Science™ using combinations of "International Health Regulations" and "vector-borne diseases", 75 references were obtained, of which 27 were included after careful qualitative analysis.

**Results:** Included articles ranged from 1996 to 2022. Four major categories of measures were found: a) Surveillance and Epidemic intelligence; b) Declaration of Public Health Emergency of International Concern; c) Measures in Points of Entry; and d) Vaccination status. Implemented measures were found in all continents: Africa, Oceania (Australia), Asia (China, India, Taiwan), Europe (Ireland, Netherlands and Mediterranean countries) and North (USA) and South America (Brazil). Yellow fever, Zika, Dengue and Chikungunya were the most cited vector-borne diseases but Crimean Congo haemorrhagic fever, Japanese encephalitis, Lyme disease, Malaria, Leishmania, Tick-borne encephalitis and West Nile fever were also mentioned.

**Conclusion:** There are severe asymmetries across countries on the implementation of international regulations with regards to vector-borne diseases, particularly on the issue of surveillance systems. State Parties should consider the lessons learned from the pandemic and perfect their core capacities to prevent future outbreaks of infectious diseases.

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### Monkeypox outbreak: observational analysis of confirmed human monkeypox virus cases in the province of padua

Marco Pierbon<sup>1</sup>, Chiara Vivian<sup>2</sup>, Caterina Annicchiarico<sup>3</sup>, Elena Zambon<sup>3</sup>,

Lorena Gottardello<sup>2</sup>, Tiziana Coppola<sup>3</sup>, Francesca Scotton<sup>3</sup>, Luca Sbrogiò<sup>3</sup>  
<sup>1</sup>Health Local Unit n.6 Euganea Department of Prevention, Health Local Unit n.6 Euganea Via E. degli Scrovegni, 14 - 35131 Padova Italy, <sup>2</sup>Health Local Unit n.6 Euganea, <sup>3</sup>Health Local Unit n.6 Euganea Department of Prevention, Health Local Unit n.6 Euganea Italy

**Background and objective:** In June 2022, the first case of Monkeypox (MPX) was recorded in the Province of Padua. The behavioral and clinical characteristics of MPX cases obtained through epidemiological investigations and contact tracing performed by the Public Health Hygiene Service (SISP) of the Health Local Unit Euganea are described.

**Methods:** In the observational study, cases with PCR confirmation and contacts identified between 6th June and 19th September 2022 have been considered.

**Results:** Monkeypox virus infection was confirmed in 26 individuals, 92% of them were identified as men who have sex with men (MSM). The mean age was 37 years. The estimated incubation period was 8 days (95%CI:7-10). 5 cases were epidemiologically linked to case 0 (excluded from the study), a Spanish tourist. 5 cases were imported from Spain or UK. 15 patients (55%) were autochthonous, but only 4 with epidemiological link. 13 patients (50%) met the index case through dating apps, 6 in MSM clubs. 77% of patients (n.20) declared multiple/anonymous sexual activity, of these the mean of high-risk contacts per patient is 0.45. Prodromal symptoms were detected in 50% of cases. All cases (n.26) presented skin lesions, of which 92% anogenital and 50% hand/forearm. Lymphadenopathy was detected in 62% of cases. The mean time between the first symptoms and the diagnostic confirmation was 6 days (95%CI:4-7), the recovery was 21 days (95% CI: 17-26).

**Conclusion:** The MPX outbreak in the Padua MSM community reflected the international epidemiology. The high proportion of anogenital lesions confirm the MPXV transmissibility during sexual activity. The time delay between prodromal symptoms and diagnosis can be attributed to their non-specificity. Skin lesions were being the main factor in accessing the Infectious Diseases department. Stigma and fear of media exposure may reduce contact tracing compliance, particularly in patients who report intense risky sexual activity.

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### Costs of prevention programmes: a comparative analysis of screening campaigns including HCV

Daniilo Cereda<sup>1</sup>, Sara Piccinelli<sup>2</sup>, Riccardo Vecchio<sup>3</sup>, Giovanni Cicconi<sup>2</sup>, Roberta Lattanzio<sup>2</sup>, Gaia Ferraguzzi<sup>2</sup>, Chiara Marrocu<sup>2</sup>, Silvana Castaldi<sup>2</sup>, Sudwaric Sharma<sup>2</sup>, Anna Odone<sup>2</sup>, Catia Borriello<sup>2</sup>

<sup>1</sup>Regione Lombardia Italy, <sup>2</sup>Università degli Studi di Milano Italy, <sup>3</sup>Università degli Studi di Pavia

**Background and objective:** In June 2022, Lombardy Region started a new screening campaign for HCV. Ministerial and WHO guidelines on this subject indicate this screening as cost-effective according to data in the literature. Having ascertained, however, that cost-effectiveness ratios can be debated and that in any case the available resources are limited, we wanted to verify the real cost of the screening programme and compare it with the prevention programmes currently active.

**Methods:** The costs of each healthcare service were obtained from the 2022 tariff nomenclature. The number of level I, II and III services according to the screening pathway were obtained from the data contained in the 2015 Regional Report on cancer screening (for breast, colon and cervix), containing invitations, adhesions and recall rates, as well as the number of diagnoses (detection rate).

A cost of EUR 0.50 per invitation letter was also estimated for colon, cervix and breast screening.

Data on HCV screening were obtained from the dedicated software, from June 2022 to the end of November 2022.

**Results:** Breast screening had a total cost of 17,474,067 euro with 1,624 diagnosis. Colon screening had a total cost of 4,868,244 euro with 9,236 diagnosis.

Cervix screening had a total cost of 1,488,672 euro with 899 diagnosis.

HCV screening had a total cost of 992.400 euro with 104 diagnosis.

Therefore, per 100.000 euro invested we can estimate the diagnosis of: - 10,17 breast cancer - 189,72 colon cancer or adenoma - 59,72 cervix dysplasia - 10,48 HCV positivity

**Conclusion:** HCV screening proves to be cost-effective compared to other prevention programmes active in Lombardy Region. It would be interesting to compare them with the costs of vaccinations by taking into account the cases prevented, starting with the prevalence rate in the pre-vaccination period

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### Rapid blood sample screening test for hepatitis c virus: Results of

### nine months of activities

Giacomo Scaioli<sup>1</sup>, Annalisa Castella<sup>2</sup>, Roberta Siliquini<sup>2</sup>, Angela Gallone<sup>3</sup>, Giulia Fornaro<sup>2</sup>, Elena Lonardelli<sup>2</sup>, Nigina Alimardanova<sup>2</sup>, Giuseppina Moro<sup>4</sup>, Davide Minniti<sup>5</sup>, Franca Dall'Occo<sup>2</sup>

<sup>1</sup>University of Turin 1) Department of Public Health Sciences, University of Turin, Italy 2) Local Health Authority ASL TO3, Piedmont, Italy, <sup>2</sup>Local Health Authority ASL TO3, Piedmont, Italy, <sup>3</sup>University of Turin, <sup>4</sup>University of Turin Department of Public Health Sciences, University of Turin, Italy, <sup>5</sup>Local Health Authority ASL TO3, Piedmont, Italy Health Director Italy

**Background and objective:** In recent years, an effective treatment for chronic Hepatitis C has been implemented. Therefore, screening programs to detect the Hepatitis C Virus were implemented, with the aim of treating chronic hepatitis C and reduce the incidence of this disease. Objective of this study is to analyze the results of a nine month period of HCV screening in a Local Health Authority located in Piedmont, Italy.

**Methods:** The screening program involved all the residents within the territory of the Local Health Authority, including temporary resident migrants, born between 1969 and 1989, for a total of around 157,000 subjects, who were contacted through a letter, and invited to outpatient clinics. A catch-up strategy, involving all the healthcare professionals of the National Health Service, was also implemented, e.g. during routine vaccinations, routine blood tests, or outpatient visits. The screening was executed through a rapid capillary or venous blood sample test. In case of positive results, HCV RNA was searched to confirm the results.

**Results:** Between 19th March 2022 and 10th December 2022, a total of 24,800 subjects were invited (mean age 43.5 yrs, standard deviation  $\pm 2.8$ ). A total of 3,957 capillary blood sample tests and 333 venous blood sample tests were executed (17.3% of the invited subjects, mean age 44.9 yrs, standard deviation  $\pm 2.1$ ). Seven subjects resulted HCV-positive, and four of them were confirmed positive through the HCV-RNA test (0.1% of the tests). All the positive subjects were referred to hepatologists.

**Conclusions:** Hepatitis C screening is an effective method to detect and eradicate HCV. However, to achieve these goals, it is mandatory to improve the adhesion rate. General Practitioners should play a pivotal role in this regard. Promotional campaigns at a local, regional and national level addressed to the general population, and especially to high-risk subjects, should also be implemented.

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### Impact of a conditional cash transfer program on tuberculosis incidence, mortality, and case fatality-rate in a cohort of 53 million individuals

Davide Rasella<sup>1</sup>, Gabriela Jesus<sup>2</sup>, Andrea Silva<sup>2</sup>, Priscilla Sacff<sup>2</sup>, Iracema Lua<sup>2</sup>

<sup>1</sup>Federal University Bahia Italy, <sup>2</sup>Federal University Bahia Brazil

**Background objective**

Tuberculosis (TB) is considered a disease related to poverty, in fact, a higher burden of TB is often observed in populations with low socioeconomic status. During the current COVID-19 pandemic, a substantial increase in the global TB burden, caused by disruption of TB health services and increased poverty, has been predicted. Therefore, social interventions such as conditional cash transfers (CCT) can be effective in mitigating the effect of the pandemic on TB. We estimated the effect of PBF on TB incidence, mortality, and case fatality rate using a national cohort of 53 million individuals.

**Methods:** We analyzed individuals who entered the Cohort of 100 Million Brazilians between 2004-2015 and compared BFP beneficiaries and non-beneficiaries. We used multivariate Poisson regressions, adjusted for all relevant demographic and socioeconomic variables, and weighted with inverse probability of treatment weight (IPTW). We also perform a wide range of stratifications and sensitivity analyses.

**Results:** Exposure to PBF was associated with lower rates of TB incidence (RR:0.59, 95% CI: 0.58-0.60) and mortality rates (RR:0.69, 95% CI:0.65-0.73), was positively associated with a decrease in TB case fatality rates – although not statistically significant. Individuals living in extreme poverty had a greater impact of the PBF compared to less poor, (RR:0.49 versus RR:0.95 for incidence; RR:0.60 versus RR:1.00 for mortality and RR:0.80 versus RR:0.92 for fatality rate).

**Conclusion:** CCT can significantly reduce tuberculosis incidence and mortality, especially in extremely poor populations, by decreasing the unequal distribution of the TB burden in the most vulnerable populations, essential at this time with the dramatic increase in global poverty due to the COVID-19 pandemic, therefore, such a strategy can help protect against increases in the incidence of TB worldwide and contribute to achieving the goals of the "End TB Strategy".

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### Gold miners shootup malaria transmission in indigenous areas of roaima, Brazil

MARIA CRUZ<sup>1</sup>, Jacqueline Barros<sup>2</sup>, Fabiana Granja<sup>3</sup>, Paola Marchesini<sup>4</sup>, Paulo Pequeno<sup>3</sup>

<sup>1</sup>Fiocruz Malaria Research Laboratory av brasil 4365 21045900 Rio De Janeiro - RJ Brazil, <sup>2</sup>Coordination of Roraima Health Surveillance Federal University of Roraima Brazil, <sup>3</sup>Federal University of Roraima, <sup>4</sup>General Coordination of Surveillance of Zoonoses and Vector-Transmitted Diseases Brazil

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### Risk factors associated with COVID-19 deaths in hospitalized patients between March 2020 and March 2021 in Morocco Taza province case: Case control study

Bennasser Samira<sup>1</sup>

<sup>1</sup>Delegation of Public Health, FETP Morocco, Morocco

Introduction: Coronavirus disease (COVID-19) occurred for the first time in China in December 2019, particularly in the WUHAN city, then, it has spread rapidly around the world. To refine surveillance recommendations for this disease, this study was conducted to identify risk factors associated with deaths among COVID-19 patients in Taza Moroccan province between March 2020 and March 2021.

Methods: This is a retrospective case-control study among patients with coronavirus infection and hospitalized at the IBN BAJA provincial hospital in Taza from March 2020 to March 2021. The cases are patients who died. Three controls from the same cohort, hospitalized at the same time but declared cured on discharge, were matched to each case. Data analysis was performed using Epi-Info version 7 software. The analysis of the association was carried out by the statistical tests.

Results: This study included 94 cases and 282 controls. The mean age of cases and controls was 65 years (SD=11), the sex ratio M/F was 2.9 and 1.31 respectively in cases and controls. Others Factors such as older age (AOR=2.44 95%CI[1.28-4.66], male sex (AOR=2.91), Lung Injury greater than 70% on admission (AOR=5.26, 95%CI[2.71-10.2]), Time between onset of illness and hospitalization greater than 7 days (AOR=4.47, 95%CI[2.25-8.91]), the cardiac pathologies (AOR=4.41, 95%CI[1.85-10.5]), the blood sugar greater than 2g/l on admission (AOR=3.10, 95%CI[1.43-6.75]) were significantly associated with the death.

Conclusions: This study provides a comprehensive overview of the profile of COVID-19 hospitalized patients in Taza province and mortality risk factors. Keywords: COVID-19, SARS-COV-2, clinical features, prognostic factors

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### Epidemiology of and factors associated with Chlamydia trachomatis in fertility treatment-seeking patients in the Abu Dhabi Emirate, United Arab Emirates

Rami Al-Rifai<sup>1</sup>

<sup>1</sup>Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, United Arab Emirates

Background and Objectives: The burden of infection with *C. trachomatis* in fertility treatment-seeking patients in the United Arab Emirates (UAE) is still unclear. This study measures the seroepidemiology of *C. trachomatis* and investigates factors associated with seropositivity to *C. trachomatis* in fertility treatment-seeking patients in Abu Dhabi Emirate, UAE. Methods: A consecutive sample of fertility treatment-seeking patients completed a self-administered questionnaire and screened for *C. trachomatis* IgG, IgM, and IgA antibodies. Prevalence of lifetime (IgG positive), current/acute (IgM positive), and ongoing progression of infection (IgA positive) infection with *C. trachomatis* was quantified. Independently associated factors with seropositivity to *C. trachomatis* were identified.

Results: A total of 308 patients (mean age: 36.1 ± 6.8 SD, years) were surveyed. 87.7% of the patients were females, 93.4% married for >1 year, and 68.1% were infertile for ≥6 months. Of the patients, 19.0%, 5.2%, and 1.6% were with lifetime exposure, acute infection, and ongoing progression of infection with *C. trachomatis*, respectively. Overall, 22.0% of the patients were exposed to *C. trachomatis*. Males compared to females (45.7% vs 18.9%, p<0.001) and current/ex-smokers compared to non-smokers (44.4% vs 17.8%, p<0.001) carried higher seropositivity. Patients with a history of pregnancy loss also carried higher seropositivity compared to patients with no history of pregnancy loss (27.0% vs

16.8%, p<0.001), particularly recurrent pregnancy losses (33.3%). Independently, current smokers (ORa: 3.8, 95% CI: 1.32–11.04) and patients with a history of pregnancy loss (ORa: 3.0, 95% CI: 1.5–5.8) had significantly higher odds of infection with *C. trachomatis*. Conclusion: One in five and five in twenty fertility-treatment-seeking patients exhibited evidence of lifetime and current infection with *C. trachomatis*, respectively. This high prevalence of *C. trachomatis* in fertility treatment-seeking patients, particularly in patients with a history of pregnancy loss, possibly contributes to the growing burden of infertility in the UAE.

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### Environment friendly vector control (Slash and clear) to accelerate onchocerciasis elimination in a high transmission area: a pilot study in the Mbam valley (Centre Region, Cameroon)

André Domche<sup>1</sup>, Hugues Djeunga<sup>2</sup>, Philippe Nwane<sup>3</sup>, Michel Boussinesq<sup>4</sup>, Sébastien Pion<sup>4</sup>, Joseph Kamgno<sup>5</sup>

<sup>1</sup>Centre for Research on Filariasis and other Tropical Diseases, University of Yaoundé I, Yaoundé, Cameroon, <sup>2</sup>Centre for Research on Filariasis and Other Tropical Diseases, Cameroon, <sup>3</sup>Centre for Research on Filariasis and other Tropical Diseases, Cameroon, <sup>4</sup>Institut de Recherche pour le Développement (IRD), France, <sup>5</sup>Centre for Research on Filariasis and Other Tropical Diseases, Cameroon

Background: Although “slash and clear” (slashing and clearing trailing vegetation where blackflies breed) has already proven its effectiveness in reducing blackfly densities in low transmission foci, the feasibility and impact of this strategy in very high transmission foci with large rivers and important vector densities is yet to be demonstrated.

Objective: To evaluate the impact of “slash and clear” approach on blackfly densities and onchocerciasis transmission.

Methods: Two first-line villages (Bayomen used as control site and Biatsota used as intervention site) were selected in Centre Region of Cameroon. In each village, baseline data were collected for one year, using human landing catching method. Two days of ground and boat prospection was done, for the identification and characterization of blackflies breeding sites. The “slash and clear” was conducted once a month during nine months. Generalized estimating equations were used to evaluate the effect of intervention, adjusted on baseline data.

Results: Prior to intervention, a total of 56870 and 51240 blackflies were collected in Bayomen and Biatsota, respectively. No significant difference was found between the two villages (p= 0.7545). The main attachment points for the blackfly larvae were the plant *Pandanus candelabrum* (90% of larvae/pupae). After the intervention (destruction of the blackfly habitat) period, blackfly densities declined from 51240 to 25520 in the intervention site (50.2% reduction) while in the control site, the densities declined from 56870 to 49471 (13% reduction); the observed reduction was significantly more important in the intervention site compared to the control site (p=0.0213).

Conclusions: This study revealed that the “slash and clear” approach has a significant impact on vector densities in a very high transmission setting. Additional studies are needed to investigate the long-term impact of the “slash and clear” strategy, and how it can be used to supplement mass drug administration to accelerate the onchocerciasis elimination.

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### Effect of multi-month dispensing on adherence to antiretroviral therapy among adolescents and young adults Tanzania

Heri Masuka<sup>1</sup>

<sup>1</sup>University of Dodoma, Dodoma, Tanzania

Background: Service delivery models for differentiated care provide a balanced approach to HIV services using longer dispensing intervals for patients who are stable and virologically suppressed. The paper aims to assess adherence to antiretroviral therapy (ART) and viral load suppression (VLS) among adolescents and young adults enrolled to multi-month dispensing (MMD) for ART prescriptions.

Methods: This was retrospective cross-sectional analysis of routinely collected data from care and treatment clinics for adolescents and young adults living with HIV and initiated on antiretroviral therapy (ART), between 2016 to 2020 in 26 Tanzanian Regions. Descriptive statistics were used to summarize the covariates of study sample. Logistic regression was used to determine adjusted odds ratios (AOR) for the effect of MMD on VLS comparing 3-month dispensing (3MD) and 6-month dispensing (6MD) with the standard, one-month dispensing.

Results: In 20676 stable clients on ART, 10373 (50.2%) were initiated on 3MD, 6951 (33.6%) on 6MD, and 3352 (16.2%) remained on one month standard of care (SOC). Those that received 3MMD had better adherence to ART (AOR=1.63,

$p < 0.001$ ) and greater VLS (AOR=3.88,  $P < 0.001$ ) than SOC. However, those that received 6MMD also had better adherence to ART (AOR=1.42,  $p = 0.001$ ) and higher VLS (AOR=1.65,  $p < 0.001$ ) than SOC. Conclusions: A large proportion of eligible clients were initiated on multi-month dispensing in either three- or six-month prescriptions with reduced clinical visits and extended ART refills. The study also validates that the shift to multi-month prescription schedules and provides evidence of better adherence to ART and viral load suppression.

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### A joinpoint regression analysis of trends in HIV incidence in Brazil over 20 years

Denise Souza<sup>1</sup>, Cleber Carmo<sup>1</sup>, James Welch<sup>1</sup>  
<sup>1</sup>Oswaldo Cruz Foundation (Fiocruz), Brazil

**Introduction/Objectives:** The HIV/AIDS epidemic, involving infection by the etiological agent Human Immunodeficiency Virus (HIV) or illness by Acquired Immunodeficiency Syndrome (AIDS), began in the early 1980s and involves diverse dynamics. This study aimed to describe the temporal evolution of ratios of HIV infections e AIDS cases in Brazil and in each of the country's states between 2000 and 2019 among subjects of both sexes 13 years and older using the joinpoint regression method. **Methods:** This ecological study analyzed temporal series of standardized incidence of HIV/AIDS stratified by sex. Incidence data was accessed from the Brazilian National Disease Notification System (SINAN) from the Brazilian Health Ministry. Populational data was accessed from the Brazilian Institute of Geography and Statistics (IBGE). Trend analyses were produced by joinpoint regression models and obtained by annual percent change (APC) and average annual percent change (AAPC).

**Results:** During the study period, there were 773.893 notified cases in Brazil. Trend analysis by state indicated rising incidence for both sexes (AAPC > 0) in the country's North and Northeast regions and a decline trend (AAPC < 0) in the South and Southeast regions. There was a general trend of decline in incidence among male population (AAPC = -0,6; CI95% - 0,1; 0) and rise among female population (AAPC = 1,4; CI95% 0,8; 1,9). **Conclusions:** Higher incidence was observed among male population. Analysis by state indicated distinct trends in different regions of Brazil. These disparate trends suggest a national scenario of social inequality.

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### Patients presenting to a united states academic health center emergency department following opioid overdose show elevated rates of Hepatitis C and limited testing history

John Swift<sup>1</sup>

<sup>1</sup>Institute for Collective Health, University of Missouri School of Medicine, United States

**Background and Objective:** Cases of acute Hepatitis C Virus (HCV) increased approximately 3.8-fold between 2010 and 2017 due, in part, to increasing injection drug use and surveillance. Furthermore, multiple HIV outbreaks in Europe and North America have been attributed to injection drug use. Emergency departments are uniquely situated to address infections among people using opioids given their limited utilization of other healthcare resources. This review assesses prevalence, testing history, and potential benefit for screening of HIV and HCV among patients presenting to emergency departments following an opioid overdose.

**Methods:** 134 emergency department encounters at an academic medical center in the central United States representing 120 unique patients diagnosed with poisoning by opioids between January 2021 and May 2022 were included in the analysis. Emergency department and most recent primary care visit notes, as well as laboratory results from January 2000 to May 2022 were reviewed for history of HIV and HCV testing and viral load.

**Results:** 48 patients (40%) had a history of HCV testing and 54 (45%) had a history of HIV testing. 20 patients had tested positive for HCV (41.6% of tested, 16.7% of total), and 1 had tested positive for HIV (1.9% of tested, 0.8% of total). 8 patients had detectable HCV viral loads, 6 were virologically suppressed, and 6 had no documented quantitative testing. 1 patient had a detectable HIV viral load.

**Conclusions:** There is a substantial burden of HCV among individuals presenting to American emergency departments following opioid overdoses. Universal HCV screening for individuals being observed following an overdose could detect many undiagnosed HCV infections. These results have been reported to the state government which plans to implement a program to test all emergency department patients suspected of opioid abuse for HCV and to coordinate treatment for those who test positive.

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### Anti-HCV testing acceptance and seroconversion rates among people who use drugs and are under opiate substitution treatment (Hippocrates Epidemic Detection System)

Olga Anagnostou<sup>1</sup>, Katerina Micha<sup>2</sup>, George Tsitsanis<sup>1</sup>, Argyro Karakosta<sup>3</sup>, Georgia Papadopoulou<sup>2</sup>, Eleni Panopoulou<sup>2</sup>, Christos Danopoulos<sup>2</sup>, Charikleia Tsatsaroni<sup>2</sup>, Nikolaos Avgerinos<sup>2</sup>

<sup>1</sup>Greek Organization against Drugs (OKANA), Greece, <sup>2</sup>Greek Organization Against Drugs (OKANA), Greece, <sup>3</sup>Department of Hygiene and Epidemiology, Athens Medical School, University of Athens, Greece

**Background and Objective:** People who use drugs (PWUD) are at high-risk for hepatitis C virus (HCV) infection. Opiate substitution treatment (OST) reduces the risk of infection. Testing opportunity acceptance and seroconversion rates among PWUD under OST are of great importance for public health. **Methods:** AntiHCV rapid test was offered free of charge to all individuals under OST in Athens (N=2,892) from Sep2021 to Oct2022. A retrospective analysis of data collected was conducted. In total, 83.3% were male, mean (SD) age 51(9) years, 56.3% buprenorphine/43.7% methadone, in OST public units of large(>200patients:35.3%), medium (100-199patients:31.5%) or small capacity (<99 patients:33.2%).

**Results:** From 2,892 participants 2040(70.5%) have a previous positive test and were not retested. AntiHCV test was performed to 540 out of 852 eligible persons (63.4%); Of the 312 not tested, 42(13.5%) refused screening, 8(2.6%) were temporarily out of OST and 262/312(84%) did not present for testing due to unknown reasons. Tested individuals didn't differ significantly with those who refused testing with respect to gender, age and opiate substitution substance. Refusal rate was slightly higher in medium-capacity units (19.9%) vs smaller (14.9%) and larger (13%) ones, however the differences were not statistically significant. No significant differences were observed among patients who refused testing and the rest not screened. In total 103/540(19.1%) were found AntiHCV(+). Seroconversion, defined as a positive rapid test in a known antiHCV (-) individual, was documented in 98/540(18,1%) and it was higher in large-capacity (24.3%) compared to medium-capacity units (6.9%) ( $p < 0.001$ ). Seroconversion rate was higher in methadone participants (21.3%) vs buprenorphine (15.4%), although the difference was not statistically significant. Rates didn't differ significantly by sex and age. **Conclusions:** High rates of antiHCV seroconversion are documented among PWUD even when under OST. Further study on high-risk behaviors while under substitution is needed. Testing acceptance by PWUD is a challenge even when test is offered free of charge in a treatment setting.

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### Epidemiological Burden of Hepatitis B Infection among Military Personnel in Khartoum State

Adam Ahmed<sup>1</sup>

<sup>1</sup>Sudan

**Background and Objectives:** Viral hepatitis has been identified as the seventh leading cause of mortality worldwide. In 2015 an estimated 1.34 million deaths in the world is due to viral hepatitis, approximately half (47%) are related to hepatitis B virus (HBV). The WHO classified Sudan among the highest-burden countries for hepatitis B virus infection (>8%). Living in military camps and being at a greater risk for injury and hospitalization results in a higher risk of HBV infection acquisition among military personnel. Sudan has launched the first national strategic plan on viral hepatitis from 2019 – 2025. The aim of this study is to assess the epidemiological burden of HBV infection among military personnel to help in the implementation of the national strategic plan.

**Methods:** A sample of 770 military personnel was selected by stratified cluster sampling. Seroepidemiologic and questionnaire survey tools have been used to collect the data, and SPSS was used for analysis.

**Results:** A seroepidemiologic survey was conducted among 770 active military personnel working in four areas in Khartoum State. More of them are male (91%), and only (9%) are female. The majority age group is 18 -30 years (46.5%), and (34.8%) of the group is 31 – 45 years. The seroprevalence HBsAg among military personnel was 8.9%. The study indicated an association between the age 31-45 years and HBV infection  $P > 0.05$ , and between the deployment duration and HBV infection  $P > 0.05$ . The study showed a low awareness about the disease (35%), mode of transmission (43%), and taking treatment (23%).

**Conclusions:** HBV infection among military personnel was high and the main risk factors the age, education, and longer deployment duration. Poor disease awareness and delays in treatment increase the disease burden. Screening surveys, treatment with regular follow-up visits, health education, and vaccination program are needed for disease control.

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### Stigma, self-efficacy and susceptibility associated with knowledge about hiv in high school students

Carolina Pérez<sup>1</sup>, Carlos Montero<sup>2</sup>, Josue Villegas-Dominguez<sup>2</sup>, Iant Reyes<sup>2</sup>, María Rascon<sup>2</sup>

<sup>1</sup>School of Medicine, Universidad Veracruzana, Mexico, <sup>2</sup>Universidad Veracruzana, Mexico

**Background:** The state of Veracruz, Mexico for 36 years has occupied the first places in new and prevalent cases of patients with HIV and AIDS, occupying during the year 2019 8.7% of the total cases of AIDS nationwide and 12.39% of the total Seropositive cases registered, being important the treatment for these patients to avoid their discrimination since it can be a risk factor for anxiety, depression or suicidal ideation. **Objective:** To determinate the association between the level of knowledge and attitudes for HIV / AIDS. **Methods:** A cross-sectional, prospective, analytical and observational study was carried out. High school students from the city of Veracruz-Boca del Río, Mexico were included during the period January - March 2021, students who refused to participate were excluded. The sampling was not probabilistic for temporality and convenience. The knowledge about HIV, stigma, self-efficacy and susceptibility to HIV, was quantified with the HIV / AIDS-65 scale with scores of 0 to 100 likert type. The surveys were conducted through Google Forms® and were by an internet device. For the data analysis the SPSS v22 software, were used, with statistical significance  $p < 0.05$ .

**Results:** 895 students were included; The correlation between level of correct knowledge and positive attitude, negative attitude, neutral attitude, susceptibility and self-efficacy was less than 0.35 in all cases. Higher quartiles were determined in knowledge scores and the attitude, presenting an OR of 2.3 (95% CI 1.6-3.2) for high self-efficacy, OR 3.1 (95% CI 1.7-5.4) for susceptibility, OR 1.6 (95% CI 1.0 - 2.7) for neutral attitude and OR 2.4 (1.6-3.4) for positive attitude ( $p < 0.05$ ), while the negative attitude resulted with  $p > 0.05$ . **Conclusions:** knowledge has a low correlation with attitude, susceptibility and self-efficacy, and high knowledge is associated with a better attitude, susceptibility and self-efficacy for HIV / AIDS.

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### Level of knowledge of HIV / AIDS associated with risk behaviors and use of Prep / Pep in students

Carolina Pérez<sup>1</sup>, Carolina Taffoya<sup>2</sup>, Josue Villegas-Dominguez<sup>2</sup>, Iant Reyes<sup>1</sup>

<sup>1</sup>School of Medicine, Universidad Veracruzana, Mexico, <sup>2</sup>Universidad Veracruzana, Mexico

**Background:** In Mexico, the state of Veracruz occupied the second national place in the number of HIV / AIDS cases during 2019. The total cases registered in Veracruz, 5.8% were in young people between 15 and 19 years old. **Objective:** To determinate the association between the level of knowledge about HIV / AIDS and risk behaviors in high school students. **Methods:** A cross-sectional, prospective, analytical and observational study was carried out. High school students from the city of Veracruz-Boca del Río, Mexico with active sex life were included, students who refused to participate were excluded. The WHO Behavior Assessment Test and the HIV / AIDS-65 were applied. The surveys were conducted through Google Forms® and were answered on that same platform in an electronic device with internet. For the data analysis the SPSS v22 software.

**Results:** 895 students were interviewed, of which 363(40.55%) had active sex life and 3(0.8%) reported being HIV positive. Sexual orientation, having sexual activity under the consumption of illicit substances, being monogamous or promiscuous, initiate sexual life early, the frequency in the use of condoms, accepting to take Prep or Pep in case of having risk relationships had no association with the high level of knowledge about HIV ( $p > 0.05$ ). Use condoms in the first sexual relationship (OR 1.8, 95%CI 1.94-3.2), susceptibility (OR 3.1 95% CI 1.6-6.8), negative attitude (OR 0.04, 95%CI 0.01-0.1), autonomy (OR 2.5, 95%CI 1.5-4.0) and positive attitude (OR 2.3, 95% CI 1.4-3.9) with  $p$  value  $< 0.05$ . **Conclusions:** the high level of knowledge in students with active sexual life is only associated with the use of condoms during the first sexual intercourse, without presenting differences to modify other risk behaviors or the intention of taking Prep or Pep in case of anticipating the need of using it.

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### Characterising a syndemic among women impacted by syphilis and the toxic drug supply in Fraser Health Authority, Canada using latent class analysis

Vivian Ngo<sup>1</sup>, Jannie Leung<sup>2</sup>, Maulik Baxi<sup>3</sup>, Troy Grennan<sup>4</sup>, Adrianna Paiero<sup>5</sup>, Vanessa Ryan<sup>4</sup>, Jason Wong<sup>6</sup>

<sup>1</sup>Faculty of Medicine, University of British Columbia, Canada, <sup>2</sup>Fraser Health Authority, Canada, <sup>3</sup>Fraser Health Authority, University of British Columbia,

Canada, <sup>4</sup>British Columbia Centre for Disease Control, Canada, <sup>5</sup>University of British Columbia Faculty of Medicine, Canada, <sup>6</sup>British Columbia Centre for Disease Control, University of British Columbia, Canada

**Background and Objectives:** A syphilis outbreak and overdose/toxic drug poisoning (TDP) emergency have been declared in the province of British Columbia (BC), Canada. In Fraser Health Authority (FHA), BC's largest regional health authority, rates of infectious syphilis and TDP events have increased among women since the start of the COVID-19 pandemic. We aim to understand social and structural factors associated with the emergent syndemic of women affected by infectious syphilis and TDP to inform targeted interventions and improve service provision. **Methods:** The data source was a retrospective chart review of all women-identified individuals diagnosed with infectious syphilis in FHA from January 2021 to April 2022 from hospital records and public health databases. We used Latent Class Analysis (LCA) to identify subgroups based on patterns of socio-demographic factors (e.g. unstable housing), comorbidities (e.g. mental health disorders), and health service utilisation.

**Results:** A total of 113 women were included, of whom 61% were ever diagnosed with an opioid- or stimulant use disorder and 30% had an emergency department visit for TDP. We identified three subgroups by LCA: 1. "Incarceration experience, comorbidities" ( $n=22$ , 19%): incarceration (100%), mental health disorder diagnosis (96%), stimulant use (86%), income assistance (59%), 2. "Multiple barriers, child removal" ( $n=37$ , 33%): concurrent opioid and stimulant use (78%), child removal (55%), intimate partner violence (46%), 3. "Greater resiliency factors" ( $n=54$ , 48%): attached to primary care practitioner (57%), syphilis diagnosed during pregnancy (19%).

**Conclusions:** Two subgroups (52% of the sample) were highly impacted by mental health, substance use challenges and structural vulnerabilities, which may result from social and systemic inequities driving the syndemic. Enhancing women-centred health services addressing sexual health, mental health and determinants of health may increase opportunities for engagement, prevention and harm reduction. An additional subgroup (48%) had fewer structural vulnerabilities, and further analyses are needed to better elucidate their distinct care needs.

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### Implementation of the explicit health guarantees program for the human immunodeficiency virus and its intervention in mortality in Chile

Christopher Sánchez-Moya<sup>1</sup>

<sup>1</sup>Universidad Mayor, Chile

**Background and Objectives:** In 2004, Law 19966 in Chile, was enacted to establish the Explicit Health Guarantees (GES). This public policy was designed to facilitate access, coverage, and quality of health care for the population by guaranteeing all beneficiaries minimum benefits, timely, quality care and care protocols for a group of priority diseases due to their prevalence and mortality, including acquired immunodeficiency virus (HIV)/AIDS, intervening in prevalent mortality rates in the country.

**Objective:** To describe the influence of the HIV/AIDS GES public policy on mortality rates in Chile. **Methods:** A quantitative, cross-sectional, and descriptive design was conducted, using interrupted time series, Newey-West estimator, 95% confidence. **Sample:** HIV deaths between 2000 and 2020 registered in the Chilean Statistical Office.

**Results:** The median number of HIV deaths due to other infectious diseases was 241 person/year in the early 2000s. The average number of deaths associated with pregnancy complications was 3 person/year between 2000 and 2010. Deaths due to other specified diseases, have a maximum of 109 person/year in 2015, and a minimum of 22 person-years in 2020. After the implementation of the program, there is an average decrease of 41 deaths/year. The access of public sector patients to the program is 100% in Chile's hospital network and first preventive care, starting in 2013.

**Conclusions:** There was evidence of a reduction in mortality from HIV and related diseases between 2013 and 2020. The eradication of HIV deaths in pregnancy is total until 2020. A significant decrease in mortality was observed after the adjustment of the program in 2016 related to promotion and prevention actions. The impact of the intervention was measured through mortality, which does not include other relevant variables in the disease-death process, such as bio sociodemographic, socioeconomic, and geographic factors.

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### Factors associated with intention to use self-sample collection for HIV and other sexually transmitted and blood-borne infections

**among men who have sex with men in British Columbia, Canada**Ihoghosa Iyamu<sup>1,2</sup>, Mark Gilbert<sup>1,2</sup>, Aidan Ablona<sup>1</sup>, Ben Klassen<sup>3</sup>, Heather Pedersen<sup>1</sup>, Devon Haag<sup>1</sup>, Hsiu-Ju Chang<sup>1</sup>, Nathan Lachowsky<sup>4</sup><sup>1</sup>British Columbia Centre for Disease Control, Canada, <sup>2</sup>School of Population and Public Health (SPPH), University of British Columbia (UBC), Canada, <sup>3</sup>Community-Based Research Centre, Canada, <sup>4</sup>Community-Based Research Centre, School of Public Health and Social Policy, University of Victoria, Canada

**Background:** Population subgroups likely to use self-sample collection for HIV and other sexually transmitted and blood-borne infections (STBBIs) are not well-characterized in Canada. Given provincially organized health services, we assessed factors associated with intention to use self-sample collection among gay, bisexual, and other men who have sex with men (GBMSM) in British Columbia.

**Methods:** We analysed data from the 2019 Sex Now online survey of GBMSM aged  $\geq 15$  years in Canada. Respondents indicated how likely they would use a testing service by ordering a self-collection kit online, having it mailed to specified addresses and shipped to a lab for testing. We assessed associations between intention to use self-sample collection (i.e., likely/very likely vs. other responses) and explanatory variables including sociodemographic characteristics, sexual behaviors, healthcare access and testing. Using multivariable logistic regression, we selected our model using automated backward elimination based on Akaike information criterion, after retaining predictors identified in the literature.

**Results:** Overall, 758 respondents had complete responses to our survey questions, with a mean age of 39.39 years (SD: 14.25). Among these, 66.1% (501) indicated intention to use self-sample collection. In multivariable analysis, age  $\geq 30$  years (adjusted odds ratio [AOR] 1.64, 95% CI 1.11-2.42), having last STBBI test between 4-6 months prior to the survey (AOR 1.82, 95% CI 1.11-3.05), and experiencing delayed testing due to access barriers (e.g., cost, distance, inconvenient hours, fear of judgement etc.) (AOR 2.53, 95% CI 1.77-3.65) were associated with higher odds, while participants with a bachelor's degree had lower odds of intending to use self-sample collection (AOR 0.46, 95% CI 0.248-0.74) (Figure 1).

**Conclusions:** The high intention to use self-sample collection for HIV and other STBBIs suggests that the service can potentially increase access to testing services for GBMSM in BC, especially for those experiencing delayed testing due to health service access barriers.

**Popul. Med. 2023;5(Supplement):A294****DOI: 10.18332/popmed/165657****Stigma towards tuberculosis in nurses from high complexity care centers in Cartagena, Colombia**Irma Castillo Avila<sup>1</sup>, Zuleima Cogollo Milanes<sup>2</sup>, Andres Beltrán Arteaga<sup>3</sup><sup>1</sup>Universidad de Cartagena, Colombia Universidad de Cartagena Campus de salud. Cartagena Colombia Colombia, <sup>2</sup>Universidad de Cartagena, Colombia Colombia, <sup>3</sup>Universidad de Cartagena, Colombia Australia

**Background:** People with tuberculosis experience rejection in many contexts. Recognizing the stigma in health professionals under your care can help reduce this negative situation.

**Objective:** To determine the stigmatization level of the nursing staff towards the tuberculosis patient, in highly complex health institutions.

**Method:** A descriptive study was performed for twelve months with a population and sample of 149 nursing professionals who work in highly complex health institutions in cartagena. A questionnaire was applied to measure sociodemographic characteristics and a scale to measure attitudes towards tuberculosis, which consists of 25 items and closed yes and no questions; the greater the number of positive responses, the higher the level of stigmatization. The collected information was tabulated and processed in the microsoft excel program. Descriptive statistics were applied to the data and the results were presented in tables and graphs.

**Results:** Of the 149 participants, the majority are women (91.9% (137)), stratum 2 (47.7% (71)), single (45.0% (67)), and only with undergraduate studies (59.7% (89)). 63.1% (94) of nursing professionals think that people with tuberculosis experience greater economic difficulties than those who do not suffer from this disease, 65.1% (97) affirm that it is risky to eat or drink with a nursing friend with tuberculosis. Likewise, 8.1% (12) think that people sick with tuberculosis can spread the disease by shaking hands or hugging and 93.3% (139) believe that people feel uncomfortable being around someone who is sick with tuberculosis.

**Conclusion:** Nursing professionals stigmatize tuberculosis patients in a high degree. Women, those who only have an undergraduate degree, those from lower strata and those who work in administrative areas have a higher level of stigmatization; all these may become a barrier to the provision of quality nursing care to the patient.

**Popul. Med. 2023;5(Supplement):A295****DOI: 10.18332/popmed/163641****Epidemioclinical profile of cutaneous leishmaniasis in tataouine: a prospective longitudinal study**Ines Cherif<sup>1</sup>, Jihène Bettaieb<sup>1</sup>, Ghassen Kharroubi<sup>1</sup>, Wissem Ghawar<sup>1</sup>, Mohamed Snoussi<sup>1</sup>, Sadok Salem<sup>1</sup>, Amor Bouaoun<sup>2</sup>, Said Chouchen<sup>2</sup>, Afif Ben Salah<sup>3</sup><sup>1</sup>Laboratory of Medical Epidemiology, Institut Pasteur de Tunis, Tunisia,<sup>2</sup>Regional Health Directorate of Tataouine Tunisia, <sup>3</sup>Arabian Gulf University, Road 2904 Building 293 Manama Bahrain

**Background:** Cutaneous leishmaniasis (CL) constitutes a real public health problem in Tunisia mainly due to its consequences in terms of quality of life. The identification of the clinical and epidemiological characteristics of the different forms of CL will facilitate the differentiation between them and will be useful for the therapeutic management, the prognostic evaluation and the adjustment of control measures. The aim of this study was to identify the different forms of CL in the city of Ghomrassen in Southern Tunisia according to parasite species and to describe the epidemiological and clinical profile of each form.

**Methods:** A prospective descriptive study was conducted between 07/02/2018 and 12/06/2020 at Ghomrassen primary healthcare facility in Tataouine. Adult volunteers between 18 and 65 years of age with CL were included in this study. Each participant was followed until lesions were healed with a maximum follow-up time of one year from the date of the first visit. Species were identified using the PCR-RFLP (Polymerase chain reaction- Restriction fragment length polymorphism).

**Results:** A total of 262 patients were included. Parasite species were identified in 64.1% of participants, of whom 83.9% were infected by *L. major*. *L. major* lesions occurred mainly in autumn (54.6%), were mostly multiple (58.2%) and situated on limbs (94.3%). On the other hand, *L. tropica* lesions occurred mainly in winter (44.4%,  $p=0.02$ ) and were mostly single (63.0%,  $p=0.05$ ). The duration of lesion evolution was comparable between *L. major* and *L. tropica* (151 days $\pm$ 4.5 vs 148 $\pm$ 3.8,  $p=0.9$ ).

**Conclusions:** The coexistence of two species of leishmaniasis in the same geographical area argues for the promotion of species identification by encouraging the development of sensitive, specific, and easy-to-use tests that can be used in primary health care facilities in endemic rural regions.

**Popul. Med. 2023;5(Supplement):A296****DOI: 10.18332/popmed/163668****Fine mapping of ascaris lumbricoides, trichuris trichiura and hookworm infections in sub-districts of makenene in Centre Region of Cameroon**Cyrille Kamdem Nguemang<sup>1</sup>, Auvaker Tiofack Zebaze<sup>1</sup>, Estelle Mewamba Mezajou<sup>1</sup>, Edmond Tekeu Mengoue<sup>1</sup>, Pythagore Fogue Soubgwi<sup>1</sup>, Esthelline Tchouankeu Yangea<sup>1</sup>, Joël Atiokeng Tatang<sup>2</sup>, Carole Tchami Mbagnia<sup>3</sup>, Hilaire Womeni<sup>4</sup>, Gustave Simo<sup>1</sup><sup>1</sup>University of Dschang, Molecular Parasitology and Entomology Unit, Department of Biochemistry, Faculty of Science, University of Dschang, PO Box 67, Dschang, Cameroon, <sup>2</sup>University of Dschang, Research Unit of Biology and Applied Ecology, Department of Animal Biology, Faculty of Science, University of Dschang, Dschang, Cameroon, <sup>3</sup>University of Yaounde, Parasitology and Ecology Laboratory, Department of Animal Biology and Physiology, Faculty of Science, University of Yaoundé I, Yaoundé, Cameroon, <sup>4</sup>University of Dschang "Unité de Recherche de Biochimie, des plantes Médicinales, des Sciences Alimentaires et Nutrition", University of Dschang, Dschang, Cameroon

**Background and Objective:** Preventive chemotherapy (PC) that remains the main control strategy recommended by the World Health Organization to achieve the elimination of soil-transmitted helminth (STH) infections as a public health problem must be strengthened by identifying the remaining transmission hot-spots for the deployment of appropriate control measures. This study was designed to perform micro scale mapping in order to identify transmission hot-spots of STH infections for targeted control operations.

**Methods:** Stool samples were collected from 1775 children in ten primary schools of eight sub-districts of Makenene in Cameroon. Kato-Katz technique was used to process and examine stool samples to detect STHs eggs. The prevalence of STH species as well as the infection intensities was compared. Data visualizations in forms of maps were made using Quantum geographic information system (QGIS) software.

**Results:** The overall prevalence of STH infections was 4.8% with a 95% confidence interval (CI) of 3.8-5.9%: 3.0% (95% CI 2.2-3.9) for *Ascaris lumbricoides*, 1.4% (95% CI 0.9-2.0) for *Trichuris trichiura* and 0.8% (95% CI 0.5-1.4) for hookworms. The prevalence of STH species differ significantly between schools and sub-districts.

The intensity of infections was light (2.4%, 1.1% and 0.8%), moderate (0.4%, 0.1% and 0.1%) and heavy (0.2%, 0.2% and 0%) for *A. lumbricoides*, *T. trichiura* and hookworm respectively. Between schools and sub-districts, significant difference was recorded in the means of infection intensities of *T. trichiura* and hookworms. This difference was also significant for *T. trichiura* when comparison were between sex. Fine mapping revealed that children harbouring heavy infections were clustered in the same sub-districts.

Conclusion: This study showed a diversity in the prevalence of STH species. It also highlighted the need for micro scale mapping to enable the localisation of high endemicity sub-districts where targeted control operations must be deployed to achieve STH elimination.

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### The impact of the disruption of the seasonal chemoprevention services on the malaria epidemic in senegalese children: a study in the Sédhiou and Kolda regions

Giorgia Alderotti<sup>1</sup>, Vieri Lastrucci<sup>1</sup>, Carlotta Carboni<sup>2</sup>, Lorenzo Stacchini<sup>3</sup>, Primo Buscemi<sup>3</sup>, Amadou Camara<sup>4</sup>, Mansour Faye<sup>4</sup>, Omar Sagna<sup>5</sup>, Adama Faye<sup>6</sup>, Ibrahima Seck<sup>6</sup>, Maria Caldes<sup>2</sup>

<sup>1</sup>Epidemiology Unit, Meyer Children's Hospital, Florence, Italy, <sup>2</sup>Global Health Center, Meyer Children's University Hospital Italy, <sup>3</sup>Medical Specialization School of Hygiene and Preventive Medicine, University of Florence, Italy, <sup>4</sup>Medical Region of Sédhiou, Senegal, <sup>5</sup>President Malaria's Initiative, USAID, Senegal, <sup>6</sup>Cheikh Anta Diop University of Dakar, Senegal

Background and Objective: In Senegal seasonal chemoprevention (SMC) is routinely provided to children aged between 3-120 months. During the epidemic season 2018-2019 healthcare workers declared a strike that totally disrupted the SMC services in the regions of Sédhiou and Kolda. The study aimed to investigate the impact of the strike on the malaria epidemic dynamic.

Methods: Three epidemic seasons (from May to April) were considered, namely pre-strike, strike and post-strike seasons. For each season, monthly numbers of malaria cases occurred in children aged between 3-120 months and 10-day average rainfall data were retrieved from the regional databases. Incidence rates were calculated at regional and district levels and regression analyses using interrupted time series models were performed to evaluate differences in the incidence of malaria among the considered seasons.

Results: In the strike seasons, only 20 (16%) health centers (out of 124) provided SMC services. During the strike season, a total of 30,522 and 28,129 malaria cases were registered during the pre- and post-strike seasons, respectively, while in the strike season a total of 57,543 cases were observed. The malaria incidence in the strike season was about two times higher than the one registered in the pre-strike season (incidence rate ratio: 1.89, 95% CI 1.56-2.28;  $p < 0.001$ ), this significant increase was observed at regional and sub-district levels. Cumulative seasonal average rainfall was lower in the strike season (Kolda: 906.16 mm, Sédhiou: 971.93 mm) compared to the pre-strike season (Kolda: 978.80 mm, Sédhiou: 1051.66 mm), similar findings were observed at district level.

Conclusion: Our findings showed that the interruption of the SMC is associated with a significant increase of malaria incidence in children without any significant increase in precipitation. Our findings confirm that SMC is essential to reduce the burden of malaria in children residing in areas of highly seasonal transmission.

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### Tb notification in children; the experience of targeted community demand creation amidst insecurity in imo state Nigeria.

Arinze Ajogwu<sup>1</sup>, Aadaeze Ikeru<sup>2</sup>, Jude Ilozumba<sup>1</sup>, Charles Okafor<sup>3</sup>

<sup>1</sup>Caritas Nigeria Caritas Nigeria Abuja, Nigeria Nigeria, <sup>2</sup>Caritas Nigeria, <sup>3</sup>Imo State TB and Leprosy Control Program Imo State TB and Leprosy Control Program Imo State Nigeria Nigeria

Background and Objective: The 2022 Global TB report shows that Nigeria is one of the 30 high-burden countries that have significantly contributed to the global Childhood TB epidemic. Despite significant improvements being made by the country in TB case notifications, children are being left behind as the childhood proportion remained at 7% nationally. The current security challenges in some parts of the country including the Imo state, worsen this challenge. This study aimed to determine how targeted community demand creation can contribute to TB Notification in Children in security-challenged settings.

Methods: The hotspot identification approach was used to identify and cluster community entities; such as hospitals, patent medicine vendors, and traditional birth attendants. These centers were engaged to refer children to TB diagnosis and treatment services, over a 21-month period, (January 2021 to October 2022).

The inclusion criteria considered in identifying the hot spots included proximity to living areas, schools (targeting preschool and early school-aged children), Orphanages, and childrens clinics. Targeted demand-creation activities were carried out in these clusters.

Results: On the whole, 1,104 centers were engaged, and 162 demand-creation activities were conducted leading to the referral of 579 children. A total of 115 pediatric TB cases were placed on treatment through this intervention. The Paediatric TB notification trend within this period showed a continuous increase in childhood TB cases started on treatment.

Conclusion: Targeted outreaches through hotspots or clusters help to reduce the security challenges posed by large crowds gathering in the communities and patients traveling long distances to access treatment. This approach is effective in ensuring pediatric TB cases are identified and started on treatment amidst the worsening security challenges in many parts of Nigeria like Imo State.

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### Knowledge, attitude, and perception of monkeypox among medical/health students across media space in Nigeria

Stephen Ugwu<sup>1</sup>, Bartholomew Okolo<sup>2</sup>, Stephen Ugwu<sup>1</sup>, Sodiq Abolade<sup>3</sup>, Augustine Ofeh<sup>1</sup>, Temitope Awoyinka<sup>1</sup>, Eunice Ayeni<sup>1</sup>, Kolawole Eniola<sup>1</sup>  
<sup>1</sup>Infectious Disease Research Group Nigeria, <sup>2</sup>Infectious Disease Research Group, Nigeria, <sup>3</sup>Infectious Disease Research Group

Background: Monkeypox is a rare disease caused by infection with the Monkeypox virus (MPXV). Although monkeypox existed and declined in the past, its re-emergence is simultaneous with the rise in cases recently.

Methods: This study utilized a non-interventional, anonymous, self-administered web-based survey through a descriptive cross-sectional design to collect data from medical/health students (undergraduate, graduate, and postgraduate students). The E-questionnaire was administered from 22nd July to 5th August through social media, and the data collected and extracted through an excel spreadsheet was analyzed using IBM SPSS Statistics 26.0.

Results: A total of 203 respondents were obtained from 22nd July to 5th August, out of which 109 (53.7%) were females, 92 (45.3%) were males with 18-25 years (63.5%), 25-30 years (26.6%), <30 years (7.4%) and <18 years (2.5%) age groups. Of the total respondents, 94.1% have heard about monkeypox before, 59.1% believed that monkeypox could be managed, 80.8% believed that monkeypox is zoonotic but can be transferred from human to human, and the majority (60.1%) are aware of the symptoms of monkeypox.

Conclusions: Medical/health students across social media show a relatively high knowledge of the Monkeypox virus with significant knowledge gap regarding the evolving epidemiologic and clinical manifestations, and the variety of components implicated in monkeypox transmission. Nonetheless, the knowledge is to be sustained and reinforced through continued awareness on social media and in rural areas with a high percentage of basic internet coverage and literacy. In order to direct proper surveillance, data collecting, readiness, and response operations, public health/surveillance capacities in Nigeria must be urgently developed.

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### Effect of treatment on school-aged children's hemoglobin levels in a Schistosoma mansoni endemic area of Minas Gerais, Brazil.

Gisele de Andrade<sup>1</sup>, Leonardo Matoso<sup>1</sup>, Alexandre Lisboa<sup>1</sup>, Rodrigo Correa-Oliveira<sup>2</sup>, Andrea Gazzinelli<sup>1</sup>

<sup>1</sup>Participant Nursing school - Universidade Federal de Minas Gerais Brazil,

<sup>2</sup>Participant Fundação Oswaldo Cruz - FIOCRUZ Brazil

Background and Objective: Schistosomiasis is an important public health problem in Brazil and still represents a significant segment of the global burden of illness. The objective of this study was to assess the association between schistosomiasis and soil-transmitted helminths (STH) infection and hemoglobin levels of school aged children residing in areas in the Jequitinhonha Valley, Minas Gerais, Brazil.

Methods: A cohort of 387 school-aged children positive for *Schistosoma mansoni* eggs were included. Parasitological, socioeconomic, demographic, and hemoglobin were analyzed in all children infected or coinfecting with *S. mansoni*, hookworm, and/or *Ascaris lumbricoides*, aged 6 to 15 years, in eight endemic areas. Individuals were treated until they were determined to be negative for the presence of *S. mansoni* or STH. Individuals were surveyed again 12 and 24 months from the date of successful treatment. Hemoglobin levels before and after treatment were analyzed by multifactorial analysis of variance, with the predictors reinfection group, (co-)infection, time of observation, age, and the interaction between them. To evaluate the effect of antiparasitic treatment on hemoglobin levels, values before and after treatments were analyzed by Student's paired t

test. Repeated measures ANOVA was used to assess the association between hemoglobin levels with different participant characteristics.

Results: The mean levels of hemoglobin in the first (13.1 g/dL) and second (13.3 g/dL) year post-treatment were significantly higher than at baseline (12.8 g/dL). At baseline, the hemoglobin levels of the co-infected individuals were significantly lower in relation to the non-co-infected individuals. However, in reinfected and non-reinfected groups this association was not statistically different in any follow up time point. Longitudinal analysis of hemoglobin level showed an increase over time, independent of age and reinfection by *S. mansoni*.

Conclusion: The data suggest that treatment elevated Hb levels in this population, especially in the group of *S. mansoni*-infected children co-infected with STH.

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### Rsv epidemiological burden in paediatric outpatients in Italy: a systematic review

Sara Boccalini<sup>1</sup>, Benedetta Bonito<sup>1</sup>, Cristina Salvati<sup>1</sup>, Enrica Stancanelli<sup>1</sup>, Mario Bruschi<sup>1</sup>, Giulia Ionita<sup>1</sup>, Johanna Iamarino<sup>1</sup>, Davide Bentivegna<sup>1</sup>, Primo Buscemi<sup>1</sup>, Giulia Ciardi<sup>1</sup>, Claudia Cosma<sup>1</sup>, Lorenzo Stacchini<sup>1</sup>, Cristiana Corticello<sup>1</sup>, Manjola Bega<sup>1</sup>, Annamaria Schirripa<sup>1</sup>, Marco Del Riccio<sup>1</sup>, Lorenzo Bertizzolo<sup>2</sup>, Salvatore Parisi<sup>2</sup>, Francesca Trippi<sup>2</sup>, Paolo Bonanni<sup>1</sup>, Angela Bechini<sup>1</sup>

<sup>1</sup>University of Florence Department of Health Sciences Viale G.B. Morgagni, 48 Italy, <sup>2</sup>Sanofi 14 Espa. Henry Vallée, 69007 Lyon France

Background: Respiratory Syncytial Virus (RSV) infection is a paediatric threat, being the main cause of lower respiratory tract infections (LRTIs) in children <5 years of age and often leading to severe consequences (i.e., bronchiolitis and pneumonia). Preventive strategies are and will be available to reduce the burden of this respiratory infection. Therefore, in order to assess the effect of prevention strategies, establishing a baseline before implementation may be considered to be relevant. The aim of this systematic review is to describe the epidemiological burden of RSV infection in paediatric outpatients aged 0-5 years in Italy. Methods: We performed a systematic review by consulting PubMed, Embase, Scopus and the International HTA Database. We then applied inclusion and exclusion criteria, including limiting to English and Italian languages and articles published between Jan 1st 2000 and July 14th, 2022, requirement of RSV test-positive data and from patients in the aforementioned age range. Results: We retrieved 20,845 records collectively, from which 9 articles were eligible for our study. Overall, we found RSV test-positivity in outpatient children ranged from 18% to 41%. Data comparison across studies was challenging because of differences in initial diagnosis, source of information, sample population, and study design. Importantly, the RSV positivity increased from 2001-2002 (23.8%) to 2019-2020 (40.8%): this is perhaps due to true changes in the epidemiological trends, detection bias due to increased awareness of RSV by the medical professionals and the availability of more sensitive diagnostic techniques. Conclusions: To our knowledge, this is the first review summarizing RSV epidemiology in paediatric outpatients in Italy. In the future, more data on this topic will be crucial for an appropriate and effective prevention strategy to manage the RSV-related disease burden in paediatric outpatients.

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### Neuroinvasive toscana virus, Italy, 2016-2021: should we invest in improving surveillance?

Flavio Mellace<sup>1</sup>, Flavia Riccardo<sup>2</sup>, Martina Del Manso<sup>2</sup>, Daniele Petrone<sup>3</sup>, Emmanouil Fotakis<sup>3</sup>, Flavio Mellace<sup>1</sup>, Emmanouil Fotakis<sup>4</sup>, Daniele Petrone<sup>3</sup>, Antonino Bella<sup>4</sup>, Maria Caporali<sup>3</sup>, Gioia Bongiorno<sup>3</sup>, Iaria Bernardini<sup>3</sup>, Marco Di Luca<sup>3</sup>, Giulietta Venturi<sup>3</sup>, Claudia Fortuna<sup>3</sup>, Stefania Giannitelli<sup>3</sup>, Federica Ferraro<sup>5</sup>, Francesco Maraglino<sup>5</sup>, Patrizio Pezzotti<sup>3</sup>, Flavia Riccardo<sup>3</sup>

<sup>1</sup>Department of Medicine (DAME), University of Udine - Udine; Italian National Institute of Health (ISS), Department of Infectious Diseases - Rome Italy, <sup>2</sup>Department of Infectious Diseases, Italian National Institute of Health (ISS), Rome, Italy, <sup>3</sup>Italian National Institute of Health (ISS) - Rome Department of Infectious Diseases Italy, <sup>4</sup>Italian National Institute of Health (ISS) - Rome, <sup>5</sup>Italian Ministry of Health - Rome Department of Prevention, Infectious Disease Office Italy

Background and objective: Among viruses of the Phlebovirus genus in the Mediterranean area, sand flies transmitted Toscana virus (TOSV) can cause human neuro-invasive disease. Due to a lack of international surveillance, its impact on human health is poorly known, and considering high phlebotomine vectors density detected in some disease foci. We aim to describe the epidemiology all cases of

neuro-invasive TOSV notified in Italy from 2016 to 2021.

Methods: We analysed data from the Italian national TOSV surveillance system on all notified cases of neuro-invasive disease laboratory-confirmed with at least one of the following: TOSV isolation, TOSV-IgM in cerebrospinal fluid (CSF); TOSV RT-PCR on CSF/blood/urine/other; TOSV IgM and IgG in serum; seroconversion/four-fold increase in TOSV antibody titre.

Results: Between July 2016 and October 2021, 6 transmission seasons, 331 confirmed cases of neuro-invasive TOSV were reported in Italy (median 56 cases/year, range 35 in 2016 - 85 in 2018). Most cases were confirmed by PCR (271, 82%) and/or TOSV IgM and IgG detection (235, 71%).

Cases were reported in 9/21 Italian Regions, mainly in the north-east. Average age was 46 (range 0 - 89 years), most cases were male (233, 70%). Disease onset occurred mainly between July and August (205, 62%). The mean annual incidence was 0.09 cases/100.000 ranging between 0.06 cases/100.000 in 2016 and 0.15 cases/100.000 in 2018. The annual mean 6-year incidence was similar across age groups (0.07 cases/100.000 ≥80 years, 0.09 cases/100.000 in the 0-59 and 60-79 age groups).

Conclusions: TOSV infection is endemic in Italy, causing on average 50 cases of neuro-invasive disease each year. This likely under-estimates infections, as neuro-invasive cases are rare events, most TOSV infections are mild, and in our analysis we only considered laboratory-confirmed cases. Increased disease detection and international surveillance could improve our understanding of the public health impact of TOSV.

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### Incidence rates of gonococcal disease in a tertiary level hospital in madrid (Spain) between 2019 and 2022

Esther Expósito<sup>1</sup>, Ana Sánchez<sup>1</sup>, Rosa García<sup>1</sup>, Aitana Vázquez<sup>1</sup>

<sup>1</sup>Hospital Universitario Gregorio Marañón Spain

Background and Objectives: Gonococcal infection is a sexually transmitted infection caused by the bacterium *Neisseria gonorrhoeae*, whose incidence has been increasing since the beginning of the century. Gonococcal infection can lead to serious complications such as pelvic inflammatory disease in women and orchitis in men. Given its importance at the Public Health level, the World Health Organization has included the control of this disease in the global strategies of the health sector for 2022-2030.

The main objective of this study is to analyze the incidence rate of *N. gonorrhoeae* reinfections and coinfections with *Chlamydia trachomatis* declared by a tertiary level hospital in the Community of Madrid since 2019.

Methods: This is a descriptive study of the declared cases of *N. gonorrhoeae* from January 1, 2019 to November 18, 2022. The rate of reinfections in a period of 1 year and the incidence rate of coinfections with *C. trachomatis* each year are calculated.

Results: There were 136 new *N. gonorrhoeae* infections in 2019, 93 in 2020, 228 in 2021 and 271 in 2022. The incidence rate of reinfections was 2.22% in 2020, 2.73% in 2021 and 4.35% in 2022. The incidence rate of coinfections with *C. trachomatis* has been 28.1% in 2019, 24.44% in 2020, 27.27% in 2021 and 25.56% in 2022.

Conclusions: The incidence rate of *N. gonorrhoeae* reinfections in a tertiary hospital has been increasing. The rate of co-infections with *C. trachomatis* has maintained levels, although there has been a significant decrease in incidence in 2020, which can be explained by the COVID-19 pandemic (decrease in social interaction, reduction of screening programs, closure of health resources, etc.). The decrease in the incidence rate of coinfections in 2022 can be explained by the sample size of this year, which only includes until mid-November.

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### Trends in confirmed cases of sexually transmitted diseases among notifications in a portuguese city, 2018-2022

Diogo Lopes<sup>1</sup>, Francisca Valente<sup>2</sup>, Ana Baptista<sup>1</sup>, Dinis Loyens<sup>1</sup>, Maria Borges<sup>2</sup>, Paula Marques<sup>1</sup>

<sup>1</sup>Amadora Public Health unit Portugal, <sup>2</sup>Amadora Public Health Unit

Background and Objective: Globally, sexually transmitted diseases (STDs) account for a significant number of morbidities and deaths. During the past few years, there has been an increase in the number of reported cases of STDs in Portugal. This study was designed to assess four-year trends in the percentage of confirmed STD cases among clinical notifications in a Portuguese city, from 2018 through December of 2022.

Methods: The Portuguese Epidemiological Surveillance System (SINAVE) provided data on STD notifications and confirmed cases. The data were analyzed to determine the percentage of confirmed cases among all notifications every year.

Additionally, the percentage of confirmed cases by specific STDs was examined. Results: Based on the results of the analysis, the percentage of confirmed STD cases in the city has increased from 2018 to 2022. A percentage of 68% of confirmed cases was reported in 2018, which increased to 74.4% in 2019 and 83% in 2020. Further increases occurred in 2021 and 2022, reaching 84% and 88.9%, respectively. This trend, however, differed in specific STDs, with syphilis increasing from 14% in 2018 to 68% in 2022.

Conclusion: It may be that the COVID-19 pandemic has had a restrictive effect on the number of confirmed cases. Many individuals with mild or no symptoms may have avoided seeking medical attention due to the pandemic, resulting in a higher percentage of confirmed cases. In part, this may be due to reduced access to medical care and diagnosis due to the pandemic, and some individuals may have neglected to visit a healthcare provider as a result. This has resulted in STDs that may otherwise have been diagnosed and treated early slipping through the cracks.

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### Prevalence and risk factors associated with schistosomiasis among women living with hiv/aids in lower moshi kilimanjaro, Tanzania

Anthony Charles<sup>1</sup>

<sup>1</sup>Temeke regional referral hospital Department of microbiology and immunology P.O.Box 45232 Dar es salaam Tanzania

Background: Schistosomiasis infection has been associated with increased risk of HIV infection in African women. The co-infection between schistosomiasis and HIV /AIDS infection can be mediated through social behavioral factors. Cases show that over 200 million people are infected worldwide with a disproportionate burden in Africa, about 90% cases found alongside co-infection with HIV/AIDS.

Objective

To determine the prevalence and risk factors associated with schistosomiasis among women living with HIV/AIDS in lower Mosh- Kilimanjaro

Methodology: This study was a cross sectional hospital based analytical study, which was conducted in lower Moshi (Pasua, TPC, Arusha chini, Mabogini) from April to June 2021. The study population was HIV/AIDS infected women aged (15-49) years. A minimum of 260 women was enrolled in this study with a simple random sampling technique. A questionnaire was a tool for data collection. Data was entered and analyzed using SPSS version 20. Microscopic examination was performed to test for schistosoma infection where urine sample was used for detection of Schistosoma haematobium by membrane filtration method.

Results: A total of 260 participants were enrolled. The prevalence of schistosomiasis among HIV/AIDS positive women is 5% (13/260). There was an association between the outcome (schistosomiasis) and the previous infection of HIV/AIDS with a p-value <0.01.

Conclusion: The low prevalence of Schistosomiasis among HIV/AIDS women is 5% Only previous infection were associated with schistosomiasis. So strategic plans such as provision of Praziquantel drugs in the CTC and health seminars should be provided to residents in lower Moshi Kilimanjaro.

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### Protecting health workforce through vaccination in low and lower-middle income countries

Emma Patu<sup>1</sup>, Jean-Marie Okwo-Bele<sup>2</sup>, Wahid Marjooh<sup>3</sup>, Rocio Saenz<sup>4</sup>

<sup>1</sup>World Federation of Public Health Associations, New Zealand, <sup>2</sup>WHO Monkeypox Emergency Committee, WHO, Democratic Republic of Congo, <sup>3</sup>Ministry of Health, Afghanistan, <sup>4</sup>The Latin American Alliance for Global Health, Costa Rica

Outline: Protecting people worldwide with the appropriate vaccinations is a priority to save millions of lives. This is even more true for the healthcare and public health workforce, very often at the front line in caring for patients and communities. Indeed, the World Health Organization has prioritized healthcare workers for COVID-19 vaccine. While many countries, including those in less wealthy settings, often have infrastructures and policies to guarantee vaccinations for children, this is not always the case for adults nor for health workers. Indeed, in many countries a lack of infrastructures or appropriate policies undermine the access to vaccination throughout the life span. This means that high risks categories like the health workers are not protected creating a huge problem not only for the individual but for the whole society. Vaccine administration relies on existing immunization infrastructures. However, worldwide nearly 40% of countries have no immunization infrastructure to deliver adult immunization and almost 60% of the world's population lives in countries with no routine adult immunization programs. This applies also to the health workers. COVID-19 vaccines are being

administered in many low- and lower-middle income countries (LIC and LMIC) that do not have routine adult immunization infrastructure. This means also lack of mobilization and outreach, poor vaccine storage, handling, delivery, and waste management ability for this category. To administer COVID-19 vaccines to the adult populations, needed infrastructures and related activities should be developed. We should take advantage of this momentum to advocate for a sustainable development of infrastructures and measures to guarantee vaccination during the full life span, going beyond COVID-19 vaccine, starting with the health workforce. Aims: The World Federation of Public Health Associations (WFPHA) has worked together with its public health associations members to map out in which LIC and LMIC countries those structures are in place or under preparation to support the COVID-19 immunization, with the goal of encouraging the use of these resources to ensure sustainable routine immunization of health workers. Through literature review, WHO data analyses, survey among our members and focus groups, WFPHA has developed a series of recommendations to be used by national public health association to advocate with their government to reach this common goal.

Key questions: During the workshop, key opinion leaders from different regions will discuss the recommendations and share their experiences on how to develop, strengthen, and sustain immunization systems for health workers in LICs and LMICs and beyond to ensure routine immunization protecting health workers, patients and communities.

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### Strengthening Public Health Systems to Prevent and Respond to High-Consequence Biological Threats

Presenting Faculty<sup>1</sup>, Paul Barach<sup>2</sup>, Jan-Cedric Hansen<sup>3</sup>, Frank van Trimont<sup>4</sup>, Donald Donahue<sup>5</sup>

<sup>1</sup>Representing CREDO (<http://credoglobal.eu/>): \* Paul Barach, MD, MPH \* Jan-Cedric Hansen, MD \* Frank van Trimont, MD \* Donald A. Donahue, DHEd, MBA, MSJ, FACHE, FRSPH, FICDM, <sup>2</sup>Sigmund Freud University CREDO Austria, <sup>3</sup>CREDO, France, <sup>4</sup>European Council of Disaster Medicine, Belgium, <sup>5</sup>University of Maryland Baltimore CREDO 18823 New Hampshire Avenue Ashton, MD 20861-9791 United States

Outline of the overall workshop

COVID-19 has revealed that national governments and the international community are woefully unprepared to respond to pandemics—underscoring our shared vulnerability to future catastrophic biological threats that could meet or exceed the severe consequences of the current pandemic. This workshop: \* equips public health personnel for early identification of malicious use of the tools of modern biology, an accident-caused biological event, or a naturally occurring pathogen emerging in a novel manner; \* familiarizes public health staff with concepts of One Health, disease spillover, and indices of suspicion; \* prepares public health entities with effective communications approaches to convey the scope and severity of an outbreak; and \* facilitates multi- and inter-disciplinary responses applicable across the whole of society.

Specific aims/objectives and component parts

Upon completion of this workshop, participants will be able to: \* identify and analyze evidence of an emerging outbreak; \* apply a participatory foresight, co-creative, future, and transformation-oriented methodology to structure a transformative model for a disciplined exploration of scenarios to confront complex challenges and facilitate improved outcomes; \* evaluate current policy priorities and potential new policy directions; \* see how the impact of possible policy decisions may combine with other developments; \* inform, support, and link policymaking in and across a range of sectors; \* identify societal demands and challenges; and \* anticipate future developments, disruptive events, risks, and opportunities. The workshop begins with a scenario-based quiz, designed to illuminate disparate and often conflicting perspectives across civil society. Participants are familiarized with roles and responsibilities via Socratic roleplaying and provocative inquiry. Small groups are then assigned outbreak-related input and tasked to make recommendations to governmental leadership. Design of the scenarios is such that irreconcilable results emerge. Best practices are then reviewed, followed by a workshop-ending post quiz.

Key questions the workshop will address

The workshop engenders “mitigation scenarios” based on the “Confront, Regulate, Overcome” metamodel combined with the “Security, Rescue, Care” response modalities, helpful and required for cooperation and coordination of law enforcement, fire, civil security resources, hospitals, and first line responder teams. The exercise reveals gaps in national and international biosecurity and pandemic preparedness architectures. It explores opportunities for better cooperation to improve prevention and response capabilities for high consequence biological events and to generate actionable public health recommendations for the

international community.

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### Association of COVID-19 vaccination with herpes zoster: a systematic review and meta-analysis

Zhu Jiesisibieke<sup>1</sup>

<sup>1</sup>School of Public Health, The University of Hong Kong Li Ka Shing Faculty of Medicine, Hong Kong, China

**Background:** Following COVID-19 vaccination, several herpes zoster cases have been reported, making it critical to explore the association between herpes zoster and COVID-19 vaccination. This is especially true in the context of increasing the number of participants enrolled to receive COVID-19 vaccination. **Research design and methods:** Three databases, including the Cochrane Library, PubMed, and EMBASE, were searched for relevant studies before 25 December 2021 according to preliminarily determined inclusion and exclusion criteria without any language limitations. Four cohort studies were included in this systematic review and meta-analysis.

**Results:** Compared with the placebo group, there was no evidence that the COVID-19 vaccination group was associated with increased incidence of herpes zoster (Risk ratio [RR]: 1.06; 95% confidence interval [CI]: 0.91 to 1.24). There is no evidence that the COVID-19 vaccination from Moderna is associated with the incidence of herpes zoster compared with vaccination from Pfizer (RR: 0.20; 95% CI: 0.01 to 2.99). **Conclusions:** To date, there is no evidence of an association between COVID-19 vaccination and herpes zoster.

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### False-positivity Results in rapid antigen tests for SARS-CoV-2: an umbrella review of meta-analyses and systematic reviews

Yu-Pei Yang<sup>1</sup>

<sup>1</sup>Department of Hematology, Taizhou Hospital of Zhejiang Province affiliated to Wenzhou Medical University, Linhai, China

**Purpose:** The rapid antigen detection tests (RADTs) for SARS-CoV-2 infection could contribute to the clinical and public health strategies for managing COVID-19. This umbrella review aimed to explore the accuracy and sensitivity of RADTs for SARS-CoV-2 by assessing the incidence of false positivity associated with them.

**Methods:** Meta-analyses and systematic reviews on the sensitivity and specificity of commercially available RADTs with data on false-positive Results were identified by searching the PubMed, EMBASE, Cochrane Library, and Web of Science databases from inception to March 31, 2022. Data on the author and year, included studies, index tests, sample size, false negatives, false positives, and study quality based on AMSTAR 2 (Assessing the Methodological Quality of Systematic Reviews) rating were extracted from the included meta-analyses and systematic reviews.

**Results:** After a comprehensive literature search, 2670 studies were initially identified. After removing duplicates, 2288 studies were further screened. After title and abstract screening, 277 studies were considered for full-text review, of which 265 were excluded. Finally, 12 meta-analyses consisting of 422 articles were included in the umbrella review. The primary studies included in these 12 meta-analyses were observational studies with a comparison group and SARS-CoV-2 confirmed by RT-PCR or cell culture. The false-positivity rates in the included studies ranged from 0 (95% CI 0 to 1.0%) to 4.0% (95% CI 2.0%-5.0%). Based on the AMSTAR-2 criteria (Table 2), the quality of four, four, one, and three meta-analyses/systematic reviews were 'critically low,' 'low,' 'moderate,' and 'high,' respectively. **Conclusions:** The false positivity rates in the included studies ranged from 0.0% - 4.0%. This study summarizes the available evidence on the incidence of false positivity in RADTs and shows it is less than 4.0%. Therefore, our Findings imply that RADTs can be an appropriate, economic, and rapid detection method for mass screening of COVID-19.

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### Building a public health leadership curriculum for future pandemic preparedness

Lotte Pol<sup>1</sup>

<sup>1</sup>NorthWestern University, Malden, The Netherlands

The COVID-19 pandemic has emphasized the importance of effective public health leadership, and collaboration on multiple levels. Public- and global health leaders took many different approaches to reduce the spread of COVID-19. We investigated lessons learned about essential public health leadership skills through literature review, and through six 60-minute interviews with public health

leaders in Chicagoland area during the COVID-19 pandemic. Additionally, we developed a course syllabus to effectively teach public health leadership skills to future public health leaders. The developed leadership syllabus consists of four segments, discussing essential leadership skills in times of pandemic, outbreak investigation, global health disparities, and a personal leadership skill development plan. Teaching methods include case studies, narratives, reflections, podcasts, and teamwork assignments. We chose these methods because they will inspire students to further develop skills that will be necessary as a public health leader. Skills that should be taught to future public health leaders can be subdivided in five categories: social, emergency response, epidemiology, outbreak management, and technical skills. In particular, strong strategic thinking, teamwork, and communication skills are indispensable for a leader during a pandemic. Additional to essential skills, we identified certain personality traits that a public health leader should possess: such as flexibility, accountability, empathy, and having a clear vision. A limitation of our research is that we have only been able to perform six qualitative interviews, while the rest of our research was based on literature review of articles published during the COVID-19 pandemic. However, the qualitative interviews were performed with some of Chicagoland areas most influential leaders, for example Dr. Rachel Rubin and Dr. Kiran Joshi, Co-leads at the Cook County Department of Public Health. Sharing these essential public health leadership skills identified during the COVID-19 pandemic, and teaching them to future public health professionals can improve future pandemic preparedness.

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### COVID-19 rapid diagnostic test Results and their associations with certain factors among the residents of Balochistan

Ehsan Ahmed<sup>1</sup>

<sup>1</sup>FELTP Pakistan Health Department Government of Balochistan, Quetta, Pakistan

**Background:** This paper analyses any possible association of various factors like gender, last COVID-19 PCR test Results, BCG Vaccination, Seasonal Flu vaccination, occupation and confirmed case contact history with COVID-19 RDT Results of the participants. COVID-19 will soon become endemic in Pakistan, the government should adopt COVID-19 RDT kits for trace, test and quarantine activities.

**Objectives:** 1. To assess the odds for certain anti-COVID-19 IPC measures among the Contacts of an index COVID-19 case traced by Provincial Disease Surveillance and Response unit Quetta. 2. To provide evidence based recommendations for risk communication to the local context via media cell of the Health department of Balochistan

**Methodology:** Considering the availability of COVID-19 rapid diagnostic kits, 596 individuals all previously COVID-19 PCR tested were made part of this cross-sectional study. Simple random sampling was used for the selection of study participants. The whole study was conducted during September and October 2020.

**Results:** The major Findings of this study are clearly showing that the Positive Likelihood ratio of the COVID-19 RDT Kits (LR+) is well above 1; similarly, the negative Likelihood ratio is approaching 0. On the other hand, the sensitivity and specificity 80% and 74% respectively. Similarly, study found statistically significant association was between RDT outcomes and last PCR Test status, occupation and contact with COVID-19 positive individuals. While other variables like gender, BCG vaccination and history of seasonal flu vaccinations were found to have no significant associations with COVID-19 RDT Kit outcomes.

**Conclusions:** Being the first study of its kind in Pakistan the major Findings of this study are almost in line with the set hypothesis and Objectives of this study and based on study Findings it will be of high value to use COVID-19 RDT kits during mass screening especially during test, trace and quarantine activities.

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### The impact of the COVID-19 pandemic on the residential aged care sector

Chebiwot Kipsaina<sup>1</sup>, Angelita Martini<sup>2</sup>

<sup>1</sup>Brightwater Research Centre, Curtin University, Australia, <sup>2</sup>Brightwater Research Centre, Brightwater Care Group, The University of Western Australia, Inglewood, Australia

This scoping review sought to identify the impact of the COVID-19 pandemic on the residential aged care sector and facilities (RAC/F), using the World Health Organization's (WHO) health systems framework. It also sought to identify COVID-19 response strategies across the residential aged care sector, including

strategies that considered residents with cognitive impairment, who have been most impact by the COVID-19 pandemic. Databases were searched April-May 2022 for peer reviewed articles and grey literature, with additional searches on policy and service delivery to August 2022, with 147 articles included. The COVID-19 pandemic highlighted the lack of integration across health and aged care sectors, and issues with governance, accountability and comprehensive service delivery for RACFs. Response strategies that considered residents with cognitive impairment were limited. The need to ensure advance care and palliative care planning within COVID-19 responses was evident. Clear guidelines and additional resourcing are required for utilisation of telehealth during a pandemic, particularly to ensure access to diagnostic and treatment services for residents with cognitive impairment.

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### Vaccine hesitancy among the indigenous tribes of North East India: an incipient crisis

Ningombam Devi<sup>1</sup>, Shanthosh Sundaram<sup>2</sup>

<sup>1</sup>North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, Shillong, India, <sup>2</sup>North Eastern Indira Gandhi Regional Institute of Health and Medical Sciences, India

**Background:** Vaccine hesitancy has become an important concern to public health as it carries both individual and community level risks; however, it lacks proper assessment till date. Understanding the burden and the reasons for the same thus becomes a key for an effective solution toward the COVID vaccination among the indigenous tribal community.

**Methods:** A community based sequential explanatory mixed methods study was conducted among 238 eligible indigenous Khasi tribes of Meghalaya, North East India. The quantitative part involved a cross-sectional study to determine the proportion of vaccine hesitancy and the qualitative part comprised of in-depth interviews among the eligible residents and key informant interview among the health workers providing the vaccination services, to explore the facilitators and barriers of vaccine uptake.

**Results:** A total of 113 [47.5% (95% CI: 41.0%-54.0%)] participants were found to be hesitant to vaccination, among which 40 [16.8% (95% CI: 12.4%-22.3%)] were initially hesitant and 73 [30.7% (95% CI: 24.9%-37.0%)] had vaccine refusal. The themes generated through qualitative interviews were individual related, disease related, vaccine related, healthcare system and provider related and socio-cultural and religious. The main barriers were identified under perceived susceptibility and perceived severity under the individual perception along with ambiguity aversion, scepticism about the efficacy, mistrust, concerns on side effects, rumours and socio-cultural and religious misbeliefs acting as major perceived barriers for likelihood of action. Some of the facilitators were literacy, health consciousness, family motivation and perceived benefit on effectiveness.

**Conclusions:** and recommendations: Vaccine hesitancy is found to be relatively higher for the indigenous tribes and it depends on complacency towards the vaccine, confidence on its safety, perceived susceptibility and severity to the disease coupled with modifying factors for cues for action. Healthcare workers should better communicate to improve the uptake of vaccine by reducing the barriers on the vaccine acceptance.

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### Stress, coping and psychological wellbeing of postgraduate student in Ireland during COVID 19 pandemic

Afroja Ahmed<sup>1</sup>

<sup>1</sup>School of Public Health, Physiotherapy and Sports Science University College Dublin (UCD), Ireland

Present research aimed at identifying how postgraduate students in Ireland were coping with stress and the relationship between coping strategies to wellbeing, considering the context of the covid 19 pandemic. The purpose of the current study was to determine the extent to which diverse postgraduate students were experiencing a various range of covid related stress, how do they cope with stressors and its relationship to their wellbeing. It was a cross-sectional and correlational study where measures of covid stress, coping strategies, psychological well-being and key demographics were collected through an online survey. Data were collected via UL Qualtrics by inviting postgraduate students of the University of Limerick (UL) in Ireland through email and social media posts. Total 109 postgraduates of UL participated in the research and data were analyzed by using SPSS (version 23). To test the hypotheses of the study, Hayes' process macro for mediation and moderation analysis in SPSS was employed. Findings demonstrated that covid stress was undermining the wellbeing of postgraduate

students and informal coping strategies mediate the relationship between stress and wellbeing. Here informal coping strategies indicated exercise, listening to music or spending time with housemates for leisure activities. Whereas, formal emotional coping strategies (i.e. counseling) didn't either mediate or moderate the relationship between stress and wellbeing. However, majority of the student agreed that online anonymous wellbeing services would be beneficial for them to deal with covid related stress. Present study shed light emphasizing diverse postgraduate students' wellbeing, and their emotional needs and support services at Irish Universities as Ireland is a global hub for highly diverse international students. This study developed two new covid related scales (i.e. stressors and coping scale) which also has a proffered practical and policy implications for the post-pandemic era.

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### Outcomes of home isolated COVID-19 patients and risk factors associated with the adverse outcomes: Longitudinal Retrospective Study in Shimoga, Karnataka

Sakshi Kumari<sup>1</sup>

<sup>1</sup>Shimoga Institute of Medical Sciences, Shimoga, India

**Background:** COVID-19 is a current global pandemic caused by the newly discovered novel SARS-COV-2. According to studies, patients who have died thus far were older, more likely to be male, and to have a comorbidity such as hypertension, diabetes, cardiovascular disease, or lung disease thus necessitating the assessment of risk variables in various demographic groups or contexts. Aims: 1. To estimate the proportion of different outcomes such as recovery, hospitalization, and mortality among home isolated covid-19 patients, 2. To estimate the proportion and to determine various risk factors associated with COVID-19 adverse outcome.

**Methodology:** The study was carried out in Shimoga Institute of Medical Sciences, Shivamogga, Karnataka. Data was collected by telephonic Interview. Study design: Longitudinal retrospective study. Study Population: Home isolated COVID-19 patients. Inclusion criteria: All COVID-19 patients registered in triage of MCGann hospital, during April 20th-June 20th 2021. Exclusion criteria: People who did not consent, or were suffering from mental illnesses, or did not respond Study period: April 20th-June 20th, 2021. Sample size: 168. Sampling: All the patients who reported in MCGann triage during April 20th-June 20th, 2021.

**Results:** A total of 168 people participated in this study, with 93 men (55.3%) and 75 women (44.7%). More than 90% of patients in the Home Isolated COVID 19 patients recovered, 10.75% required hospitalisation, and 3% died. One third of the patients (37%) had one or more comorbidities. Conclusions: Our study shows that older age, male gender and comorbidities have higher hospitalisation rates. Comorbidities and older age were associated with a higher risk of death in hospitalised patients. Even though recovery rate is very high, a significant (10.75%) home isolated patients need hospital admission in the disease course. So, the proper monitoring of home isolated patients can save the lives of many COVID-19 patients.

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### Psychological impact of the early stage of the COVID-19 outbreak, what have we learned? A systematic review

Henoch Ciswa<sup>1,2</sup>, Fils Hyute<sup>1</sup>, Newton Mupungu<sup>3</sup>, David Bayenga<sup>3</sup>, Roger Kabuya<sup>4</sup>, Esperance Kashala-Abotnes<sup>5,6</sup>

<sup>1</sup>Faculty of Medicine, University of Kinshasa, Kinshasa, Democratic Republic of Congo, <sup>2</sup>Academy of Science and Engineering for Africa Development, Kinshasa, Democratic Republic of Congo, <sup>3</sup>Faculty of Medicine, University of Kinshasa, Kinshasa, Democratic Republic of the Congo, <sup>4</sup>Pinecrest-Queensway Community Health Centre, Ottawa, Canada, <sup>5</sup>University of Bergen, Centre for International Health, Bergen, Norway, <sup>6</sup>Department of Neurology, Kinshasa University Hospital, Kinshasa, Democratic Republic of Congo

**Background and objectives:** As in previous pandemics, the COVID-19 outbreak has been inflicting different mental disorders upon people. As it was a question of a new virus, research had to be carried out to promptly react to this global crisis. Significant effects of COVID in its earlier stage such as high mortality, speed of transmission, no cure had led to a novel psychological pandemic that made the COVID-19 pandemic management more difficult. The Objective of this systematic review is to explore the global view of the psychological impact of the COVID-19 pandemic in its earlier stage.

**Methods:** A systematic search of PubMed, EMBASE, and Google Scholar databases was performed up to June 20, 2020. Three authors evaluated full-text articles regarding predefined criteria. We utilized a modified version of the

Newcastle-Ottawa Scale for observational studies to assess the risk of bias. The review protocol is registered and available online in PROSPERO.

Findings: This systematic review included participants from all over the world except Africa and Oceania. Fifty-four descriptive studies were included in the review. Overall, the analysis from this review suggested that there is a lack of sufficient robust evidence to confirm the association between the COVID-19 pandemic and mental impact. However, most of the studies pleaded for the assumption that the pandemic affected the mental health of the population throughout the world.

Conclusions: Governments and decision-makers are required to respond promptly to any eventual outbreak to ensure the populations mental health well-being through some strategic planning and prevention.

Keywords: systematic review, COVID-19, mental health, psychological impact, psychological symptoms

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### Knowledge and attitude of COVID-19 preventive practice in Mongolia

Buuveidulam Altansukh<sup>1</sup>, Suvd Batbaatar<sup>1</sup>

<sup>1</sup>National Center for Public Health, Mongolia

As of September 21, 2021, 65.3 percent of Mongolias population was vaccinated at full dose. However, as of COVID-19 confirmed cases, Mongolia is in the top five countries in the West Pacific. This indicates that there is a lack of practice to prevention from coronavirus infection in the population. This survey Aims to compare the level of attitudes, and practices of the population towards coronavirus infection with the Results of the baseline survey Results; and disseminate evidence-based recommendations for decision-makers who are dealing with the pandemic. The cross sectional method used for data collection and analysis was conducted using SPSS-23. A total of 1896 people aged 15-60 years old participated in the study. The 56.6% were from Ulaanbaatar and 43.4% were from rural areas. Compared to the baseline survey Results, in the follow-up survey, practices of wearing masks in the workplace or indoor environment (73.0%) had increased. Most of the population surveyed is aware of ways to preventive measures of infection.

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### Informational and structural barriers to uptake of preventive behaviours among Healthcare workers working in both isolation and non-isolation sites during COVID 19 in Zambia

Mwiza Nyasa<sup>1</sup>

<sup>1</sup>Centre for Infectious Disease Research in Zambia (CIDRZ), Zambia

Healthcare workers (HCWs) are at higher risk of contracting COVID-19 due to the nature of their jobs, handling patients in proximity. We aimed to explore HCWs perspectives on their knowledge, skills needs, attitudes towards, and their ability to practice preventive behaviours in the context of COVID-19 in Zambia. 20 in-depth interviews (IDIs) via phone. 10 from an isolation facility and 10 from a non-isolation facility.

Preliminary results: HCWs had sufficient information on how COVID-19, is transmitted, managed, and prevented. Some participants received training on oxygen therapy, infection prevention practices, donning and doffing and admission of critically ill patients but would want more continuous training. Facility changes such as increased staffing, outdoor screening tents, temperature checks helped reduce the spread in the facilities. HCW continued to practice infection prevention to protect themselves from COVID-19 but faced challenges of insufficient, supplies and equipment to meet prevention needs and treat COVID-19 patients and NCD patients were some of the noted challenges faced in the prevention and management of COVID-19. HCW also mentioned the emotional stress of treating patients, especially during the surge, where they felt overwhelmed and anxious handling patients and felt the need to have mental health services offered to them recommended that for them to be adequately protected they needed an adequate and consistent supply of well-fitting PPE, tests kits and medication for comorbid diseases like diabetes and hypertension and availability of products to enhance infection prevention control such as running water, soap, hand sanitisers, and gloves.

Conclusions: HCWs in all health facilities need continuous training, as COVID-19 evolves. There is a need for supply of quality well-fitting PPE, more rapid test kits and a sufficient supply of medication for comorbid diseases will also aid in ensuring a reduction in transmission of COVID-19 in facilities.

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### Exploring COVID-19 risks in Ghana, Cameroon, and Malawi

Nathanael Ojong<sup>1</sup>, Eyram Agbe<sup>1</sup>

<sup>1</sup>York University, Canada

Extensive immunisation plays a critical role in preventing, containing, and stopping transmission of COVID-19, and the success of extensive immunisation hinges on individual acceptance of these approved vaccines. However, in several African countries, people's reluctance to receive the recommended vaccines remains a major concern. This paper uses a qualitative research approach that included 144 semi-structured interviews to investigate the ways people in Ghana, Malawi, and Cameroon construct and understand risk related to COVID-19 and recommended vaccines. Using the concept of risks, our Findings bring to the fore an alternative geographical understanding of COVID-19 viral spread and COVID-19 vaccines, where spatial, relational, and temporal dimensions of risk are intimately interwoven. Spatiality was important to people's understanding of risk. People's understanding of COVID-19 viral spread and COVID-19 vaccine risks was tied to specific sites and landscapes. The Findings show that vaccine safety goes beyond clinical and regulatory authority approvals; it encompasses forces which are socio-spatial in nature. Additionally, our Findings highlight how power relations are manifested at macro- and micro-structures and operate through different channels to influence COVID-19 vaccine acceptance and rejection. We contend that the multiple manifestations of power relations have implications regarding the individualisation of risk. In some situations, people manifest autonomy regarding managing risk and in other cases that autonomy is challenged through macro and micro power structures. Promoting COVID-19 vaccine uptake requires understanding the socio-spatial perceptions of risk. An in-depth understanding of localised perceptions of COVID-19, including COVID-19 vaccines, leads to contextualised and local public health responses to tackle the current pandemic and future ones.

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### Multidisciplinary rehabilitation in intensive care for COVID-19 - a randomized controlled trial

Ana Carvalho<sup>1,2</sup>, Pedro Cantista<sup>2,3</sup>, Catarina Branco<sup>4</sup>, Bruno Guimarães<sup>4</sup>

<sup>1</sup>Unidade de Saúde Pública Porto Oriental, Portugal, <sup>2</sup>Instituto de Ciências Biomédicas Abel Salazar, Portugal, <sup>3</sup>Centro Hospitalar Universitário do Porto, Portugal, <sup>4</sup>Centro Hospitalar Entre Douro e Vouga, Portugal

Background and Objective: The coronavirus disease 2019 (COVID-19) has led to an increasing number of patients in the intensive care units (ICU). The size of this post-ICU cohort will be unprecedented, with many patients vulnerable to post-intensive care syndrome. PICS is recognized as a growing public health burden due to the associated neuropsychological and functional disability, and the evidence suggests that the prevention from ICU admission is more important and effective than intensive treatment of PCIS following ICU discharge. The objective of this study was to analyze the respiratory and functional effects of a rehabilitation program on functional performance, in patients hospitalized in ICU due to COVID-19. Methods: We conducted a randomized controlled clinical trial. Ninety-six patients, who fulfilled the eligible criteria, were randomized into control or intervention group. The control group received standard of care in the ICU, and the intervention group received a functional and respiratory rehabilitation protocol, that included medical, nursing, physiotherapy, and occupational therapy interventions.

Results: At discharge, the intervention group showed significantly better muscular strength and respiratory capacity, and significantly less days of hospitalization (12.90±5.8 vs 15.60±6.7 days, P=0.037). At the 4- and 12-week follow-up we applied our main outcome measure – 6-minute walking test. The intervention group had significantly better Results than the control group on the 6-minute walking test at the 4-week follow-up (604±67 vs 571±57 m, P=0.018) and at the 12-week follow-up (639±53 vs 611±67, P=0.025). Conclusions: These results support the role of a multidisciplinary rehabilitation program in COVID-19 patients hospitalized in ICU and adds evidence that the implementation of rehabilitation programs in ICU could Results in beneficial outcomes for the critical ill patients.

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### Assessment of the usability of SARS-CoV-2 self-tests in a peer-assisted model among factory workers in Bengaluru, India

Meghana Pydi<sup>1</sup>, Neha Parikh<sup>2</sup>

<sup>1</sup>Swasti Health Catalyst, Bengaluru, India, <sup>2</sup>Swasti Health Catalyst, Karnataka, India

Background: The covid-19 pandemic exacerbated inequities in healthcare for vulnerable populations and exposed structural gaps in the health system in India.

During the pandemics peak, access to quick, accurate, and affordable testing method was scarce due to overburdened public and private testing centers. Self-testing kits for home-based use for detecting the sars-cov-2 virus were introduced as a tool to bridge the gaps of conventional testing. This study aimed to determine the usability of SARS-COV-2 self-tests in a peer-assisted model among factory workers in Bengaluru, India. Methods: This mixed-method cross-sectional study of 106 factory workers in Bengaluru, India evaluated the usability of a nasal sampling-based covid-19 antigen self-test kit (PANBIO™) in a peer-assisted model from February to March 2022. An observer used a product-specific usability checklist consisting of critical and non-critical steps in the IFU to record the usability of the test kit and the mobile application as the participant performed the test with peer assistance.

Results: the average usability score of the test kit was 80.69% and the average usability score for uploading results through the mobile application was 34.01%. 82.07% of the participants correctly interpreted pictures of positive results with 62.0% of participants being confident in performing and interpreting the test with the assistance of a peer. Whereas, 43.9% of participants were confident in performing and interpreting the test on their own suggesting that peer assistance is a key determinant for the usability of self-tests in marginalized populations. Conclusions: Results of the usability and acceptability study suggest that a nasal sampling-based self-testing kit for covid-19 shows overall moderate to high levels of usability and high levels of acceptability in a peer-assisted workplace testing model. Determining the feasibility of implementing this model at scale is the next step to inform and advocate for other workplace self-testing programs for vulnerable populations.

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### Inflammatory markers and hematologic indices in the prediction of severity of COVID-19: a single center study in Southern Philippines

Meccar Elino<sup>1</sup>, Michael Pecaoco<sup>1</sup>

<sup>1</sup>Department of Health, Southern Philippines Medical Center, Davao City, Philippines

Various diagnostic tests across COVID-19 literatures were employed as surrogate markers in COVID-19, wherein interleukin-6 (IL-6) – gauge for cytokine storm or impending severity – is not readily available on third world countries particularly Philippines. This study determined the clinical value of inflammatory markers and hematologic indices as warning indicators in the prediction of severity of COVID-19 infection. Cut-off values were also determined. Methods: Demographics, baseline inflammatory markers and hematologic indices were retrieved from the database covering April-December 2020 as a single-center retrospective cohort. Univariate, Multivariate, and Receiver Operator Characteristic analyses were done. There were 1,368 patients: 845 nonsevere cases (61.77%) and 523 severe cases (38.23%). Diabetes, hypertension, leukemia, cancer, cardiovascular disease, chronic lung disease, liver disease and chronic kidney disease are seen more in severe group. HIV did not establish significant difference between two groups. Markers C-reactive protein (CRP), lactate dehydrogenase (LDH), ferritin & procalcitonin; and indices neutrophil-to-lymphocyte ratio (NLR), fibrinogen, & D-dimer are significantly higher in severe group. Diabetes (OR 2.19, 95% CI 1.01-4.76 p<0.05) and cancer (OR 4.58, 95% CI 1.24-4.76 p<0.05) emerged as potent independent risk factors for COVID severity. CRP (OR 1.24, 95% CI 1.12-1.37 p<0.05), LDH (OR 1.02, 95% CI 1.001-1.004 p<0.05), and ferritin (OR 1.004, 0.998-1.009 p<0.05) show the highest predictive value in developing severe COVID-19. Optimal cut-off values predictive of severity were determined more than 1.85 mg/dL for CRP (79% Sensitivity, 84% Specificity), more than 644.85 U/L for LDH (78.7% Sensitivity, 81.6% Specificity), and more than 621.4 ng/mL for ferritin (71.3% Sensitivity, 74.8% Specificity). Nonsevere cases with diabetes, cancer, and high levels of CRP (>1.85 mg/dL), LDH (>644.85 U/L), and ferritin (>621.4 ng/mL) have high predilection to become severe or O2-requiring in the course of infection. Utmost caution and monitoring at the onset are warranted.

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### Hand Hygiene (HH) pre and post-SARS-CoV2 pandemic: What are we missing?

Valeria Reynolds-Cortez<sup>1</sup>, Maria Haro<sup>2</sup>, Maria Carralero-Palomero<sup>3,4</sup>, Mar Gomez-Santillana<sup>5,6</sup>, Edgar Silva-Contreras<sup>5,6</sup>

<sup>1</sup>Servicio de Salud de Castilla-La Mancha (SESCAM), Spain, <sup>2</sup>Hospital Virgen de la Luz, SESCAM, Cuenca, Spain, <sup>3</sup>Servicio de Salud de Castilla - La Mancha (SESCAM), Spain, <sup>4</sup>Hospital Virgen de la Luz, Spain, <sup>5</sup>SESCAM, Spain, <sup>6</sup>Hospital Virgen De La Luz, Spain

Healthcare-associated infections (HAIs) are a public health problem. Many of the HAIs are preventable by following the 5 Moments for HH from WHO. We compared the degree of compliance of HH(DCHH) and the consumption of alcohol-based solutions (ABS) in our hospital in the years 2017-2019 (pre-pandemic) and 2021 (post-pandemic). The observation of DCHH was carried out annually from 2017-2021 according to the WHO methodology; with the exception of 2020 due to the pandemic. ABS consumption is reported by the purchasing department and is an indirect indicator of the DCHH. The variables studied are: Consumption of ABS in liters x 1000/Patient Days per year (LPP); Number of HH actions observed (HAO) x 100/Number of HH opportunities observed per year for each of the 5 moments from WHO. For the analysis we used the program SPSS 24.0, x2 or t-student with [IC95] and p<0.05. In 2017, LPP was 11.9% (925200/77227); overall HAO 31.8% (84 actions/264 opportunities); Indication 1(I1) 28.3%(30/106); Indication 2(I2) 14.7% (5/34) Indication 3(I3) 11.1%(2/18); Indication 4-5(I4-5) 44.3%(47/106). 2018: LPP was 44.2% (3376600/76475), overall HAO 48.2%(370/768); I1 41.9%(136/325); I2 56.4%(22/39); I3 56.9%(45/79); I4-5 51.4%(167/325). 2019: LPP was 12.5%(839487/67153); overall HAO 31.5%(218/692); I1 25.0%(73/292); I2 6.5%(2/31); I3 2.6%(2/77); I4-5 48.3%(141/292). 2021: LPP was 9.5%(669580/70161); overall HAO 38.5%(119/309); I1 27.8%(27/97); I2 18.6%(11/59); I3 39.3%(22/56); I4-5 60.8%(59/97). LPP from 2017-2019 was 23.2%(5141287/220855) vs. 2021's 9.5%(669580/70161). For the year 2021, the global HAO RR 0.9[0.5-1.2] p =0.8; I1 RR 0.8[0.5-1.2] p =0.3; I2 RR 0.7[0.9-2.2] p=0.2; I3 RR 1.4[0.9-2.2] p=0.1; I4-5 RR 1.5[1.1-2.2] p<0.05. LPP for 2021 was lower (9.5%) than in pre-pandemic years (23.2%). The I4-5 was significant. Healthcare workers appear to perceive the potential risk of cross-transmission only after making contact with the patient, or perhaps their actions are based on self-protection. It is essential to continue training in HH in favor of patient safety.

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### Loneliness across the COVID-19 Pandemic: an Irish cohort study.

Joanna Power<sup>1</sup>, Philip Hyland<sup>1</sup>, Michael Daly<sup>2</sup>

<sup>1</sup>Department of Psychology, Maynooth University, Maynooth, Ireland,

<sup>2</sup>Department of Psychology, Maynooth University, Maynooth, Republic of Ireland

Background and Objectives: Loneliness and existential loneliness are undesirable states which may have been inflated during the COVID-19 pandemic across the population. The Objective was to assess trajectory of loneliness among Irish adults during the COVID-19 pandemic, predictors of baseline and changes in loneliness over time, and to evaluate existential loneliness towards the end of the pandemic, and its correlates.

Methods: Longitudinal panel data were gathered from 1041 participants aged 18-80 from 31st March 2020 across four waves. Latent growth models in a structural equation modelling context were used to evaluate change in loneliness over time. A separate structural equation model was used to evaluate correlates of existential loneliness.

Results: At a group level there was little change in loneliness over time (estimate = 0.04) and participants were on average moderately lonely at baseline (intercept estimate = 1.62). At baseline loneliness was associated with: being younger, not being in a relationship, being employed in healthcare, lower levels of neighbourhood belongingness, social contact from family, and higher levels of depression. Change in loneliness was associated with: being employed in healthcare (negative change, possibly regression to mean), and depression levels (negative change, again likely regression to mean). Existential loneliness was associated, cross-sectionally, with loneliness (beta = .46), depression (beta = .31), sex (beta = -.134), age (beta = -.19), relationship status (beta = .14), and empathy (beta = -.151).

Conclusions: We describe correlates of loneliness in the first Irish lockdown of 2020, as well as predictors of changes in loneliness across the pandemic, and correlates of existential loneliness at a later stage in the pandemic. Results indicate that those working in healthcare in particular had highest levels of loneliness during the first lockdown. Results are discussed in the context of potentially informative theoretical frameworks of loneliness.

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### Characteristics and outcomes of COVID-19 among people living with HIV at Eka Kotebe General Hospital, Addis Ababa, Ethiopia Nebiyat Ahmed<sup>1</sup>

<sup>1</sup>Department of Internal Medicine, Eka Kotebe General Hospital, Ethiopia

Introduction: Evidences about the interplay between HIV and COVID-19 are not entirely consistent.

**Objectives:** Compare the adverse outcomes of COVID-19 among people living with and without HIV/AIDS and explore factors that determine outcomes. **Methods:** We conducted a retrospective cohort study on medical records of patients who had a positive RT-PCR for COVID-19 and were admitted to Eka Kotebe General Hospital from March 2020 to October 2021.

**Results:** Four hundred twenty-seven, 108 exposed (people living with HIV/AIDS) and 319 non-exposed (people without HIV/AIDS) were included in the study. The median age for PLWH and people without HIV was 49.5 (40–59) and 48 (32–65) respectively. Of those, 258 (60.4%) were male. There were significant differences between PLWH and people without HIV in terms of age, TB, pregnancy, chronic liver disease, complications, shock, WBC count, and end outcome (alive or dead). There was no association between HIV status and the need for oxygen, ICU admission, and disease severity. After adjusting for other variables, mortality was significantly higher among PLWH (AOR = 2.25, 95% CI 1.11-5.56,  $p=0.023$ ). **Conclusions:** PLWH with COVID-19 have a higher rate of in-hospital mortality than people without HIV, although there was no association between HIV status and the requirement for ICU admission, mechanical ventilation, oxygen support, or the severity of the disease at the time of admission.

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### Social connectedness and emotional health during the COVID-19 pandemic: a population-based latent profile analysis examining changes in connectedness and emotional health among adolescents in British Columbia, Canada

Eva Oberle<sup>1</sup>, Maram Livermore<sup>1</sup>, Tonje Molyneux<sup>1</sup>, Ryan Ji<sup>1</sup>

<sup>1</sup>The University of British Columbia, Canada

This study examined profiles of social connectedness among early adolescents in grade 7 before the COVID-19 pandemic was declared (Winter 2020), and again in grade 8 during the second Wave of the pandemic (Winter 2021), applying a person-centered approach. Linked data from 1753 early adolescents (49% female) from British Columbia (BC), Canada who completed the Middle Years Development Instrument (MDI) survey in grade 7 and 8 were used. Elementary and middle schools in the province of BC were open for in-person instruction during the 2021 school year. Students reported on positive (life satisfaction) and negative (depressive symptoms) mental wellbeing indicators and connectedness with peers, and adults at home, school and in the community. Latent Profile Analysis was performed to identify profiles of connectedness for students in grades 7 and 8. Latent Transition Analysis was performed to examine transitions in connectedness profiles from grade 7 to grade 8. Multiple regression analyses examined the associations between profile membership in grade 7 and mental wellbeing in grade 8. Further analysis examined the association between transitions in profile membership between grades 7 and 8 (i.e., increases versus decreases in connectedness over time) and mental wellbeing in grade 8. We found that connectedness in multiple domains in grade 7 was related to significantly higher levels of mental wellbeing in grade 8, controlling for early adolescents' demographic Background, wellbeing in grade 7, and COVID-related mental health worries. Wellbeing was highest for those who felt highly connected in all domains and lowest for those who felt consistently lower levels of connection. Profile membership was relatively stable over the two time points. However, for those who transitioned to a different connectedness profile, increases in connectedness were related to improvements in mental wellbeing and decreases were related to a decline in wellbeing over time.

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### Strength of community engagement in controlling and preventing COVID-19 in a highly vulnerable Māori populated region in New Zealand

Anura Jayasinghe<sup>1</sup>, Hine Moeke-Murray<sup>2</sup>

<sup>1</sup>Health New Zealand, Tairāwhiti, Gisborne, New Zealand, <sup>2</sup>Te Kupenga Net Trust, New Zealand

**Background and objectives:** Tairāwhiti district in New Zealand has a unique demographic and geographic makeup in which Māori represent 53% of the population and are disproportionately represented in adverse health and social outcomes. In this context, an equitable response was required to ensure all families and communities could access timely support to minimise the impact of COVID-19, despite existing stressors, including comorbidities, economic deprivation and housing stress. The programs primary Objectives are to establish a community-led, clinically partnered and locally structured program to respond to the COVID pandemic, to coordinate responses to reduce the risk of fragmented service to families, and to mitigate community transmission of COVID.

**Methods:** Public Health identified a well-established community organisation

named "Te Kupenga Net Trust" which had already delivered a range of welfare services to indigenous population groups in the region. Representatives of the leading partners engaged with the trust, and the service structure was transformed into a COVID service provider named "Takātū Hub". Public Health and the main co-partners through the Takātū Hub provided welfare, psychosocial support, primary care, testing and isolation.

**Results:** The majority of 16,784 local COVID patients and their families received immediate medical and welfare advice from the service. Tairāwhiti Māori COVID hospitalization rate is remarkably lower (1.8/1000) than the national rate (3.08/1000). This could be related to better community care in Tairāwhiti through this specific programme. This programme generated other positive effects, such as: a new and unique workforce trained with the agility and ability to respond to exceptional circumstances, strengthened relationships between agencies, and shared learnings and successes evident in different parts of the service continuum.

**Conclusions:** This exercise has demonstrated that localised and community-led establishments can be transformed into other health settings in public health crises and provide community support and care to reduce hospitalization.

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### Effects of COVID-19 vaccination type and doses on symptoms and hospitalization of healthcare professionals having SARS-CoV2 infection

Fatma Akcakaya<sup>1</sup>, Bedia Ozyildirim<sup>1</sup>, Sezanur Turkoglu<sup>2</sup>, Ceyda Acar<sup>2</sup>

<sup>1</sup>Department of Public Health, Faculty of Medicine, Bezmialem Vakif University, Türkiye, <sup>2</sup>Department of Public Health, Faculty of Medicine, Bezmialem Vakif University, Turkiye

**Background:**It is an important issue for public health to protect healthcare professionals who are fighting the virus most closely in the COVID-19 pandemic from illness and hospitalization with vaccines. It was aimed to investigate the effects of different types and numbers of vaccines administered for COVID-19 in isolated healthcare professionals in Turkey on symptoms and hospitalization. **Methods :**Between February2021-March2022, questionnaire were applied to healthcare professionals who tested positive for COVID-19 infection, at home or on the first day of the isolation process in the hospital, by telephone interview. The data obtained were evaluated as a retrospective cohort study.

**Results:**71.3%of the people in the study(N=690) were female, mean age was 31.6 ± 8.9 years. 634people(91.9%) said they had at least one dose of vaccine, 150people(21.7%) said they had COVID at least once before our follow-up. 182people(26.4%) who had at least one dose of vaccine received only sinovac vaccine,112people(16.2%) received only biontech vaccine and 293people(42.5%) received both vaccine types. The most common symptoms on the first day of our calls among 690people were nasal discharge/congestion(58.8%), cough(57.0%), musculoskeletal pain(56.5%), sore throat(55.5%) and fever/chills/chills(43.2%). After the diagnosis of COVID-19 14people(2.0%) were hospitalized. Hospitalization was found to be statistically higher in those who were not vaccinated( $p=0.003$ ). The rate of loss of taste and smell and dizziness were found to be statistically higher in the unvaccinated compared to the vaccinated(respectively  $p=0.036,0.032,0.030$ )

**Conclusions:**The high rate of hospitalization, loss of taste and smell, and dizziness in unvaccinated patients is an important indicator of workforce loss in healthcare professionals and poses a serious threat to public health. Giving priority to healthcare professionals in vaccination programs is extremely important for the uninterrupted continuation of health services in future pandemics. The continuation of this study with a larger sample is a significant issue that should be considered in terms of protecting public health.

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### Pediatric COVID-19 population in Tunisia from 2020 to 2022 : clinical characteristics and risk factors of severity

Arwa Neffati<sup>1</sup>, Hela Ghali<sup>2</sup>, Rania Bannour<sup>1</sup>, Sana Bhiri<sup>3</sup>, Aroua Kamel<sup>3</sup>, Emna Hariz<sup>2</sup>, Fatimaezzahra Khouya<sup>3</sup>, Souhir Ayadi<sup>3</sup>, Salwa Kefacha<sup>3</sup>, Asma Cheikh<sup>3</sup>, Houyem Said<sup>3</sup>

<sup>1</sup>Department of Prevention and Safety of Care, Sahloul University Hospital, Sousse, Tunisia, <sup>2</sup>Department of Prevention and Safety of Care, Sahloul University hospital, Sousse, Tunisia, <sup>3</sup>Department of Prevention and Safety of Care, Sahloul university hospital, Sousse, Tunisia

**Background:** Tunisia was one of the countries with the highest COVID-19 mortality worldwide. Although clinical characteristics and risk factors for severe disease in COVID-19 patients have been described in many studies, works on the pediatric population are still scarce. **Objectives:** The aim of our study was to describe

the clinical characteristics of COVID-19 in pediatric patients in a tertiary care center since the start of the pandemic until the end of hospitalization to identify their association to severe forms. Methods: Since the start of the pandemic, the prevention and security of care department has been recording all new cases of COVID-19 hospitalized in the various units in which these patients were hospitalized. Daily monitoring of the evolution of the patient's conditions was provided by the hygienist technicians of our department.

Results: Overall, 180 confirmed COVID-19 pediatric patients have been admitted in our hospital. Most patients were male (51.1%); the median age was 1[1; 8] years. The median length of stay was 3 days [2-8]. Comorbidities were present among 43.9%: renal diseases (13.3%), coronary artery diseases (11.7%) and neurological diseases 6.7%. Most patients had an important degree of hypoxemia, with 12.8% of them requiring supplemental oxygen, and 4.4% needed intubation. The overall case fatality rate was 6.7%. The multivariate analysis revealed Independent risk factors which were: male gender ( $p$ :0.019, OR 1.363, IC [1.053-1.765]); use of nasal cannula ( $p$ =10<sup>-3</sup>; OR: 2.025, IC [1.397-2.933]); optiflow ( $p$ <10<sup>-3</sup>, OR :11.042, IC [6.366-19.155]); noninvasive ventilation ( $p$ <10<sup>-3</sup>,OR 24.14, IC [13.78-42.29]); comorbidities ( $p$ =0.001, 1.733[1.24; 2.42]) such as Hypertension, diabetes( $p$ =0.016,1.44[1.07;1.93]), neurological disorders ( $p$ =0.025; 1.64[1.06; 2.53] and obesity ( $p$ <10<sup>-3</sup>;3.94[1.83;8.45]). Conclusions: identifying these risk factors is of tremendous importance to improve the management of pediatric patients at risk of severe forms and to guide the development of preventive measures.

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### Voices of Society: the emergence and contributions of civil-society practices aiming to engage in COVID-19 management

Sophie Kemper<sup>1</sup>, Renate Broek<sup>2</sup>, Sarah Hameren<sup>3</sup>, Frank Kupper<sup>4</sup>, Marloes Bongers<sup>5,6</sup>, Marion Vries<sup>5,6</sup>, Aura Timen<sup>7</sup>

<sup>1</sup>National Coordination Centre for Communicable Disease Control, National Institute for Public Health and the Environment, Bilthoven, The Netherlands,

<sup>2</sup>National Coordination Centre for Communicable Disease Control, The National Institute for Public Health and the Environment, Bilthoven, The Netherlands, <sup>3</sup>National Coordination Centre for Communicable Disease Control, The National Institute for Public Health and the Environment, Bilthoven, The Netherlands, <sup>4</sup>Athena Institute, Faculty of Science, VU University Amsterdam, Amsterdam, The Netherlands, <sup>5</sup>National Coordination Centre for Communicable Disease Control, National Institute for Public Health and the Environment, The Netherlands, <sup>6</sup>National Centre for Public Health and Environment, The Netherlands, <sup>7</sup>Department of Primary and Community Care, Radboud University Medical Center, Nijmegen, The Netherlands

Background: In COVID-19 management (CM) complex trade-offs are made between health, society, and economy. During the pandemic, parts of the public have mobilized themselves in civil-society engagement practices (CSEPs), to improve or suggest alternative CM-practices. This study explores the motivators to establish CSEPs aiming to influence CM and their perceived contributions to CM, with the main aim to study whether integrating views of CSEPs has added value in CM. Methods: A systematic online search identified eligible CSEPs in the Netherlands. Their corresponding characteristics were mapped based on publicly available information, such as local/national scope, the topic of focus in CM, and the goals CSEPs aimed to achieve. Subsequently, CSEPs were interviewed to collect the motivators to establish and perceived contributions to CM.

Results: Twenty-two CSEPs were identified, of which fourteen were interviewed. Interviewed CSEPs indicated several motivators for establishing; a perceived lack of governmental action, democratic values, and diversity of perspectives in CM, a shortage of equipment and means to help, solidarity to contribute to controlling COVID-19, and differences in views with the government regarding CM Aims. All CSEPs believed to have contributed to policy or society, such as influencing opinions of citizens and persons with decision-making authority, or occasionally altering CM. Moreover, CSEPs encountered obstacles in their attempts to contribute to CM such as not being able to establish contact with authorities, and feeling unheard or undermined during contact. Also, CSEPs indicated that the interplay of political interests complicated their ability to contribute. Conclusions: Overall, CSEPs have fulfilled various roles such as providing ideas, producing equipment and informing. The emergence of CSEPs uncover discrepancies between CM and public views. These insights, together with the identified perceived barriers of CSEPs, can be used to improve the connection between (future) management of pandemics and public priorities and interests.

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### COVID antibodies in patients treated with immune suppressive drugs after 4 doses of vaccination

Jose Alfonso-Sánchez<sup>1</sup>, Luis Lopez-Cerrillo<sup>2</sup>, Paula Julian-Pachés<sup>2</sup>, Andrea Benavides-Hernández<sup>2</sup>, Martina Gimenez-Azagra<sup>2</sup>, José Mayordomo-Sánchez<sup>2</sup>, Isabel Jesús-María<sup>2</sup>, Ignacio Barreira-Hernández<sup>2</sup>, Andrea Agurto-Ramírez<sup>2</sup>, José Martín-Moreno<sup>1</sup>

<sup>1</sup>Universidad de Valencia, Spain, <sup>2</sup>Hospital General Universitario de Valencia, Spain

Introduction: CD20 is a phosphoprotein expressed on the surface of B lymphocytes. Antibody binding to CD20 causes a reduction in the number of CD20+ cells through three mechanisms: antibody-dependent cell-mediated cytotoxicity, complement-mediated cytotoxicity, and induction of B cell apoptosis. Objective: to know the level of covid antibodies produced in immunosuppressed patients with anti-CD20 drugs after their 4 doses of covid-19 vaccine. Material and Methods: A group of patients with autoimmune pathologies was obtained with inclusion criteria (being in conditions of immunosuppression or autoimmune disease, being able to control them for antibodies, knowing their basic characteristics) and exclusion criteria (lost patients). In the end, 447 patients were included. Variables studied Ac of covid (Quant), age in years, sex, drug, treatment time.

Results: In the final analysis of the results, the mean age was 63 years, being somewhat higher in men than in women, and the mean of Ac of covid was 243. In the multiple regression taking the number of antibodies as the dependent variable, the significant variables were: the treatment time coefficient 2.47 (1.5-3.2), and the age of the patients with 1.9 (1.3-2.8). The interactions between the different variables were not significant. Conclusions: The factors that conditioned the level of antibody response in covid-19 vaccination in this type of patient were the time of treatment and age. Keywords: covid vaccination, antibodies, immunosuppression

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### Perspectives on future of healthcare worker in post-COVID-19 Era: a comparative study of Eastern Europe and Middle Eastern economics concerning healthcare workers

Yousif Khattee<sup>1</sup>

<sup>1</sup>Azadi Public Hospital, Iraq

The healthcare landscape in many countries around the world has failed to change quickly to respond to the necessities of the COVID-19 pandemic. Meanwhile, the demand for healthcare services during the pandemic has plunged rapidly and government responses were limited to the healthcare system, the human labor in the healthcare system, healthcare infrastructure, and government financial contribution prior COVID-19 and the government preparedness for pandemics. COVID-19 has been a serious challenge for the global markets and for labor in all sectors, however, the healthcare worker have had many difficult and serious challenges including encountering COVID-19 with limited information on this contagious virus, dealing with the infected patients, dealing with their family needs and running hospitals and healthcare centers to assure required healthcare services are delivered properly. For healthcare workers hospitals impose mandatory work at healthcare locations, while for many other organizations and institutions a new trend of working remote or online from home was practiced. The sudden switch to work in hospitals and in COVID-19 centers has created fear even for healthcare workers to expose to the threat directly because when healthcare workers were infected hospitals did not have enough capacity to even take care to their workers. The sample of this study will focus on Easter European economics while compare them to the Middle Easter economics, the healthcare workers in both regions as the two case studies will be analyzed. The study is guided by few essential questions are: to what extend healthcare workers got supported to avoid them encounter serious financial difficulties during the COVID-19 pandemic? Links:-----[1] [http://events.decorporate.ca/#FTN1\[2\]](http://events.decorporate.ca/#FTN1[2]) <http://events.decorporate.ca/#ftnref1>

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### Compliance to health risk warning in notification of COVID-19 close contacts of exposure and Self-monitoring requirements

Si Chong<sup>1</sup>, Benjamin Seah<sup>1</sup>, Andrea Lim<sup>1</sup>, Xin Chong<sup>1</sup>, Peter Law<sup>1</sup>, Joan Lee<sup>1</sup>

<sup>1</sup>Ministry of Health, Singapore

Aim: We aim to describe the overall compliance rates in the electronic acknowledgement of HRW notification receipt and submission of ART results and its contribution to effective pandemic management. Methodology and Results: Based on electronic records held centrally. From 1 Nov 21 to 31 Jan 22, a total of 435,398 Health Risk Warning (HRW) notifications were sent via SMS to close contacts of COVID-19 cases. 95.56% of the intended recipients

acknowledged receipt electronically and 95.04% of the pHRWs submitted ART results electronically. We noted a statistically significant difference between the proportions of those aged <60 years old and those aged ≥60 years, in terms of electronic acknowledgement and ART result submission compliance rates. Discussion: Plausible explanations for the trend observed include a relatively higher proportion of the elderly being non-conversant in the English language or who had a lower level of digital literacy. Those living alone and/or who were socially isolated during the pandemic may have experienced difficulties obtaining assistance in terms of interpreting and responding to these electronic messages. Given the widespread acceptability of SMSs as an electronic means to quickly notify close contacts of all ages, their exposure and prescribed public health actions, we are of the opinion that it is a valuable tool and should be used for future pandemics in populations characterised by a high level of social responsibility and high mobile phone penetration rate. However, particular attention should be paid to individuals aged 81 to 85 years old and in the adjacent age bands as they were noted to be characterised by low acknowledgement and compliance rates, presumably due to lower IT literacy and limited accessibility to electronic devices.

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### Young people's guide to the COVID galaxy: preferences for COVID-19 research communication

Caitlin Douglass<sup>1</sup>, Merryn Roe<sup>2</sup>, Lindi Masson<sup>2</sup>, Felicia Schlotthauer<sup>2</sup>, Zay Swe<sup>3</sup>, Stephanie Main<sup>2</sup>, Megan Lim<sup>2</sup>, Michelle Raggatt<sup>2</sup>

<sup>1</sup>Burnet Institute, Melbourne, Australia, <sup>2</sup>Burnet Institute, Australia, <sup>3</sup>Burnet Institute, Burma (Myanmar)

**Background and Objective:** Research communication is critical for raising awareness of COVID-19 prevention measures and optimising public health responses. However, research is often communicated in ways that exclude participants, including young people. This study aimed to understand young people's preferences for COVID-19 research communication in Australia. **Methods:** In February 2022, we conducted four online Zoom workshops with two groups of young people aged 18-22 years. Workshops went for two hours each and involved activities where participants could contribute ideas through verbal discussion and text, pictures and drawings on a virtual whiteboard. Workshop one focused on building relationships between participants and researchers and developing skills to ask open ended questions. Workshop two explored perceptions of existing research communication. Workshop three explored young people's ideas for communicating COVID-19 research and workshop four involved generating recommendations. Data including transcripts and whiteboard materials, were entered into NVivo and thematically analysed.

**Results:** Nine young people participated in the workshops (3 female, 3 male and 3 non-binary). Participants expressed the need to communicate research relevant to their experiences, including the challenges they faced throughout the pandemic and their positive contributions to society. Although participants trusted evidence communicated by reputable organisations, they identified an opportunity for young people to collaborate with researchers to produce authentic and relatable content. Young people appreciated when researchers highlighted their most important Findings using clear visuals, animations, infographics and humour. Given the overwhelming amount of COVID-19 information, research needed to be accessible and integrated into platforms young people were already using, such as short videos on TikTok and Instagram.

**Conclusions:** Findings suggest there are opportunities to make COVID-19 research communication more relevant for young people by incorporating their experiences and ideas. Further studies where researchers partner with young people are needed to develop and test content using social media.

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### Severe acute respiratory syndrome coronavirus 2 (SARS-Cov-2) infection in household contacts and related factors during the first and second waves of the COVID-19 pandemic in Chile: a longitudinal cohort study

Cintha Urquidí<sup>1</sup>, Víctor Rebolledo<sup>2</sup>, Alejandra Chaparro<sup>2</sup>, Ileana Gonzalez<sup>3</sup>, Fernando Delgado<sup>3</sup>, Ornella Realini<sup>4</sup>, María Valenzuela<sup>1</sup>, Maximiliano Ventura<sup>5</sup>, Claudia Brizuela<sup>6</sup>, Felipe Reyes-López<sup>7</sup>, Ana Sandino<sup>7</sup>

<sup>1</sup>Facultad de Medicina, Universidad de los Andes, Santiago, Chile,

<sup>2</sup>Universidad de los Andes, Santiago, Chile, <sup>3</sup>Biomedical Research

Labs, Catholic University of Maule, Talca, Chile, <sup>4</sup>Centre for Biomedical

Research and Innovation (CIIB), Universidad de los Andes, Santiago, Chile,

<sup>5</sup>Department of Infectology, Clínica Dávila, Santiago, Chile, <sup>6</sup>Department

of Conservative Dentistry, Endodontics, Faculty of Dentistry, Clínica

Universidad de Los Andes, Santiago, Chile, <sup>7</sup>Department of Biology, Faculty of Chemistry and Biology, Universidad de Santiago de Chile, Chile

**Background:** Households are the high-risk setting for SARS-CoV-2 transmission, especially for close and prolonged person-to-person contact. However, the role of household structural and clinical factors, especially angiotensin-converting enzyme 2 (ACE2), is scarce studied. We analyzed the household SARS-CoV-2 infection during the first and second waves of the COVID-19 outbreak and associated factors in household contacts. **Methods:** We conducted a prospective cohort study of 109 household clusters with a 60-day follow-up (109 index cases and 248 household contacts) in a selected population in Santiago de Chile. Home interviewers measured: compliance with non-pharmaceutical interventions, household structures, symptoms questionnaire; comorbidities and periodontal condition self-report; and saliva samples and nasopharyngeal swabs for ACE2 and SARS-CoV-2 viral load determination. The secondary attack rate (SAR) of SARS-CoV-2 risk factors was assessed using Poisson random-mixed models. Incidence Rate Ratios (IRR) and p-values are reported.

**Results:** The baseline SAR in household contacts was 0.478 (within household variations of 0.03) and 0.488 at the end of the follow-up. Of infected households, 13.6% of contacts were asymptomatic at baseline 23.7% and 12.7% at 7-day and 14-day follow-up, respectively. Infected household contacts were younger (35.9 y vs. 41.1 y, p=0.02), less hypertensive (9.3% vs. 18.5%, p=0.03), and had lower levels of ACE2 (0.04 ng/dl vs. 0.07 ng/dl, p=0.02) than those uninfected. Factors associated with household transmission were a greater number of adult inhabitants (IRR 0.77, p<0.01) and a greater number of rooms (IRR 0.8, p=.003). **Conclusions:** In our study, during a COVID-19 when index cases were enrolled, more than 48% of their household contacts were already infected. The composition and structure of the home play an essential role in preventing household SARS-CoV-2 transmission. The ACE2 levels may play an important role in household contacts, but further studies are needed.

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### Hospital hand hygiene after COVID-19: has the pandemic heightened healthcare workers' awareness?

Margherita Zeduri<sup>1</sup>, Alice Sgueglia<sup>1</sup>, Giacomo Vigezzi<sup>1</sup>, Marina Lanave<sup>2</sup>, Rebecca Galvi<sup>2</sup>, Alba Muzzi<sup>2</sup>, Anna Odone<sup>1</sup>

<sup>1</sup>Department of Public Health, Università degli Studi di Pavia, Pavia, Italy,

<sup>2</sup>Medical Direction, Fondazione IRCCS Policlinico San Matteo, Pavia, Italy

**Hand hygiene (HH)** is the most effective, low-cost measure for preventing transmission of healthcare-associated infections (HAI), and a cornerstone to COVID-19 prevention. Aim of this study is to assess Healthcare Workers' (HCW) adherence to WHO optimal practices, in order to promote a culture of safety and quality infection prevention and control (IPC) activities. Fondazione IRCCS Policlinico San Matteo, Pavia (Italy), implemented a monitoring plan in which HCWs' adherence to HH procedures was evaluated using WHO's 5 moments guidelines, technical manual and observation form. Direct field observations by trained personnel took place from March to October 2022. Process index was HH adherence, stratified by profession, opportunity and unit, with each being inspected at least twice. Overall, 953 HCWs were observed within 18 hospital units (334 physicians, 375 nurses, 190 healthcare assistants, 25 students). Out of 4245 opportunities, global adherence was 52% with 606 handwashings and 1605 handrubblings. The indication with the highest adherence was "after body fluid exposure risk" (69%), whereas the lowest were "before touching a patient" (43%) and "after touching the patient's setting" (44%). Adherence was higher in specialistic surgeries and haematology units, while the worst performances were reported in general surgery ward (33%). Physicians' and nurses' adherence was respectively 46% and 60%. Audits occasionally revealed non-conformities in glove use (i.e., unnecessary use, not changed between patients, hand rubbing on gloves). These findings could be directly linked to habits acquired during the pandemic, when HCWs tended to consider COVID-19 patients as a whole block, to shield themselves from infections. HH awareness has changed in the wake of the pandemic and our study reports how specific initiatives are needed to promote correct HH and optimal practices among HCWs. Therefore, the COVID-19 pandemic reinforced the importance of handwashing and IPC, showing the key role of the HCWs' adherence to HH procedures.

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### Mitigating the psychological impact of COVID-19 on care givers at Dodoma Municipality, Tanzania

Yohana Mirinde<sup>1</sup>

<sup>1</sup>Sekoutoure Regional Referral Hospital, University of Dodoma, Mwanza,

**Tanzania**

Background: COVID-2019 outbreak started at Wuhan city in China, December 2019. On January, 2020 WHO declared it as, public health emergency and upon projection Sub-Saharan Africa was expected to see high number of deaths by 2020, because of poor and limited healthcare systems. In Tanzania by June 2020 there were 509 reported cases and 21 deaths from COVID-19 infection, among all reported cases were in cities. Since COVID-19 pandemic psychological impact was still unclear therefore understanding the psychological burden of the COVID-19 pandemic among caregivers is crucial in guiding policies and interventions to maintain their psychological well-being. Study Objective is to assess the psychological impact of COVID -19 on care givers of Dodoma Municipality in Tanzania. Methods: A cross-sectional study design were used, random sampling and purposeful sampling for select participants employed. The study established a brief, confidential, self-administered questionnaire containing DASS-21 (Depression, Anxiety, and Stress Scales) designed enquiry, in software data collector (KoBo toolbox), data analyzed by IBM SPSS software version 23.

Results: The current study employed a sample of 246 Dodoma residents' adults caregivers of COVID-19 patients, which found that psychological impact experienced by caregivers were commonly, anxiety, stress and depression was 83.7%, 76.4% 67.5 respectively, and peaking among nurses and family care givers, serving the frontline at hospital and quarantine center of COVID-19 patients. Mitigation of psychological burden, were achieved through taking precautionary measure of COVID-19, clear disease information, psychological support from family member, fellow staff and hospital managements, vaccination and least religious conviction. Conclusions: Generally, psychological burden has increased in COVID-19 caregivers, particularly among frontline health care workers, this may increase the risk of mood, sleep and functional disorders, therefore early psychotherapeutic interventions targeting this vulnerable group may be beneficial.

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### **Caring for Long COVID patients in primary health care: a cross-sectional study among general practitioners in Belgium and Malta**

Sarah Moreels<sup>1</sup>, Sarah Cuschieri<sup>2</sup>, Sherihane Bensemmane<sup>3</sup>, Robrecht Schreye<sup>3</sup>

<sup>1</sup>Epidemiology and Public Health, Sciensano, Brussels, Belgium, <sup>2</sup>Department of Anatomy, Faculty of Medicine and Surgery, University of Malta, Msida, Malta, <sup>3</sup>Epidemiology and Public Health- Sciensano, Brussels, Belgium

Background and Objective: At least 10% of COVID-19 recovered individuals experience persistent symptoms (Long COVID), with primary health care and general practitioners (GPs) at forefront in their care. In this study, GPs' knowledge, perception and experience on Long COVID, and the definition used across two countries are investigated to provide insight in their care at cross-country level.

Methods: A cross-sectional study targeting GPs was conducted in Belgium and Malta during mid-2022. An online survey on Long COVID was disseminated. Country-specific practice and demographic characteristics were collected. Descriptive and logistic regression analyses were performed.

Results: A total of 150 GPs (Belgium=105; Malta=45) responded. Female GPs represented 58.0%, median age was 49 years (IQR: 37-61). In both countries, two in three GPs felt that Long COVID patients were not well followed up by primary care. Most GPs reported insufficient scientific knowledge and information on Long COVID diagnosis and treatment. Accessibility to educational material was limited and an awareness-rising campaign is merited, especially in Malta (OR=6.81, 95%CI [1.49;31.12]). For diagnosing Long COVID, 54.7% reported the requirement of a positive COVID-19 test, especially among Belgian than Maltese GPs (64.3% vs 45.2%, p=0.036). To assess Long COVID, GPs mainly implemented diagnostic criteria by themselves (47.3%) together with persistence of symptoms (4 weeks to 5 months). 76.0% GPs reported caring for Long COVID patients, irrespective of practice type and GPs' country, sex or age (p=0.353; p=0.241; p=0.194; p=0.058). 48.3% of GPs reported to follow-up these patients by themselves or GP colleagues and 29.8% by multidisciplinary cooperation.

Conclusions: At cross-country level, most GPs provide similar (multidisciplinary) care to Long COVID patients. Although GPs perceive lack of scientific knowledge and training on Long COVID, similar diagnostic criteria were noted. Uniform guidelines, scientific support and training for GPs across Europe is a priority to augment their Long COVID approach.

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### **COVID-19 pandemic on public health systems and practice in 3 districts from the perspective of public health leaders: a qualitative study in Uganda**

**Nalwoga Aminah<sup>1</sup>**

<sup>1</sup>Joint Clinical Research Center, Save A Life Foundation, Kampala, Uganda

The COVID-19 pandemic has impacted health systems worldwide. Studies to date have largely focused on the health care system with less attention to the impact on public health systems and practice.

Objective: To describe the early impacts of COVID-19 on public health systems and practice in 3 Ugandan districts from the perspective of public health system leaders and synthesize lessons learned.

Design: A qualitative study using semi structured virtual interviews with public health leaders between October 2020 and April 2021. The World Health Organizations essential public health operations framework guided data collection and analysis.

Setting: This study involved the Ugandan government. These districts were chosen for their large populations, relatively high COVID-19 burden, and variation in public health systems.

Participants: Public health leaders from Kampala (n = 21), Wakiso (n = 18), and Mubende (n = 19) in organizations with a primary mandate of stewardship and/or administration of essential public health operations (total n = 58).

Results: We found that the COVID-19 pandemic led to intensified collaboration in public health systems and a change in workforce capacity to respond to the pandemic. This came with opportunities but also challenges of burnout and disruption of non-COVID-19 services. Information systems and digital technologies were increasingly used and there was greater proximity between public health leaders and other health system leaders. A renewed recognition for public health work was also highlighted.

Conclusions: The COVID-19 pandemic impacted several aspects of public health systems in the provinces studied. Our findings can help public health leaders and policy makers identify areas for further investment (eg, intersectoral collaboration, information systems) and develop plans to address challenges (eg, disrupted services, workforce burnout) that have surfaced.

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### **Impact of COVID-19 vaccination on mortality from COVID-19 severe acute respiratory syndrome (SRAG-COVID) in Brazilian municipalities in 2021**

Rômulo Paes-Sousa<sup>1</sup>, Gabriela Silva<sup>2</sup>, Mônica Castro<sup>2</sup>, Anelise Souza<sup>3</sup>, Gustavo Fernandes<sup>4</sup>

<sup>1</sup>Brazil, <sup>2</sup>René Rachou Institute, Oswaldo Cruz Foundation, Brazil, <sup>3</sup>Federal University of Ouro Preto, Brazil, <sup>4</sup>Fiocruz, Brazil

Background and Objective: During the COVID-19 pandemic, Brazil had difficulties in carrying out a timely vaccination campaign throughout its territory, already marked by strong social and health inequalities. The combination of vaccination of delay and structural inequality produced a heterogeneous vaccine coverage across the country. This work Aims to evaluate the differences in the impact of COVID-19 vaccination by on mortality due to COVID-19 severe acute respiratory syndrome (SRAG-COVID) in the country municipalities. In 2022, the initial difficulties on providing adequate vaccination coverage were overpassed.

Methods: Ecological study from January to December 2021, with monthly data from 200 Brazilian municipalities in five Brazilian regions with at least 25 deaths from COVID-19 in January 2021. A linear regression model was performed for the country and regions, with log-log transformation and fixed effects in the municipality, using SARS-COVID mortality rate standardized by age and sex as the dependent variable, first dose coverage as the independent variable and a significance level of 5%.

Results: The monthly average standardized mortality rate in January 2021 was 33.1 deaths/100,000 inhabitants, being higher in municipalities in the North and Midwest regions. Vaccination started in January 2021 and reached an average first dose coverage of 74.5% in December 2021, when the average mortality rate was 2.2 deaths/100,000 inhabitants, fifteen times lower than January 2021. A 10% increase in vaccination coverage caused an average decrease of 5.6% in the municipalities monthly mortality rate, with a significant effect in all regions, greater in the North (8.7%) and Northeast (6.3%).

Conclusions: Also in Brazil, vaccination was crucial for reducing deaths from COVID-19 and had a greater effect in the poorest regions of Brazil. A homogeneous increase in vaccination coverage, with a timely and well-articulated campaign by the central government, could be an important tool for reducing the country's territorial inequalities.

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### **Knowledge, attitudes, practices and perceptions around SARS**

### CoV rapid antigen self-tests among urban poor communities of Mohammadpur and Bangalore, India

Neha Parikh<sup>1</sup>, Syama Syam<sup>1</sup>, Ravneet Kaur<sup>1</sup>, Angela Chaudhuri<sup>1</sup>, Shankar A.G.<sup>1</sup>

<sup>1</sup>Swasti Health Catalyst, India

**Background and Objectives:** Urban poor are low-income, marginalized communities, particularly at risk of infectious diseases. COVID-19 exposed them to a range of problems that hindered access and utilization of health services perpetuating poor health outcomes and increased transmission. The knowledge and uptake of community-based-testing in vulnerable communities remains difficult, even in long prevailing conditions like HIV, more so for covid-19. Testing alone is insufficient unless it is integrated with the continuum of primary care. Although self-tests are approved for individual use, the feasibility, and acceptability of tests for the disadvantaged remains unclear. This study is aimed to determine the feasibility and acceptability of sars-cov-2 self-testing using a health worker-assisted model among 2 urban slums in India.

**Methods:** A mixed methods study is being conducted (aug- dec 2022) among urban poor in Mohammadpur and Bangalore, where health worker assisted self testing is introduced as part of an ongoing community intervention that provides comprehensive healthcare services.

**Results:** Preliminary findings indicate limited knowledge about self tests in urban poor. Reported uptake of tests was poor at 15%, with reasons of apprehension ranging from ability to complete tests, concerns about results and potential stigma from communities. Self reported willingness to undergo self-testing was high at 91%. Around 77% participants preferred some sort of assistance for conducting the self tests preferring tests to be conducted at existing community institutions. The next round of this study will measure the change in capacities and acceptability of the study at the endline.

**Conclusions:** Conventional covid-19-rtqcr testing presents a huge barrier for urban poor in terms of costs, access, loss of livelihood and stigma. Self tests are empowering, allowing vulnerable individuals control over their health. Results from this intervention will provide learnings for implementation and scale of self-tests bringing relevant findings for point-of-care devices and enable health system preparedness.

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### COVID-19 vaccine hesitancy in Western Balkans

Sanja Matovic-Miljanovic<sup>1</sup>, Smiljana Cvjetkovic<sup>2</sup>, Vida Stojkovic<sup>2</sup>, Stefan Mandic-Rajcevic<sup>3,4</sup>, Janko Jankovic<sup>3,4</sup>, Michele Gross<sup>5</sup>

<sup>1</sup>Euro Health Group A/S, Søborg, Denmark, <sup>2</sup>Department of Humanities, Faculty of Medicine, University of Belgrade, Belgrade, Serbia, <sup>3</sup>Institute of Social Medicine, Belgrade, Serbia, <sup>4</sup>Faculty of Medicine, University of Belgrade, Belgrade, Serbia, <sup>5</sup>Public Health, Euro Health Group A/S, Søborg, Denmark

**Background and Objectives:** The uptake of COVID-19 vaccines in Western Balkan countries is lagging far behind the European Union average, with vaccine hesitancy as a serious threat and reason for the insufficient vaccination coverage and suboptimal herd immunity. Understanding factors that influence vaccine uptake in those countries is critical for development of effective vaccination promotion strategies for Western Balkans.

**Methods:** Cross-sectional research was carried out from July to October 2021. Convenience sampling included 1605 individuals aged 18 and above from Albania, Bosnia and Herzegovina, North Macedonia, Montenegro and Serbia. Online questionnaire was shared through social media.

**Results:** In all countries both vaccinated and unvaccinated respondents consider the vaccine against COVID-19 to be more safe than effective. The most positive attitudes towards COVID-19 vaccine safety are found in North Macedonia (M=3.61, SD=1.17) and Serbia (M=3.50, SD=1.26). Around 40% of respondents believe that pharmaceutical companies are reluctant to publish research reports on risks of adverse reactions to vaccines. Over 70% respondents in Albania and North Macedonia and 66.5% in Montenegro and Bosnia see important role for primary health physicians in educating people on importance of vaccination and consider them as trusted sources of information about COVID-19. Women and those with higher education (Bosnia and Herzegovina, Montenegro and Serbia) manifest a more pronounced personal sense of social responsibility in achieving collective immunity. Respondents who assessed themselves as more religious consider vaccine against COVID-19 as less safe and effective, demonstrate less trust towards societal factors and are less likely to demonstrate social responsibility in the context of vaccine behaviour.

**Conclusions:** Family physicians should have a key role in promoting vaccination and educating public in Western Balkans. Partnerships with representatives of

religious groups and awareness campaigns with focus on young people should be the core of public health interventions addressing vaccine hesitancy in Western Balkans.

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### Analysis of the preparedness for the COVID-19 pandemic in the rural areas of the Bolivian Chaco

Daria Bucci<sup>1</sup>, Vieri Lastrucci<sup>2,3</sup>, Francesco Cosmi<sup>4</sup>, Carlo Signorelli<sup>5,1</sup>, Maria Caldés<sup>6</sup>

<sup>1</sup>School of Medicine, Vita-Salute San Raffaele University, Milan, Italy,

<sup>2</sup>Department of Health Science, University of Florence, Italy, <sup>3</sup>Epidemiology Unit, Meyer Children's University Hospital, Florence, Italy, <sup>4</sup>Convenio de Salud, Camiri, Bolivia, <sup>5</sup>IRCCS San Raffaele Hospital, Milan, Italy, <sup>6</sup>Centro di Salute Globale of Tuscany Region, Meyer Children's University Hospital, Florence, Italy

Public health emergency preparedness is essential to mitigate pandemics effects, especially in low-resource contexts. This retrospective analysis evaluates planning and response capacities, available resources, and care management, among indigenous communities living in rural areas of the Gran Chaco Region of Santa Cruz Department, Bolivia, during the first wave of the COVID-19 pandemic. Authors derived and pooled original data from local databases on positive cases, deaths, tests executed, and vaccination registers. The population was administered two surveys by convenience sampling of healthcare facilities of rural communities insisting in four municipalities of the Province and to heads of communities, accordingly. Data collection period was from May 2022 to June 2022. The first COVID-19 case in the area was recorded on April 17, 2020, and the maximum peak of daily records during the first wave was 113 cases in September 2020. A total of 39 healthcare facilities were surveyed, insisting in 117 communities. Data from the healthcare facilities survey showed that 50% were prepared for the pandemic. Although approximately 85% of the pooled received information from the MoH on the contact tracing methodology, 65% received practical guidance on the clinical management of patients. 58% of the facilities arranged temporary beds, 71% in different locations (e.g. schools). Most facilities were supplied with equipment such as pulse-oximeters (79%), oxygen cylinders (75%), and antibiotics (63%). Only eight per cent of respondents stated the equipment was present before the pandemic began, while 46% received it afterward. 69% of respondents reported unpreparedness for the following wave. Rural communities of the Chaco were largely unprepared and suffering from pre-existing resource challenges for communities' care. Although the first wave arrived six months later than the rest of the world, half of the responders reported an adequate preparedness level, and public policies did not address the region with appropriate interventions.

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### Involving cases and contacts more actively and autonomously in contact tracing through digital tools: a mixed methods investigation among Dutch public health professionals involved in COVID-19 contact tracing

Yannick Helms<sup>1</sup>, Mart Stein<sup>2</sup>, Nora Hamdiui<sup>1</sup>, Akke Meer<sup>1</sup>, Ruth Baron<sup>1</sup>, Renske Eilers<sup>1</sup>, José Ferreira<sup>1</sup>, Rik Crutzen<sup>3</sup>, Aura Timen<sup>4,5</sup>, Mirjam Kretzschmar<sup>6,7</sup>

<sup>1</sup>National Institute for Public Health and the Environment (RIVM), The Netherlands, <sup>2</sup>National Institute for Public Health and the Environment (RIVM), Netherlands, <sup>3</sup>Maastricht University/CAPHRI, The Netherlands, <sup>4</sup>Radboud University Medical Centre, The Netherlands, <sup>5</sup>Radboud University, The Netherlands, <sup>6</sup>Utrecht University Medical Centre, The Netherlands, <sup>7</sup>Julius Center for Health Sciences and Primary Care, The Netherlands

**Background and Objective:** Contact tracing (CT) can be an effective tool to prevent transmission of communicable diseases. However, public health services may not always have sufficient human resources at their disposal to facilitate CT adequately. In the EU-project 'CORESMA', we investigated if and how this may be compensated by involving cases and contacts more actively and autonomously in the identification, notification, and monitoring of contacts through digital tools, from the perspective of Dutch public health professionals (PHPs).

**Methods:** Between November 2020 and April 2022, we conducted interviews (N=17) and distributed an online questionnaire (N=637) among PHPs involved in CT for COVID-19 in the Netherlands. An inductive thematic analysis of the interviews was performed to identify barriers/facilitators influencing PHPs' intention to involve cases and contacts in CT through digital tools. Random forest analyses of the questionnaire data were performed to prioritize the qualitatively identified barriers/facilitators to inform the future development and implementation of

digital tools.

Results: Interviewees were generally open towards more actively and autonomously involving cases and contacts in CT for COVID-19 through digital tools. Most questionnaire respondents had a positive intention to use digital tools for the identification (66.1%), notification (58.6%), and monitoring (55.1%) of contacts. Random forest models accurately predicted the (positive or neutral/negative) intention of 80-82% of questionnaire respondents to use digital tools for the identification, notification, and monitoring of contacts, respectively. Accelerating the CT-process, reducing PHPs' workload, and sufficient support for cases and contacts were the top predictors of PHPs' intention.

Conclusions: Most PHPs are open towards involving cases and contacts through digital tools. Based on our Results, we created a 'blueprint' for the development and implementation of digital tools in CT. In a small-scale randomized pilot study, we are currently comparing different digital methods to let cases autonomously identify and notify their contacts.

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### Impact of the COVID-19 pandemic on stroke and ST-segment elevation myocardial infarction patient management: French regional registry

Florence Francis<sup>1</sup>, Emilie Lesaine<sup>2,3</sup>, Sandrine Domecq<sup>4</sup>, Laura Cetran<sup>5</sup>, Pierre Coste<sup>5</sup>, Sahal Hadi<sup>1</sup>, Catherine Pradeau<sup>6</sup>, Francois Rouanet<sup>7</sup>, Floriane Sevin<sup>8</sup>, Igor Sibon<sup>7</sup>, Florence Saillour-Glénisson<sup>9</sup>

<sup>1</sup>CHU de Bordeaux, France, <sup>2</sup>Bordeaux Population Health, University of Bordeaux, Bordeaux, France, <sup>3</sup>Centre Hospitalier Universitaire (CHU) de Bordeaux, Bordeaux, France, <sup>4</sup>CHU de Bordeaux, <sup>5</sup>Coronary Care Unit, Hôpital Cardiologique, CHU de Bordeaux, Nouvelle-Aquitaine, France, <sup>6</sup>Pôle de médecine d'urgence, CHU de Bordeaux, Bordeaux, France, <sup>7</sup>Stroke Unit, Department of Neurology, CHU de Bordeaux, France, <sup>8</sup>Bordeaux Population Health, CHU de Bordeaux, University of Bordeaux, Bordeaux, France, <sup>9</sup>CHU de Bordeaux, Pôle de santé publique, Service d'Information Médicale, Bordeaux Population Health, University of Bordeaux, ISPED, Centre INSERM U1219, Bordeaux, France

Background and Objective: Around the world, the consequences of the COVID-19 pandemic on the management of no-COVID-19 pathologies are causing concerns. We aimed to assess the impact of changes in use of care and health reorganizations implementation spurred by the COVID-19 pandemic (first wave), on acute management times of strokes and ST-segment elevation myocardial infarctions (STEMI).

Methods: The study was based on two cohorts of stroke and STEMI patients included between January 2019 and August 2020 in a French regional registry. The hospital reorganizations were systematically collected from heads of hospital departments. The associations between reorganizations, use of care, and care management times were analyzed through multivariate linear regression mixed models. Interaction terms between the use of care variables and the period (pre, per, post-wave) were introduced.

Results: A total of 9,218 patients were included (6,436 stroke and 2,782 STEMI patients). Per-wave period management times deteriorated for stroke but maintained for STEMI. Per-wave changes in use of care did not have any impact on STEMI management. No association was found between reorganizations and stroke management times. In the STEMI cohort, the implementation of a systematic testing at admission was associated with an increase of 41% in care management times (exp=1.409, 95%CI [1.075-1.848], p=0.013); the implementation of the global "plan blanc", concentrating resources in emergency activities, was associated with a decrease of 19% in management times (exp=0.801, 95%CI [0.639-1.023], p=0.077).

Conclusions: The pandemic induced no deep altering of emergency pathway structuration. The better resilience of the STEMI pathway than the stroke one is interpreted as linked with its stronger structuration. Transversal reorganizations aiming at concentrate resources on emergency care contributed to maintaining quality of care.

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### Innovative shortcuts and initiatives in Primary Health Care for rural/remote localities: a scoping review on how to overcome the COVID-19 pandemic

Renata Siqueira<sup>1</sup>, Aylene Bousquat<sup>2</sup>, Simone Schenkman<sup>3</sup>, Amandia Sousa<sup>4</sup>

<sup>1</sup>Institute for Collective Health, University of Sao Paulo - USP, Brazil, <sup>2</sup>University of Sao Paulo, Sao Paulo, Brazil, <sup>3</sup>University of Sao Paulo (USP), Brazil, <sup>4</sup>FIOCRUZ Amazonia, Brazil

Background and Objective: The COVID-19 pandemic has emerged as one of the greatest challenges to societies and to world health systems in the last century. Therefore, it is essential to discuss the role and initiatives of Primary Health Care (PHC) to deal with it. Regarding the response to the pandemic, the rural/remote PHC context in the pandemic is barely visible. This review aims to analyze the set of individual and collective initiatives and innovations developed to face the pandemic, within the PHC scope, in rural/remote areas.

Methods: A scoping review methodology was applied to peer-reviewed articles. Eight databases were searched to identify studies published from January 2020 to July 2021. The main focus sought in the literature was the set of initiatives and innovations within the PHC scope in rural/remote locations during the pandemic. The bibliographic information was imported into a web application for systematic reviews, following the scoping review stages.

Results: This review included 38 studies, mostly from Australia, Canada, USA and India. The main PHC initiatives were related to access; to the role of Community Health Workers and Health Surveillance; and to the importance of placing and retaining human resources in health. Cultural, equity and vulnerability issues occupy an important place among the initiatives. Regarding the innovations, telecare and customized communication are highlighted. From an organizational dimension, these locations showed flexibility to deal with the pandemic and it is important to indicate that they have potential for intersectoral activities at the local level.

Conclusions: The findings summarize initiatives and innovations developed to face the pandemic, within the PHC scope in rural and remote areas. This review has identified collective, clinical, intersectoral and organizational health initiatives. An articulation between different government levels would be paramount in evaluating the implementation of policies in these areas for future epidemics.

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### Micronesian community response to COVID-19

Srue Wakuk<sup>1</sup>, Jendrik Paul<sup>2</sup>

<sup>1</sup>Institute for Collective Health, University of Hawaii Cancer Center, United States, <sup>2</sup>Department of Health, Missouri Coalition for Oral Health (MCOH), United States

Background and Objective: The beginning of 2020 in Hawaii symbolized a time consumed with fear, despair, and confusion. Micronesians, historically excluded in Hawaii, often experienced discrimination and stigmatization. This population vastly emerged, with a population size of 18504 from 2013 to 2017, approximately 1.3% of the state population. Unfortunately, the influx migration of Micronesians pressured the state economy. Many have depended on government assistance, especially during the transiting time. In 2017, Hawaii's spending on COFA migrants was \$363 million. Due to Hawaii's high cost of living, most Micronesians live together to make ends meet. When COVID hit, Micronesians suffered, but with resiliency fabricated in their cultural heritage, they persevered through racism and hardships associated with COVID.

Methods: The resiliency of the Micronesian community was obvious with the robust planning and implementations throughout COVID. There are two grassroots that emerged in response to the needs of the people. Some performances were executed to help the communities through food distribution, supplies distribution, and other COVID-19 assistance—Micronesian champions engaged in different entities tackling COVID challenges to alleviate their communities. Leaders were out in the community, raising awareness about COVID and the vaccine.

Results: The resilience of Micronesians is obvious in withstanding challenges against racism, language barriers, healthcare, and COVID. Micronesians persevered above and beyond societal expectations. The number of cases and vaccinated participants can prove the hard work of the community. The latest report on COVID cases stated that about 54 patients were diagnosed in August 2022 and significantly dropped to 19 in November 2022. The COVID mortality rate reported in August was one person and none in November.

Conclusions: In conclusions, the robustness and resilience of this community in tackling COVID-19 should be highlighted and used for a future roadmap to guide the community in any health crisis.

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### Socioeconomic inequalities in times of COVID-19 lockdown: prevalence and related-differences in measures of anxiety and stress in Palestine

Hamzeh Zabadi<sup>1</sup>, Maryam Haj-Yahya<sup>2</sup>, Noor Yaseen<sup>2</sup>, Thair Alhroub<sup>2</sup>

<sup>1</sup>Public Health Department, Faculty of Medicine and Health Sciences, An-Najah National University, Occupied Palestinian Territory, <sup>2</sup>Department

of Medicine, Faculty of Medicine and Health Sciences, An-Najah National University, Nablus, Occupied Palestinian Territory

**Background:** Implementation of quarantine and lockdown to COVID-19 pandemic has created dramatic negative psychological impact mainly the general populations health worldwide. We aimed to assess the prevalence and predictors of anxiety and stress severity among the Palestinian population.

**Methods:** A cross-sectional web-based survey was conducted. An anonymous online questionnaire and snowball recruiting technique were used to target the general public in Palestine between 6 and 16 April, 2020 during COVID-19 pandemic lockdowns. Multivariate logistic regression models were developed for the outcome variables.

**Results:** Of the 2819 individuals who completed the questionnaire, more than two thirds of them (72.6%) were females. Nearly (83.5%), were residing at the West Bank. The mean age of participants was 29.47 (SD = 10.97) years. The anxiety prevalence was (25.15%) with (20.08%) had mild/moderate severity. The stress prevalence was (38.77%) with (22.21%) had mild/moderate severity. The prevalence of both anxiety and stress was (20.3%). In multivariate analysis, exposure to confirmed case of COVID-19, inadequacy of food supply and jobs that acquire leaving home during lockdown were significantly related to higher anxiety degree. As for stress, low monthly income, cohabitation with a person of a high-risk group and inadequacy of food supply were significantly related to higher stress degree.

**Conclusions:** Young adults with low socioeconomic status and inadequate food supply were more likely to have a higher degree of stress and/or anxiety. Providing alternative economical sources for those in need, and spreading more awareness regarding the pandemic, supporting the populations psychological wellbeing, community connection and the availability of specialist mental health services are crucial to overcome the mental impacts of COVID-19 in Palestine.

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### COVID-19 preventive behaviors and information sources: a cross-sectional study in Japan

Manae Uchibori<sup>1</sup>

<sup>1</sup>Keio University, Japan

**Background and Objective:** Individual preventive behaviours are one of the key ways needed to prevent the spread of COVID-19. The objective of this study was to identify the factors associated with the adoption of COVID-19 preventive behaviors, focusing on use and trust of information sources about covid-19.

**Methods:** A nationally representative cross-sectional survey of 30053 Japanese adults was conducted in February 2021. We estimated the associations between the adoption of COVID-19 preventive measures and a broad array of individual factors. A total of three multivariable logistic regression models was constructed to identify the factors associated with the adoption of each of three preventive measures: 3cs avoidance ("closed spaces", "crowded places", and "close-contact settings"), hand hygiene and respiratory hygiene.

**Results:** The prevalence of preventive behaviours was 35.92% for 3cs avoidance, 80.43% for hand hygiene and 67.66% for respiratory hygiene. After adjusting for covariates, socioeconomic variables, psychological variables, and the use and trust of information sources were statistically significantly associated with the adoption of three preventive measures. Trust in social media was associated with lower odds (0.91, confidence intervals 0.86-0.96), while trust in healthcare professionals was associated with higher odds (1.10, 1.05-1.16). The number of information sources used and the odds of adopting 3cs avoidance were positively associated, e.g. An odds ratio of 2.70 (2.48-2.94) for five or more sources in reference to one source. In addition, the greater the number of social media used as an information source, the higher the odds of avoiding the 3cs, e.g., an odds ratio of 4.55 (2.03-10.19) for six or more sources in reference to none. Similar trends were observed for hand hygiene and respiratory hygiene. **Conclusions:** The findings indicate that access to multiple sources of information and social networks to provide public health messages may be important in promoting prevention measures for COVID-19.

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### What the COVID-19 pandemic teaches us about modeling epidemics?

Jean-François Mathiot<sup>1</sup>, Laurent Gerbaud<sup>2</sup>, Vincent Breton<sup>3</sup>

<sup>1</sup>Laboratoire de Physique de Clermont, Centre national de la recherche scientifique (CNRS), France, <sup>2</sup>CHU Clermont-Ferrand, Clermont-Auvergne University, France, <sup>3</sup>Laboratoire de Physique de Clermont, Centre National de la Recherche Scientifique (CNRS), France

**Background and Objective:** The COVID19 pandemic associates a continuous diffusion at low intensity, with a majority of patients with poor clinical signs, and rapid accelerations with the combination of super spreading patients and situations, with high rates of severe cases. The nature and intensity of social relationships play a central role to predict its evolution. To better take into account the role of these relationships, we built a model based on percolation theory, and showed that it was a good predictor of the incidence of hospitalization. In this work, we compare our model, called PERCOVID, to the SEIR (Suspected, Exposed, Infected, Recovered) model considered as the reference for modeling epidemics. **Methods:** Time study was divided in five periods which played a major role in the propagation of the pandemic in France: initial underground propagation (December 2019 / January 2020), first wave and first lockdown (February / March 2020), first summer after lockdown (June / August 2020), spread of alpha variant (March / May 2021), decline of vaccine efficiency (October / November 2021). For each period, we shall compare the results of the PERCOVID and SEIR models for the same epidemiological and sociological parameters, emphasizing the role of local spread of the epidemic as compared to long-range contamination.

**Results:** In the periods of underground propagation and acceleration of the virus or its variants, SEIR type predictions largely overestimate the incidence rate as compared to predictions from PERCOVID. Both models perform similarly in the period of epidemic slowdowns, particularly when the mobility of the population is important. **Conclusions:** PERCOVID is a powerful tool in order to disentangle the intrinsic properties of the virus, like its infectiousness, from the nature of social relationships in the population under study and from the influence of any regulation issued by national authorities.

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### The impact of Long COVID Syndrome treatment and rehabilitation: systematic review and meta-analysis of patient-reported outcomes

Gianfranco Damiani<sup>1</sup>, Domenico Pascucci<sup>2</sup>, Mario Nurchis<sup>2</sup>, Gerardo Altamura<sup>2</sup>, Gian Raspolini<sup>2</sup>, Aurora Alizadeh<sup>2</sup>, Giuseppe Santoli<sup>2</sup>, Giulio Pasca<sup>2</sup>

<sup>1</sup>Institute for Collective Health, Università Cattolica del Sacro Cuore, Italy,

<sup>2</sup>Università Cattolica del Sacro Cuore, Italy

**Background and Objective:** COVID-19 pandemic resulted in an unprecedented public health crisis, in which efforts mostly focused on containment and treatment of acute disease. However, important disease sequelae are increasingly reported by clinicians and addressed in terms of treatment and rehabilitation needs. The long COVID syndrome (or post-COVID-19 condition) is a still poorly investigated condition, which makes the patients' subjective evaluation of symptoms via Patient-Reported Outcome Measures (PROMs) vital. The aim is to evaluate treatment and rehabilitation interventions for long COVID management, through PROMs.

**Methods:** A systematic review was performed querying Medline, Scopus and WebOfScience databases, according to the following inclusion criteria: evidence involving patients of all age groups diagnosed with long COVID syndrome, undergoing several physical and/or psychological interventions, and using PROMs to collect patients' feedback. For each type of intervention meta-analyses were computed adopting the Paule-Mandel random-effects model, while T-tests were performed to investigate differences in efficacy between rehabilitation and treatment. All statistical analyses were conducted using statistical software STATA.

**Results:** Out of 481 papers retrieved, 16 met the inclusion criteria. Most frequently used PROMs were Euro-QL-5D, Hospital Anxiety and Depression Scale, and Perceived Stress Scale. Efficacy of physical interventions (SMD 0.29 95% CI 0.12–0.51), psychological ones (SMD 0.17 95% CI 0.05–0.36) and both (SMD 0.35 95% CI 0.18–0.71) was consistently proved. Evidence supported the efficacy of online-delivered interventions for all the categories; no statistical differences were found regarding the positive impact of both rehabilitation and treatment for all interventions (p>0.05).

**Conclusions:** There is promising evidence regarding Long COVID treatment and rehabilitation impact on patients' quality of life and general well-being. This paper partially fills a literature gap on an actual and potentially persistent public health matter regarding the chronic consequences of the COVID-19 pandemic, although further studies are needed.

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### Achieving COVID-19 vaccination equity in South Eastern Metropolitan Victoria, Australia

Evelyn Wong<sup>1,2</sup>, Brett Sutton<sup>3</sup>, Mohana Baptista<sup>1</sup>, Catherine McGrath<sup>1</sup>, Tom McLaughlin<sup>1</sup>, Andrew Stripp<sup>4</sup>, Rhonda Stuart<sup>4</sup>

<sup>1</sup>Monash Health, Clayton, Australia, <sup>2</sup>Monash University, Clayton, Australia, <sup>3</sup>Victorian Department of Health, Melbourne, Australia, <sup>4</sup>Monash Health, Victoria, Australia

**Background:** This study aimed to describe COVID-19 vaccination uptake across Local Government Areas (LGAs) in Victoria using the South East Public Health Unit (SEPHU) catchment as a case study, and to explore key policy and implementation strategies that contributed to equitable uptake. There were significant socioeconomic disparities between LGAs within the SEPHU catchment, ranging from the most advantaged, Bayside, to the most disadvantaged, Greater Dandenong, where over 60% of the population were born overseas and spoke a language other than English.

**Methods:** Using an ecological study design, we compared trends in COVID-19 vaccination first and second dose uptake in Victoria and reviewed key social and public health measures used in Victoria's and SEPHU's vaccination program rollout from 1st January to 31st December 2021.

**Results:** By July 2021, half of the adult population in Bayside, had received their first vaccination dose compared to only a quarter in Greater Dandenong. However, by 31st December 2021, this geographical variation was narrowed to 1.3% for first dose (95.6% in Bayside and 94.3% in Greater Dandenong) and 2.5% for second dose (94.9% in Bayside and 92.4% in Greater Dandenong), a trend that was also observed broadly across Victoria. Key Victorian policy changes from September 2021 included vaccination mandates for essential workers and later for staff and patrons in hospitality and entertainment venues. Key engagement and vaccination strategies employed by SEPHU included strong engagement and co-designing programs with community leaders, mass vaccination centres, community outreach clinics, a mobile vaccination bus, and a highly visible walk-in vaccination pop-up at a shopping centre.

**Conclusions:** There were multiple policy and implementation factors contributing to the successful narrowing of COVID-19 vaccination inequities in Victoria. Deeper causal analysis is needed to investigate the individual impacts of these factors which can inform strategies to achieve similar success in future mass vaccination programs.

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### Predicting death for nursing home residents before and after COVID-19 vaccination: can we prevent the next pandemic?

Komal Aryal<sup>1</sup>

<sup>1</sup>McMaster University, Hamilton, Canada

**Introduction:** COVID-19 vaccinations have reduced COVID-19 cases and mortality for nursing home (NH) residents. However, little is known about how the discriminability of COVID-19 death changed before and after vaccination. The objective of this study is to examine factors that predict COVID-19 death before and after vaccination.

**Methods:** We conducted a retrospective cohort study on NH resident data collected using the Resident Assessment Instrument Minimum Data Set Version 2.0. The cohort included 14977 residents who tested positive for COVID-19 between March 7, 2020, and July 31, 2021. The cohort was split into two groups, COVID-19 deaths before and after January 1st, 2021. Logistic regression, LASSO regression, and random forests methods were used to evaluate the predictive ability of resident characteristics and COVID-19 mortality. Model performance was assessed using the area under the receiver operating characteristics curve (AUC). Variable importance was measured by the change in AUC.

**Results:** Age, sex, diabetes, declining cognition, and deteriorating activities of daily living were the most informative predictors for COVID-19 mortality before and after COVID-19 vaccination. COPD, emphysema, asthma, and emphysema were informative of COVID-19 mortality after vaccination only. The logistic regression, the LASSO regression, and the random forest model display similar predictive ability for COVID-19 mortality in their respective cohorts. A similar discrimination was reached for COVID-19 mortality before and after vaccination (AUC = 0.67, AUC=0.68, and AUC=0.644 respectively).

**Conclusions:** The factors associated with COVID-19 mortality are multifactorial and may be modifiable. Closer attention to these factors may help reduce COVID-19 mortality. Although the discriminability of the models was poor, advanced knowledge of NH resident characteristics can support upstream decision-making to prioritize care for NH residents who are at the greatest risk of COVID-19 death. Future studies are required to validate these Findings and demonstrate the utility of this model in pandemic preventability.

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### A rapid global review of guidance to prevent and control COVID-19 in custodial settings

Lindsay Pearce<sup>1</sup>, Stuart Kinner<sup>2</sup>, Alaina Vaisey<sup>3</sup>, Claire Keen<sup>3</sup>, Lucas Calais-Ferreira<sup>3</sup>, James Foulds<sup>4</sup>, Ruth Gray<sup>5</sup>, Sunita Sturup-Toft<sup>6</sup>

<sup>1</sup>Curtin University, Bentley, Australia, <sup>2</sup>Curtin University, Australia, <sup>3</sup>University of Melbourne, Australia, <sup>4</sup>University of Otago, New Zealand, <sup>5</sup>South Eastern Health and Social Care Trust, Ireland, <sup>6</sup>Public Health England, United Kingdom

**Background and Objective:** With over 11 million people incarcerated globally, the prevention and control of COVID-19 in custodial settings is a critical component of the public health response. We sought to identify, collate, and summarise guidance for the prevention and control of COVID-19 in custodial settings in the first six months of 2020.

**Methods:** We conducted a systematic search of peer-reviewed and grey literature, and manually searched relevant websites to identify publications up to 30 June 2020 outlining recommendations to prevent and/or control COVID-19 in custodial settings. We inductively developed a coding framework and assessed recommendations using conventional content analysis.

**Results:** We found 201 eligible publications containing 372 unique recommendations across 19 domains that represented key components of a comprehensive COVID-19 response in custodial settings to protect the health of people in prison and the general public. These included: preparedness; physical environments; case identification, screening, and management; communication; external access and visitation; psychological and emotional support; recreation, legal, and health service adaptation; decarceration; release and community reintegration; workforce logistics; surveillance and information sharing; independent monitoring; compensatory measures; lifting control measures; evaluation; and key populations/settings. We identified twelve guiding principles, few conflicting recommendations, and several areas where more guidance was needed.

**Conclusions:** The breadth of recommendations identified in this review reflects the complexity of COVID-19 response in custodial settings. Despite the availability of comprehensive guidance overall, no one guidance document covered all 19 domains. Important gaps remain in the implementation of recommended prevention and control measures globally and in the availability of evidence assessing their effectiveness on reducing COVID-19 disease, their mental and physical health impacts on inmates and staff, and implementation. Addressing these knowledge gaps are critical to ensure a more effective and humane response to infectious diseases in custodial settings in the future.

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### The effect of health literacy on delayed COVID-19 vaccine: a cross-sectional study in Hong Kong

Yue Tian<sup>1</sup>, Eliza Wong<sup>1</sup>, Phoenix Mo<sup>1</sup>, Dong Dong<sup>1</sup>, Annie Cheung<sup>1</sup>

<sup>1</sup>Jockey Club School of Public Health and Primary Care, Faculty of Medicine, The Chinese University of Hong Kong, Hong Kong, China

**Background and Objective:** Health literacy (HL) is an important determinant of health outcomes, as it determines individuals' abilities to process and use health-related information. However, the association between HL and vaccine delay remains unclear. This study aimed to assess how HL affected the delayed COVID-19 vaccination among Hong Kong adults.

**Methods:** A cross-sectional study using Quota sampling was conducted. Self-administrated online questionnaires were distributed to a web panel. Multivariable logistic regression models were used to explore associations among three domains (i.e., functional, interactive, and critical) of HL and vaccine delay while adjusting for social demographic and health-related characteristics. Sensitivity analyses were performed to ensure the robustness of the Results.

**Results:** A total of 401 participants were recruited between August to September 2022. Over half (52%) of the participants have inadequate HL. The proportion of participants with delayed first and third doses of COVID-19 vaccination is 30.9% and 28.2%, respectively. In multivariable analysis, the risk of delaying the first dose was higher among participants with inadequate functional HL (OR = 0.58, p = 0.015) and adequate levels of two subdomains of critical HL (OR = 1.82, p = 0.013; OR = 1.91, p < 0.01). Participants who delayed their third doses were likely to have inadequate interactive HL (OR = 0.52, p = 0.014) and an adequate level of one subdomain of critical HL (OR = 1.71, p = 0.039). The sensitivity analyses confirmed these findings.

**Conclusions:** Functional and interactive HL were positively associated with COVID-19 vaccination. However, a negative association between critical HL and vaccination was reported. These findings indicate a challenge for health partitioners to promote vaccination campaigns to the public, especially those

with low functional and interactive HL and high critical HL. Researchers and policymakers may need to monitor and report HL when they study vaccination decision behaviours.

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### Geographical intelligence applied to public health: the examples of Rio de Janeiro and Niterói municipalities (Rio de Janeiro, Brazil) to face SARS-CoV-2

Marcelle Rodrigues<sup>1</sup>, Antonio Oscar-Júnior<sup>1</sup>, Pedro Castro<sup>2</sup>, Francisco Mendonça<sup>3</sup>, Mariana Silva<sup>1</sup>, Júlia Silva<sup>4</sup>, Thiago Fogaça<sup>5</sup>

<sup>1</sup>Programa de Pós-Graduação em Geografia da Rio de Janeiro State University (PPGEO/UERJ), Rio de Janeiro, Brazil, <sup>2</sup>Rio de Janeiro State University, Rio de Janeiro, Brazil, <sup>3</sup>Programa de Pós-graduação em Geografia Universidade Federal do Paraná, Brazil, <sup>4</sup>PPGEO/UERJ, Rio de Janeiro State University, Rio de Janeiro, Brazil, <sup>5</sup>PPGEO/UFPR, Federal University of Parana, Brazil

This paper aimed to apply geographical intelligence to analyze the spread of coronavirus, between March 2020 and November 2022, in two municipalities in Rio de Janeiro state: Rio de Janeiro and Niterói, with national strategic and economic importance. Geographers have been produced important contributions in the analysis of geographical elements associated with the dissemination of diseases, taking into account their determinants/conditioners and the analysis of geographical space. To this end, analyzing the spread of diseases goes beyond its spatialization, identifying also its social determinants/conditioners and those territorial technical networks preferred for virus dissemination. Our hypothesis is that, in the absence of clinical control, geographical intelligence had the capacity to anticipate the dynamics of virus diffusion, qualifying the decision-making process by public agents and, later, with vaccination, to evaluate its impact and reorient decision-making, especially in face of growing antivaccine movement. In the first stage were identified patterns in time series data of confirmed cases and deaths with Pettit's technique and these results was analyzed together with the vaccination schedule, circulation of new strains and public policies measures. The results indicated that the emergence of less lethal strains, such as Delta variant, and vaccine advances were decisive to reduce the populations tendency to become infected. After, Kernel technique was applied to the epidemiological data, revealing the temporal-spatial dynamics of disease spread, which took advantage of the logistical infrastructure and technical network, inequalities in vaccination coverage and deficiencies in the public health system. Finally, contamination scenarios were built up and confirmed the trends of virus diffusion, demonstrating the importance of geographic intelligence for decision making in public health and the health-disease-care process as an object of interest of Geography.

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### A household survey; contamination related characteristics of COVID-19

Duygu Atılmış<sup>1</sup>, Hanife Erik<sup>1</sup>, Şahin Özeltun<sup>2</sup>, Gülçin Dizman<sup>3</sup>, Gizem Karahan<sup>4</sup>, İlke Önder<sup>5</sup>, Alpaslan Alp<sup>6</sup>, Levent Akın<sup>7</sup>

<sup>1</sup>Department of Public Health, Faculty of Medicine, Hacettepe University, Türkiye, <sup>2</sup>Etimesgut District Health Directorate, Ankara, Türkiye, <sup>3</sup>Department of Infectious Diseases and Clinical Microbiology, Faculty of Medicine, Hacettepe University, Türkiye, <sup>4</sup>Faculty of Medicine Department of Infectious Diseases and Clinical Microbiology, Hacettepe University, Turkey, <sup>5</sup>Department of Medical Microbiology, Faculty of Medicine, Hacettepe University, Türkiye, <sup>6</sup>Department of Medical Microbiology, Faculty of Medicine, Hacettepe University, Türkiye, <sup>7</sup>Department of Public Health, Faculty of Medicine, Hacettepe University, Turkey

Background: Household transmission studies are suitable setting to examine determinants of disease by controlling many environmental variables. This study is a prospective, case-based study evaluating the household transmission and possible risk factors on the demographical and behavioral characteristics of individuals diagnosed with COVID-19 and households. Methods: Between 1 August 2021 and 1 February 2022, individuals who were RT-PCR positive and their household members were invited to the study. Swab samples were taken from contacts and RT-PCR test was performed. Secondary attack rate (SAR) was calculated to assess household transmission. Descriptive analyzes and Logistic Regression analyzes were used in the study. Statistical Package for Social Sciences program was used for analysis. Statistical significance was accepted as  $p < 0.05$ . Ethical approval was obtained from Hacettepe University Ethics Committee. The research was supported by Sanofi.

Results: 42 index cases and 112 contacts were involved in the study. 43% of index

cases and 54% of contacts were women. The median age of index cases was 40 and contacts' was 34. SAR was 25%. SAR was also high in contacts sleeping in the same room (%40), hugging (%39), eating together (%30), sharing goods (%38). SAR was high in contacts of index cases who were under 40 (%22), women (%39) and vaccinated (%30). Contacts living with five or more people (OR:5.54), contacts who were spouse or children of the index case (OR:3.53) had high risk of infection. Conclusions: Living in crowded house was the most important risk factor for infection transmission. In order to prevent contagion, such measures as the use of masks in the house, frequent ventilation of house, not eating in the same environment during the quarantine period should be shared with the public and policies should be developed in this direction. Keywords: SARS-CoV-2, family characteristics, close contact transmission

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### A scalable model to ensure sustainability of resources and quality in health emergency management in public administration

Giuseppe Furia<sup>1</sup>, Maddalena Quintili<sup>2</sup>, Francesca Troiano<sup>3</sup>, Carmela Puleo<sup>1</sup>, Patrizia Chierchini<sup>1</sup>, Debora Angeletti<sup>4</sup>, Anna Zoppegno<sup>5</sup>, Anna Gagliardi<sup>6,7</sup>, Maddalena Quintili<sup>8</sup>

<sup>1</sup>Hospital Management Area, Local Health Authority Roma 1, Rome, Italy, <sup>2</sup>Risk Management Area, Local Health Authority, Roma, Italy, <sup>3</sup>Risk Management, Local Health Authority Roma 1, Roma, Italy, <sup>4</sup>Information and Communication Technology, Local Health Authority Roma 1, Rome, Italy, <sup>5</sup>Health Professionals Area, Local Health Authority Roma 1, Rome, Italy, <sup>6</sup>Department of Economics, University of Foggia, Foggia, Italy, <sup>7</sup>Risk Management Area, Istituto di Ricovero e Cura a Carattere Scientifico IRCCS Casa Sollievo della Sofferenza, San Giovanni Rotondo, Italy, <sup>8</sup>Risk Management Area, Local Health Authority Roma 1, Rome, Italy

Background and Objective: During the COVID-19 pandemic, standard criteria were defined for optimization of spaces to be used as vaccination centers, in relation to the objectives of the 2030 UN Agenda on environmental sustainability. The aim of the study is to describe a scalable model based on the criteria of economic sustainability of the public administration, potentially expandable in other sectors such as cooperation and development.

Methods: To define the essential requirements of the new vaccination centres, a Rapid Response Team was set up and WHO guidelines were adopted following a specific checklist elaborated from a SWOT Analysis. The project was carefully calculated and measured in all phases of the vaccination cycle process. The new centers have also been designed to ensure social inclusion and user privacy.

Results: The centers were set up in about 20 days. The checklist and data collection has allowed to optimize the process and the efficiency of the linear conformation, guaranteeing a 15% increase in space for each phase of the vaccination cycle based on the length of stay of the workers. All steps have been fully digitized with 100% accuracy in data handling. In 13 months, the saving of paper filing, compared to CO2 emissions, was 64.34Kt.

Conclusions: Our model can be easily reproduced in other contexts, guaranteeing efficiency, taking advantage of new digital technologies and the quality of education.

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### Predicting inflection points in the disease curve through wastewater-based epidemiology: learnings from SARS-CoV-2 monitoring in Bengaluru, India

Shirish Harshe<sup>1</sup>, Angela Chaudhuri<sup>2</sup>, Chhavi Sodhi<sup>2</sup>, Nitish Kumar<sup>3</sup>, Varsha Shridhar<sup>4</sup>, Shirish Harshe<sup>2</sup>, Aditya Pangaria<sup>3</sup>

<sup>1</sup>Swasti, India, <sup>2</sup>Swasti, Bengaluru, India, <sup>3</sup>Catalyst Management Services, Bengaluru, India, <sup>4</sup>Molecular Solutions Care Health, Bangalore, India

Background: The covid-19 pandemic was a watershed event for wastewater-based epidemiology. It highlighted the inability of existing disease surveillance systems to provide sufficient forewarning on the existing scale of disease spread and underscored the need for effective Early Warning Systems (EWS). In keeping with WBE'S potential, the covid action collab [1] launched the precision pandemic health surveillance [2] in May 2021 for equitably tracking sars-cov-2 spread in Bengaluru, India. Methods: Wastewater samples were collected from 28 networked and 46 non-networked sites. Inclusion of non-sewered sites enabled equitable disease surveillance at the wider-population level. The samples were tested for Sars-CoV-2 using a quantitative RT-PCR kit. For detecting early warning signals, the exponential weighted moving average filter was used on longitudinal viral load data. A 70% weight was assigned to the latest data-points and 30% weightage to older data. Furthermore, control chart limits and an internally-designed heuristic

model were used. Whole genome sequencing was used for genomic epidemiology. Results: The program used the aforementioned methodology to identify emerging warning signals by distinguishing the 'noise' from the 'signals,' arriving at more accurate predictions of future disease pathways and foretelling the timespan in which a contained outbreak would begin to spread. It also identified the inflection points in the epidemiological curve, which are the points of most significant inference for public health action. Basis these points, the epidemiological curve was disaggregated into four stages-normalcy, escalation, progression and de-escalation-with actionable insights for authorities at each stage. Conclusions: An EWSS enables early implementation of disease mitigation strategies. Going forward, the learnings can be harnessed by other cities for effective monitoring of covid-19 and other infectious diseases. The successful deployment of es as an ethical and equitable surveillance platform enables systems to capture the health concerns of vulnerable population groups and thus, it has great usability for showcasing the complete epidemiological arc of diseases which have a disproportionate impact on such communities. Links:-----[1] <http://events.decorporate.ca/https://covidactioncollab.org/>[2] <http://events.decorporate.ca/https://storymaps.arcgis.com/stories/c42be68c85634d19a5d92873a10bda66>

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### The construction of the primary health care organizational model index to fight COVID-19: scope, limits and perspectives in the Brazilian remote rural context

Aylene Bousquat<sup>1</sup>, Simone Schenkman<sup>1</sup>

<sup>1</sup>University of Sao Paulo, Brazil

**Background and Objective:** The socio-spatial singularities of remote rural locations are rarely recognized in their classification; nor are they remembered in the formulation and implementation of public policies. These must prioritize the conditions of access to health, the form of organization of Primary Health Care (PHC) services and practices and the workforce attraction, molded in relation to local contexts, far beyond a simple opposition to the urban locale. In the context of fighting against the covid-19 pandemic, cohesion between political initiatives, organization of services and health surveillance are essential, based on the power and capillarity of PHC. Our aim is to contextualize the creation of the organizational model index for coping with COVID-19 and to analyze its application in the Brazilian rural remote municipalities.

**Methods:** Document and statistical analysis, including correlations, factorial and consistency analysis and logistic regression, from the construction of the instrument to its application. The index consists of six dimensions: Political Conduct, Social Isolation, Border Surveillance, Case Surveillance, Service Organization and Social Support.

**Results:** The determining variables for success in combating the pandemic were the state of alert for the high case rate, lower death rate than the state of origin and longer time to define containment strategies, with two sets of protectors: wealthier localities, with a lower % of income transfer or higher Family Health Strategy coverage and PHC services density. Health surveillance was essential in case detection, along with specialized care, and in the identification of deaths, with both rates being higher in the Midwest and Amazon regions.

**Conclusions:** The index successfully discriminated the different remote rural typologies, with a gradient being observed between the Midwest region and Northern Minas Gerais state; with the best results, whereas the Amazon region presented intermediate levels, followed by the new northeastern agricultural frontier and the northeastern Semiarid region.

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### Health protection and risk reduction related to SARS-Cov-2 in health services in Brazil

Mariluce Souza<sup>1</sup>, Patrícia Araújo<sup>2</sup>, Ediná Costa<sup>1</sup>, Yara Lima<sup>1</sup>, Gisélia Souza<sup>1</sup>, Ana Souto<sup>3</sup>, Bianca Paz<sup>1</sup>, Eliana Costa<sup>2</sup>, Lafse Soares<sup>2</sup>

<sup>1</sup>Universidade Federal da Bahia (UFBA), Brazil, <sup>2</sup>Universidade do Estado da Bahia (UNEB), Brazil, <sup>3</sup>Universidade Federal da Bahia, Brazil

**Background and Objective:** The COVID-19 pandemic had an impact on health services. This study aims to analyze actions for health protection and risk reduction related to SARS-Cov-2 in health services. **Methods:** Exploratory, descriptive research, with qualitative analysis based on interviews with managers of health surveillance services and blood collection units in three Brazilian state capitals. The Iramuteq software was used to process the textual corpus and the Descending Hierarchical Classification was analyzed. Study developed with the support from the National Council for Scientific and Technological Development (CNPq).

**Results:** The study showed characteristics about the organization and conditions of work, about the protection of the health of workers and the population. The work at Health Surveillance during the pandemic reiterates old structural difficulties, staff shortages, insufficient training of teams and managers in the face of challenges in controlling health risks. There was a predominance of action centered on inspection/supervision and insufficient risk communication activity and guidance to the population. Joint actions of inspection, epidemiological surveillance and worker health surveillance were highlighted. Additionally, there were increased computerization, organization of remote work and joint efforts with other sectors. Regarding the effects of the pandemic on blood collection units/hemotherapy services, differences in infrastructure between services were identified. Measures such as the reorganization of the physical space to avoid crowds, measures to protect the health of workers, dissemination of information and various strategies to mobilize candidates and donors were observed. **Conclusions:** Both services required adjustments in the organization and adaptations in working conditions in order to minimize risks and preserve the protection of the health of workers and the population.

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### It's the stress of not knowing: a qualitative study of the impacts of COVID-19 pandemic among young adults in Canada

Geneviève Fortin<sup>1,2</sup>, Marie-Pierre Sylvestre<sup>3,4</sup>, Olivier Ferlatte<sup>1,5</sup>, Jennifer O'Loughlin<sup>1,6</sup>, Laura Struik<sup>7</sup>

<sup>1</sup>School of Public Health, University of Montreal, Canada, <sup>2</sup>Centre de recherche en santé publique (CRéSP), Canada, <sup>3</sup>École de Santé publique de l'Université de Montréal, Université de Montréal, Canada, <sup>4</sup>Centre de Recherche du Centre Hospitalier de l'Université de Montréal (CRCHUM), Canada, <sup>5</sup>Centre de Recherche en Santé Publique (CRéSP), Canada, <sup>6</sup>Centre de recherche du centre hospitalier de l'Université de Montréal (CRCHUM), Canada, <sup>7</sup>Faculty of Health and Social Development and School of Nursing, University of British Columbia, Canada

The COVID-19 pandemic impacted populations differently across age groups. Young adults were particularly affected by lockdowns and physical distancing measures put in place to limit the spread of the pandemic. Studies demonstrate that young adults were at increased risk of psychological distress, financial stress, and work-related instability when compared to older age groups. We conducted 25 semi-structured interviews between July and August 2021 with young adults (32-34 years old) to gain insights about their perspectives on the impacts of the pandemic on their wellbeing. Data were analyzed using a reflective thematic analysis. Our study findings revealed three distinct but interconnected themes. First, "Losing oneself in chaos," represents the participants feelings of losing their sense of self and hitting rock bottom. Second, "Gaining a sense of what matters" refers to a realization of some of the positive aspects of the pandemic, such as having more time for oneself and self-care. Third, "finding balance" reflects the need of participants to find meaning in their experiences of the pandemic and achieve balance between losses and gains. The impacts on mental health runs through the themes. Together, these themes describe the strength and the process of resilience among young adults in the context of unknown pandemic trajectories. Lessons can be learned from these findings to help inform responses to future pandemics: 1) Young adult mental health (and more specifically, facilitating the development of coping strategies) must be a public health priority; 2) Young adults' coping strategies are not fixed in time; providing ongoing mental health services is therefore essential, even months after acute phases of pandemics are over. Although participants demonstrated great resilience and coping skills, ongoing support could have helped limit the negative mental health impacts brought forward by public health measures.

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### Pentraxin (PTX-3) as a prognostic marker of clinical implication of COVID-19 in a cohort of healthcare workers from the A.O.U. 'G. Martino' of Messina

Giuseppe Panto<sup>1</sup>, Anna Carpa<sup>2</sup>, Alessio Ardizzone<sup>2</sup>, Emanuela Esposito<sup>3</sup>, Raffaele Squeri<sup>1</sup>

<sup>1</sup>Department of Biomedical Sciences and Morphological and Functional Images, University of Messina, Italy, <sup>2</sup>Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Italy, <sup>3</sup>Genetics and Pharmacogenetics Unit, Department of Chemical, Biological, Pharmaceutical and Environmental Sciences, University of Messina, Italy

**Introduction:** Pentraxin (PTX-3) is an acute phase protein, which has significant functions in humoral innate immunity, such as regulation of inflammatory

responses, control of complement pathways, tissue repair.

**Purpose:** A systematic literature review was performed to better define the prognostic role of PTX3 in COVID-19 disease. This study also aims to analyse PTX-3 levels in our cohort of healthcare workers, belonging to the A.O.U. "G.Martino", who have or have not contracted the infection in their lifetime, after anti-SARS-CoV-2 vaccination (Pfizer/BioNTech Comirnaty).

**Materials and Methods:** The PubMed database (MEDLINE) was searched using the keywords PTX-3 and COVID-19, considering observational studies, case-control studies, cross-sectional studies, cohorts. Data extraction for this systematic update was performed by two independent reviewers. The cohort analysed consisted of workers vaccinated and supervised by the Hospital Hygiene Unit. A personal and family medical history was taken and an objective examination of the individual participants was carried out, who underwent blood sampling. Serum aliquots obtained after centrifugation were stored at -20°C. Subjects enrolled in the study were divided into 2 groups: SARS-CoV-2 positive (n=40); SARS-CoV-2 negative (n=40). Using commercially available kits, serum PTX-3 concentrations were determined using an enzyme-linked immunosorbent assay (ELISA).

**Results:** We included 11 studies in the systematic review. PTX-3 was evaluated in COVID-19 patients versus non-infected subjects and in COVID-19 patients in ICU versus COVID-19 patients not in ICU. For the healthcare workers in the study, demographic, clinical, laboratory characteristics were collected and reported in a dedicated database and associated with PTX-3 levels. Preliminary data showed variability in PTX-3 levels in healthy subjects correlated with sex, age, BMI, comorbidities and genetic characteristics.

**Discussion and Conclusions:** The results to date support the hypothesis that PTX3 levels can be considered a useful biomarker of the inflammatory response and could have a relevant clinical impact on COVID-19 disease outcomes.

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### Mortality from COVID-19 in Belgrade

Svetlana Miltenovic<sup>1</sup>

<sup>1</sup>Institute of Public Health of Belgrade, Belgrade, Serbia

**Background and Objective:** Coronavirus disease (COVID19) has spread worldwide in a short time. It caused a lot of deaths of infected patients. Mortality data provides insight of fatal consequences among population. Risk factors for mortality have not been well summarized, but it was possible to show findings on the association between age, gender and comorbidities from COVID-19 infection. Mortality statistics are fundamental to public health decision making. Mortality varies by time and place and its measurement is affected by some biases that have been exacerbated during the pandemic. This paper aims to present mortality from the COVID-19 pandemic in Belgrade, Serbia.

**Methods:** An analysis of death certificates shows an insight into the causes of death of Belgrade inhabitants. The paper presents data from database of deceased persons in Belgrade, 2012- 2021, analyzed using frequencies and incidence rates by gender, age groups, month of death.

**Results:** Mortality (mt) incidence rate in Belgrade 2012 - 2021 is increasing. The highest mortality rate was in 2021, 17,72/1000 population at the age 20 to 64, the highest rate was also in 2021, male (m) 6,73/1000, female (f) 3,48/1000 older age (65 and more) shows highest mt rates in 2021, male 86,92/1000, female 63,46/1000 between march 2020 and December 2021, highest mortality rate from covid19 in man and women at the age 20-64 was in October 2021 (m: 39,12/100000, f: 20,32/100.000). Man 65 and older most frequently died in December 2020 (479,67/100.000), women in October 2021 (282,04/100.000). most common comorbidity were diseases of circulatory system, endocrine, metabolic diseases, neoplasms, etc.

**Conclusions:** Older age (65 years old), male gender and particular comorbidities were associated with greater risk of death from COVID-19 infection in Belgrade, Serbia. These findings could help clinicians and public health authorities to prevent unnecessary death outcomes.

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### Have public health responses to COVID-19 considered social inequalities in health? Insights from Brazil, Canada, France & Mali

Marie-Catherine Gagnon-Dufresne<sup>1</sup>, Lara Gautier<sup>1</sup>, Camille Beaujoin<sup>1</sup>, Zoé Richard<sup>2</sup>, Pauline Boivin<sup>3</sup>, Stéphanie Medeiros<sup>4</sup>, Valéry Ridde<sup>2</sup>, Kate Zinszer<sup>5</sup>

<sup>1</sup>School of Public Health (ESPUM), University of Montréal, Montréal, Canada, <sup>2</sup>Centre Population et Développement (CEPED), University of Paris, Paris, France, <sup>3</sup>Association Miseli, Bamako, Mali, <sup>4</sup>Universidade Federal de Pernambuco, Recife, Brazil, <sup>5</sup>School of Public Health (ESPUM), University of Montréal, Québec, Canada

**Background:** Research has indicated an increased risk of self-harm repetition and suicide among individuals with frequent self-harm episodes. Co-occurring physical and mental illness further increases the risk of self-harm and suicide. However, the association between this co-occurrence and frequent self-harm episodes is not well understood. We examined the profile of individuals with frequent self-harm episodes and the association between physical and mental illness comorbidity, self-harm repetition and highly lethal self-harm acts.

**Methods:** The study included consecutive patients with five or more self-harm presentations to Emergency Departments across three general hospitals in the Republic of Ireland. The study included file reviews (n=183) and semi-structured interviews (n=36). Multivariate logistic regression models were used to test the association between the sociodemographic and the comorbidity variables on highly lethal self-harm acts. Thematic analysis was applied to identify themes related to the comorbidity and frequent self-harm repetition.

**Findings:** Most of the participants were female (59.6%), single (56.1%) and unemployed (57.4%). The predominant current self-harm method was drug overdose (60%). Almost 90 % of the participants had history of a mental or behavioural disorder, and 56.8% had recent physical illness. The most common psychiatric diagnoses were alcohol use disorders (51.1%), borderline personality disorder (44.0%), and major depressive disorder (37.8%). Male gender (OR=2.89) and alcohol abuse (OR=2.64) were associated with highly lethal self-harm acts. Major qualitative themes were a) the functional meaning of self-harm b) self-harm comorbidity c) family psychiatric history and d) contacts with mental health services. Participants described experiencing an uncontrollable self-harm urge, and self-harm was referred to as a way to get relief from emotional pain or self-punishment to cope with anger and stressors.

**Conclusions:** Physical and mental illness comorbidity was high among the participants. The mental and physical illness comorbidity of these patients should be addressed via a biopsychosocial assessment and subsequent interventions.

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### Strategies to fight the COVID-19 pandemic in remote rural municipalities of Piauí state, Brazil

Aylene Bousquat<sup>1</sup>, Carinne Magnago<sup>1</sup>, Angela Carneiro<sup>2</sup>, Kamila Santos<sup>3</sup>

<sup>1</sup>University of Sao Paulo (USP), Brazil, <sup>2</sup>Federal University of Vale do São Francisco (UNIVASF), Brazil, <sup>3</sup>Federal University of Vale do Sao Francisco (UNIVASF), Brazil

**Background and Objective:** Ensuring the provision of health services in rural remote municipalities (MRR) remains a challenge for the Brazilian Public Health System-SUS. This problem increased dramatically during the COVID-19 pandemic, as MMR context amplifies the devastating potential of the virus, such as insufficient supply of professionals/services and the great distance from urban centers (technological density). Our aim is to analyze the initiatives to combat the pandemic adopted in Piauí's MMR; discuss the role of primary healthcare (PHC) in the pandemic; and identify itineraries of patients diagnosed with COVID-19.

**Methods:** Exploratory qualitative case study, developed in two MMR of Piauí, both with less than 4000 inhabitants. Data were collected in 2022, through individual in-depth interviews with PHC professionals, SUS users SARS-Cov-2 infected and community leaders. The interviews were conducted with open questions about coping with the pandemic (professionals and leaders) and the experience and care received during the illness caused by COVID-19 (users). The interviews were recorded, transcribed and treated qualitatively, applying content analysis technique.

**Results:** Initiatives adopted: sanitary barriers, mandatory use of masks, social isolation, ban on parties/gatherings, closure of non-essential establishments, "covid kit", distribution, testing of suspected cases and vaccination. PHC: concentrated care for COVID-19 cases, protagonism and work overload of community workers (CHW), on barriers, home visits, vaccination and service through messaging applications. Itineraries: non or mildly-symptomatic were advised to isolate themselves at home, severe cases were referred by ambulance to reference hospitals in other municipalities in Piauí.

**Conclusions:** Primary care coordinated and/or actively participated in coping with the pandemic. Positive points: population bonds and CHW's assistance. Users felt supported. Distance from larger cities was not considered a protective factor against COVID-19. Previous results suggest the existence of long-term COVID-19 cases, with different clinical presentations, and an increase in mental disorders' prevalence (depression, alcoholism and drug use).

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### Working in the territory or in the health care facility? Community

### Health Workers' (CHW) work process during the COVID-19 pandemic in Brazil

Ligia Giovanella<sup>1</sup>, Patricia Chueiri<sup>2,3</sup>, Juliana Lima<sup>4</sup>, Simone Schenckman<sup>5</sup>, Ana Chancharulo<sup>6</sup>, Aylene Bousquat<sup>5</sup>, Liliene Nakata<sup>5</sup>, Aline Fiori<sup>5</sup>

<sup>1</sup>Oswaldo Cruz Foundation (Fiocruz), Brazil, <sup>2</sup>Israeli Faculty of Health Sciences, Albert Einstein, Brazil, <sup>3</sup>University of Sao Paulo, Brazil, <sup>4</sup>Federal University of Oeste do Pará (UFOPA), Brazil, <sup>5</sup>University of Sao Paulo (USP), Brazil, <sup>6</sup>SES/ Bahia, Brazil

**Introduction AND Objective:** Actions during the pandemic in Brazil were characterized by a lack of federal coordination and diversified actions of Primary Health Care (PHC) teams. The family health strategy (FHS) is the hegemonic model of PHC in the country, whereas the community health worker (CHW) enhances actions to face the pandemic. The aim is to describe the CHW work process during the pandemic and its association with health indicators, municipality characteristics and the assistance provided.

**Methods:** cross-sectional study with probabilistic sampling of Brazilian PHC facilities (PHCF). The reference population was formed by the PHCF registered by Dec-2020, stratified considering the five country regions, totaling 945 PHCF. Data collection was carried out between Jul-Nov-2021. The inclusion criteria were operating during the pandemic and having higher-level professionals for more than six months. The manager was invited to respond to an online survey. The CHWs work was analyzed through five dimensions: inputs, work process, connectivity, surveillance and social support.

**Results:** 907 PHCF participated. The Southeast/South regions stand out with less CHW. Regarding the work process, CHW mostly worked in the territory or at the PHCF. In the North/Northeast regions, the work was mainly territorial, different from the other regions (p

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### COVID-19 and financial transfers- an analysis of Minas Gerais, Brazil, from 2020 to March 2021

Taíssa Maia<sup>1,2</sup>, Allan Barbosa<sup>3</sup>, Philippe Mendes<sup>4</sup>

<sup>1</sup>Secretaria de Estado de Saúde de Minas Gerais (SES-MG), Belo Horizonte, Brazil, <sup>2</sup>Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Brazil, <sup>3</sup>UFMG, Brazil, <sup>4</sup>CEDEPLAR/UFMG, Brazil

The study analysed the financial transfers made to directly cope with the COVID-19 pandemic in the State of Minas Gerais, Brazil, in the years 2020 and 2021, aiming at the allocation of resources by area of greater contamination, hospitalization and deaths caused. The allocation of financial resources in an emergency can boost care actions and reflect the strategic preference used to cope with the pandemic, be it preventive, health testing and promotion, hospitalizations, acquisition of supplies and expansion of beds. This paper presents in a first moment normative aspects related to transfers and sources destined to health, with special emphasis on the period that comprises the pandemic. Subsequently, to contextualize the institutional and legal ambience of Minas Gerais, Brazil, in confronting COVID-19, a research was made of the creation of well committees and working groups and normative acts with emergency actions for the territory of Minas Gerais, Brazil. Finally, results of the transfers in this period are presented as well as the analyses that indicate aspects that may hinder the effective coping of the pandemic. The results suggest, in addition to a review of the values considered inadequate to cope with, the need for an allocating review by territory proven the need for care, as well as a strategic structuring of coping with the pandemic. Minas Gerais has major public policy challenges, especially maintaining equity given territorial extension, and regional disparities, further aggravated by a pandemic state in a still developing country. It also has the greatest challenge of effectively thinking about levels of care that can minimize or mitigate the effects of the health emergency. Added to this is the need to adjust the timing of the transfer to the dynamics imposed by health needs, which would certainly allow alignment between spending and coping in "real time".

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### The reach of health and social protection policies for the homeless population during the COVID-19 pandemic in Belo Horizonte, Minas Gerais, Brazil

Rômulo Paes-Sousa<sup>1,2</sup>, Helvécio Junior<sup>3,4</sup>, Rômulo Paes-Sousa<sup>3,5</sup>, Anelise Souza<sup>3,5</sup>, Luísa Fernandes<sup>3,5</sup>, Ana Martins<sup>3,5</sup>, Ana Oliveira<sup>6</sup>, Gabriela Silva<sup>6</sup>, Gustavo Lucius<sup>6</sup>, Ana Dantas<sup>6</sup>, Rafaela Marinho<sup>6</sup>

<sup>1</sup>Research Group of Health and Social Protection Policies, Belo Horizonte, Brazil, <sup>2</sup>Rene Rachou Institute, Oswaldo Cruz Foundation, Belo Horizonte, Brazil, <sup>3</sup>Oswaldo Cruz Foundation, Brazil, <sup>4</sup>Rene Rachou Institute, Brazil,

<sup>5</sup>Research Group of Health and Social Protection Policies, Rene Rachou Institute, Brazil, <sup>6</sup>Research Group of Health and Social Protection Policies, Oswaldo Cruz Foundation / Rene Rachou Institute, Brazil

**Introduction:** The COVID-19 pandemic aggravated the homeless populations (HP) vulnerability. The study of targeted policies is necessary to improve response and ensure "no one is left behind" following the sustainable development goals (SDG). Brazil has a National Public Health System (SUS) and a National Social Protection System (SUAS), and both were active during the pandemic. Belo Horizonte (BH) is Brazil's third-largest city, and it is known to have a robust SUS and SUAS. The town was an example of the emergency and preparedness response, reducing potential death. However, the reach of the initiatives to vulnerable populations wasn't assessed. **Objective:** This study investigated the effectiveness of health and social protection initiatives during the pandemic tailored for HP in BH. **Methods:** A mixed method study was conducted, including the statistical analysis of HP, who received care during the pandemic, and a content analysis of the discourses collected. Primary data was collected through in-depth interviews and focus groups with policymakers, workers, and HP. The secondary data analyzed used a linkage of the city's electronic health records and the database for social protection beneficiaries (cadunico). Results indicated the implemented policies reached the HP; however, important access barriers were observed for SUAS existing services. Despite the initial decrease in consults, sus continued to care for the HP, followed by an increase in HP with respiratory symptoms attended by primary care units. The social isolation housing for symptomatic HP was a successful new initiative jointly coordinated. Strong Non-Governmental Organization (NGO) participation was identified as the primary support during the city lockdown. **Conclusions:** The emergency and preparedness initiatives implemented during the pandemic reached the HP, with an NGO's support, attending to SDG principles. Collaborative governance and infrastructure were key to reaching HP.

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### Lessons from slums during COVID-19 in Indore and Agra, India towards better preparedness for future pandemics

Siddharth Agarwal<sup>1</sup>, Kanupriya Kothiwari<sup>2</sup>, Shabnam Verma<sup>2</sup>, Mayaram Sharma<sup>2</sup>

<sup>1</sup>Urban Health Resource Centre, New Delhi, India, <sup>2</sup>Urban Health Resource Centre, India

**Background and Objective:** COVID-19 led to adverse effects on the urban poor relating to healthcare, nutrition, children's education, livelihood. The research aimed at learning challenges, coping method of families who faced difficulty in access to healthcare, food supplies, livelihood disruption, children's education. Lessons point to preparedness measures for future disasters.

**Methods:** We conducted in-person qualitative interviews, with open-ended probes with women of 40 slum families and with 10 key informants.

**Results:** Many Government and private hospitals refused non-COVID services during lockdown. With frontline workers on COVID duty, pregnant women, children missed essential immunisation and maternity services leading to maternal and neonatal illness, deaths. Uncertain livelihoods, low access to social benefits made slum dwellers, mostly informal workers vulnerable. Many faced food-insecurity. They resorted to private hospitals and incurred debt. Those with previously stored grains could tide through food insecurity. School closure affected children's education. Online classes were partially feasible for many. They could not afford phones, laptops and sustained internet access that better-off city dwellers had.

**Conclusions:** Lessons for future include having more hospitals and clinics for routine health services. Co-opting nurses, other paramedical personnel on medium-term contracts can prevent/mitigate interruption of outreach health services and help Indian, LMIC cities better deal with future disasters. Inclusion of the urban poor (who provide low-wage services to cities) in extending essential services, and social protection schemes is vital during future pandemics. Ensuring access to food supplies mitigates suffering of the urban poor. Decentralised free food distribution with the help of schoolteachers, other government functionaries is crucial to prepare for similar future crises. An employment guarantee program for the urban poor similar to India's Rural Employment Guarantee Scheme needs to be rolled out. Onsite classes in settlements with open spaces nearby is a way to extend education to deprived children during future disasters/pandemics.

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### Symptom presentation and quality of life are comparable in Myalgic Encephalomyelitis/Chronic Fatigue Syndrome and post COVID-19 condition

Breanna Weigel<sup>1</sup>, Natalie Eaton-Fitch<sup>1</sup>, Kiran Thapaliya<sup>1</sup>, Sonya Marshall-

Gradisnik<sup>1</sup><sup>1</sup>National Centre for Neuroimmunology and Emerging Diseases, Menzies Health Institute Queensland, Griffith University, Australia

**Background and Objective:** Considerable overlap exists in the clinical presentation of Post COVID-19 Condition and Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS). The current study aimed to compare symptoms and patient-reported Quality of Life (QoL) among people with Post COVID-19 Condition and ME/CFS in Australia. **Methods:** QoL data was collected from n=61 ME/CFS patients, n=31 Post COVID-19 Condition patients, and n=54 Healthy Controls (HCs) via validated instruments. The ME/CFS and Post COVID-19 Condition participants also provided self-reported severity and frequency of symptoms derived from the Canadian and International Consensus Criteria for ME/CFS and the World Health Organization case definition for Post COVID-19 Condition. Study variables were compared with Chi-square, Fisher's exact, Fisher-Freeman-Halton, Mann-Whitney U, and Kruskal-Wallis H tests using Statistical Package for the Social Sciences version 29. Symptom clusters among the two illness cohorts were identified with hierarchical cluster analysis.

**Results:** ME/CFS was associated with a higher prevalence of short-term memory loss (p=0.039), muscle weakness (p<0.001), lymphadenopathy (p=0.013), and nausea (p=0.003). People with ME/CFS also reported more severe light-headedness (p=0.011) and more frequent unrefreshed sleep (p=0.011), but less frequent heart palpitations (p=0.040). Symptom prevalence, severity, and frequency were otherwise comparable. Few differences existed in the QoL of the two illness cohorts, both of which returned significantly impaired QoL scores when compared with HCs (p<0.001). Cluster analysis of symptom prevalence revealed four clusters: 1) Low gastrointestinal, low neurosensory; 2) Moderate gastrointestinal, low orthostatic and memory loss; 3) Moderate gastrointestinal, high orthostatic and memory loss; and 4) High gastrointestinal, high pain, which did not differ in sociodemographic information, illness status, or diagnostic criteria met. **Conclusions:** Post COVID-19 Condition and ME/CFS are remarkably similar in presentation and, like ME/CFS, Post COVID-19 Condition has a profound and negative impact on patient QoL. Gastrointestinal symptoms may have a role in determining ME/CFS and Post COVID-19 Condition subtypes.

**Popul. Med. 2023;5(Supplement):A372****DOI: 10.18332/popmed/165669****How to reshape trade for vaccine equity: gaps in policy discourse**Toby Pepperrell<sup>1</sup>, Alison McCallum<sup>2</sup>, Toby Pepperrell<sup>1</sup>, Alison McCallum<sup>1</sup>  
<sup>1</sup>University of Edinburgh, United Kingdom, <sup>2</sup>Centre for Population Health Sciences, United Kingdom

**Background and Objective:** While trade-related impacts on health are often difficult to assess, the COVID-19 pandemic revealed vaccine inequity as a unifying health need, an example of trade as a commercial determinant of health (CDH). We analysed stakeholder views and priorities regarding trade and vaccine equity, exploring where policy and action may shift to reshape trade relationships for wider transition to wellbeing economics, and to build a transferable analytical framework for policy analysis of trade as a CDH.

**Methods:** We undertook a systematic literature search (01/03/22-01/06/22) exploring major stakeholder libraries, Policy Commons, and linked reference searches from 2010. Stakeholder views on contributors to vaccine inequity were mapped onto an adapted rights, responsibilities, redistribution framework as causal process observations to create a network of policy recommendations.

**Results:** The available policy advice was fragmented and revealed significant gaps. While existing tools and legal flexibilities were acknowledged, the deep-set politico-economic barriers that limit successful use were not. Technocratic solutions lacked incentives or requirements for cooperation. The determinants of vaccine equity and application of collaborative mechanisms, other than trade agreements, were rarely considered. The shrinkage of policy space inhabited by governments, public health, and NGOs by current approaches to free trade agreements was not addressed. Few spaces for real change were explored, even when distributional inequity was clear.

**Conclusions:** Our analytical framework illustrates gaps in the consideration of policy options and implementation mechanisms that would help address current levels of vaccine inequity. The narrow policy discourse and resistance to implement existing mechanisms designed to mitigate inequity has delayed essential action and limited co-creation of solutions. In addition to a TRIPS+ waiver, trade-related factors that increase health inequity must be tackled explicitly. Alternative collaborative mechanisms with the potential for real change must be prioritised above trade agreements that serve corporate over community interests.

**Popul. Med. 2023;5(Supplement):A373****DOI: 10.18332/popmed/165673****Assessment of excess mortality in Italy in 2020-2021 as a function of selected macro-factors**Emiliano Ceccarelli<sup>1</sup>, Giada Minelli<sup>1</sup>, Giovanna Lasinio<sup>2</sup><sup>1</sup>Istituto Superiore di Sanità, Italy, <sup>2</sup>Sapienza University of Rome, Italy

**Background:** Excess mortality (EM) can reliably capture the impact of a pandemic, as the increase in deaths is not related to the COVID-19 deaths alone. This study aims at assessing the numerous factors associated with EM during the pandemic in Italy.

**Methods:** Mortality records (ISTAT 2015-2021) aggregated in the 610 Italian Labour Market Areas (LMAs) were used to obtain the EM P-score to correlate EM with socioeconomic variables. A two-step analysis was implemented: 1) Functional representation of EM and clustering using the Discriminative Functional Mixture Model. 2) Distinct functional regression by cluster to assess relationships between EM and covariates.

**Results:** The LMAs are divided into 4 clusters: 1 low EM; 2 moderate EM; 3 high EM; 4 high EM-first wave. From the functional regression models estimate, Low-Income showed a negative association with EM clusters 1 and 4. Population density and percentage of over 70 did not seem to affect EM significantly. Bed availability positively correlates with EM during the first wave. The employment rate positively correlates with EM during the first two waves, becoming negatively associated when the vaccination campaign began.

**Conclusions:** The clustering shows diverse behaviors by geography and time, the impact of socioeconomic characteristics, and local governments and health services responses. The LMAs allow drawing a clear picture of local characteristics associated with the spread of the virus. The employment rate and the beds availability trends confirmed that essential and health workers were at risk, especially during the first wave. The beds availability trend shows also the nosocomial nature of the disease during the pandemic's first wave. The proportion of the elderly is mostly not significant, except for two clusters with lower EM during the first wave, showing a positive association with EM.

**Popul. Med. 2023;5(Supplement):A374****DOI: 10.18332/popmed/165689****COVID-19 conspiracy beliefs, government legitimacy and societal priorities in the age of pandemic**Aldo Rosano<sup>1</sup>, Pasquale Padova<sup>1</sup>, Luca Regazzi<sup>2</sup>, Chiara Cadeddu<sup>2</sup><sup>1</sup>National Institute for Public Policy Analysis, Rome, Italy, <sup>2</sup>Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy

**Background:** Conspiracy beliefs can be a major hindrance causing a lack of compliance with public health measures and, more in general, a government's ability to enforce rules adopted to protect the public. During the pandemic, trust in scientists, government, and its responses to the health emergencies represented crucial questions. The study examines conspiracy beliefs, government legitimacy, and societal priorities in relationship with COVID-19 in 17 European countries: Bulgaria, Croatia, Czechia, Estonia, Finland, Greece, Hungary, Iceland, Italy, Lithuania, Netherlands, North Macedonia, Norway, Portugal, Slovakia, Slovenia, Switzerland using data from the 10th round of the European Social Survey held in 2021-2022.

**Results:** Respondents are 33.351 aged 15 or more. Trust in scientists ranges from 54% in Slovakia and Bulgaria to over 84% in Finland and Iceland. One-fourth of respondents believe that groups of scientists manipulate evidence to deceive the public, from a high of 50% in Bulgaria and North Macedonia to a low of 20% in Italy, Switzerland, and Nordic countries. About 56% of respondents affirm that it is more important to prioritise public health when fighting a pandemic rather than economic activity, with slight differences among countries. Most respondents are satisfied with the way health services coped with the coronavirus pandemic, less in Bulgaria and Slovakia (80%). Those more prone to conspiracy, who believe in manipulation by scientists, have a lower education, older age, and lower interest in political and cultural life.

**Conclusions:** This study paints a picture of the opinions of European citizens on government legitimacy and priorities related to the pandemic. The share of European people prone to conspiracy thinking is large, especially in Eastern Europe. This is of great concern for compliance with rules to be adopted during health emergencies.

**Popul. Med. 2023;5(Supplement):A375****DOI: 10.18332/popmed/165690****Trust in the scientific community and conspiracy thinking in Italy during the COVID-19 pandemic**Chiara Cadeddu<sup>1</sup>, Luca Regazzi<sup>1</sup>, Aldo Rosano<sup>2</sup><sup>1</sup>Department of Life Sciences and Public Health, Università Cattolica del

Sacro Cuore, Rome, Italy, <sup>2</sup>Unit of Statistics, National Institute for Public Policies Analysis (INAPP), Rome, Italy

**Background and Objective:** Trust in scientists (TiS) plays a major role in determining people's acceptance of evidence-based health-related measures. Previous research shows that in Italy lack of TiS is associated with a higher inclination towards conspiracy beliefs (ItCB). Our aim is to analyse TiS and ItCB among Italians during the COVID-19 pandemic.

**Methods:** The European Social Survey (ESS) is a biennial survey measuring attitudes, beliefs, and behaviours across Europe. We present a descriptive analysis of data from its 10th round, conducted in 2022, concerning Italians' TiS and ItCB, along with their relationship with socio-cultural-demographic variables. **Results:** The sample is composed of 2,640 respondents, with a median age of 53 years, of which 51.7% are females. Most respondents declare having high levels of trust in scientists (69.3%). However, only 49.8% of them disagree that groups of scientists manipulate evidence to deceive the public. While 58.9% of those with high levels of trust expectedly disagree with evidence manipulation by scientists, 15.7% of them are concerned with it. Of those trusting science, 51.5% think people can usually be trusted (against 29.6% of those distrustful of science). Conversely, among those questioning scientists' integrity, a lower proportion trust people in general (33.0%) compared to their counterparts (50.6%). Both higher trust in scientists and stronger belief in scientists' integrity are associated with higher education (high school/university), younger age, and being female. A similar association emerges with higher interest in politics, with left-wing political placement, with better rating of health services and with living in a big city or suburbs.

**Conclusions:** Although most Italians show high TiS and low ItCB, there is a relevant cluster of citizens with an opposite profile. The common determinants of lower TiS and higher ItCB must be better understood and addressed to ensure a higher effectiveness of public health measures during emergencies.

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### The impact of COVID-19 pandemic on depression and anxiety symptoms: findings from the United Arab Emirates healthy future cohort study

Maryam Marri<sup>1</sup>, Manal Blooshi<sup>1</sup>, Tamadher Ameri<sup>1</sup>, Amar Ahmad<sup>1</sup>, Andrea Leinberger-Jabari<sup>1</sup>, Abdishakur Abdulle<sup>1</sup>, Manal Taimah<sup>1</sup>, Thekra Zaabi<sup>1</sup>, Khaloud Remeithi<sup>1</sup>, Ayesha Hosani<sup>1</sup>, Scott Sherman<sup>2</sup>, Raghieb Ali<sup>1</sup>

<sup>1</sup>New York University Abu Dhabi, United Arab Emirates, <sup>2</sup>New York University, United States

**Background and Objectives:** Concerns about mental health were raised during the COVID-19 pandemic. We investigated the prevalence of depression and anxiety symptoms among the participants of the United Arab Emirates Healthy Future Study (UAEHFS); a cohort study. We further explored the change in the prevalence of depression symptoms among those with comparable pre-pandemic data.

**Methods:** A sample of UAEHFS participants was invited to complete a COVID-19 online questionnaire during the pandemic. Depression and anxiety symptoms were assessed using the Patient Health Questionnaire Depression Scale (PHQ-8) and the Generalized Anxiety Disorder-7 Scale (GAD-7) respectively. Unpaired analyses were done to examine the effect of COVID-19 on depression and anxiety symptoms during the pandemic. Paired analysis was conducted to examine the change in depression symptoms.

**Results:** During the pandemic, we reported a prevalence of 32.8% (95% CI: 27.0, 39.1) for depression and 26.4% (95% CI: 21.0, 32.6) for anxiety symptoms. Younger people reported higher levels of depression (40.4%) and anxiety (34.5%) symptoms. Females reported higher levels of depression (36.5%) and anxiety (32.7%) symptoms. In paired analysis, the prevalence of depression symptoms during the pandemic was 34% (95% CI: 26.5, 42.4) compared to 29.9% (95% CI: 22.7, 38.1) before the pandemic. No statistically significant difference was observed, p-value = 0.440. Adjusted multivariate logistic regression models for PHQ-8 and GAD-7 during the pandemic showed that participants, who were experiencing flu-like symptoms, had higher odds of reporting depression symptoms compared to those without symptoms. Age was significantly negatively associated with anxiety symptoms.

**Conclusions:** We found that depression and anxiety symptoms were more prevalent among young people and females. However, we did not find a significant change in the prevalence of depression symptoms among those with comparable pre-pandemic data. Identifying vulnerable groups and understanding trajectories through longitudinal studies would help with planning for effective mental health interventions.

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### Impact of the COVID-19 pandemic on federally qualified health centers in Puerto Rico during 2020

Heriberto Centeno<sup>1</sup>, Ralph Rivera-Gutiérrez<sup>2</sup>, Elba Díaz-Toro<sup>3</sup>, Alejandro Rodríguez-Putnam<sup>2</sup>, Rahisa Morales<sup>2</sup>

<sup>1</sup>University of Puerto Rico, Graduate School of Public Health, Puerto Rico,

<sup>2</sup>Graduate School of Public Health, University of Puerto Rico, Puerto Rico,

<sup>3</sup>School of Dental Medicine, University of Puerto Rico, Puerto Rico

**Introduction:** Puerto Rico's network of Federally Qualified Health Centers (FQHCs), which consists of 22 centers with 86 satellite clinics, is the backbone of the island's primary health care system. Therefore, it is extremely important to study the effect of the COVID-19 pandemic on the delivery of services and the adaptation strategies implemented to continue operations. The research Objectives were to identify, measure and describe the effect of the pandemic on the FQHCs' continuity of operations, financial stability, and strategies implemented. Finally, we sought to develop recommendations to strengthen the FQHCs' continuity of operations for future emergencies.

**Methods:** A mixed research Methodology was utilized in which quantitative and qualitative approaches were combined. Of the 21 FQHCs that qualified for the study, 17, or 81.0%, provided the research team with data on service utilization, patients served, staff, operating costs, and revenue received from 2018 to 2020. Moreover, individual and group interviews were conducted with patients, members of the Board of Directors, community leaders, clinical staff, and senior management from a sample of seven FQHCs. We then triangulated the data and information collected from both components.

**Results:** Puerto Rico's FQHCs demonstrated great flexibility, adaptability, and innovative capacity during their response to the pandemic. The primary health care services provided played an important role in assisting, supporting, and mitigating the impact of COVID-19 on the health of thousands of vulnerable persons, families, and communities around the island.

**Conclusions:** While there is clearly much work to be done to overcome this public health challenge, the current moment offers an opportunity for Puerto Rico's local and state political leaders to use the creativity, innovations, and lessons learned from the FQHCs' response to the COVID-19 pandemic to maintain and strengthen an equitable primary health care system that is resilient and accessible in the future.

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### Investigating household transmission of SARS-CoV-2: an analysis of 1453 households

Ecem Şensoy<sup>1</sup>, Ahmet Emecen<sup>1</sup>, Salih Keskin<sup>1</sup>, Ahmet Süner<sup>1</sup>, Neslişah Şiyve<sup>1</sup>, Öykü Turunç<sup>2</sup>, Belgin Ünal<sup>3</sup>

<sup>1</sup>Department of Public Health, Faculty of Medicine, Dokuz Eylül University,

Türkiye, <sup>2</sup>Mardin Provincial Health Directorate, Turkey, <sup>3</sup>Department of Public

Health, Dokuz Eylül University Faculty of Medicine, Turkey

**Background&Objective:** Household transmission is the dominant way of SARS-CoV-2 transmission. Implementing strict protective measures is difficult to apply within households. In this study, we aimed to investigate individual and household-level factors contributing to SARS-CoV-2 transmission among household members. **Methods:** A total of 1453 households belonging SARS-CoV-2 RT-PCR-positive people who applied to Dokuz Eylül University Hospital in Izmir, Turkey between November 1st and 30th, 2020 were included in the study. Individual and household-level data were collected via telephone calls. Multilevel logistic regression models were conducted with individual and household-level variables to predict SARS-CoV-2 transmission. The transmission was considered as being SARS-CoV-2 RT-PCR positive or having symptomatic illness for the people who were epidemiologically linked to the confirmed case.

**Results:** Among the 5228 people coming from 1453 households, 3194 people were symptomatic (61.1%). The null model revealed there is a significant variation among households (Variance partition coefficient-VPC: 21%). According to the full model which included individual and household-level variables and had adjustment for household size and population (VPC: 20%); significant individual variables were being over age 65 (odds ratio-OR, 95% confidence interval-CI: 7.85, 5.38-11.45), having a chronic disease (OR, 95%CI: 1.60, 1.31-1.96) and being a nuclear family member (OR, 95%CI: 3.30, 2.71-4.1). For household-level variables, having a housekeeper in the household (OR, 95%CI: 2.44, 1.00-5.96), never wearing a mask (OR, 95%CI: 1.60, 1.15-2.23), eating at the same table (OR, 95%CI: 1.92, 1.42-2.60) and traveling in the same car (OR, 95%CI: 1.58, 1.17-2.13) were significant. Gender, natural ventilation, type of building and being isolated in a separate room were not statistically significant.

**Conclusions:** The results of the study may represent a useful contribution to understanding the household transmission of SARS-CoV-2. In line with the study

results, mitigation strategies in the future could be planned for the household transmission of SARS-CoV-2-like respiratory viruses.

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### **Impact of COVID-19 in Irish Nursing Homes: an assessment of variables associated with performance during first wave of the pandemic**

John Loughrey<sup>1</sup>, Codd Mary<sup>2,1</sup>, Conyard Karl<sup>2,1</sup>, Parnian Jalili<sup>1</sup>, Eamonn Gormley<sup>1</sup>, Patrick Wall<sup>3</sup>

<sup>1</sup>University College Dublin, Dublin, Ireland, <sup>2</sup>ASPHER, Ireland, <sup>3</sup>University College Dublin, Ireland

**Background and Objective:** The COVID-19 pandemic has had a devastating impact globally, particularly on long-term care facilities (LTCF), in which elderly and vulnerable populations reside. In Ireland, LTCF residents were severely affected in the first wave; 3-5% of all LTCF residents died in this timeframe, accounting for 56% of all COVID-19 deaths in the country. Continued investigation of the reasons for this is vital. The aim of this research was to establish whether risk factors for high LTCF mortality established elsewhere were significantly associated with Irish LTCF performance in the first wave. Specifically, cumulative county incidence rate, facility size, occupancy rates, private vs public ownership and compliance with health inspection regulations were investigated.

**Methods:** The main outcome considered was deaths per 100 beds. Data on crude mortality were available for 580 LTCFs up to 28 May 2020. Estimates of occupancy and compliance with regulations were averaged for these LTCFs from a novel dataset of 1130 available LTCF regulatory inspection reports up to January 2022. Focused geographic, temporal and correlation analyses looked at the relationship between deaths and studied variables. Bivariate and multivariate regression analysis was carried out to predict LTCF performance.

**Results:** The most significant predictor of deaths from COVID-19 in LTCFs resulting from this research was cumulative COVID-19 incidence in a county followed by facility size, in concordance with international literature. Occupancy rates and ownership factors were not found to have a significant effect. Compliance with regulatory standards showed borderline significant association with worse performance.

**Conclusions:** In conclusion, to protect LTCF residents in Ireland in the present and for potential future pandemics, attention should be paid to monitoring and suppressing local incidence rates, a move towards smaller facilities with individual rooms and closer attention to compliance with regulatory guidelines.

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### **Flexibilization of regulations of health professionals' practices in response to the COVID-19**

Ana Stralen<sup>1</sup>, Cristiana Carvalho<sup>1</sup>, Sábado Girardi<sup>1</sup>, Alice Massote<sup>1</sup>, Mariangela Cherchiglia<sup>1</sup>

<sup>1</sup>Federal University of Minas Gerais, Brazil

**Background and Objective:** Brazil is one of the countries most affected by the COVID-19 pandemic. Given its rapid spread, governments and health services had to act with the same speed to expand their health workforce capacity. This study aimed to identify strategies related to optimizing the health workforce, especially those related to the flexibilization of the scope of practice regulation of health professionals worldwide and in Brazil.

**Methods:** We conducted a scoping review in September and October of 2020 following the stages proposed by the Joanna Briggs Institute to identify worldwide regulatory strategies related to the flexibility of the scope of practice regulation of health professionals. After classifying the strategies, we investigated how and which strategies were implemented in Brazil.

**Results:** A total of 36 documents were identified and grouped into the type of strategies, professionals involved, and country of references. We identified six categories of strategies (1) enhancing scope of practice; (2) task shifting between health professionals; (3) telemedicine; (4) licensing and recruitment of idle workers; (5) recruitment of workers from other regions/states; and (6) education and training. Among the most important strategies identified, in several countries, including Brazil, in response to health workforce shortages and overloaded professionals, was the willingness to adapt, expand, and redistribute workers' functions to deal with the rapid changes. However, in Brazil, we encountered several limitations due to rigid workforce regulations.

**Conclusions:** Many countries and health organizations have experimented with new ways to unlock the potential of the health workforce. This review points to the urgent need for reforms in workforce regulation in Brazil to optimize and permit the use of full skillsets of the health workforce so that they can meet the population's

constant needs and adapt to new demands.

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### **Healthcare assistant and carers in Ireland: battling for resources during SARS CoV-2, Wave 1: a rapid-response survey**

Karl Conyard<sup>1,2</sup>, Allison Metcalfe<sup>3</sup>, Nicole McAllister<sup>4</sup>, Parnian Jalili<sup>5</sup>, John Loughrey<sup>5</sup>, Patrick Wall<sup>6</sup>, Mary Codd<sup>7</sup>

<sup>1</sup>Association of Schools of Public Health in the European Region (ASPHER), Dublin, Ireland, <sup>2</sup>University College Dublin, Dublin, Ireland, <sup>3</sup>HCA and Carers Ireland, Kildare, Ireland, <sup>4</sup>University College Dublin, Ireland, <sup>5</sup>Woodview House, School of Public Health, Physiotherapy and Sports Science, University College Dublin, Ireland, <sup>6</sup>School of Public Health, Physiotherapy and Sports Science, University College Dublin, Ireland, <sup>7</sup>School of Public Health, Physiotherapy and Sports Science, University College Dublin, Association of Schools of Public Health in the European Region, Dublin, Ireland

**Background and Objective:** The first wave of SARS-CoV-2 enveloped the world with uncertainty and fear. At-risk-populations including the elderly, those living with disabilities and those who were immuno-compromised relied heavily on frontline healthcare staff for much of their care. In Ireland, little is known of key workers at the helm of this effort, notably Healthcare Assistants and qualified carers (HCAs). This study highlights how HCAs managed in the most difficult period of the SARS-CoV-2 pandemic and the already delicate systems in which they function.

**Methods:** A mixed method rapid-response survey was carried out by the HCA Research Group at University College Dublin in conjunction with HCA and Carers Ireland, a national social association for healthcare assistants and qualified carers which provided education and assistance for research activities for policy change. The rapid-response survey was made available online for a 24-hour period in April 2020. The information was gained in a confidential and anonymous manner.

**Results:** Of 456 responses received within 24-hours, the majority worked in the private sector (56%). Homecare was the most common healthcare environment (44%) followed by nursing homes (29%). At the time of the survey 31% had not received any training in infection prevention and control (IPC), 29% of respondents worked in different locations weekly; 38% did not have access to an adequate supply of personal professional equipment (PPE); 55% did not have appropriate PPE for their duties; 29% did not feel supported at work.

**Conclusions:** Fear of the unknown was a common concern early in the pandemic. SARS-CoV-2 was an emerging infection about which little was known and early information was conflicting. Lack of prior IPC training and inadequate supplies of appropriate PPE in residential care settings reflected failure to direct resources to these important preventative measures. HCAs and carers are a vital source of this important information.

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### **SARS-CoV-2 Delta and Omicron variant transmission and the impact of vaccine in schools and child-care settings in Australia**

Archana Koirala<sup>1,2</sup>, Kristine Macartney<sup>3</sup>, Noni Winkler<sup>2</sup>, Helen Quinn<sup>3</sup>, Evangeline Gardiner<sup>2</sup>, Bette Liu<sup>4</sup>, Joanna Forbes<sup>5</sup>, Caroline Sharpe<sup>5</sup>, Trish Tuszenbroek<sup>6</sup>, Nicholas Wood<sup>3</sup>

<sup>1</sup>University of Sydney, Australia, <sup>2</sup>National Centre for Immunisation Research and Surveillance, Australia, <sup>3</sup>National Centre for Immunisation Research and Surveillance, University of Sydney, Australia, <sup>4</sup>National Centre for Immunisation Research and Surveillance, University of New South Wales, Australia, <sup>5</sup>New South Wales Health, Australia, <sup>6</sup>New South Wales Department of Education, Australia

**Background:** Over 214 million students globally have been affected by school closures during the COVID-19 pandemic. To address knowledge gaps on transmission of SARS-CoV-2 delta (B.1.617.2) and omicron (B.1.1.529) variants in educational settings we examined virus transmission in schools and early childhood education and care settings (ECECs) in New South Wales (NSW), Australia in relation to mitigation measures, including COVID-19 vaccination.

**Methods:** Secondary transmission from children and adults with laboratory-confirmed SARS-CoV-2 infection who attended a school (n=3170) or ECECs (n=5800) while infectious was investigated over two periods: 1) June 16 to September 18, 2021 (delta outbreak), and; 2) October 18 to December 18, 2021 (delta and omicron; schools only). Close contacts of cases underwent 14 days quarantine and SARS-CoV-2 nucleic acid testing. Secondary attack rates (SARs) were calculated and compared with state-wide notification data, school attendance, and vaccination status.

**Findings:** 1187 schools and 300 ECECs had students (n=1349) or staff

(n=440) attend while infectious. Of 24279 contacts investigated, most (93.2%; 22627/24279) were tested and 912 secondary cases identified. The secondary attack rate (SAR) was 5.6% in 139 ECECs and 3.5% in 312 schools. The risk of becoming a secondary case was higher in unvaccinated school staff (OR 5.7; 95%CI: 2.0–16.0), particularly ECEC staff (OR 11.3; 95%CI: 4.5–28.4) and unvaccinated school students than in vaccinated school staff. SARs were similar for delta (4.6%) and omicron BA.1 (5.0%) in the unvaccinated and higher compared with vaccinated contacts (1.3% and 2.2%, respectively). Increasing school attendance rates raised case incursions and secondary case numbers, but not community-wide infection rates.

Interpretation: Vaccination reduced SARS-CoV-2 transmission rates in schools, although less so for omicron than delta variants. Despite higher community-based transmission rates, in-school transmission remained low and stable with high attendance, suggesting that community restrictions, rather than school closures, best mitigated COVID-19 impacts.

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### Quality of National Disease Surveillance Reporting before and during COVID-19

Hanevi Djasri<sup>1</sup>, Muhammad Hardhantyo<sup>1</sup>, Aldilas Nursetyo<sup>1</sup>, Bernadetta Rachela<sup>1</sup>, Andriani Yulianti<sup>1</sup>

<sup>1</sup>Center for Health Policy and Management, Indonesia

Background: Global COVID-19 outbreaks in early 2020 have burdened health workers, among them surveillance workers who have the responsibility to undertake routine disease surveillance activities. The aim of this study was to describe the quality of the implementation of Indonesia's Early Warning and Response Alert System (EWARS) for disease surveillance and to measure the burden of disease surveillance reporting quality before and during the COVID-19 epidemic in Indonesia. Methods: A mixed-method approach was used. A total of 38 informants from regional health offices participated in Focus Group Discussion (FGD) and In-Depth Interview (IDI) for informants from Ministry of Health. The FGD and IDI were conducted using online video communication. Yearly completeness and timeliness of reporting of 34 provinces were collected from the application. Qualitative data were analyzed thematically, and quantitative data were analyzed descriptively.

Results: Major implementation gaps were found in poorly distributed human resources and regional infrastructure inequity. National reporting from 2017–2019 showed an increasing trend of completeness (55%, 64%, and 75%, respectively) and timeliness (55%, 64%, and 75%, respectively). However, the quality of the reporting dropped to 53% and 34% in 2020 concomitant with the SARS-CoV2 epidemic.

Conclusions: Report completeness and timeliness are likely related to regional infrastructure inequity and the COVID-19 epidemic. It is recommended to increase report capacities with an automatic EWARS application linked systems in hospitals and laboratories.

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### High coverage and equitable distribution: status and correlates of COVID-19 vaccine uptake in two vulnerable sites in Bangladesh

Islam Muhammed Nazmul<sup>1</sup>, Emmanuel Bonnet<sup>2</sup>, Malabika Sarker<sup>1</sup>, Manuela De Allegri<sup>3</sup>, Valéry Ridde<sup>2</sup>

<sup>1</sup>BRAC James P Grant School of Public Health, BRAC University 22 Sheikh Shaheb Bazar Road, Azampur, Dhaka-1205, Bangladesh, <sup>2</sup>Institut de recherche pour le développement, <sup>3</sup>Heidelberg Institute of Global Health, Heidelberg University Germany

Bangladesh has fully vaccinated 76 per 100 population against COVID-19. However, ensuring higher coverage in vulnerable sites is subject to various challenges. We report the COVID-19 vaccine uptake and its correlates among the adults residing in two vulnerable sites in Bangladesh.

We conducted a cross-sectional study between August and September 2022 in two sites with a high prevalence of in- and out-migration. Duaripara, a slum in northeast Dhaka, was selected as the in-migration site. Tala, a disaster-prone sub-district located in southwest Satkhira, was selected as the out-migration site. We surveyed 2502 adults (1239 from Duaripara; 1263 from Tala) from 1211 randomly selected households. We reported coverage and examined associations between the uptake and background characteristics using Poisson, and Two-part regression models. Additionally, we checked for spatial autocorrelation to assess equitable distribution geographically.

The coverage for the first and second doses of the COVID-19 vaccine were about 91% and 80.3% in Duaripara, and 96.6% and 92.2% in Tala, respectively. For the

third dose, it was about 14% in Duaripara and 52.4% in Tala. For Tala, the uptake was significantly associated with age, education, and occupation. Interestingly, it was associated positively with television access (Incidence rate ratio: 1.04, p-value = 0.01) and negatively with smart-phone access (IRR: 0.96, p-value = 0.04). Respondents who temporarily migrated were more likely to remain unvaccinated (IRR: 0.90, p-value <0.001). For Duaripara, age and occupation were associated with the uptake. For both sites, the uptake was neither associated with income or wealth, nor correlated with geographical location, indicating equitable distribution. The credit for high COVID-19 vaccine coverage in Bangladesh dates back to its long history of implementing immunization programs through community mobilization and creating demand through health education. However, full vaccination is essential to reduce COVID-19-related deaths. Health authorities need to pay special attention to vulnerable sites.

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### Roles of health professionals in infodemic management related with the novel coronavirus disease

Dilek Aslan<sup>1</sup>, Selen Yegenoglu<sup>1</sup>, Bilge Sozen Sahne<sup>1</sup>, Meltem Sengelen<sup>1</sup>

<sup>1</sup>Hacettepe University, Faculty of Medicine, Department of Public Health, 06100, Sıhhiye, Ankara, Türkiye

Background and objective: Infodemic is a global threat. This study is carried out with one of the qualitative research methods, in-depth interview, aimed determining the views and roles of healthcare professionals on the widespread "infodemic" during the COVID-19 pandemic. Secondary aim is to develop possible solution proposals regarding the roles of healthcare professionals in the fight against infodemic.

Methods: Within the scope of the research, in-depth interviews were held with 23 academic staff from the field of health at Hacettepe University (Health) Campus in the 2021-2022 period. Eight physicians, 5 pharmacists, 3 nurses, 3 dieticians, 2 dentists, 1 physiotherapist and 1 child development specialist participated. Due to the pandemic conditions, various online meeting platforms were used for the interviews. The interviews were transcribed by the researchers. Themes categories and codes were determined for content analysis. In the end, categories and codes compatible with 6 themes were determined. The Project was funded by Hacettepe University Scientific Research Projects Coordination Unit (Nb. 19340). Results: In the interviews, participants stated that infodemic was a problem before COVID-19. Thus, its frequency became more visible with the pandemic. The infodemic, in general, has made life difficult in many ways. All participants think that health workers have a significant role in the fight against infodemic. Although being a health worker is the common ground in the stated roles, different occupational groups also underlined their expertise-specific roles. Besides they declared that the fight against infodemic was stated as a multidisciplinary field of study and an institutional approach must be developed. Conducting future studies with an interdisciplinary approach, development of individual and community education, professionalism and strengthening of healthcare and other systems were emphasized.

Conclusion: Planning sustainable programs will be helpful to respond to the actual needs in infodemic management.

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### One size does not fit all! barriers and drivers towards COVID-19 prevention measures in the Netherlands

Valerie Eijmond<sup>1</sup>, Nora Bünemann<sup>1</sup>, Nicky Renna<sup>1</sup>, Anja Schreijer<sup>1</sup>

<sup>1</sup>Pandemic and Disaster Preparedness Center Netherlands

Background and Objective: Identifying barriers and drivers towards health protective behaviours is an important step when designing interventions because a one-size-fits-all approach may not reach the whole population. The objective of this project is developing, testing and evaluating targeted interventions for underserved groups during pandemics in the Netherlands. We did so by using the Tailoring Immunization Programmes (TIP) approach developed by the World Health Organization (WHO). We now present the findings of the situation analysis. The aim was to get an overview of existing barriers and drivers to COVID-19 vaccination, testing and adherence to measures, and the interventions initiated in the Netherlands.

Methods: We conducted a literature scan followed by semi-structured interviews with 23 experts. The data were discussed and enriched during a national expert meeting facilitated by the Pandemic and Disaster Preparedness Center (PDPC) and the WHO regional office for Europe.

Results: The findings revealed that underserved groups are heterogeneous, with different and multifactorial barriers (e.g. mistrust in the government, mis- and

disinformation, accessibility) and drivers (e.g. self-protection, moral duty to protect others). Research has predominantly focused on vaccination behaviour among the general population. Over 45 interventions and projects were identified. These interventions were designed with limited use of behavioural insights, due to limited available qualitative research and lack of time during the crisis to gain such insights.

Conclusion: More research is needed to understand the differences between underserved groups. Although many interventions were initiated, there is a need to design tailored interventions informed by insights, and the need for monitoring and evaluation. In the next phase of this project, we will explore the barriers and drivers to COVID-19 vaccination among elderly migrants using a qualitative approach. These results will be used to develop tailored interventions to improve vaccination uptake and can inform long-term pandemic preparedness and response.

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### **A feasibility study about covid-19 patients management in general hospital wards in Italy: an organizational assessment approach**

Giulia Libero<sup>1</sup>, Valerio Bordino<sup>1</sup>, Paolo Ragusa<sup>1</sup>, Alessandro Prinziavalli<sup>1</sup>, Palma Desantis<sup>2</sup>, Paola Gatti<sup>2</sup>, Adriana Trombotto<sup>2</sup>, Davide Minniti<sup>2</sup>, Roberta Siliquini<sup>3</sup>, Fabrizio Bert<sup>4</sup>

<sup>1</sup>University of Turin, Department of Public Health Sciences, Italy, <sup>2</sup>Health Local Unit ASL TO3 Italy, <sup>3</sup>University of Turin, Department of Public Health Sciences; AOU City of Health and Sciences of Turin, Italy, <sup>4</sup>University of Turin, Department of Public Health Sciences; Health Local Unit ASL TO3, Italy

Background and objectives: In the COVID-19 pandemic, healthcare-associated transmission has been a major concern and hospitals had to implement ways of isolating COVID-19 patients. Our study aimed to identify public health variables affecting the organizational approach of managing COVID-19 positive patients in hospital wards and describe our experience in three hospitals of Northern Italy.

Methods: We searched in the scientific literature organizational models for cohorting patients with COVID-19. We created a focus group and a SWOT analysis in order to define the best organizational assessment for each hospital.

Results: There is poor literature about organizational assessment for cohorting COVID-19 patients. We analyzed the floor plans, the hospital ventilation system, the personal protective equipment (PPE) use during a shift, workload for healthcare workers (HCW) and patient safety.

The variables that we identified were: 1) structural variables: presence or absence of single rooms with dedicated bathroom in hospital wards, presence or absence of an anteroom for donning and doffing, ventilation system; 2) patient care variables: safe patient care, patient well-being, necessity to move patient for diagnostic tests; 3) HCW variables: use of PPE, HCW workload; 4) Economic variables: costs for PPE supply, additional personnel costs, loss of COVID-free beds. In particular, we focused our attention on structural variables, patient care variables, HCW variables and economic variables.

Conclusions: The analysis of variables led us to define different organizational assessments for the three hospitals. Our evaluation showed that Hospital structure is the most important variable to evaluate. If there are no single rooms and no dedicated bathroom, it is impossible to guarantee isolation of patients. The cost in PPE use and for additional personnel may be higher with the single room isolation system than with the ward isolation system. Feasibility studies are needed to define which organizational model best suits the hospital setting.

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### **Identifying essential resources for pandemic response: an international delphi study within the EU-PANDEM-2 project**

Berend Beishuizen<sup>1</sup>, Mart Stein<sup>1</sup>, Anne-Romy Peelen<sup>1</sup>, Joeri Buis<sup>1</sup>, Alma Tostmann<sup>2</sup>, Caroline Green<sup>3</sup>, James Duggan<sup>3</sup>, Máire Connolly<sup>3</sup>, Chantal Bleeker-Rovers<sup>2</sup>, Aura Timen<sup>1</sup>

<sup>1</sup>National Institute for Public Health and the Environment, Netherlands, <sup>2</sup>Radboudumc, Netherlands, <sup>3</sup>University of Galway, Ireland

The ongoing COVID-19 pandemic highlights the crucial role of healthcare and public health resource management, where shortages impair the immediate response to a pandemic resulting in increased transmission and delayed patient care. In the European PANDEM-2 project, we aimed to identify essential resources for pandemic planning in the context of an emerging viral respiratory illness.

We performed a Delphi study consisting of a systematic literature review, a structured questionnaire and two international consensus rounds. Resources were categorized as material, human or pharmaceutical. A panel of public health experts (PHEs) and a panel of clinicians participated in the questionnaire (53

resources: 23 material, 18 human and 12 pharmaceutical) and a consensus round. We performed descriptive analyses for both panels.

Seventeen PHEs and 16 clinicians from nine and four countries respectively participated in the study. Consensus between the two panels was observed on 40 resources (16 material, 14 human, 10 pharmaceutical; 33 included and seven rejected). Notably, clinicians selected three home care resources while PHEs did not, and PHEs included two pharmaceutical resources which clinicians did not. No consensus was observed on 13 resources. Eleven additional resources were suggested (five by PHEs and six by clinicians) and included amongst which personal protective equipment for mobile teams, resources for primary care and resources related to mechanical ventilation.

There was consensus on 40 resources, of which 33 were included and seven rejected. There was no consensus on 13 resources, notably regarding home care and pharmaceutical resources, which reflects the different priorities of PHEs and clinicians in pandemic planning. This study highlights a set of resources to prioritize for pandemic preparedness activities, and shows the importance of including experts from varied backgrounds. Including these resources in pandemic models and preparedness exercise scenarios allows training on resource gaps and supports evidence-based decision making during future outbreaks.

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### **Supporting rurally dwelling adults with disabilities: the experiences of two organisations in Western Australia during the COVID-19 pandemic**

Zoe Lawrence-Haughey<sup>1</sup>, Monica Moran<sup>2</sup>, Barbara Nattabi<sup>1</sup>, Rohan Rasiah<sup>2</sup>

<sup>1</sup>The University of Western Australia, Australia, <sup>2</sup>The Western Australian Centre for Rural Health, Australia

Background and Objective: The COVID-19 pandemic disproportionately impacted people with disability and people living in rural areas, worsening existing inequalities. Many people with disability in Australia are assisted by disability support workers (DSWs) and disability support organisations (DSOs), though there has been little research done on how DSWs and DSOs have been affected by COVID-19. The aim of our study was to explore the experiences of staff from two rural DSOs in a large rural town in Western Australia (WA) who supported adults with disability during the COVID-19 pandemic and determine what challenges and opportunities they faced during this time.

Methods: Eleven employees from two DSOs in Western Australia were recruited mid-2022 using non-random purposive sampling. Three individual and two group semi-structured in-depth interviews were conducted via video-call software and reflexive thematic analysis was used in data analysis.

Results: Four major themes were identified. The study revealed that there were difficulties with the government pandemic response, increasingly unclear work boundaries for DSWs, and a high burden of the pandemic on DSOs, though organisations and employees adapted as best they could. Participants raised concerns over a perceived lack of inclusion of the disability sector and people with disability during the pandemic.

Conclusion: Whilst DSOs and DSWs believe that they have been able to maintain supports for clients during the pandemic, the lack of systematic public health approach for people with disability was evident. Future pandemic response in Australia requires consultation with the disability sector, utilisation of appropriate communication channels, and improved advocacy services for people with disability

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### **Integrated environmental and clinical surveillance of viral acute respiratory infections in close communities: opportunities and challenges**

Annalaura Carducci<sup>1</sup>, Laura Carrozzi<sup>2</sup>, Guglielmo Arzilli<sup>3</sup>, Ileana Federigi<sup>4</sup>, Marco Fornili<sup>5</sup>, Giulia Lauretani<sup>4</sup>, Tommaso Lomonaco<sup>6</sup>, Nebiyu Tariku Atomsa<sup>4</sup>, Alessandra Pagani<sup>4</sup>, Francesco Pistelli<sup>2</sup>, Lara Tavoschi<sup>3</sup>, Marco Verani<sup>4</sup>, Caterina Rizzo<sup>3</sup>

<sup>1</sup>University of Pisa, Department of Biology, Via S. Zeno, 35-37, 56123 PISA, Italy, <sup>2</sup>University of Pisa, Department of surgical, medical and molecular pathology and critical care medicine, Via Paradisa, 2, Pisa, Italy, <sup>3</sup>University of Pisa, Department of Translational Research and New technologies in Medicine and Surgery, Via S. Zeno, 35-37, 56123 Pisa, Italy, <sup>4</sup>University of Pisa, Department of Biology, Via S. Zeno, 35-37, 56123 Pisa, Italy, <sup>5</sup>University of Pisa, Department of clinical and Experimental Medicine, Via Roma, 67, Pisa, Italy, <sup>6</sup>University of Pisa, Department of Chemistry and Industrial Chemistry, Via Moruzzi, 3 - Pisa, Italy

**Background and Objectives:** The epidemiological relevance of viral acute respiratory infections (VARIs) has been dramatically highlighted by COVID19, but other viruses cannot be neglected, such as influenza virus, respiratory syncytial virus, rhinovirus, other coronavirus, adenovirus, metapneumovirus. The transmission of these viruses occurs mainly in closed spaces and is dependent both on human and environmental factors. Besides schools, closed communities, such as nursing homes and prisons are the most vulnerable settings, where the real extent of VARIs is often difficult to evaluate, due to the natural history of the diseases and to case ascertainment. In the COVID19 pandemic the Wastewater Based surveillance has shown its great potential for monitoring the virus diffusion and evolution in the environment. Our aim is to pilot an integrated surveillance system for closed communities, carried out through a syndromic surveillance, environmental monitoring (air, surfaces, and wastewater), and the collection on environmental and behavioral risk factors.

**Methods:** The Project funded by the National Recovery and Resilience Plan NRRP - Tuscany Health Ecosystem will consist in design and validate tools for epidemiological and environmental surveillance and analytical methods for environmental matrices, including viral sensors for viruses detection. The integration of all these information into risk assessment models will provide a useful tool for early warning and risk management.

**Results:** In the first phase of the project we will design and validate tools, such as clinical, epidemiological and environmental-based questionnaires, for each setting coupled with analytical methods for viruses' detection. The integrated surveillance system for closed communities, will be carry-out through syndromic surveillance, environmental monitoring (air, surfaces, and wastewater) and collection of environmental risk factors.

**Conclusion:** Integrating different surveillance systems for VARIs appears crucial to inform early warning and risk assessment tools available at local, regional and National level, but methods and strategies need to be set up.

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### Parameters in mathematical modelling of indoor spread of COVID-19: a scoping review

Cosimo Savoia<sup>1</sup>, Roberta Pastorino<sup>1</sup>, Angelo Pezzullo<sup>1</sup>, Stefania Boccia<sup>1</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore, Italy

**Background and Objective:** The spread of COVID-19 in indoor environments is a critical concern during the ongoing pandemic and mathematical modelling can provide insight into the transmission of SARS-CoV-2 in these settings. However, input factors used in these models have not been clearly described or analysed. The objective of this work was to retrieve and report the parameters related to the biological characteristics of SARS-CoV-2 and the physical parameters of the indoor environment that are used in the mathematical modelling of infectious disease transmission in indoor environments.

This research was conducted within the framework of the national "OPTimal bEhavior iN paNdEmic Scenarios" (OPENNESS) project, funded by Regione Lazio. **Methods:** We searched the PubMed database up to 31/11/2022 for English-language articles on quantitative risk assessment of indoor transmission of COVID-19.

Articles addressing other infections or including outdoor-developing diseases were excluded.

**Results:** The research generated 110 outputs, of which 2 studies were retained. One study employed a deterministic approach, while the other adopted a probabilistic mathematical method.

The common parameters identified in the two studies were: the pathogen quanta emission rate, exposure to quanta concentration, number of quanta received by an exposed susceptible person, time-dependent particle number concentration, and deposition of particles in the host's respiratory system.

The deterministic model better predicts particle filtration and deposition into receptor respiratory systems, whereas the probabilistic model provides more accurate results in environmental conditions with less clearly specified parameters. **Conclusion:** The parameters identified in this review and their subsequent analysis lay the groundwork for future research on the mathematical modelling of SARS-CoV-2 indoor transmission. More research is needed to understand better the role of these parameters to validate and refine existing mathematical models, in order to inform public health decision-making and prevent COVID-19 from spreading in indoor environments.

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### An assessment on the interplay of digital proximity app use and vaccine uptake for SARS-CoV-2 transmission mitigation in

### Switzerland

Paola Diano<sup>1</sup>, André Moser<sup>2</sup>, Marc Höglinger<sup>3</sup>, Nicole Probst Hensch<sup>4</sup>, Maeda Imboden<sup>4</sup>, Thomas Vermees<sup>4</sup>, Dirk Keidel<sup>4</sup>, Murielle Bochud<sup>5</sup>, Natalia Ortega Herrero<sup>2</sup>, Stéphanie Baggio<sup>2</sup>, Patricia Chocano-Bedoya<sup>2</sup>, Nicolas Rodondi<sup>6</sup>, Stefano Tancredi<sup>7</sup>, Cornelia Wagner<sup>7</sup>, Stéphane Cullati<sup>7</sup>, Silvia Stringhini<sup>8</sup>, Semira Gonseth Nusslé<sup>9</sup>, Caroline Veys-Takeuchi<sup>9</sup>, Claire Zuppinger<sup>9</sup>, Erika Harju<sup>10</sup>, Gisela Michel<sup>10</sup>, Irène Frank<sup>11</sup>, Christian Kahlert<sup>12</sup>, Emiliano Albanese<sup>13</sup>, Luca Crivelli<sup>13</sup>, Sara Levati<sup>13</sup>, Rebecca Amati<sup>13</sup>, Marco Kaufmann<sup>14</sup>, Marco Geigges<sup>14</sup>, Tala Ballouz<sup>14</sup>, Anja Frei<sup>14</sup>, Jan Fehr<sup>14</sup>, Viktor von Wyl<sup>14</sup>

<sup>1</sup>University of Zurich, Institute for Implementation Science in Health Care, Switzerland, <sup>2</sup>University of Bern, <sup>3</sup>Winterthur Institute of Health Economics, Switzerland, <sup>4</sup>Swiss Tropical and Public Health Institute, Switzerland, <sup>5</sup>University of Basel, Switzerland, <sup>6</sup>Bern University Hospitals, Switzerland, <sup>7</sup>University of Fribourg, Switzerland, <sup>8</sup>University of Geneva, Switzerland, <sup>9</sup>University of Lausanne, Switzerland, <sup>10</sup>University of Lucerne, Switzerland, <sup>11</sup>Lucerne Cantonal Hospital, Switzerland, <sup>12</sup>Cantonal Hospital St. Gallen, Switzerland, <sup>13</sup>Università della Svizzera Italiana, Switzerland, <sup>14</sup>University of Zurich, Switzerland

**Background and Objective:** During the first year of the SARS-CoV-2 pandemic, digital proximity tracing apps were introduced to mitigate viral spread in absence of vaccines. Adherence to such measures leading up to and following widespread vaccine rollout remains unclear. Our study aimed to evaluate adherence to digital proximity tracing app use and preventive measures across different vaccination uptake trends.

**Methods:** We report findings from two population-based longitudinal cohorts in Switzerland from January to December 2021. Failure time analyses were conducted for each study cohort for SARS-CoV-2 vaccine uptake and uninstalling of the SwissCOVID digital proximity tracing app outcomes, stratified by age group. Cox proportional hazards regression models were used to estimate adjusted hazard ratios (aHR). The analyses assessed the primary outcomes and associations with other actions taken by individuals to reduce viral spread (e.g., getting tested for SARS-CoV-2).

**Results:** We included 4514 participants from the Corona Immunitas Digital Follow-up (CI-DFU) and 1969 participants from the COVID-19 Social Monitor (CSM) studies. We observed a trend of individuals who did not adhere SwissCOVID app use and did not get vaccinated during the study period. We found an increased uptake of the vaccine associated with SwissCOVID app use (aHR, 1.51; 95% CI: 1.40-1.62 [CI-DFU]; aHR, 1.79; 95% CI: 1.62-1.99 [CSM]) or adherence to preventive measures (aHR, 1.44; 95% CI: 1.28-1.62 [CI-DFU]; aHR, 1.82; 95% CI: 1.52-2.18 [CSM]). Decreased SwissCOVID uninstallation risk was observed for participants who got vaccinated (aHR, 0.55; 95% CI: 0.38-0.81 [CI-DFU]; aHR, 0.45; 95% CI: 0.27-0.78 [CSM]).

**Conclusions:** We found strong evidence that adherence to digital proximity tracing app use and preventive measures is associated with higher vaccine uptake. In evolving pandemic contexts, these findings can assist public health authorities in designing evidence-based communication strategies to enable adoption of preventive measures and novel health technologies across all population groups.

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### Opinions matter: public opinions on data-sharing and how they can shape pathogen genomic surveillance in Canada

Tian Rabbani<sup>1</sup>, Sarah A. Savić Kallesøe<sup>1,2</sup>, Erin E. Gill<sup>3</sup>, Fiona S.L. Brinkman<sup>3</sup>, Emma J. Griffiths<sup>1</sup>, Ma'n H. Zawati<sup>4</sup>, Hanshi Liu<sup>4</sup>, Nicole Palmour<sup>4</sup>, Yann Joly<sup>4</sup>, William W.L. Hsiao<sup>1</sup>

<sup>1</sup>Faculty of Health Sciences, Simon Fraser University, Burnaby, Canada, <sup>2</sup>Nuffield Department of Population Health, University of Oxford, Oxford, United Kingdom, <sup>3</sup>Department of Molecular Biology and Biochemistry, Simon Fraser University, Burnaby, Canada, <sup>4</sup>Department of Human Genetics, McGill University Faculty of Medicine and Health Sciences, Montreal, Canada

**Background and Objective:** Intersections of public health and pathogen genomics have played a vital role in surveilling the Coronavirus Disease 2019 (COVID-19) pandemic and building resilient health systems. Individual-level COVID-19 data collected by Canadian provincial/territorial health authorities is not yet readily available to the public, including researchers. Lack of data-sharing delays or prohibits national data interpretation, harmonization, integration, and surveillance. To inform pathogen genomic-based surveillance practice and research innovation, (e.g. [virsuseq-dataportal.ca](https://virsuseq-dataportal.ca) [1]; [covarnet.ca](https://covarnet.ca) [2]), we explored public opinions on sharing de-identified COVID-19 data publicly in Canada.

**Methods:** In March 2022, a national survey was open to those 18 years or older and currently living in Canada. Opinions on publicly sharing 16 de-identified COVID-19

datatypes (i.e. data removed of identifiable information such as name, birthday, etc.) were assessed.

Results: Of 4,981 participants, 79.7% were supportive of publicly sharing de-identified COVID-19 data, whilst 20.3% were hesitant/averse/unsure. Participants most supported sharing symptoms (83.0% in support), region (82.6%), and COVID-19 vaccination status (81.7%). Participants were most averse to sharing their employment sector (27.4% averse), postal area (26.7%), and international travel history (19.7%). Generally supportive participants were characterized as being age 50 years or older, with higher education, and at least singly vaccinated against COVID-19. Vaccination status was the most influential predictor of data-sharing opinion. Participants who were ever vaccinated were 4.20 times more likely (95% CI, 3.21-5.48, PLinks:-----[1] <https://virusseq-dataportal.ca/>[2] <https://covarnet.ca/>

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### **A review of the association between micronutrients and risk and severity of COVID-19**

Parnian Jalili<sup>1</sup>, Catherine Phillips<sup>1</sup>

<sup>1</sup>University College Dublin, School of public health, physiotherapy, and sports sciences, Woodview House, Belfield, UCD, Dublin4, Ireland

**Introduction:** The end of 2019 was marked by the rapid epidemic of Severe Acute Respiratory Syndrome (SARS) due to COVID-19 in Wuhan, China. The most common medical treatment pathways have been supportive rather curative. However, multiple studies have found impaired levels of micronutrients in patients. These associations with disease outcomes could be taken into consideration. Micronutrient deficiencies (MNDs) are a global health concern and an underdiagnosed epidemic highly affecting developing countries. The most vulnerable groups for MNDs are women, children, and the elderly. MNDs can cause a huge number of morbidities and mortalities indicating the significance of effective prevention and treatment strategies to further control the consequences. **Objectives:** The aim of this study was to review and summarise the literature on dietary intake and supplementation and the associations of micronutrient insufficiencies with disease susceptibility and severity of symptoms.

**Methods:** A narrative review of the literature was conducted through two online databases in PubMed and Google Scholar. Articles that were published since the start of the pandemic and had different types of study designs were included. Of 5,073 identified articles, 38 studies were selected according to defined inclusion criteria.

**Results:** The most prevalent nutritional insufficiencies and their associations with prevention and disease severity among COVID-19 patients were identified. Patients had impaired levels of a wide range of micronutrients, including vitamin D, Zinc, and Selenium followed by vitamins B1 and C.

**Conclusion:** Malnutrition and undernutrition are global concerns and modifiable risk factors in many countries impacting the prevalence of infectious diseases. Medical nutrition therapy (MNT) is an overarching method to combat nutritional deficiencies. Thus, alongside preventive measures like acquiring herd immunity by vaccination, achieving an optimal nutritional status could be a contributing factor for better outcomes in patients.

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### **Knowledge, attitudes, practice of people toward the COVID-19 pandemics, and its impact in Afghanistan**

Khawja Saeed<sup>1</sup>, Khawja Saeed<sup>2</sup>, Narges Niazi<sup>3</sup>, Khushal Nabizada<sup>4</sup>

<sup>1</sup>AFETP EMPHNET, Afghanistan National Public Health Institute, Golayee Hese Awal Khair Khana, Afghanistan, <sup>2</sup>MoPH, Afghanistan National Public Health Institute, Golayee Hese Awal Khair Khana, Afghanistan, <sup>3</sup>WHO Kabul, <sup>4</sup>Freelance, London UK, United Kingdom

COVID-19 pandemic disrupted the social and economic norms. Knowledge, Attitude and Practices studies are used to address the information gap for further strategic decision making to control the pandemic. This study aimed to find the level of Knowledge, Awareness, Attitudes, and behavioral practices of the people of Afghanistan about the COVID-19 and its impact on health and socio-economic dimension of their routine lives. We used a cross-sectional method with two stage sampling design. Data analysis was performed using SPSS v.20. The survey focused on adults including men and women all over the country to represent the country, including the urban and rural areas. Most of the respondents are in the age group of 21-30 years (46.5%); 60.15% of the participants are married. Almost 75% of females and 84% of males were literate and most participants have a bachelors degree (34%). More than 80% of participants knew they can prevent themselves from contacting COVID-19 through hand washing frequently with soap

and water and wearing a mask. More than 80% of participants responded that they would go for a lab test for detection of the virus as well as COVID-19 vaccination if it is available. Almost 35% reported always wearing a mask to prevent COVID-19 transmission; more than half of participants always wash their hands, more than 60% of them do not touch their eyes, nose, and mouth frequently. Nearly 60% of participants indicated that their household had problems satisfying food needs partly during the COVID-19 pandemic. Nearly half of participants believed that the government was successful in applying lockdown measures and in awareness rising (56.8 and 69.8%). The study findings provide some useful insight about the KAP of communities in Afghanistan, which could assist policy makers in public health to design and implement interventions based on the information gaps reported.

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### **Inequalities in accessing COVID-19 vaccination: the findings from population-based survey in areas with high hesitancy**

Deogratius Bintabara<sup>1</sup>

<sup>1</sup>The University of Dodoma, Department of Community Medicine, The University of Dodoma, Tanzania, P.O Box 259, Dodoma, Tanzania

**Background and Objective:** Inequality in accessing healthcare services is well-documented worldwide. However, little literature discussed the inequality in accessing COVID-19 vaccination. Furthermore, the spatial dimension of this inequality is largely unexplored in the literature. Therefore, this study examined the regional variation of educational-related inequality in accessing COVID-19 vaccination in Tanzania to identify populations with greater disadvantages.

**Methods:** The uptake of any complete dose of the COVID-19 vaccine was used to measure access to COVID-19 vaccination. The inequalities were assessed by using concentration curves and concentration indices (CI). The multivariable logistic regression was performed to identify the potential contributors to the inequalities in accessing COVID-19 vaccination.

**Results:** A total of 22910 adults from four major cities in Tanzania were interviewed. About 20% of the respondents received the COVID-19 vaccine. The highest educational-related inequality in accessing COVID-19 was in favor of educated compared to uneducated adults. After disintegration by regions, the high extent of inequalities was observed among adults in Mwanza (CI: 0.093, P<0.001) and Arusha (CI: 0.062, P<0.001) compared to Iringa (CI: 0.011, P<0.05) and Morogoro (CI: 0.040, P<0.001) regions. The contributors to inequalities in accessing COVID-19 vaccinations were age, sex, marital status, and occupation. **Conclusion:** The current study is the first to investigate the regional variation of inequality in the COVID-19 vaccination in areas with high hesitancy. Establishing policies or strategies which will consider regional variations in educational inequality might be a way forward toward achieving universal coverage of COVID-19 vaccination, especially in areas with high hesitancy.

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### **Health-related quality of life among long-COVID patients - Tunisia, 2020-2022**

Sonia Dhaouadi<sup>1</sup>, Mouna Safer<sup>1</sup>, Letaief Hejer<sup>1</sup>, Aicha Hechaichi<sup>1</sup>, Hind Bouguerra<sup>1</sup>, Amenallah Zouayti<sup>1</sup>, Chaima Aichouch<sup>1</sup>, Arwa Neffati<sup>1</sup>, Myriam Bougateg<sup>1</sup>, Nawel El Mili<sup>1</sup>, Rim Mhadhbi<sup>1</sup>, Khouloud Talmoudi<sup>1</sup>, Nissaf Bouafif ép Ben Alaya<sup>1</sup>

<sup>1</sup>National Observatory of New and Emerging Diseases, Tunis, Tunisia

**Introduction:** Coronavirus disease 2019 (COVID-19) has become a global health threat not only because of its acute phase, but because of the "long-COVID" that cause a substantial disease burden.

Long-covid include also long-term consequences affecting patients' wellness and quality of life.

Our study aimed to assess the impact of long-covid on the patients' quality of life in Tunisia.

**Methods:** We conducted a cross sectional retrospective survey among a representative sample of COVID-19 survivors in Tunisia registered at the national SARS-Cov-2 surveillance database from September 2020 to September 2021.

Trained health care workers interviewed consenting respondents by phone using a standardized questionnaire (EQ-5D-3L) including five dimensions: mobility, self-care, usual activities, pain-discomfort and anxiety-depression. Each dimension has three levels: no problem; some problem and extreme problems.

Respondents recorded their perceived quality of life on a visual analog scale VAS (0-100).

Alpha Cronbach was used to measure internal reliability of questionnaire's item. We compared health-related quality of life between two groups: with and without

long-covid.

Results: Of 1094 persons contacted, 416 responded (38%).

Long-covid prevalence was 64% (95%CI:59%-69%); 128 (31%) of participants reported any problem in all dimensions: 41% among long-covid patients vs 13% among non-long covid ( $p < 10^{-3}$ ).

Compared to non-long covid patients, long-covid patients reported more problem on all dimensions: mobility: 14.8% vs 4.1% ( $p = 10^{-3}$ ), usual activity: 12.6% vs 4.8% ( $p = 0.01$ ), pain-discomfort: 22.4% vs 3.4% ( $p < 10^{-3}$ ) and anxiety-depression: 19.8% vs 8.1% ( $p = 0.002$ ).

The VAS was significantly lower among long-covid patients compared to non-long covid: 73.1 vs 83.9 ( $p < 10^{-3}$ ).

Alpha Cronbach's value was 0.66.

Conclusion: Long-covid impact quality of life, affect mobility and cause disability. Psychological support during and after acute COVID-19 episode is recommended to preserve the well-being of affected patients. This additional burden shows the importance of the public health prevention measures and vaccine strategies.

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### Reception and healthcare services for marginalised and undocumented migrants face the challenge of COVID-19

Achille Cernigliaro<sup>1</sup>, Silvia Pilutti<sup>2</sup>, Enea Delfino<sup>2</sup>, Marianna Parisotto<sup>3</sup>, Leonardo Mammana<sup>3</sup>, Silvia Giaimo<sup>3</sup>, Giulietta Balestra<sup>3</sup>, Raffaella Rusciani<sup>4</sup>, Delia Da Mosto<sup>3</sup>, Nicola Caranci<sup>5</sup>, Chiara Di Girolamo<sup>6</sup>, Elisa Adami<sup>3</sup>, Francesca Cacciatori<sup>3</sup>, Marianna Bettinzoli<sup>3</sup>, Roberto Di Monaco<sup>7</sup>, Stefania D'amato<sup>8</sup>, Teresa Spadea<sup>4</sup>

<sup>1</sup>Department of Health Services and Epidemiological Observatory, Health Authority, Sicily Region 2) Complex Unit of Clinical Pathology, Department of Radiological Sciences and Services, Sant'Antonio Abate Hospital, Health Authority, Palermo, Trapani Province, Trapani, Italy, <sup>2</sup>Prospettive ricerca socio economica sas, via Bernardino Galliani 10 bis, 10125, Turin, Italy, <sup>3</sup>Centre for International & Intercultural Health - APS, Via di Corticella 303/3, 40128, Bologna, Italy, <sup>4</sup>Epidemiology Unit, ASL T03 Piedmont Region, Via Sabaudia, 164, 10095 Grugliasco (TO), Italy, <sup>5</sup>Regional Health and Social Care Agency, Emilia-Romagna Region, Viale Aldo Moro, 21, 40127 Bologna, Italy, <sup>6</sup>University of Turin, Health and Social Care Agency Emilia-Romagna Region, University of Turin, Regione Gonzole 10, Orbassano (TO), Italy, <sup>7</sup>University of Turin, Department of Cultures, Politics and Society, Lungo Dora Siena 100, Turin, Italy, <sup>8</sup>Ministry of Health, Directorate-General for Prevention, 00144 Rome, Italy

Background and Objectives: There is scant evidence on the direct and indirect impact of COVID-19 on undocumented migrants living in Italy. Therefore, a qualitative study was conducted in two Northern-Italy Regions (Piedmont and Emilia Romagna).

Methods: The research consisted of 10 focus groups and 37 semi-structured interviews, with professionals of public and private social services who work in the reception and healthcare system, and the latter with the migrants themselves, especially the undocumented.

Results: Lights and shadows emerge from the results.

Due to precarious housing and working conditions, migrants had a higher infection risk, however lockdown measures in reception facilities might have had a protecting role. The interruption of care pathways led to the worsening of health problems, although the contact with healthcare services for COVID-19-related issues permitted the diagnosis of previously unrecognised pathologies. Uncertainty, fear, social withdrawal, and the crisis of the migratory project increased mental pathologies/struggles. Furthermore, the loss of work, the increased burden in essential jobs, and the reduced protection of undocumented migrants led to further impoverishment and, consequently, increased health risks. Migrants highlighted the importance of the effects of the COVID-19 pandemic on the social determinants of health, especially on working and housing conditions, rather than directly on health.

Conclusions: Despite the initial impossibility of accessing health and social reception services, due to the lockdown, and the lack of specific operating protocols to manage undocumented migrants and, more broadly, marginalised communities, both public and private social sectors, and the community have activated proactive outreach actions towards migrants, in a logic of integration and subsidiarity. Under crisis conditions, social and health services have found the ability to reorganize themselves and adapt to the needs of these more fragile targets. How much of these efforts will be capitalized and "stabilized" in the post-pandemic?

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### Post-acute COVID-19 syndrome in the workplace

Nicola Magnavita<sup>1</sup>, Gabriele Arnesano<sup>2</sup>, Igor Meraglia<sup>3</sup>, Marco Merella<sup>4</sup>

<sup>1</sup>School of Occupational health, Università Cattolica del Sacro Cuore, Largo F. Vito 1, 00168 Roma, Ital, <sup>2</sup>Occupational health, UCSC, Largo F. Vito 1, 00168 Roma, Italy, <sup>3</sup>Occupational health, researcher, Largo F Vito 1, 00168 Roma, Italy, <sup>4</sup>Occupational Health, UCSC, Largo F. Vito 1, Italy

Background and Objectives: COVID-19 is a multi-organ disease that can cause a wide range of persistent symptoms following the initial acute infection. The health status of the workforce was examined as part of a health promotion program integrated into workplace medical surveillance.

Methods: In order to determine the prevalence of infection, stress, mental health issues, sleep problems, and work ability, 1378 workers exposed to occupational risks in the health and other sectors conducted a medical examination in addition to a questionnaire.

Results: In 2020 and 2021, 164 employees (or 11.6%) contracted COVID-19. Compared to other occupational sectors (7.4%), the frequency was higher among hospital employees (15%). 4 weeks after the infection had ended, 86% of the workers said that some symptoms were still present.

The infected employees exhibited similar levels of occupational stress and anxiety as the other employees, but they slept less soundly ( $p = 0.05$ ). In comparison to healthy respondents, Post-COVID workers showed lower levels of sleep quality, and higher levels of fatigue, anxiety, and depression ( $p = 0.001$ ). 1.3% of individuals stated that infections caused exacerbations of pre-existing diseases. These workers had a considerably lower working capacity ( $p < 0.001$ ) than other workers, in addition to the characteristics mentioned above.

Conclusions: As of December 13th, 2022, 654 million people worldwide have been infected with COVID-19 (<https://www.worldometers.info/coronavirus/>). Assuming a conservative estimate of 6.2% survivors who experience persistent symptoms, long-term effects of COVID-19 could have an impact on almost 40,500,000 people. It has been noted that long-term impacts could compound exponentially if this virus continues to spread among humans. Post-COVID employees need specialized disability management care.

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### Analysis and management of the migrant population for covid19 emergency in the province of lecce

Alberto Fedele<sup>1</sup>, Adele Idolo<sup>1</sup>, Emanuela Civino<sup>1</sup>, Giampaolo Mazzeo<sup>1</sup>, Valerio Aprile<sup>1</sup>

<sup>1</sup>Local Health Authority, Lecce, Italy

Background and Objective: The COVID19 pandemic has been a significant risk factor for the health of migrant populations in Europe and Italy.

Objective study: investigate the epidemiology of COVID19 infection in the immigrant population arriving in Salento from 2020 to 2022.

Methods: Upon arrival, the COVID19 Surveillance Centre of ASL Lecce is activated. Migrants are hosted in dedicated Reception Centres, screened at time "0" by SARS-CoV-2 test and, in case of quarantine, at subsequent control test.

Sample: 4056 migrants welcomed to Salento between April 2020 and October 2022 with 81 arrivals.

Data stratified by gender, age, nationality were collected in a database and analyzed with MS-Excel.

Results: Study population: 90% males, 10% females. Average age 24 years, most represented age group 20-29 years (42%), 21% minors.

Most represented nationalities: Pakistan (26%), Iran (21%), Iraq (15%), Afghanistan and Egypt (11%).

7% of migrants (266) were positive (92% males, 8% females), average age 25 years, most represented age group 20-29 years (49%), 16% minors.

In 2020 9% were positive, in 2021 7% and in 2022 only 2%, with an average of positive for landing of 5%. Positive migrants came mainly from Pakistan (45%), Iran (10%), Bangladesh (9%); ethnic observation shows a higher rate of positivity among Bangladeshi citizens (21%).

All positive subjects showed mild symptoms, only 2 hospitalized and no deaths.

Conclusion: The data seem to confirm that young age and lack of comorbidity in immigrant population (healthy migrant) represent protective factors for SARS-CoV-2 infection and complications (hospitalization/deaths), despite the precarious social and health conditions.

The COVID19 surveillance system has highlighted the importance for Public Health, to increase attention to the most vulnerable migrant populations, to control and contain the spread of the virus, in particular in the reception facilities, including strengthening vaccination policies and health promotion initiatives and prevention measures.

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**Lessons learned from Tunisia prevention, preparedness, response and resilience to COVID-19 pandemic**Nissaf Bouafif ép Ben Alaya<sup>1</sup>, hajer Letaief<sup>2</sup>, Aicha Hechaichi<sup>2</sup>, Mouna Safer<sup>2</sup>, Sonia Dhaouadi<sup>2</sup>, Emna Mziou<sup>2</sup>, Fatma Ben Yousef<sup>2</sup>, Sondes Derouiche<sup>2</sup>, Rim Mhadhbi<sup>2</sup>, Leila Bouabid<sup>2</sup>, Souha Bougatef<sup>2</sup>, Mohamed Chahed<sup>2</sup><sup>1</sup>National Observatory of New and Emerging Diseases, Full professor, 5-7 Rue Elkhartoum, immeuble diplomate, 13ème étage, Tunis Belvédère 1002, Tunisia, <sup>2</sup>National Observatory of New and Emerging Diseases, Tunisia**Background and Objective:** Although Tunisia implemented a multisectoral prevention, preparedness, response and resilience plan to emerging and reemerging diseases, the COVID-19 pandemic highlighted the continued need to establish an effective Early Warning and Rapid Response System (EWARS) in order to better prepare for future pandemics.**The objective of this study is to characterize Tunisia response to the COVID-19 pandemic in order to highlight effective strategies to control outbreaks.****Methods:** An Intra-action Review (IAR) of COVID-19 response was conducted in Tunisia (June 2021 and March 2022) to identify challenges and best practices and to identify recommendations for addressing identified challenges and institutionalization of the best practices. The review covered all pillars and included more than 50 experts and stakeholders from different departments involved in COVID-19 response.**Results:** Five pillars of the successful fight against emerging and reemerging diseases and rapid response to a new outbreak to control community transmission were identified:A strong multisectoral coordination structure from the local to the national level with high political commitment  
An Electronic Integrated Surveillance System with an Early Alert System  
An effective laboratories networking with pathogens genomic surveillance  
A public health workforce adequately trained that can intensify outbreak investigation into origins and operate effective surveillance systems.  
A need for a strong sustainable national public health system**Conclusion:** The COVID-19 pandemic highlighted the importance of multidisciplinary coordination and the need to increase the investment global health security and public health.**Popul. Med. 2023;5(Supplement):A402**

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**The assistance GAPS in the struggle against covid-19 in Brazil: the temporal course in the beginning of vaccination of indigenous and quilombolas peoples**Rafael Moreira<sup>1</sup>, Lucas Santos<sup>2</sup>, Tainá Maфра<sup>2</sup>, Herika Maurício<sup>3</sup><sup>1</sup>Oswaldo Cruz Foundation and UFPE, ABRASCO, Av. Professor Moraes Rego, s/n - Cidade Universitária - Recife/PE . CEP 50.740-465., Brazil, <sup>2</sup>Oswaldo Cruz Foundation, Av. Professor Moraes Rego, s/n - Cidade Universitária - Recife/PE . CEP 50.740-465., Brazil, <sup>3</sup>Universidade de Pernambuco, ABRASCO, Rua Arnóbio Marques, 310 - Santo Amaro, Recife/PE CEP: 50100-130, Brazil**Background/Objective:** With the pandemic of covid-19, the infection rate grew rapidly in Brazil, ranking among the countries with the highest cases and death rates. The national vaccination began in January 2021, focused on priority groups, including indigenous peoples and quilombolas, given their social vulnerability and difficulties in accessing health services. This study aimed to analyze the temporal evolution of vaccination against covid-19 in indigenous peoples and quilombolas in Brazil between the 3rd and 21st Epidemiological Week (EW) of 2021.**Methods:** A temporal analysis comprising 19 EW was performed. Cases were structured by priority group of indigenous and quilombola populations, dose, vaccine (Coronavac or Astrazeneca), and place of vaccination. The Vaccination Rate (VR) per 100 inhabitants was calculated. Temporal analysis of VR identified significant trends ( $\leq 5\%$ ), and results were converted into temporal cluster graphs by EW.**Results:** By the end of May 2021, 1,176,173 doses of Astrazeneca (AZ) or Coronavac (CV) Vaccines had been administered to indigenous peoples and quilombolas. Nationally, 21.7% of CV and 99% of AZ vaccination schedules were incomplete for this priority group. The temporal analysis identified high VR of the CV first and second dose in the first weeks (EW 1 to 7), with a significant drop in subsequent weeks; and high VR of both doses of AZ concentrated in the final weeks (10 to 19).**Conclusion:** The indigenous and quilombola populations had low vaccination rates nationally. It is important to consider the decrease in CV vaccine in the analyzed period, highlighting that from May onwards the AZ vaccine distribution was predominant due to a decrease in the CV national production. Possible

factors contributing to the reduction of VR in these populations were poor access to health services; inconsistent national vaccination plan; geographical barriers; and hesitancy to vaccinate as a consequence of the spread of fake news.

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**Evidence-based comparison on COVID-19 pandemic control strategies--Taiwan as an example**Shu-Ti Chiou<sup>1</sup><sup>1</sup>Health & Sustainable Development Foundation, Taiwan**Background and Objective:** Taiwan was predicted to bear high risk of COVID-19 importation at the beginning of 2020. The author examined available evidence to explore what made Taiwan perform well in 2020, fix its breach in 2021, and overtake the other forerunners in 2022.**Methods:** Pandemic control strategies were categorized into 3 types- elimination, suppression and mitigation. Annual COVID-19 mortality rate, annual excess deaths and Google community mobility trend were used as impact indicators. Cumulative vaccination coverage rate was used to indicate preparedness, and tests per 1000 per day and stringency index in different periods were used to compare public health input.**Results:** In 2020, Taiwan applied swift and strict elimination strategy. At a population size of 23 million, there were only 802 confirmed COVID-19 cases, 7 deaths, and 253 consecutive days with 0 domestic case in 2020.

In 2021, a significant breach pushed the daily incidence close to that of UK at the same period, but Taiwan maintained its elimination strategy and eventually returned to zero though it took 3 months with inadequate testing capacity and refusal to lockdown.

In 2022, Taiwan cleaned up several Omicron breaches with only 3 deaths by March 31. However, it suddenly announced returning to normalcy with the "New Taiwan Model" on April 1. The daily incidence grew explosively and by November 26, its annual cumulative mortality rate has exceeded most of the other countries.

**Conclusion:** By cross-sectional comparison between countries and before-after comparison of the same country, the study shows that community activities were least restricted under elimination, and mitigation was consistently associated with hundred times higher health impact but didn't bring about normalcy in daily lives when incidence was high. Some countries managed to keep weekly excess death rate within 20% after abandoning elimination, but not Taiwan.**Popul. Med. 2023;5(Supplement):A404**

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**Comparative analysis of maternal mortality in Central Asia region before and during COVID-19 pandemic**Karina Nukeshtayeva<sup>1</sup>, Olzhas Zhamantayev<sup>1</sup>, Zhanerke Bolatova<sup>1</sup>, Gaukhar Kayupova<sup>1</sup>, Nurbek Yerdosov<sup>1</sup><sup>1</sup>Karaganda Medical University, Kazakhstan**Background and Objective:** The maternal mortality ratio (MMR) is the key indicator that characterizes the state of a healthcare system. Various countries reports indicate a significant impact of the COVID-19 pandemic on MMR. We aimed to determine MMR trends in Central Asia (CA) countries and its association with the total health expenditures before and after pandemic. We also compared the maternal mortality causes before and during the pandemic in Kazakhstan.**Methods:** We conducted a retrospective study working with the secondary data which were collected on selected health indicators using information from open sources, and official statistical data on the Republic of Kazakhstan, Republic of Kyrgyzstan, Republic of Uzbekistan, and Tajikistan.**We applied the linear regression analysis to identify statistically significant trends of MMR in CA countries from 2000 to 2020 in the study. Pearson correlation analysis was used to assess the associations between the national MMR and CA total health expenditures expressed in national currency units. R-studio soft version 1.2.5033 was used for the statistical analysis.****Results:** During the pre-pandemic period, Central Asian nations had a downward trend of maternal mortality. Except for Uzbekistan, where this indicator decreased, all Central Asia countries experienced a sharp increase in maternal mortality ratio in 2020. The share of indirect causes of maternal deaths in Kazakhstan reached 76.3% in 2020. There is an association between the maternal mortality ratio in Central Asia countries and their total health expenditures expressed in national currency units ( $r_{max} = -0.89$  and  $r_{min} = -0.66$ ,  $p < 0.01$ ).**Conclusion:** The COVID-19 pandemic has noticeably impacted the maternal mortality levels in most of the CA countries. The findings suggest that there must be additional efforts from the local authorities to enhance the preparedness of CA healthcare systems for the new public health challenges and improve health data accessibility.

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### Lessons learned from coronavirus disease: India's preparedness and response strategies for future pandemic

Soumya Mohapatra<sup>1</sup>, Ramesh Sethi<sup>1</sup>

<sup>1</sup>Kalinga Institute of Industrial Technology (KIIT), Deemed to be University, Bhubaneswar, India

**Background:** The coronavirus disease (COVID-19) pandemic has impacted all nation-states and globally 66.34 lakhs deaths had been recorded whereas India has contributed 5.30 lakhs of deaths (as on 13th December, 2022 WHO). It has exposed persistent inequalities in demographic indicators across territorial boundaries along with structural and social issues like interconnected threats to population health and well-being rooted in socio-economic-political and physical environmental determinants of health. While developed nations had to face tremendous challenges related to overstretched capacity and fragmentation, developing nation's weak health provisions jeopardized its health delivery system and disrupted millions of lives and livelihoods.

**Objective:** To learn lessons from COVID-19 pandemic across the globe and fostering an enabling ecosystem with multi-sectoral integrative efforts to strengthen preparedness and response strategies to meet future pandemic.

**Methods:** The study synthesizes on available evidence based on secondary sources of data and focuses on both qualitative and quantitative methods.

**Results:** The study reveals pandemic trajectory of India witnessed slow and sustained decline of COVID-19 cases. India's strong and decisive leadership, proactive top-down approach, inter-sectoral coordination, massive vaccination drive and timely guidance for national response to the pandemic helped in reducing its cases and deaths per million to 25,158 cases per million and 345 deaths per million population respectively (as on 17th December, 2021) which is one of the lowest in the world. This indicates lessons learned from worldwide supported India to rebuild more resilience health care system and accelerate towards achieving global goals.

**Conclusion:** Healthcare system in most of the countries have not evolved for resilience in times of catastrophe. and also not for efficient rapid responses to pandemic. However, the countries undergone unprecedented health crisis have learnt lessons from COVID-19 which recommends the healthcare institutions need to be streamlined and instituted for increasing efficiency, coherence, and preparedness to prevent future pandemic.

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### A low burden of severe illness: the COVID-19 Omicron outbreak in the remote Torres and Cape region of Far North Queensland, Australia

Johanna Neville<sup>1</sup>, Caroline Taunton<sup>1</sup>, Leanne hawthorn<sup>1</sup>, Rittia Mattysek<sup>1</sup>, Marlow Coates<sup>1</sup>, Emma Pickering<sup>1</sup>, Valmay Fisher<sup>1</sup>, Allison Hempenstall<sup>1</sup>, Simon Smith<sup>2</sup>, Josh Hanson<sup>2</sup>

<sup>1</sup>Torres and Cape Hospital and Health Service, Nil, L3/120 Bunda street, Carins 4870, Queensland, Australia, <sup>2</sup>Cairns Hinterland Hospital Service, Australia

The arrival of the highly transmissible Omicron variant reignited concerns that outbreaks of COVID-19 could have devastating consequences for First Nations Australians living in remote areas. The Far North Queensland region of Australia is home to 19,500 First Nations people (68.8% of population). To prepare for a COVID-19 outbreak, Torres and Cape Hospital and Health Service TCHHS in partnership with local First Nations councils undertook extensive outbreak preparation including the establishment of a COVID-19 public health team and the delivery of a logistically complex outreach vaccination service. The first outbreak was declared in December 2021. Here we report local outbreak epidemiology for the first ten-month outbreak period from December 2021 to October 2022.

Outreach vaccination and walk-in fever clinics were established at 28 health facilities with 12 utilising point-of-care PCR machines. The public health team contacted cases by telephone throughout the period to undertake health screening; offer medical certificates; provide information about case isolation and close contact quarantine requirements; triage cases for treatment eligibility; and offer participation in the COVID-19 care-in-the-home program which provided wellbeing support telephone calls throughout mandatory isolation.

COVID-19 vaccination rates among those aged  $\geq 12$  years climbed from 43.4% to 79.3% (single dose) and from 22.2% to 67.6% (double dose) between early September and late December 2021. A total of 7784 cases were notified, with 65.5% of cases among First Nations people. The attack rate was 25.6% (95%CI 25.1%-26.1%), the hospitalisation rate was 1.6% (95%CI 1.3%-1.9%) and the crude

case fatality rate was 0.05% (95%CI 0.01%-0.13%). Genomic results were available for 213 specimens, with all (100%) identified as the Omicron variant.

We attribute the excellent outcomes to the mild Omicron variant and vaccination coverage along with local community leadership, strong partnerships, community engagement in testing and isolation, and community participation in the culturally considered COVID-19 care-in-the-home program.

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### Crossing the border: Adherence to the Vaccination Campaign in multicultural provinces of South-Tyrol during COVID-19 Pandemic, a cross-sectional study

Francesco Uguzzoni<sup>1</sup>, Lucia Palandri<sup>2</sup>, Antonio Lorenzon<sup>1</sup>, Catalina Cristoforo<sup>3</sup>, Filippo Lozza<sup>3</sup>, Riccardo Poluzzi<sup>3</sup>, Maria Scasserra<sup>1</sup>, Cristiana Rizzi<sup>1</sup>, Pierpaolo Bertoli<sup>4</sup>, Florian Zerzer<sup>5</sup>, Elena Righi<sup>1</sup>

<sup>1</sup>University of Modena and Reggio Emilia, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, Via Campi 287, 41125 Modena(MO), Italy, <sup>2</sup>University of Modena and Reggio Emilia, <sup>3</sup>South Tyrol Health Care Service, Epidemiological Surveillance Unit, Via Lorenz Böhler 5, 39100, Bolzano, Italy, <sup>4</sup>South Tyrol Health Care Service, Medical Management, Via Lorenz Böhler 5, 39100, Bolzano, Italy, <sup>5</sup>South Tyrol Health Care Service, General Management, Via Thomas Alva Edison 10/D, 39100, Bolzano, Italy

**Objectives and Background:** "South-Tyrol" Alpine region in Italy is administered as an "autonomous statute region", bordering Austria. This geographically heterogeneous environment is divided in 20 districts and is inhabited by a unique multicultural population. Poor evidence exists on factors influencing adherence to vaccination in peculiar contexts, therefore

The aim of this study was to investigate the role played by geographical, cultural and socio-demographical characteristics on COVID-19 vaccination adherence during the first year of the Italian vaccination campaign.

**Methods:** We carried out an ecological study by analysing data collected from each district of South-Tyrol: altitude, population density, linguistic belonging, Austrian border proximity, cultural heritage, winter tourism, COVID-19 incidence, complete primary vaccination cycle and booster dose. Data refer to February 2022, one year after the beginning of the vaccination campaign. Spearman correlation, Kruskal-Wallis and Mann-Whitney-U tests were performed to assess relationships between variables.

**Results:** On February 2022 district percentages of vaccination adherence varied widely ranging between 57.1% and 74.8%. Adherence to vaccination appears to be negatively correlated to altitude (Rho=-0.626, p=0.003; Rho=-0.693, p<0.001, respectively for primary vaccination and booster dose) and positively correlated to population density (Rho=0.585, p=0.007; Rho=0.600, p=0.005). Furthermore, primary vaccination appeared significantly lower in districts with a higher prevalence of German speaking population (69.2% vs 74.7%, p<0.05) and in those more isolated or with a prevalent German cultural heritage.

**Conclusion:** In analysing vaccination adherence, diversity in geographic, demographic and cultural factors should be taken in great account, even when the target population appears homogeneous from a clinical standpoint and overall adherence to vaccination campaign is satisfying. To plan a more effective and homogeneous vaccination campaign, specific public health interventions more focused on cultural heritage and geomorphological peculiarities should be considered and implemented for specific subpopulations and areas.

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### Cardiovascular and respiratory events following COVID-19 hospitalisation: a cohort study in Portuguese hospitals

Andreia Leite<sup>1</sup>, Maria Brazão<sup>2</sup>, Sofia Nóbrega<sup>2</sup>, Maria Lobão<sup>3</sup>, Luísa Eça Guimarães<sup>4</sup>, Rita Moça<sup>4</sup>, Léilita Santos<sup>5</sup>, Joana Paixão<sup>5</sup>, Helena Rodrigues<sup>5</sup>, Ana Ramalho<sup>5</sup>, Inês Simões<sup>6</sup>, Andreia Costa<sup>7</sup>, Gabriel Atanásio<sup>8</sup>

<sup>1</sup>NOVA National School of Public Health, Portugal, <sup>2</sup>Hospital Central do Funchal, Portugal, <sup>3</sup>Hospital de Cascais, <sup>4</sup>Centro Hospitalar Póvoa de Varzim-Vila do Conde, Portugal, <sup>5</sup>Centro Hospitalar e Universitário de Coimbra, Portugal, <sup>6</sup>Hospital Terras do Infante, Portugal, <sup>7</sup>Centro Hospitalar de Trás-os-Montes e Alto Douro, Portugal, <sup>8</sup>Centro Hospitalar Tondela/Viseu, Portugal

**Background and Objective:** Several studies have shown an increased frequency of cardiovascular and respiratory events, a part of the long COVID presentation. We aimed to describe the incidence of pre-specified cardiovascular and respiratory events after a COVID-19 hospitalisation.

**Methods:** We retrospectively collected data from individuals hospitalised due to

COVID-19 between March 2020 and March 2021 in six Portuguese hospitals. The cardiovascular events considered were: heart failure, myocarditis, arrhythmia, acute myocardial infarction, deep vein thrombosis, ischemic stroke, and hemorrhagic heart attack; and the respiratory events considered were: pulmonary thromboembolism, pulmonary fibrosis, chronic or prolonged respiratory failure, obstructive/restrictive lung disease, and organising pneumonia. We estimated incidence and 95% confidence intervals.

Results: Data collection is still ongoing. For this preliminary analysis, 1438 individuals were included. The median age was 70, 53% were male, and 12% died after hospital discharge. Individuals were in the study for a median of 17 months. Most individuals (66%) had moderate COVID-19, corresponding to supplementary oxygen use during hospitalisation, and 14% had severe COVID-19, needing ventilation or admission to ICU. During the study period, 98 cardiovascular and 85 respiratory events were registered, corresponding to an incidence of 3.5 (95% CI: 2.8; 4.3) and 3.9 (95% CI: 3.1; 4.9) cases per 1000 person-years, respectively. Overall, 172 events were registered, corresponding to an incidence of 107.9 (95% CI: 92.4; 125.3) cases per person-years. The incidence of cardiovascular and/or respiratory events increased according to the severity of the COVID-19 episode (mild – 75.7 (95% CI: 48.5; 112.6), moderate – 109.3 (95% CI: 90.1; 131.4) and severe – 143.9 (95% CI: 100.2; 200.1) cases per person-years, respectively).

Conclusion: Comparisons with the expected incidence rates in the absence of COVID-19 are required; nevertheless, our preliminary results indicate that the frequency of events increases with increasing COVID-19 severity.

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### The PHIRI project for measuring the impact of health crises on the European Healthcare System: the Italian case in COVID-19 pandemic

Andrea Faragalli<sup>1</sup>, Eugenio Mattei<sup>2</sup>, Martin Thissen<sup>3</sup>, Flavia Carle<sup>1</sup>, Brigid Unim<sup>2</sup>, Rosaria Gesuita<sup>1</sup>, Ronan Lyons<sup>4</sup>, Sarah Aldridge<sup>4</sup>, Francisco Estupiñán-Romero<sup>5</sup>, Andrea Shmidt<sup>6</sup>, Enrique Bernal-Delgado<sup>5</sup>, Luigi Palmieri<sup>2</sup>

<sup>1</sup>Center of Epidemiology, Biostatistics and Medical Information Technology, Marche Polytechnic University, Italy, <sup>2</sup>Department of Cardiovascular, Endocrine-metabolic Diseases and Aging, Istituto Superiore di Sanità-ISS, Rome, Italy, <sup>3</sup>Department of Epidemiology and Health Reporting, Robert Koch Institute-RKI, Berlin, Germany, <sup>4</sup>Swansea University Medical School, Swansea University, Swansea, United Kingdom, <sup>5</sup>Data Science for Health Services and Policy Research Group, Institute for Health Sciences-IACS, Zaragoza, Spain, <sup>6</sup>Austrian National Public Health Institute-GöG, Vienna, Austria

Background and Objective: The CoViD-19 pandemic brought out the need for a uniform European response to public health issues. With the purpose of assessing the impact of the pandemic on European Healthcare Systems, the European project Population Health Information Research Infrastructure-PHIRI (EC H2020-IBA-INFRA-CORONA-2020 n. 101018317), aims to create and implement a federated research infrastructure based on the secondary use of administrative health-care databases data and real-world data. First Italian results from the Istituto Superiore di Sanità-ISS and the Polytechnic University of Marche-UNIVPM are reported.

Methods: Four Use Cases (UC) were investigated. UC-A: Direct and indirect determinants of CoViD-19 infection on hospitalization of fragile populations (including heart attack and stroke (CVD), trauma, and hip and knee replacement surgery); UC-B: Delays in the treatment of breast cancer due to the pandemic; UC-C: Impact of CoViD-19 on perinatal health; UC-D: Changes in mental health status related to the CoViD-19 pandemic. PHIRI Research Centers developed and mutually shared the methodology, identified and processed the data necessary for the comparison between the pre (2017-19) and post (2020) pandemic periods using a Linux container (Docker). Docker allows sharing the analysis procedure, to perform it locally without any transfer of sensitive data, to produce structured results reports.

Results: In UC-A (ISS), 1,088,026 hospitalizations were identified in Italy in 2017-2019 (451,015 for CVD; 400,057 for prosthetic surgery; 236,954 for trauma) and 338,740 in 2020 (140,421; 117,483; 80,836, respectively). In UC-B (UNIVPM), 818 new breast cancer interventions were identified in the Marche region in 2020; 2,964 in 2017-2019. Median time from diagnosis to surgery in 2020 was 39 days (1st-3rd Q: 26-61), 39 days (1st -3rd Q: 24-56) in 2017-2019 (p = 0.08).

Conclusions: Administrative health databases and real-world data in a federated research infrastructure can help European stakeholders to support shared decision-making in health crises.

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### Associations Between Reported Post-COVID-19 Symptoms and

### Subjective Well-Being, Israel, July 2021 -April 2022

Paul Otiku<sup>1</sup>, Michael Edelstein<sup>1</sup>, Yanay Gorelik<sup>1</sup>, Amiel Dror<sup>1</sup>, Hiba Zayyad<sup>2</sup>, Ofir Wertheim<sup>2</sup>, Kamal Abu Jabal<sup>3</sup>, Saleh Nazzal<sup>2</sup>, Jelte Elsinga<sup>1</sup>, Daniel Glikman<sup>1</sup>, Michael Edelstein<sup>1</sup>

<sup>1</sup>Azrieli Faculty of Medicine, Bar-Ilan University, Israel, <sup>2</sup>Baruch Padeh Hospital, Israel, <sup>3</sup>Ziv Medical Centre, Israel

Background and Objective: Prolonged and persistent symptoms following acute SARS-CoV-2 infection has been widely reported, but the impact of individual symptoms reported post-COVID-19 on subjective well-being (SWB) is unknown. We described associations between SWB and selected reported symptoms following SARS-CoV-2 infection.

Methods: We analysed reported symptoms and subjective well-being from 2295 participants (of which 576 reported previous infection) in an ongoing longitudinal cohort study taking place in Israel, in which participants regularly report their health status. We measured SWB using the WHO-5 standardized tool and estimated changes in SWB associated with reported selected symptoms at three follow-up time points (3-6, 6-12, and 12-18 months post-infection) among participants reporting previous SARS-CoV-2 infection, adjusting for key demographic variables, using linear regression.

Results: Our results suggest that the biggest and most sustained changes in SWB stems from non-specific symptoms (fatigue -7.7 percentage points (pp), confusion/ lack of concentration -10.7 pp, and sleep disorders -11.5pp, p<0.005), whereas the effect of system-specific symptoms, such as musculoskeletal symptoms (weakness in muscles and muscle pain) on SWB, are less profound and more transient. Each symptom was individually associated with a decrease of SWB after adjusting for other symptoms.

Conclusion: Post-acute COVID19 symptoms can have a profound and lasting effect on well-being, especially among individuals experiencing several symptoms. Taking a similar approach for other symptoms and following individuals over time to describe trends in SWB changes attributable to specific symptoms will help understand the post-acute phase of COVID-19 and how it should be defined and better managed.

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### Impact of COVID-19 Lockdowns on Gastrointestinal Cancer Incidence: A Registry-Based Study in Bavaria - Germany

Amir Hakimhashemi<sup>1</sup>, Sven Voigtländer<sup>1</sup>, Nina Grundmann<sup>1</sup>, Martin Meyer<sup>1</sup>, Jacqueline Müller-Nordhorn<sup>1</sup>

<sup>1</sup>Bavarian Cancer Registry, Bavarian Health and Food Safety Authority, Germany

Background and Objective: Recent scientific studies show that the COVID-19 pandemic affected the cancer screening programs and, consequently, cancer incidence in different countries worldwide. This study investigated the impact of the two lockdowns in March 21 to May 3, 2020 (first lockdown) and December 9, 2020 to March 7, 2021 (second lockdown), on gastrointestinal cancers (ICD-O-3: C15 – C26) in Bavaria, Germany.

Methods: We gathered incident cancer data including malignant and in situ cases from approximately 50% of pathological centres in Bavaria. We aggregated the number of incident gastrointestinal cancers in months stratified by cancer site and malignancy in pre-pandemic (03.2019 to 02.2020) and pandemic (03.2020 to 02.2021) periods. We estimated the relative changes of numbers of cancers between pandemic and pre-pandemic periods with corresponding confidence intervals using a Bonferroni correction (13 tests with  $\alpha = 0.0038$ ).

Results: The number of malignant gastrointestinal cancers significantly declined from 10,587 in the pre-pandemic period to 9,749 in the pandemic period with a relative difference of -7.9% (95% CI: -11.6% to -4.1%). It significantly reduced for colon cancer from 4,032 to 3,568 (relative change: -11.5%; 95% CI: -17.2% to -5.4%) and rectum cancer from 2,095 to 1,772 (relative change: -15.4%; 95% CI: -23.0% to -7.1%). We found no significant reductions for other sites. The number of in situ cases decreased from 451 to 327 with a relative change of -27.5% (95% CI: -41.2% to -10.5%). It also declined in colon cancer from 281 to 170 cases (relative change: -39.5%; 95% CI: -54.3% to -19.9%), but not in the other sites.

Conclusion: The COVID-19 pandemic affected the number of pathological diagnoses of gastrointestinal cancers in Bavaria. The reduction was mainly due to the reduction in diagnoses of colon and rectum, which could be a result of decreases in screening cases during the lockdowns.

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### How were place of death trends for cancer patients affected by the COVID-19 pandemic? An international death certificate study

Sílvia Lopes<sup>1</sup>, Andrea Bruno de Sousa<sup>2</sup>, Joachim Cohen<sup>3</sup>, Barbara Gomes<sup>1</sup>  
<sup>1</sup>ENSP-NOVA NOVA National School of Public Health & Comprehensive Health Research Center & Faculty of Medicine, University of Coimbra Portugal, <sup>2</sup>FMUC, <sup>3</sup>VUB End-of-Life Care Research Group, Vrije Universiteit Brussel Belgium

**Background and objective:** During the pandemic, health systems had to respond to the needs of COVID-19 patients, while caring for patients with other conditions, including cancer. Hospitals/health institutions and home are relevant places of death (PoD) globally. We aim to examine changes in PoD trends for cancer patients, comparing pre- and pandemic years.

**Methods:** We sought national PoD data from vital registries of 47 countries varied in UN Regions. We describe the distribution of PoD (focused on hospital/health institution and home) for cancer patients [ICD-10 codes: C0-C97 (except C91-95)] from 2015 to 2021, examining variations by year, age (0-17 or ≥18) and country. Pandemic years include 2020 and, where available, 2021.

**Results:** Preliminary data shows that among 3,005,530 deceased from cancer (99.7% aged ≥18y) across 19 responding countries so far (15 countries providing 2021 data), home deaths increased in pandemic years (range per year: 40%-45%) compared to pre-pandemic (33%-35%). Inversely, deaths in hospitals/health institutions decreased (54%-56% to 43%-49%). Sub-analysis of the pediatric group (9,894 deceased) also showed increasing home death (32%-34% to 39%-39%). Consistently, for 18 out of the 19 countries the percentage of hospital/health institution deaths for cancer patients decreased during the pandemic (-11% in the country with largest decrease; smallest: -2%), while for 17 out of 19 countries the percentage of those dying at home increased (12% in country with largest increase; smallest: 1%).

**Conclusion:** An increase in home deaths appears to have occurred among cancer patients in the COVID-19 pandemic. A more detailed and homogeneous classification of PoD would provide stronger cross-country comparisons, as what is classified in each category varies. It is important to monitor if this shift in PoD is kept or reverts beyond 2021, due to the implications for the allocation of health resources to care for the dying.

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### Effectiveness of vaccination against SARS-CoV-2 infection in the pre-delta era: a systematic review and meta-analysis

Angela Meggiolaro<sup>1</sup>, Monica sane schepisi<sup>1</sup>, Giovanni Rezza<sup>1</sup>  
<sup>1</sup>Italian Ministry Of Health Italy

**Background:** The objective of this study was to assess the effectiveness of SARS-CoV-2 vaccines in terms of prevention of disease and transmission in the pre-Delta era. The evaluation was narrowed to two mRNA vaccines and two modified adenovirus-vectored vaccines.

**Methods:** The overall risk of any SARS-CoV-2 infection confirmed by positive real-time Polymerase Chain Reaction (PCR) test was estimated in partially and fully vaccinated individuals. The evidence synthesis was pursued through a random-effects meta-analysis. The effect size was expressed as relative risk (RR) and RRR (RR reduction) of SARS-CoV-2 infection following vaccination. Heterogeneity was investigated through a between-study heterogeneity analysis and a subgroup meta-analysis.

**Results:** The systematic review identified 27 studies eligible for the quantitative synthesis. Partially vaccinated individuals presented a RRR = 73% (95%CI = 59-83%) for positive SARS-CoV-2 PCR (RR = 0.27) and a RRR=79% (95%CI = 30-93%) for symptomatic SARS-CoV-2 PCR (RR = 0.21). Fully vaccinated individuals showed a RRR = 94% (95%CI = 88-98%) for SARS-CoV-2 positive PCR (RR = 0.06) compared to unvaccinated individuals. The full BNT162b2 vaccination protocol achieved a RRR = 84-94% against any SARS-CoV-2-positive PCR and a RRR = 68-84% against symptomatic positive PCR.

**Conclusions:** The meta-analysis results suggest that full vaccination might block transmission. In particular, the risk of SARS-CoV-2 infection appeared higher for non-B.1.1.7 variants and individuals aged ≥69 years. Considering the high level of heterogeneity, these findings must be taken with caution. Further research on SARS-CoV-2 vaccine effectiveness against emerging SARS-CoV-2 variants is encouraged.

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### Risk/protective factors associated with anti-SARS-CoV-2 antibody response in a sample of workers from the emilia romagna region, Italy

Michele Granata<sup>1</sup>, Pasquale Galante<sup>2</sup>, Stefania Paduano<sup>1</sup>, Alberto Modenese<sup>1</sup>, Alessandro Poggi<sup>2</sup>, Isabella Marchesi<sup>1</sup>, Roberto Vivoli<sup>3</sup>, Rossana Bellucci<sup>3</sup>,

Sara Verri<sup>3</sup>, Simona Marchetti<sup>3</sup>, Fabriziomaria Gobba<sup>1</sup>, Annalisa Bargellini<sup>1</sup>, Sara Turchi<sup>1</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy, <sup>3</sup>Laboratorio Analisi TEST Srl, Modena, Italy

**Background and Objectives:** The COVID-19 pandemic has hit worldwide. Italy was one of the first European countries to be severely affected. Many factors can play relevant roles in SARS-CoV-2 infection, both in virus replication and in activating the host's immune system. This case-control study aims to assess the possible relationship between SARS-CoV-2 infection, evaluated through antibody response and the main socio-demographic, occupational, clinical-anamnestic and biochemical factors, in a population mostly residing in the Modena province (northern Italy) and mainly composed of workers.

**Methods:** Enrolment was performed among subjects who voluntarily underwent serological testing. Subjects with antibody positivity for IgM and/or IgG (cases) and a similar number of negatives (controls), matched by sex, age and Italian region or foreign country of birth, were selected. Additional parameters (zinc/iron/copper/chromium/nickel, vitamins D/B12, folates, triglycerides, LDL/HDL/total cholesterol) were determined. Moreover, a questionnaire on the main relevant sociodemographic occupational and clinical data was administered through telephone interviews.

**Results:** A total of 405 subjects have been enrolled, 166 cases (mean age 50.6±12.4 years), 71 (42.8%) men and 95 (57.2%) women, and 239 controls (mean age 50.6±11.6 years), 106 (44.3%) men and 133 (55.7%) women. The smokers' percentage was significantly lower in cases (12.7%) compared to controls (20.6%). Among cases a higher percentage of subjects with diabetes (2.4% vs 0.8%) and a lower percentage of persons affected by respiratory diseases (9.7% vs 12.6%) were found. By analysing biochemical data, a lower median serum level of folates was detected among cases.

**Conclusion:** Our results suggest an inverse association of SARS-CoV-2 infection evaluated through antibody response with smoke and also with folates serum level. The first association, also observed in other studies, is controversial due to the role of potential confounding factors. Regarding the inverse association with folates, a recent study shows that folates bind and inactivate a viral protease.

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### Early evidence on vaccine effectiveness of COVID vaccines in PLWHA

Monica Sane Schepisi<sup>1,2</sup>, Angela Meggiolaro<sup>3</sup>, Andrea Siddu<sup>4</sup>, Alessia Mammonè<sup>3</sup>, Sara Farina<sup>5</sup>, Carolina Castagna<sup>6</sup>, Anna Caraglia<sup>3</sup>, Francesco Maraglino<sup>3</sup>, Stefania Boccia<sup>5</sup>, Giovanni Rezza<sup>3</sup>

<sup>1</sup>Ministero Salute Viale Ribotta 5 Italy, <sup>2</sup>Ministero Salute "Via Moricone 16" Italy, <sup>3</sup>Ministero Salute Via Ribotta 5 Italy, <sup>4</sup>Ministero Salute, <sup>5</sup>Università Cattolica del Sacro Cuore Italy, <sup>6</sup>Università Cattolica del Sacro Cuore

**Background:** Several studies have shown that antibody responses in people with HIV depend on CD4 count and people with HIV with CD4 counts below 500 may have a weaker response to vaccination. This systematic review aims at evaluating vaccine effectiveness reported by real world studies on HIV patients.

**Material and Methods:** PubMed, medRxiv/bioRxiv, WHO covid-19 databases, the VIEW-hub platform and the 2022 CROI (Conference on Retroviruses and Opportunistic Infections) site were searched using the terms "COVID-19", "SARS-CoV-2", "vaccine efficacy", "people living with HIV".

**Results:** Real world studies were conducted in Zambia [3], Taiwan [4], South Africa [5], and the Russian Federation [6]. Vaccine effectiveness estimates ranges varied widely across included studies according to the outcome considered: - infection: 65,8 [6] - 100% [4] - severe disease/hospitalization/ICU admission: 73,2 - 79,3% [5] - death/in-hospital mortality: 67,2 [5] - 76,0 % [3] Vaccine effectiveness author outcome hiv+ Vaccinated hiv+ unvaccinated ve% 95CI events total %95CI events total %95CI gushchin infection 71 2543 2,3 (2,2 - 3,5) 1354 16606 8,2 (6,1 - 8,6) 65,8(56,7 -72,9) LIN infection 0 336 0(0 - 1,1) 37 2795 1,3 (0,9 - 1,8) 100 bekker hospitalization 18 3802 0,5(0,3 - 0,8) 66 3731 1,8 (1,4 - 2,3) 73,2(55,0-84,1) bekker ICU admission 4 3802 0,1 (0,0 -0,3) 19 3736 0,5(0,3 - 0,8) 79,3 (93,0-99,9) bekker death 5 3803 0,1 (0,0 -0,3) 15 3738 0,4 (0,2 - 0,6) 67,2 (9,9-88,1) hines in-hospital mortality 17 159 5,8(3,4 - 9,1) 295 1229 24,0(21,6 - 26,5) 76,0(61,5 - 85,0)

**Conclusions:** Taken together, the available evidence shows that PLWHA are protected by current WHO recommended COVID-19 vaccines.

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### Wastewater monitoring system for emerging infectious diseases in Thailand

Ratanaporn Tangwangvivat<sup>1</sup>, Chadaporn Phiancharoen<sup>2</sup>

<sup>1</sup>Department of Disease control Thailand, <sup>2</sup>Department of Disease Control Thailand

**Background and Objective:** Wastewater surveillance is a beneficial method to monitor the virus especially the outbreak period but there are different benefits in each phrases including pre-outbreak, during the outbreak and post-outbreak. This method is able to use for large area and it could be more efficient for the place which has the good water management system. This study aimed to identify the beneficial of wastewater monitoring system in different settings and phrases.

**Method:** The samples were collected from different settings and phrases of the COVID-19 and Monkeypox outbreak in Thailand. The selected settings were community apartments, fresh markets, prisons, and hotels. All samples were tested for COVID-19 (E gene, ORF1ab gene and N gene) and Orthopoxvirus.

**Results:** The results demonstrated that SARS-CoV-2 and Orthopoxvirus can be detected in untreated water. The virus could be detected the next few days after the absence of the patients. The benefits of sample collection in different outbreak phrases are vary. For the pre-outbreak phrase, the surveillance aimed to detect the new emerging virus as well as the infected patient to start the interventions for disease prevent and control. During the outbreak, the surveillance aimed to identify the patients and monitor the viral trend such as the mutated strain as same as the post-outbreaks phrase.

**Conclusion:** We suggested that wastewater monitoring system is a useful method to detect the new emerging diseases and for wide-scale surveillance. Unfortunately, the different outbreak phrase has an affect for sample interpretation and usage. The implementation of this method should be identified clearly before starting the protocol.

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### Vulnerability, COVID-19 and quality of acute neuro-cardiovascular care

Florence Francis-Oliviero<sup>1</sup>, Florence Francis-Oliviero<sup>1</sup>, Emilie Lesaine<sup>2</sup>, Sahal Miganeh-Hadi<sup>3</sup>, Sandrine Domecq<sup>4</sup>, Florence Saillour-Glénisson<sup>5</sup>, Floriane Sevin<sup>5</sup>

<sup>1</sup>Bordeaux University Hospital, Bordeaux University France, <sup>2</sup>CIC-EC, Bordeaux University Hospital, <sup>3</sup>CIC-EC 14-01, Bordeaux University hospital France, <sup>4</sup>CIC-EC 1401 - Bordeaux University Hospital France, <sup>5</sup>CIC-EC 14-01, Bordeaux University hospital France The AVICOVID Group Bordeaux University France

**Background and Objective:** Myocardial infarction and stroke are two highly time-sensitive emergencies, which require standardized guidelines of timed care pathway to reduce treatment times. COVID-19 profoundly modified use and organization of care, as well as its access in a backdrop of pre-existing health disparities in neuro-cardiovascular diseases. Our aim was to evaluate if the first wave of COVID-19 had deteriorated quality of care for socially or clinically vulnerable stroke and myocardial infarction patients.

**Methods:** We included myocardial infarction and stroke patients from two French regional cohorts between January 2019 and August 2020. Associations between vulnerabilities (clinical: age over 65 years, neuro-cardiovascular history; socioeconomic: deprivation index) and care management times were analyzed through multivariate linear mixed models, with an interaction on the time period (pre, per, post-wave).

**Results:** 9218 patients were included (6436 strokes, 2782 myocardial infarctions). The first medical contact-to-procedure time was longer for the elderlies ( $p < 0.001$ ) and the “very disadvantaged” ( $p = 0.003$ ) myocardial infarction patients, without any interaction with the Covid-19 period (age:  $p = 0.541$ , neuro-cardiovascular history:  $p = 0.697$ , deprivation:  $p = 0.642$ ). In the “stroke” cohort, no significant association was found between the vulnerabilities studied and the admission-to-imaging time, with no interaction with the Covid-19 period (age:  $p = 0.807$ , neuro-cardiovascular history:  $p = 0.339$ , deprivation:  $p = 0.945$ ).

**Conclusion:** Pre-existing disparities in care management times for vulnerable

myocardial infarction and stroke patients were neither accentuated nor reduced during the first-wave Covid-19. Measures implemented during the crisis did not alter the well-structured emergency pathways for these vulnerable patients.

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### Gender differences in comorbidities and outcomes of COVID-19 patients: findings from the “MASSI” study

Andrea Maugeri<sup>1</sup>, Martina Barchitta<sup>1</sup>, Giuliana Favara<sup>1</sup>, Roberta San Lio<sup>1</sup>, Martina Puglisi<sup>1</sup>, Dario Sinatra<sup>2</sup>, Giuseppe Liberti<sup>2</sup>, Antonella Agodi<sup>1</sup>

<sup>1</sup>University of Catania Italy, <sup>2</sup>Provincial Health Authority of Catania Italy

**Background and Objective:** In the current COVID-19 pandemic scenario, it is necessary to understand if gender differences exist in terms of patients’ characteristics and clinical outcomes. Here, we explore gender-differences in the pre-existing medical conditions, and evaluate how they might affect the risk of death among COVID-19 patients.

**Methods:** We used data from the MASSI (“Modelli innovativi per l’Analisi dati della Sorveglianza Sanitaria Integrata COVID-19”) study, which integrates surveillance data obtained from the Provincial Health Authority of Catania and the national surveillance system coordinated by the Italian National Institute of Health. The analysis was conducted on 1424 patients diagnosed with COVID-19 from February 2020 to December 2021 in Catania (Italy), and included patients with at least one medical condition - cancer, cardiovascular diseases (CVDs), HIV infection, chronic neurological, respiratory, corneal, kidney and liver diseases, diabetes, obesity, and other metabolic diseases.

**Results:** Compared to females, males were younger, more likely to exhibit diabetes ( $p < 0.001$ ), and less likely to exhibit other metabolic diseases, and obesity ( $p$ -values  $< 0.01$ ). However, no gender-differences were found for other medical conditions ( $p$ -value  $> 0.05$ ). The regression model confirmed that diabetes was more common in males (OR=1.786; 95%CI=1.362-2.343;  $p = 0.001$ ), while other metabolic diseases and obesity were less common (OR=0.607; 95%CI=0.436-0.846;  $p = 0.003$  and OR=0.626; 95%CI=0.451-0.868;  $p = 0.005$ , respectively). Although no difference in mortality was evident between genders ( $p = 0.141$ ), CVDs, diabetes, kidney, chronic neurological and respiratory diseases significantly contributed to the risk of dying among males. Instead, factors that affected the probability of death among females were kidney diseases, chronic neurological and CVDs.

**Conclusions:** Our findings confirm gender-differences in pre-existing medical conditions of COVID-19 patients, which may influence the risk of death. Further studies, however, are needed to understand physiological and pathological mechanisms underpinning these differences.

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### The effect of COVID-19 pandemic on Google search activity on foods: an analysis of the public interest in Italy

Giuliana Favara<sup>1</sup>, Andrea Maugeri<sup>1</sup>, Martina Barchitta<sup>1</sup>, Roberta San Lio<sup>1</sup>, Antonella Agodi<sup>1</sup>

<sup>1</sup>University of Catania Italy

**Background and Objective:** COVID-19 pandemic had a great effect on lifestyles and behaviors, which however remains to be clarified in terms of strength and direction. Here, we analyzed Google Trends data to evaluate changes in the interest of Italian people on food categories, before and during the pandemic.

**Methods:** Data on internet searches from January 2018 to June 2022 were obtained from Google Trends, using the terms: fruits, vegetables, legumes, whole-grains, nuts and seeds, milk, red meat, processed meat, and sugar-sweetened beverages. For each term, relative search volume was measured and ranged from 0 (no interest) to 100 (highest interest). Joinpoint regression analysis was used to assess changes in public interest on foods, and results were expressed as weekly percent change (WPC).

**Results:** Public interest in fruit, vegetables, milk, and whole-grains exhibited a similar trend, with the highest peak observed during the first COVID-19 lockdown. Particularly, public interest in fruit and vegetables increased up to the highest peaks reached from 15th to 22nd March 2020 (WPC= +37.13%) and from 22nd to 29th March 2020 (WPC= +20.21%), respectively. The public interest in milk, instead, reached its peak from 23rd February to 22nd March 2020 (WPC= +36.38%). The trend was similar for whole-grains, even if the public interest reached the peak slightly after (from 12th to 19th April 2020; WPC= +4.99%). However, the interest in these foods returned to the pre-pandemic levels after the first lockdown period. Moreover, we pointed out other changes in public interest for some foods (i.e., legumes and red meat), which however were not related to the COVID-19 pandemic.

Conclusion: Our findings showed a significant influence of COVID-19 pandemic on public interest in food categories, even if this effect was limited to the first lockdown. Thus, further research should be encouraged to evaluate the long-term effect of pandemic.

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### Effects of bivalent Omicron-containing vaccine boosters and prior infection against SARS-CoV-2 Omicron infections in Luxembourg, September-December 2022

Dritan Bejko<sup>1</sup>, Dritan Bejko<sup>1</sup>, Corinna Ernst<sup>2</sup>, Anne Vergison<sup>1</sup>, Joël Mosson<sup>1</sup>  
<sup>1</sup>Health Directorate 2A, rue Thomas Edison L-1445 Strassen Luxembourg,  
<sup>2</sup>Health Directorate

**Background and Objective:** In Luxembourg, bivalent mRNA booster vaccines containing Omicron BA.1 or BA.4/BA.5 were introduced in September 2022 mainly targeting persons aged 60 years and older. The protection conferred by bivalent booster doses or by natural immunity due to prior infections against Omicron infections is unknown. We evaluated the effectiveness of a fourth bivalent Omicron-containing booster dose and natural immunity due to prior infection against laboratory confirmed SARS-CoV-2 infection.

**Method:** We conducted a test-negative matched case-control study in persons aged 60 years and older in Luxembourg during a time period when SARS-CoV-2 Omicron lineage BA.5 and its sub lineages predominated. Matching was based on age group, sex and week of test. Effectiveness was assessed using conditional logistic regression adjusting for nursing home residency, time since last dose of vaccine, geographic region, and immigration background.

**Results:** Data from 4714 cases and 9881 matched negative controls from September 22 through December 7 2022 were included in the analysis. The effectiveness of the fourth bivalent booster dose was 54% (95% CI 35%-67%) compared to no vaccination and 38% (95% CI 15%-55%) compared to three and 36% (95% CI 14%-52%) compared to four monovalent booster doses. Effectiveness for BA.1 and BA.4/BA.5 containing vaccines were similar ( $p>0.05$ ). Effectiveness of prior Omicron and pre-Omicron infection were 80% (95% CI 77%-82%) and 45% (95% CI 37%-52%), respectively. Effectiveness of prior Omicron infections and bivalent booster vaccination was 87% (95% CI 72%-94%).

**Conclusion:** Bivalent Omicron-containing boosters were more protective against Omicron infection than monovalent boosters. Prior infection with Omicron provided a high protection, significantly better than prior infection from the pre-Omicron era. Hybrid immunity with Omicron infections and bivalent booster vaccination conferred the highest levels of protection.

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### Arrangement of influenza pandemic preparation and response Plan (PanFlu) in the reality of ULSS 6 Euganea

Luca Sbrogiò<sup>1</sup>, Paolo Fortuna<sup>1</sup>, Chiara Bovo<sup>1</sup>, Piero Realdon<sup>1</sup>, Francesca Scotton<sup>1</sup>, Elena Marcante<sup>2</sup>, Paola Anello<sup>1</sup>, Luca Cesaro<sup>1</sup>, Carlo Giordani<sup>1</sup>, Lorena Gottardello<sup>1</sup>, Natalina Frison<sup>1</sup>, Irene Marin<sup>1</sup>, Tullio Zampieri<sup>1</sup>

<sup>1</sup>ULSS 6 Euganea Italy, <sup>2</sup>ULSS 6 Euganea

**Background and Objective:** The recent Sars-Cov-2 pandemic has shown the need to provide a plan capable of responding to unpredictable events. On the basis of WHO recommendations, in January 2021 Italy adopted the National Pandemic Preparedness Plan, which was consequently implemented at regional level. Each local health authority has the task of implementing these documents by bringing it down to a local level. The ULSS6, making the most of the experience gained during COVID-19 pandemic, has organized the PanFlu Plan by identifying the main actions to be taken in preparation to a possible future pandemic.

**Methods:** Preparedness in public health has been assimilated to a process, so continuous improvement techniques could be used in the preparation of the plan. Ulss 6 used the Plan-Do-Check-Act (PDCA) model, organizing the work in four phases. Processes, objectives and resources were established in the Plan phase, then in the Do phase the identified managers implemented the actions. In the Check phase, feedback and results achieved were analyzed and finally the Act phase makes the document dynamic, leading to continuous improvement.

**Results:** The PanFlu coordination group prepared the Plan within the established deadlines. The document provides for the organizational declination of 198 actions divided into 13 macro-areas of interest involving territory, hospital facilities, prevention departments and administrative area through the various phases of a pandemic, considering aspects ranging from supplies to continuous training, from personnel recruitment to communication and logistical aspects.

**Conclusion:** The Panflu Plan arrangement made it possible to define the processes and the related managers for each of the actions identified, making the document

an easily applicable tool for all operators. A solid healthcare system that is aware of its internal processes and interconnections, and manages to coordinate them efficiently, will also be able to better deal with any future emergency situations.

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### Resurgence of the respiratory syncytial virus epidemic in infants after the easing of the COVID-19 containment measures: a retrospective cohort study from Tuscany Region, Italy

Vieri Lastrucci<sup>1</sup>, Martina Pacifici<sup>2</sup>, Giorgia Alderotti<sup>1</sup>, Lorenzo Stacchini<sup>3</sup>, Elettra Berti<sup>4</sup>, Monia Puglia<sup>2</sup>, Giulia Hyeraci<sup>2</sup>, Giuseppe Roberto<sup>2</sup>, Rosa Gini<sup>2</sup>, Fabio Voller<sup>2</sup>

<sup>1</sup>Epidemiology Unit, Meyer Children's Hospital, Florence, Italy, <sup>2</sup>Observatory of Epidemiology, Regional Health Agency of Tuscany, Florence, Italy,

<sup>3</sup>Medical Specialization School of Hygiene and Preventive Medicine, University of Florence, Italy, <sup>4</sup>Neonatal Intensive Care Unit, Meyer Children's Hospital, Florence, Italy

**Background & objective:** COVID-19 pandemic reduced the incidence of many viral infections in children, raising concerns about future larger epidemics with the easing of the containment measures. Respiratory syncytial virus (RSV) is a leading cause of hospitalization in infants aged <2 years, and Palivizumab is used for RSV prophylaxis. This study aimed to evaluate the impact of COVID-19 pandemic on the RSV hospitalizations and palivizumab prescriptions.

**Methods:** the study was funded by Tuscany Region. Five RSV epidemic seasons (2017-2022) were considered. For each RSV season, all the Tuscany Region infants aged <2 years were retrospectively followed-up in administrative databases to evaluate the occurrence of a RSV infection-based hospitalization. Trend of hospitalizations by months, seasonal incidence rates (per 1,000 person-days), and palivizumab prescriptions were the main outcomes.

**Results:** in total 1,756 RSV hospitalizations occurred in a population of 313.444 infants in the five seasons. In the first RSV season during pandemic (2020/2021), the RSV hospitalization incidence rate was zero. In the 2021/2022 season, the RSV epidemic started earlier and incidence rates of RSV hospitalization and severe hospitalization (23.45, 95%CI 22.84-25.25 and 5.76, 95%CI 5.46- 6.69, respectively) were about three times higher compared with pre-pandemic seasons; a significant difference in the distribution of the RSV hospitalizations for infants' gestational age at birth (GA) was observed only for GA of 32-35 weeks, while age on admission was significantly higher in 2021/2022 compared with pre-pandemic seasons. In the 2020/2021 and 2021/2022 seasons palivizumab prescriptions remained, respectively, stable (1,416) or increased (1,658), compared with the pre-pandemic average (1,343).

**Conclusion:** COVID-19 pandemic has caused a significant effect on the RSV epidemic. The epidemic resurgence and anticipation probably reflects the containment measures relaxation and the immune debt incurred in the previous season. Palivizumab prophylaxis was not affected by any indirect effects of the pandemic on the health service use.

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### Identifying risk factors for SARS-CoV-2 infection in university students after COVID-19 vaccine release: a nested case-control study

Erika Renzi<sup>1</sup>, Valentina Baccolini<sup>2</sup>, Antonio Covelli<sup>1</sup>, Giuseppe Migliara<sup>1</sup>, Azzurra Massimi<sup>2</sup>, Corrado Vito<sup>1</sup>, Carolina Marzuillo<sup>1</sup>, Paolo Villari<sup>1</sup>

<sup>1</sup>Sapienza University of Rome Department of Public Health and Infectious Diseases, Sapienza University of Rome Italy, <sup>2</sup>Sapienza University of Rome

**Background and Objective:** During the SARS-CoV-2 testing program offered through the RT-PCR test by Sapienza University of Rome, we conducted a test-negative nested case-control study between September 2021 and February 2022 to identify risk factors for acquiring SARS-CoV-2 infection among university students.

**Methods:** Each positive student (case) was matched with two negative students (controls), randomly selected from individuals who tested on the same day. Participants underwent a 10-minute structured interview about exposure to modifiable and non-modifiable risk factors for acquiring SARS-CoV-2 in two weeks before testing. Multivariable conditional logistic regression analyses were performed. Adjusted odds ratio (aOR) and 95% CI were calculated. A second model was restricted to participants who did not report attending campus in the two weeks before testing.

**Results:** Out of 8.730 tests for SARS-CoV-2, 122 of 173 cases were included in the study (response rate: 70.5%). A total of 366 students took part in the analysis. Most students were female (73.2%), with a mean age of 23.3±3.6 years, and vaccinated for SARS-CoV-2 (97.8%). At the multivariable analysis, significant

associations were found for being a case and having had a contact with COVID-19 positive person or with influenza like (ILI) symptoms (aOR: 6.51, 95%CI 3.48-12.18), attending clubs (aOR: 4.07, 95%CI:1.52-10.90), and having only the primary vaccine cycle (aOR: 2.94, 95%CI 1.24-6.96). Instead, attending lectures at the campus (aOR: 0.34 95%CI 0.15-0.77) was a negative predictor. No association was found with other predictors. The second model showed that exposure to a COVID-19 case or someone with ILI symptoms increased the likelihood of SARS-CoV-2 infection, while being female seemed to be less associated with acquiring the infection.

Conclusions: The results highlight how students who attend lectures in-person adhering to non-pharmacological preventive measures seem less exposed to SARS-CoV-2 infection. This finding suggests that the university environment appears to be safe.

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### COVID-19's lessons learned from Primary Care and General Practice: enduring rafts against Pandemic Waves

Lucia Palandri<sup>1</sup>, Lucia Palandri<sup>2</sup>, Alice Serafini<sup>3</sup>, Giulia Ugolini<sup>4</sup>, Chiara Giansante<sup>4</sup>, Davide Fornaciari<sup>3</sup>, Alberto Ferrari<sup>1</sup>, Marco Saletti<sup>5</sup>, Marina Scarpa<sup>1</sup>, Maria Padula<sup>6</sup>, Silvia Riccomi<sup>1</sup>, Elena Righi<sup>1</sup>

<sup>1</sup>University of Modena and Reggio Emilia "1. Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy" Via Campi 287, Modena, Italy, <sup>2</sup>University of Modena and Reggio Emilia Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy. Clinical and Experimental Medicine PhD Program, University of Modena and Reggio Emilia, Modena, Italy Via Campi, 287, Modena, Italy, <sup>3</sup>Local Health Unit of Modena, Modena, Italy, <sup>4</sup>Local Health Unit of Modena, Modena, Italy Department of Primary Care, Local Health Unit of Modena, Modena, Italy, <sup>5</sup>Freelance Italy, <sup>6</sup>University of Modena and Reggio Emilia Italy

Background: The Pandemic heavily hit northern Italy. Since most infections have mild to moderate symptoms thus Primary Care(PC) had to quickly adapt and reorganize to contribute to reducing hospital overload and ensure continuity of care. Italian literature on COVID-19 outpatient management is scarce, and little is known about overall management strategies. The study aims to describe the overall reorganization in pharmacological and monitoring strategies adopted by Italian general practitioners(GPs) to care for SARS-CoV-2 infected outpatients during the pandemic's first waves and to evaluate their effectiveness in COVID-19 hospitalisation.

Methods: This is a retrospective cohort study of SARS-CoV-2 infected adult outpatients managed by their GPs from March 2020 to April 2021 in the province of Modena(Italy). Using electronic medical records, we extracted data on pharmacological and management strategies (home visits and remote monitoring), patient characteristics, and hospitalizations. We stratified data for disease severity and multiple logistic regression analysis was performed to assess the probability of hospitalization.

Results: Of 5340 patients, 56%(83% with pneumonia) were actively monitored by 46 GPs and specifically created continuity-of-care-units. A significant reduction in paracetamol, antibiotics and hydroxychloroquine prescriptions was observed over time in concordance with newly released guidelines. FANS for moderate patients(OR=0.50 95%CI:0.25-0.99), and steroids(OR=0.52 95%CI:0.32-0.84), antibiotics(OR=0.42 95%CI:0.25-0.70) and heparin(OR=0.63 95%CI:0.38-1.04) for severe-critical patients were effective in reducing the probability of hospitalisation, yet none as much as GPs' active monitoring(OR up to 0.32 95%CI:0.14-0.70) or home visits(OR up to 0.42 95%CI:0.20-0.88).

Conclusion: Italian Primary Care showed to be resilient and prone to adapt management and pharmacological strategies effective in reducing hospitalization overload. Considering a new potential pandemic and given that the ending of the current one is still proceeding at a slow pace, strengthening and investing in territorial health systems is a key strategy for controlling hospital overload and its consequences on patients health.

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### The spread of sars-cov-2 and vaccination coverage: Results of health surveillance in schools of modena province, Italy

Pasquale Galante<sup>1</sup>, Stefania Paduano<sup>2</sup>, Lucia Borsari<sup>3</sup>, Alessandra D'Alterio<sup>1</sup>, Laura Iacuzio<sup>4</sup>, Antonella Greco<sup>3</sup>, Elisabetta Fioretti<sup>3</sup>, Giacomo Creola<sup>3</sup>, Giovanni Casaletti<sup>3</sup>, Annalisa Bargellini<sup>1</sup>, Tommaso Filippini<sup>5</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy,

<sup>2</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy, <sup>3</sup>Department of Public Health, Public Hygiene Service, Local Authority of Modena, Modena, Italy, <sup>4</sup>Department of Public Health, Public Hygiene Service, Local Authority of Modena, Modena, Italy, <sup>5</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy Italy

Background and Objective: In Italy, the COVID-19 pandemic has caused over 4.6 million cases in individuals aged between 0 and 19. This study aims to evaluate the role of vaccination against COVID-19 in order to reduce the spread of the SARS-CoV-2 virus within schools in Modena province.

Methods: A retrospective cohort study was performed in the period 1 September-15 December 2021 among teachers and students aged 0-19 years, screened for SARS-CoV-2 infection by nasopharyngeal swab following the detection of an index case within classroom.

Results: In the study period, 13934 subjects were tested, of which 12534 (90%) students and 1400 (10%) teachers, from 594 different classes. A total of 1373 cases were identified, 594 index cases and 779 secondary cases, respectively. In detail, 9.8% (1225 cases) of students tested were positive for SARS-CoV-2 and 10.6% (148 cases) of teachers. Out of entire population 32.7% (4562) of participants (64.9% of teachers and 29.2% of students) were vaccinated with at least one dose of the anti-SARS-CoV-2 vaccine at the test time. Among 779 secondary cases, only 7.7% (60) were vaccinated compared to 35.1% (4408) of negative tested subjects. Most of the subjects who tested positive attended primary school (50.8%) with the highest ratio of secondary cases on index cases rate (2.19), followed by middle (24%), high school (15.2%), infant (7.2%) and nursery school (2.7%).

Conclusion: The results of this study show the differential spread of SARS-CoV-2 within various age groups and indicate that the vaccination, available in the study period only for the population aged  $\geq 12$ , may have mitigated virus spread in middle and high schools. Conversely, infant and nursery schools seemed to benefit from organization in small classes.

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### Prevention and control of covid-19: A multicentric study of the Brazilian population in the territories covered by primary health care

Maria Guilam<sup>1</sup>, Carla Teixeira<sup>2</sup>, Julio Schweickardt<sup>1</sup>, Diana Gutierrez Diaz de Azevedo<sup>1</sup>, Kamile Siqueira<sup>3</sup>, Jonatas Bessa<sup>4</sup>, Natalia Cardoso<sup>5</sup>, José Pedrosa<sup>6</sup>

<sup>1</sup>Fundação Oswaldo Cruz researcher Brazil, <sup>2</sup>Fundação Oswaldo Cruz, <sup>3</sup>Universidade Federal Fluminense, <sup>4</sup>Universidade Federal da Bahia researcher Brazil, <sup>5</sup>Universidade Federal do Rio de Janeiro researcher Brazil, <sup>6</sup>Universidade Federal do Piauí Teacher, Brazil

Background: The COVID-19 pandemic highlighted the importance of Primary Health Care (PHC) functions in Brazil, a privileged locus for health teams to carry out educational, social, and assistance actions in the prevention and control of the disease.

Objective: This study aims to analyze the information sources and daily-life practices of the strategies for COVID-19 prevention and control in the individual, family, and collective spheres of the population in the territories covered by the PHC.

Methods: Clipping of a multicenter, national study. Cross-sectional, descriptive design, with a quantitative approach, involving 128 health units, 88 municipalities, and 5 regions of the country. Selected for convenience, with a minimum sample calculation of 6,290 families, a structured online questionnaire was used for data collection, which took place between January and September 2021. Descriptive statistics were generated for the analyses.

Results: 6,775 families were included, 41.9% stated that one or more family members had been diagnosed with COVID-19. As for self-perception about the coronavirus, 55.2% say they are very confident in preventive methods; 92.9% considered social isolation as an important preventive measure; a 95.4% reported that COVID-19 is serious and a 67.1% reported low possibility of contagion by COVID-19. As for the perception of information about COVID-19 through social networks, a 57.2% of respondents reported feeling poorly informed; a 42% reported that a health and education action was carried out to prevent COVID-19 by the team of professionals from the health unit in the territory, a 78.8% reported feeling well informed about the coronavirus by health professionals.

Conclusion: Health teams contribute to the informational universe of their users through medical-scientific guidelines. Knowing the practices of coping with the COVID-19 pandemic by the Brazilian population contributes to teams

and managers in strengthening light technologies and public policies for the prevention and control of public health emergencies.

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### Impact of national-scale targeted point-of-care symptomatic lateral flow testing on trends in COVID-19 infections and hospitalisations during the second epidemic wave in Austria

Stephanie Reitzinger<sup>1</sup>, Thomas Czypionka<sup>2</sup>, Werner Leber<sup>3</sup>, Jasmina Panovska-Griffiths<sup>4</sup>, Oliver Lammel<sup>5</sup>

<sup>1</sup>Institute for Advanced Studies Austria, <sup>2</sup>Institute for Advanced Studies Department of Health Policy, London School of Economics Austria, <sup>3</sup>Queen Mary University of London United Kingdom, <sup>4</sup>The Big Data Institute, University of Oxford United Kingdom, <sup>5</sup>Practice Dr. Lammel, Ramsau am Dachstein

**Background:** In October 2020, amidst the second COVID-19 epidemic wave and before the second-national lockdown, Austria introduced a policy of population-wide point-of-care lateral flow antigen testing (POC-LFT). This study explores the impact of this policy by quantifying the association between trends in POC-LFT-activity with trends in PCR-positivity (as a proxy for symptomatic infection) and hospitalisations related to COVID-19 between October 22 and December 06, 2020. **Methods:** We stratified 94 Austrian districts according to POC-LFT-activity (number of POC-LFTs performed per 100,000 inhabitants over the study period), into three population cohorts: (i) high(N=24), (ii) medium(N=45) and (iii) low(N=25). Across the cohorts we a) compared trends in POC-LFT-activity with PCR-positivity and hospital admissions; and, b) compared the epidemic growth rate before and after the epidemic peak.

**Results:** The trend in POC-LFT activity was similar to PCR-positivity and hospitalisations trends across high, medium and low POC-LFT activity cohorts. Compared to the low POC-LFT-activity cohort, the high-activity cohort had steeper pre-peak daily increase in PCR-positivity (2.24 more cases per day, per district and per 100,000 inhabitants; 95% CI: 2.0-2.7; p<0.001) and hospitalisations (0.10; 95% CI: 0.02, 0.18; p<0.15), and 6 days earlier peak of PCR-positivity. The high-activity cohort also had steeper daily reduction in the post-peak trend in PCR-positivity (-3.6; 95% CI: -4.8, -2.3; p<0.001) and hospitalisations (-0.2; 95% CI: -0.32, -0.08; p<0.05).

**Conclusions:** High POC-LFT-use was associated with increased and earlier case finding during the second Austrian COVID-19 epidemic wave, and early and significant reduction in cases and hospitalisations during the second national lockdown. A national policy promoting symptomatic POC-LFT in primary care, can capture trends in PCR-positivity and hospitalisations. Symptomatic POC-LFT delivered at scale and combined with immediate self-quarantining and contact tracing can thus be a proxy for epidemic status, and hence a useful tool that can replace large-scale PCR testing.

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### Neutralizing anti-sars-cov-2 antibody titer after three doses of mrna vaccine in a sample of Italian nursing home personnel

Annalisa Bargellini<sup>1</sup>, Alberto Modenese<sup>1</sup>, Stefania Paduano<sup>1</sup>, Sara Turchi<sup>1</sup>, Isabella Marchesi<sup>1</sup>, Rossana Bellucci<sup>2</sup>, Simona Marchetti<sup>2</sup>, Roberto Vivoli<sup>2</sup>, Fulvio Bruno<sup>3</sup>, Pietro Grazioli<sup>3</sup>, Fabriziomaria Gobba<sup>1</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>Laboratorio Analisi TEST Srl, Modena, Italy, <sup>3</sup>Fondazione Scarpini Forattini Onlus, Schivenoglia, Italy

**Background and Objectives:** The titre of the anti-SARS-CoV-2 antibodies 6 months after the completion of primary vaccination cycle (two doses) shows a relevant decay, as also demonstrated in our previous study in a group of Italian nursing home personnel. We decided to evaluate the trend of antibody response after a third dose of anti-COVID-19 vaccine in the same workers. The possible role of individual factors was also explored.

**Methods:** A mixed retrospective-prospective observational study was performed on a sample of workers (healthcare workers (HCWs) and non-HCWs) from an Italian nursing home. Antibody titre was evaluated after the third BNT162b2 vaccine dose and compared with the values determined 6 months after the second dose (baseline). Moreover, individual socio-demographic and anamnestic characteristics were collected through a self-administered questionnaire.

**Results:** Forty-five nursing home employees vaccinated with three doses of BNT162b2 vaccine were enrolled in this follow up. Results show a significant increase of the neutralizing antibody titre after the third dose compared to the baseline (1221 BAU/ml vs 647 BAU/ml, as median values). A previous COVID-19

diagnosis and being non-HCWs were found to be associated with a higher increase of antibody titre. Analysis on individual characteristics is still ongoing, but preliminary results suggest a possible role of BMI, and age on antibody titre variation after the third vaccine dose.

**Conclusion:** The results show a significant increase of antibody titre in the employees of the nursing home after the third dose of BNT162b2 vaccine, supporting the importance of adherence to the proposed vaccine campaigns for the prevention of COVID-19 infection in workers.

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### COVID-19 testing experience among users of primary health care in communities with high socioeconomic vulnerability in northeast Brazil

Thais Aranha-Rossi<sup>1</sup>, Sandra Barros<sup>2</sup>, Ana Carvalho<sup>3</sup>, Denise Cruz<sup>4</sup>, Sisse Figueiredo<sup>2</sup>, Camila Reis<sup>4</sup>, Laio Magno<sup>1</sup>, Ines Dourado<sup>3</sup>

<sup>1</sup>State University of Bahia - UNEB Av Silveira Martins, 2555. Cabula. Salvador/Bahia/Brazil, <sup>2</sup>Federal University of Bahia, <sup>3</sup>Federal University of Bahia Av Basilio da Gama, 62. Canela. Salvador/Bahia/Brazil, <sup>4</sup>Federal University of Bahia, Brazil

**Background and objective:** We aimed to understand the testing experience for COVID-19 (C19) among users of Primary Health Care (PHC) located in communities with high socioeconomic vulnerability in a northeastern Brazilian capital. Within the PHC model, Brazil launched the Family Health Program (FHP) in 1994, which provides a broad range of primary care services.

**Methodology:** This is the formative research component of an intervention study to expand the testing and monitoring of C19. A qualitative approach carried out between December/21-February/22 was used to evaluate the C19 testing experience. Seventy semi-structured interviews were conducted with PHC users. The interviews were transcribed, coded, and analyzed through thematic content analysis.

**Results:** Of the 70 interviews, 32 were conducted in Basic Health Units and 38 in units of the FHP. The age range was 19 to 82 years old; 62(88.6%) females and 8(11.4%) males; 47.1% of mixed race, 47.1% blacks. Only 21.4% were employed, 14.3% were retired, 27.1% did not work and 21.4% were unemployed. 31 users (44.3%) received social protection benefits (93.5% a cash transfer program or the pandemic emergency aid). Users reported barriers to accessing health services and C19 testing in PHC units during the pandemic. The reported difficulties were a limited number of tests in PHC units, long waiting time, and difficulty to access the test results. Nevertheless, almost all (69) were able to test in expanding testing options provided by the National Health System.

**Conclusion:** Based on the formative research results an intervention was developed for PHC in two Brazilian capitals, to respond to the barriers to accessing C19 testing. The proposed intervention seeks to expand testing; surveillance strategies, a digital platform with a real-time situation panel, availability of test results, telemonitoring and user tracking, health education material, and prevention strategies for C19.

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### What makes health systems resilient? an analytical framework drawing on learnings from the covid-19 pandemic

Miriam Reiss<sup>1</sup>, Thomas Czypionka<sup>1</sup>, Miriam Reiss<sup>1</sup>, Markus Kraus<sup>1</sup>, Monika Riedel<sup>1</sup>

<sup>1</sup>Institute for Advanced Studies (IHS), Vienna Austria

**Background and Objective:** The COVID-19 pandemic posed an unprecedented challenge which caught many health systems worldwide widely unprepared. The aim of this research was to develop a comprehensive analytical framework on health system resilience in the context of infectious diseases.

**Methods:** The analytical framework was developed based on a two-tiered approach. First, a comprehensive review of the existing literature was conducted to identify relevant frameworks on health system resilience. Second, input was gathered in several rounds of internal and external consultations with designated field experts and stakeholders, drawing on their experiences from the pandemic.

**Results:** The framework distinguishes between prerequisites of health system resilience, which address precautions to be taken in 'normal' times, and response strategies in the face of shocks (e.g., pandemics). Both sections are further divided into six building blocks that were adapted from the WHO health system framework: governance and leadership, information and research, financing, physical resources, human resources, service delivery. A comprehensive understanding of health systems is applied, as resilience is addressed in the action areas of public health, primary care, secondary care and long-term care. An

overarching component on contextual factors – including, e.g., social cohesion, trust, international connectedness and health literacy – represents a distinctive feature of the framework and an important addition to the existing spectrum of resilience frameworks.

Conclusion: In order to be better prepared for future health crises, the foundations for a resilient health system must already be laid in 'normal' times and in all areas of the health system. In the face of an imminent shock, adequate response strategies need to be developed. An essential learning from the COVID-19 crisis has been that contextual factors of societies and sub-groups play a major role in the ability of health systems to overcome a shock.

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### COVID-19 pandemic and management of migrants on quarantine vessels in Italy

Salvatore Zichichi<sup>1</sup>, Emanuela Frisciale<sup>1</sup>, Francesca Basile<sup>2</sup>, Ignazio Schintu<sup>2</sup>, Laura Pecoraro<sup>3</sup>, Claudia Marotta<sup>4</sup>, Domenico Stabile<sup>3</sup>, Claudio Pulvirenti<sup>3</sup>, Roberto Falvo<sup>4</sup>, Ulrico Angeloni<sup>4</sup>, Giorgia Battaglia<sup>2</sup>, Giovanni Rezza<sup>4</sup>, Fabrizio Stracci<sup>4</sup>

<sup>1</sup>University of Perugia School of Specialization in Hygiene and Prevention, University of Perugia, Perugia, Italy, <sup>2</sup>Italian Red Cross - National Committee Italy, <sup>3</sup>USMAF/SASN Regional Directorate of Sicily, Ministry of Health, <sup>4</sup>General Directorate of Health Prevention, Ministry of Health - Italy

Background and objective: COVID-19 pandemic made the management of the thousands of migrants who have arrived on the sicilian coasts more complex and difficult. At the same time, restrictions to enter Italy were in force and reception facilities were not ready to handle several subjects in isolation and quarantine. Ships were converted into isolation structures. Syndromic surveillance and health conditions monitoring was carried out. This study describes the sample hosted in quarantine vessels and the management of covid-19 cases on board.

Methods: Vessels were converted according to the "ship safety" guidelines of the ministry of health. Ship crews, medical and logistic personnel of the italian red cross were on board. Migrants were hosted according to the country of origin, gender, families, pathologies and in dedicated areas if they resulted positive to the sars-cov-2 when arrived at the italian coasts. Health data of the first access were recorded in a database from april 2020 to june 2022.

Results: 59,700 migrants (6,065 women, 53,619 men, 16 not available) of 56 nationalities were hosted. The most represented countries were Tunisia (15210 migrants), Bangladesh (8959), Egypt (6918); 32 subjects declared a European nationality. The average age of the migrants who declared their age was 24,79 years old (0,38%<1y, 6,97%<18y, 8,12%=18y, 92,43%>18y). 4832 subjects (7,34%) were tested and resulted positive to the SARS-CoV-2 (58.60% before boarding and 41.4% during the quarantine period).

Conclusion: The system provided a solution quickly applicable in a context in which it was necessary to find physical places for this large number of migrants, in order to carry out isolation and quarantine with respect for human dignity. Although the system presented critical points and difficulties, it reduced the potential risk of spreading the virus among the population and in the reception system.

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### Inequalities in healthcare utilization among older adults during the second year of covid-19 pandemic: findings from the share cohort

Jitka Pikhartova<sup>1</sup>, Shakirah Sharif<sup>2</sup>, Hynek Pikhart<sup>1</sup>

<sup>1</sup>Masaryk University RECETOX Brno Czech Republic, <sup>2</sup>UCL IEHC London United Kingdom

Background and objective: Reorganisation of healthcare resources during the COVID-19 pandemic resulted in a global disruption of healthcare services, widening health inequalities among the vulnerable, particularly the older population. This study aims to investigate the sociodemographic and geographic factors associated with healthcare disruption among older European adults in second year of pandemic.

Methods: We used Survey of Health, Ageing and Retirement in Europe (SHARE) data comprising 35,923 participants aged 50 years and above from 27 countries. The influence of sociodemographic factors from wave 7 and geographic factors (country-level COVID-19 context and welfare regime typology) on forgone, postponed and denied healthcare in 2021 (wave 9), controlling for health needs, health behaviours, and COVID-19 vaccination status was investigated using three multilevel logistic regression models.

Results: Among older Europeans, the reported prevalence of forgone, postponed, and denied healthcare were 8.8%, 12.1% and 5.7%, respectively. Those higher

educated had higher likelihood of healthcare disruption. Compared to primary-educated, those tertiary-educated had 44% (95%CI 28-62%), 24% (13-37%) and 50% (28-75%) higher odds of forgone, postponed and denied healthcare, respectively. Those with secondary compared to primary education had 15% (4-27%) higher odds of forgone healthcare. Retirees faced higher chance of postponed healthcare compared to employed (OR 1.26, 1.00-1.62). Those living with partners were less likely (0.91, 0.83-0.99) to experience forgone healthcare. Country-level COVID-19 case and death numbers, stringency of measures against COVID-19 and welfare regime typology were not associated with healthcare disruption. The models for each outcome variable explained 8-9% differences between countries.

Conclusion: Differences in healthcare utilisation among older Europeans based on sociodemographic factors persisted in the second year of COVID-19 pandemic. Strategies to mitigate the repercussion of missed and unmet healthcare should be put in place to ensure preservation of health and wellbeing of this vulnerable population.

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### Use of the anti-covid vaccination status to support bed management activity as a preventive measure in the development of epidemic outbreaks

Michele Lagioia<sup>1</sup>, Veronica Ciorba<sup>2</sup>, Michele Capraro<sup>1</sup>

<sup>1</sup>IRCCS Istituto Clinico Humanitas Italy, <sup>2</sup>IRCCS Istituto Clinico Humanitas

Background and objective: The large-scale introduction of anti-COVID vaccination has been shown to reduce the probability of contracting and spreading the infection by the vaccinated person. The diagnostic capacity of the nasopharyngeal swab for COVID+ is limited at the time of its execution, failing to identify subjects who are in the incubation period and therefore with limited efficacy in preventive identification at the time of hospitalization. To limit the development of intra-hospital clusters of COVID+, a bed management model was structured based on the vaccination status recorded in the electronic medical record and on the length of hospitalization.

Methods: Starting from April 2021, the vaccination status for all hospitalizations, recorded on electronic health records, was extracted in daily reports provided to bed management. The bed management model used provided for the prohibition of sharing the hospital room between unvaccinated subjects or the possible association of long-term patients.

Results: The incidence of clusters (more than two cases in 7 days per unit of stay) in the hospital in the quarter following the implementation of this model showed a percentage reduction of 72.5%.

Conclusion: optimal management of patient placement in small cohorts according to public health criteria can help reduce the occurrence of infectious complications

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### Primary care during the pandemic: lessons learnt from five European countries

Markus Kraus<sup>1</sup>, Christoph Stegner<sup>2</sup>, Miriam Reiss<sup>2</sup>, Thomas Czypionka<sup>2</sup>, Monika Riedel<sup>2</sup>

<sup>1</sup>Institute for Advanced Studies (IHS), Vienna Josefstaedter Straße 39 1080 Vienna Austria, <sup>2</sup>Institute for Advanced Studies (IHS), Vienna Austria

Background and objective: The COVID-19 pandemic necessitated wide-ranging adaptations to the organisation of health systems, and primary care is no exception. This study aims to collate insights on the various impacts of the pandemic on primary care. The gained knowledge should help to increase pandemic preparedness and resilience of the primary care system.

Methods: We conducted a qualitative study employing semi-structured interviews with primary care providers in Austria, Denmark, France, Hungary, and Italy. A total of 31 interviews were conducted between June and August 2022 and subjected to an overarching analysis to identify key themes.

Results: Disruptions to service delivery led to a widespread adoption of telemedicine. Despite the rapid increase in telemedicine usage and efforts of primary care providers to organise face-to-face care delivery in a safe way, some patient populations such as elderly or chronically ill patients were particularly affected by disruptions in service delivery. Moreover, primary care providers perceived a substantial propagation of misinformation about COVID-19 and vaccines among the population, which also threatened patient-physician relationships. At the same time, primary care providers faced an increased workload, had to work with insufficient personal protective equipment and were provided with incongruous guidelines while pandemic response policies were mostly focused on hospitals. There was a consensus among primary care providers that they were mostly sidelined by public health policy in the context of pandemic management.

Conclusion: A better integration of primary care with public health and a better involvement of the primary care sector into the pandemic response would have generated a benefit for both patients and care providers. Primary care is well-equipped to manage most mild cases, thereby potentially relieving pressure from hospitals. Continuity of usual care should be prioritised and can be safeguarded by care provision via telemedicine or face-to-face, depending on the individual case.

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### Household food security access and dietary diversity amidst covid-19 pandemic in nepal; an evidence from rapid assessment

Dirghayu K.C.<sup>1</sup>

<sup>1</sup>Public Health Promotion and Development Organization Dhapakhel Nepal

Background: Pandemic led to the surging concerns of food insecurity status throughout the world. In response to global and national concerns on food and nutrition security, the presented study aimed to examine the prevalence and determining factors of household food insecurity and dietary diversity among people from selected rural municipalities of Lalitpur, Nepal.

Methods: A community-based cross-sectional study was conducted among 432 households. A pretested, semi-structured questionnaire was used to collect socio-demographic characteristics of the participants, household income; the impact of COVID-19 on their income and livelihood, household access to food, and dietary diversity. Food insecurity was measured using the Household Food Insecurity Access Scale (HFIAS), version 3, and the Household Dietary Diversity Score (HDDS). Bivariate and multiple linear regression models were used to assess the association between the dependent and independent variables.

Results: This study found the prevalence of household food insecurity, and low/medium household dietary diversity were 36.1% (95% CI: 31.7-40.8), and 63.2% (95%CI: 58.5-67.6) respectively. Also, households receiving COVID-19 support have had a significantly positive association with the HFS score (COR=1.62, 95% CI: 1.03-2.53) compared to those who did not receive any form of support. Multiple regression showed the disadvantaged ethnic group (AOR=2.73, 95% CI: 1.23-6.07), who did not attend formal education had significantly higher odds of household food insecurity (AOR= 3.70, 95% CI: 1.16-11.71). In contrast, participants of the age group 41-64 years were less likely to have food security and have consumed diverse diet (AOR=0.35, 95% CI: 0.21-0.59), and (AOR=0.48, 95% CI: 0.28-0.83), respectively compared to the reference group of 20-40 years.

Conclusion: Owing to the pandemic, our study concluded the increased prevalence of food insecurity among diverse communities. Despite this, dietary diversity was found to be acceptable, indicating the much-needed attention on food security in forthcoming emergencies among those of such rural settings.

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### Association between bnt162b2 vaccination and quality of life up to 18 months post-covid19 among sars-cov-2 infected individuals in israel: a cross sectional survey

Paul Otiku<sup>1</sup>, Hiba Zayyad<sup>2</sup>, Ofir Wertheim<sup>2</sup>, Kamal Jabal<sup>2</sup>, Amiel Dror<sup>3</sup>, Saleh Nazzal<sup>4</sup>, Daniel Glikman<sup>2</sup>, Michael Edelstein<sup>1</sup>

<sup>1</sup>Azrieli Faculty of Medicine, Bar-Ilan University Israel, <sup>2</sup>Baruch Padeh Hospital Israel, <sup>3</sup>Ziv Medical Centre Israel, <sup>4</sup>Galilee Medical Centre Israel

Background and objectives: Approximately 10-30% proportion of SARS-CoV-2-infected individuals continue to report symptoms months after the acute infection. Despite a growing consensus that vaccination reduces the reporting of these long-term symptoms, whether vaccination mitigates changes in quality of life (QoL) associated with post-acute COVID19 symptoms has not been fully investigated. We aimed to identify any association between the BnT162b2 vaccination use in Israel and QoL among individuals previously infected with SARS-CoV-2 in Israel, 3 to 18 months after infection.

Methods: We invited individuals aged 18 years and older whose SARS-CoV-2 r polymerase chain reaction (PCR) test was analysed between 15th March 2020 and 15th June 2022 in one of three government hospitals in Northern Israel, to fill a questionnaire pertaining to their physical, mental and psychosocial health. We examined associations between their vaccination status and post-COVID HRQoL (measured using the EQ5D-5L Utility index (UI) that ranges from less than 0 (lowest QoL) to 1) using linear regression, after adjusting for potential confounders.

Results: 951 participants with complete data were included. Mean UI for participants unvaccinated at the time of infection was 0.77, compared to 0.82 and 0.83 for double and triple vaccinated participants respectively. After adjusting for potential confounders, double and triple vaccination was associated with a 6.1

and 5.6 percentage-point increase in QoL respectively 3-18 months post-SARS-CoV-2 infection, compared to those unvaccinated ( $p < 0.05$ ).

Conclusions: Vaccination with 2 doses or more of BNT162b2 vaccine was associated with better QoL outcomes 3-18 months post infection compared to those unvaccinated at the time of infection. Our results suggests COVID-19 vaccination not only reduces post-acute COVID19 symptoms but may also mitigate the decrease in quality of life associated with symptoms post-acute COVID19 illness.

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### Health system resilience based primary health services in the covid 19 pandemic situation in depok city, Indonesia

Ede Darmawan<sup>1</sup>, Ede Darmawan<sup>2</sup>, Fajar Arianti<sup>3</sup>, Narila Nasir<sup>4</sup>, Vetty Permanasari<sup>5</sup>

<sup>1</sup>Faculty of Public Health Universitas Indonesia Indonesian Public Health Association (IPHA) Perumnas Klender, Jl. Malaka Raya, RT.12/RW.6, Malaka Sari, Durenawit, East Jakarta City, Jakarta 13460 Indonesia, <sup>2</sup>Faculty of Public Health Universitas Indonesia Indonesian Public Health Association (IPHA) MIRACLE Building Perumnas Klender, Jl. Malaka Raya, RT.12/RW.6, Malaka Sari, Durenawit, East Jakarta City, Jakarta 13460 Indonesia,

<sup>3</sup>Faculty of Health Sciences Department of Public Health, Syarif Hidayatullah State Islamic University, <sup>4</sup>Faculty of Health Sciences Department of Public Health, Syarif Hidayatullah State Islamic University Indonesian Public Health Association (IPHA) MIRACLE Building Perumnas Klender, Jl. Malaka Raya, RT.12/RW.6, Malaka Sari, Durenawit, East Jakarta City, Jakarta 13460 Indonesia, <sup>5</sup>Department of Health Policy and Administration, Faculty of Public Health Universitas Indonesia Indonesian Public Health Association (IPHA) MIRACLE Building Perumnas Klender, Jl. Malaka Raya, RT.12/RW.6, Malaka Sari, Durenawit, East Jakarta City, Jakarta 13460 Indonesia

Background: Indonesia is a disaster-prone country, so it needs preparedness to deal with it. One of the components that is the focus of a disaster is health services, including in non-natural disasters such as the COVID-19 pandemic. Primary health services were not ready when the pandemic hit in March 2020. Depok City is the city with the first case of COVID 19 in Indonesia.

Objective: Identify the resilience of primary health services (Community Health Centers) in the COVID 19 pandemic situation

Methods: We use a cross-sectional method to measure the level of resilience base on 5 variables namely governance, financial, resources and health workforce, technology and medical product uses, and services delivery. The population of this study were health workers working at the Depok City Community Health Centers in 2022 with a total sample of 111 people from 30 health centers. Respondents filled out the questionnaire using the Google form which was directly supervised by researchers in November 2022.

Results: The results show that in general resilience level of health system in Depok City based on measurement at community health center level is in a good situation (average 61,66%). Variable of resources and health workforce is the highest score (79,3 %) followed by technology and medical product uses (76,6 %), governance (56,8 %), services delivery (52,3 %), and financial (42,3 %).

Conclusions: We conclude that health system resilience in Depok City – Indonesia based on measurement at community health center level is in a good situation. Some component of health system needs to be enhanced in order to improve general resilience as preparedness step to face upcoming possible health crisis

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### Assessing the degree of doubt and the role of information sources among pregnant women who received covid-19 vaccination at an italian research hospital

Lorenza Nachira<sup>1</sup>, Brigida Carducci<sup>2</sup>, Gianfranco Damiani<sup>3</sup>, Antonio Lanzone<sup>4</sup>, Paola Arcaro<sup>5</sup>, Fabio Pattavina<sup>6</sup>, Stefania Bruno<sup>3</sup>, Enrica Campo<sup>3</sup>, Riccardo Mazzara<sup>3</sup>, Patrizia Laurenti<sup>3</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore di Roma Section of Hygiene, University Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy Largo Francesco Vito, 1 Italy, <sup>2</sup>Fondazione Policlinico Universitario Agostino Gemelli IRCCS, <sup>3</sup>Università Cattolica del Sacro Cuore di Roma Section of Hygiene, University Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>4</sup>Università Cattolica del Sacro Cuore di Roma Section of Gynecology and Obstetrics, University Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>5</sup>Università Cattolica del Sacro Cuore di Roma, <sup>6</sup>Fondazione Policlinico Universitario Agostino Gemelli

IRCCS Women, Children and Public Health Sciences Department, Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Rome, Italy

**Background and objective:** Pregnant women (PW) have a high risk of complications and adverse fetal/neonatal outcomes from COVID-19; therefore, they are a priority target group for COVID-19 vaccination. Despite the large real-world evidence about its safety in pregnancy, hesitancy is widespread and vaccination acceptance is low among PW. Following the World Health Organization's guidelines, COVID-19 vaccination of PW has been recommended in Italy since September 22nd, 2021. Shortly after, the Fondazione Policlinico Universitario Agostino Gemelli IRCCS (FPG), in Rome, implemented and promoted a specific pathway for COVID-19 vaccination of PW at its vaccination center. A cross-sectional study was conducted to assess the degree of pre-vaccinal doubt about COVID-19 vaccines, and the information sources considered decisive for the vaccination choice among PW vaccinated against COVID-19 at the FPG between October 2021 and March 2022. **Methods:** Data were collected through an anonymous questionnaire, composed of linear scale questions investigating doubts, and a multiple-answer question regarding sources. A score was calculated to assess the degree of doubt (low, medium, high). Multivariate logistic regression was performed to identify factors associated with the variables of interest, setting statistical significance at p

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### Leveraging Electronic Immunization Registry to monitor the two-year impact of COVID-19 on uptake of routine immunizations in children under 2 years of age in Sindh, Pakistan: insights from big data analysis with > 6.9 million children

Muhammad Siddique<sup>1</sup>, Sundus Iftikhar<sup>1</sup>, Mubarak Shah<sup>2</sup>, Vijay Dharma<sup>1</sup>, Danya Siddiqi<sup>3</sup>, Subhash Chandir<sup>4</sup>, Mariam Mehmood<sup>5</sup>

<sup>1</sup>IRD Pakistan Pakistan, <sup>2</sup>IRD Global Canada, <sup>3</sup>IRD Global United Kingdom,

<sup>4</sup>IRD Global United States, <sup>5</sup>IRD Pakistan

**Background and objective:** The covid-19 pandemic has disrupted routine immunizations globally, with low-middle-income countries (lmics) struggling to achieve pre-covid-19 coverage rates. We leveraged real-time immunization records of >6.9m children from the government's electronic immunization registry (seir) in sindh, pakistan, to quantify the pandemic's 2-year impact on routine childhood immunizations, including the success and inclusiveness of catch-up strategies.

**Methods:** We extracted individual immunization records from the seir from march 23, 2019 to march 22, 2022. Comparing baseline (1-year preceding the first lockdown) and the 2-year covid-19 period, we analyzed the impact on daily immunization coverage rates and impact heterogeneity in coverage across gender and geographies. Furthermore, we examined the success and inclusiveness of post-covid-19 catch-up strategies for missed children.

**Results:** We found a 48% (21,440/45,024) and 89% (40,033/45,024) decline in the daily average number of vaccine doses administered during the first and second covid-19 lockdowns compared to the baseline. Immunizations declined more for girls vs. Boys and in slums and rural areas compared to non-slums and urban areas. Of the 3.8m children who missed immunizations during the 2-year covid-19 period, 76% (2,919,683/3,818,716) were covered at the two-year mark. Despite covid-19 disruptions, the daily average number of vaccine doses administered at the one- and two-year mark surpassed the baseline rates in sindh by 22% (10,063/45,024) and 21% (9,365/45,024). Moreover, the female-based gender equity improved at the 2-year mark (crude male-to-female ratio (m:f) =1:1.09) compared to baseline (crude m:f=1:1.10)

**Conclusion:** Seir was crucial in supporting epi activities to trace, target and immunize children who missed immunizations during the 2-year covid-19 period. Pakistan is among the countries that successfully leveraged eirs during the pandemic to monitor immunization trends and transform data into actionable insights for evidence-based decision-making.

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### Effectiveness of vaccination on hospitalisation related outcomes: a population-based study in Northern Italy

Antonio Lorenzon<sup>1</sup>, Lucia Palandri<sup>2</sup>, Catalina Cristofor<sup>3</sup>, Filippo Lozza<sup>3</sup>, Francesco Uguzzoni<sup>2</sup>, Cristiana Rizzi, Riccardo Poluzzi<sup>1</sup>, Maria Scasserra<sup>3</sup>, Pierpaolo Bertoli<sup>1</sup>, Florian Zerzer<sup>4</sup>, Elena Righi<sup>5</sup>

<sup>1</sup>University of Modena and Reggio Emilia Department of Biomedical, Metabolic and Neural Sciences Via Campi 287, 41125 Modena, Italy,

<sup>2</sup>University of Modena and Reggio Emilia, <sup>3</sup>South Tyrol Health Care Service Epidemiological Surveillance Unit Via Lorenz Böhler 5, 39100, Bolzano, Italy,

<sup>4</sup>South Tyrol Health Care Service Medical Management Via Lorenz Böhler 5,

39100, Bolzano, Italy, <sup>5</sup>South Tyrol Health Care Service General Management Via Thomas Alva Edison 10/D, 39100, Bolzano, Italy

**Background and objective:** Although the efficacy of SARS-CoV-2 vaccines in preventing severe disease – especially in older adults – is widely demonstrated, there are not many studies conducted in the Alps with large sample sizes and during Omicron variant period. Moreover, scarce literature analyses the hospitalisation length of SARS-CoV-2 patients and its association with vaccination status. Aim of this study is to investigate the associations between ordinary or intensive care unit (ICU) hospitalisations and the vaccination status of SARS-CoV2 adult patients resident in the Italian alpine province of Bolzano.

**Methods:** We collected anonymized data from 93643 patients who swabbed positive for SARS-CoV-2 between November'21 and February'22 – coinciding with the arrival of the Omicron variant. Associations between vaccination status and hospitalisation characteristics were assessed using bivariate statistics and multiple logistic regression.

**Results:** Of 93643 positive patients, 925 were hospitalised (90% ordinary ward, 10% ICU).

Among over 65 (8% of the sample and 68% of hospitalisations), vaccinated patients had a significantly lower risk of being admitted to ordinary wards compared to not vaccinated: Odds Ratio(OR)=0.40(CI:0.35-0.48); to ICU: OR=0.26(CI:0.15-0.47) and to die: OR=0.39(CI:0.29-0.52).

These risks were even lower for vaccinated with booster compared to unvaccinated. Suggestively, also among vaccinated patients those with booster showed decreased risk of hospitalisation: OR=0.54(CI:0.42-0.67); and death: OR=0.39(CI:0.25-0.61).

Similar associations were found in age range 30-65.

Finally, average duration of ICU stay was significantly longer for unvaccinated people compared to vaccinated (9-6 days; p<0.003), especially in over 65 (11-6 days; p<0.05).

**Conclusion:** Results suggest that vaccination played a protective role against severe disease, even during Omicron variant period and especially in the most at-risk age groups.

Additional/booster dose have granted a greater protection compared to the primary cycle, supporting its administration policy.

The shorter ICU stay of vaccinated people suggests that vaccination could have made recovery faster.

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### Living rapid review update 18: what is the specific role of schools and daycares in covid-19 transmission?

Selin Akaraci<sup>1</sup>, Sarah Neil-Sztramko<sup>2</sup>, Leah Hagerman<sup>3</sup>, Emily Clark<sup>3</sup>, Emily Belita<sup>4</sup>, Stephanie Hopkins<sup>3</sup>, Robyn Traynor<sup>3</sup>, Karlene Stoby<sup>3</sup>, Maureen Dobbins<sup>5</sup>

<sup>1</sup>Centre for Public Health, Queen's University Belfast United Kingdom,

<sup>2</sup>National Collaborating Centre for Methods and Tools, McMaster University,

<sup>3</sup>National Collaborating Centre for Methods and Tools, McMaster University

Canada, <sup>4</sup>McMaster University

Countries have implemented various policies to tackle the COVID-19 pandemic. As pandemic conditions evolved and the body of evidence grew, the question of how to safely operate schools and daycares remained unanswered. To support evidence-informed decision-making, the National Collaborating Centre for Methods and Tools maintained a living rapid review to synthesize evidence on the role of schools and daycares on COVID-19 transmission. The search included 31 databases and grey literature sources, including Medline, Embase, PsycINFO, ERIC and medRxiv. Included studies reported data from 2021 forward on transmission (number of cases, cases/population or secondary attack rates (SAR)) within schools/daycares, the impact of infection prevention and control (IPAC) measures on transmission within schools/daycares, or the impact of operating schools/daycares on community transmission. All studies were critically appraised, and the certainty of evidence was evaluated using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. In the most recent update (December 2022), 58 single studies and 7 syntheses were identified. Results illustrate that SARs are low within school settings when IPAC measures are in place (certainty: moderate). Regarding IPAC measures, face masks may reduce the risk of transmission (certainty: low), test-to-stay policies may not increase transmission risk vs mandatory quarantine (certainty: low), cohorting and hybrid learning may make little to no difference in transmission (certainty: low), and the impact of surveillance testing within schools remained inconclusive (certainty: low). Incidence rates among students and staff were similar to community trends, indicating that school settings do not meaningfully contribute to community incidence, hospitalizations or mortality (certainty: low). The 18th

update to this living review includes higher-quality surveillance data and whole-genome sequencing studies, which build upon early case reports and prevalence studies to increase the certainty of findings. Living reviews may help to support ongoing decision-making in the context of evolving pandemic conditions.

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### Prerequisites and response strategies for tackling a pandemic: lessons for secondary care from five European countries

Monika Riedel<sup>1</sup>, Miriam Reiss<sup>1</sup>, Markus Kraus<sup>1</sup>, Thomas Czipionka<sup>1</sup>

<sup>1</sup>IHS Austria

**Background and objective:** The COVID-19 pandemic clearly highlighted the limited capacities in health systems including hospitals. This study collates experience and insights on challenges and strategies in secondary care management during the pandemic. The gained knowledge should help to facilitate pandemic preparedness in hospital care.

**Methods:** 52 semi-structured interviews with managers and executive staff of hospitals in Denmark, France, Germany, Hungary and Italy were conducted in Summer 2022 and were analysed by researchers in the respective countries. Subsequently, an overarching analysis was conducted to identify key themes and derive recommendations for improved preparedness.

**Results:** Despite marked differences between their national health systems, the investigated countries encountered similar problems. Concerning prerequisites, experts from most countries noted lack of up-to-date or sufficiently tested pandemic plans, too scarce resources dedicated to information transfer, including insufficient availability or usability of IT systems within and across organisations. Pandemic responses worked best in case of pre-existing cooperations and due to highly motivated staff. Often, in-house solutions for emerging problems were developed before support from authorities arrived. Keeping staff motivated and healthy got increasingly difficult due to the duration of the crisis, burden of work, diminishing societal support, poor governance regarding administrative burdens and (monetary) recognition of work.

**Conclusion:** The pandemic intensified pre-existing problems in the hospital sector – most notably, staff shortages and information management deficits – and accelerated developments that had begun already pre-pandemic. Experts from all five countries agreed that better equipped and integrated primary care and more suitable e-health solutions could take strain off hospitals. Professional managerial support for health organizations could improve processes. Regular practical tests of pandemic plans would point out needs for updates as well as trainings and other resources, thus enabling providers to concentrate on their core tasks in times of crisis.

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### COVID-19 infection in healthcare workers in ancona, Italy, 2020-2022: an observational longitudinal study

Davide Detto Rinaldini<sup>1</sup>, Corinna Fortunato<sup>1</sup>, Giulia Paolorossi<sup>1</sup>, Jacopo Dolcini<sup>1</sup>, Pamela Barbadoro<sup>1</sup>

<sup>1</sup>Department of Biomedical Sciences and Public Health, Università Politecnica delle Marche, Ancona, Italy

**Background and Objective:** As of January 2020, a new type of Coronavirus started to spread globally. Healthcare workers (HCWs) are exposed to a high risk of infection. Our study aims to describe the trend of SARS-CoV-2 infections within HCWs of the Azienda Ospedaliero Universitaria (AOU) delle Marche.

**Methods:** We carried out an observational longitudinal study; data has been collected from the records of the Hospital Hygiene Department of the AOU delle Marche. Among all the employees with a permanent contract (3280), only those with a positive SARS-CoV-2 swab result in the period from the 17/03/2020 to 24/03/2022 have been included.

**Results:** During study time, 794 operators tested positive corresponding to 23.6% of all employees (95%CI 22.0-25.3).

The sample was constituted of 597 (75.19%) females and 197 (24.81%) males. There was a higher incidence among employees under 30 years of age, followed by those aged 30-39.

Comparing the Sars-CoV-2 incidence in the Italian population with the HCWs' one, the incidence in March 2020 was lower in the first group.

From May 2020 to September 2020, the incidence in both populations was comparable. From December 2020, the incidence among healthcare employees decreased more drastically than in the general population and remained lower even in the following months (February - May 2021). The arrival of the Delta variant in May 2021 did not seem to affect the number of positive cases but, from November 2021 with the Omicron variant, there was a sudden increase in

incidence in both groups.

**Conclusions:** Although healthcare workers were more exposed to the virus and were more frequently screened, their risk of infection was not higher than the general Italian population.

This was probably because of the anti-SARS-CoV2 vaccination that has been administered primarily to HCWs starting from 27/12/2020 and to stricter adherence to personal protective equipment use.

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### Health needs of migrants hosted on quarantine vessels in Italy during COVID-19 pandemic

Emanuela Frisicale<sup>1</sup>, Salvatore Zichichi<sup>2</sup>, Francesca Basile<sup>3</sup>, Ignazio Schintu<sup>2</sup>, Giorgia Battaglia<sup>2</sup>, Claudia Marotta<sup>1</sup>, Ulrico Angeloni<sup>1</sup>, Roberto Falvo<sup>1</sup>, Laura Pecoraro<sup>4</sup>, Domenico Stabile<sup>4</sup>, Claudio Pulvirenti<sup>4</sup>, Fabrizio Stracci<sup>2</sup>, Giovanni Rezza<sup>1</sup>

<sup>1</sup>Directorate General of Health Prevention, Ministry of Health, Rome, Italy,

<sup>2</sup>School of Specialization in Hygiene and Prevention, University of Perugia,

Perugia, Italy - Italian Red Cross, <sup>3</sup>Italian Red Cross - National Committee,

Rome, Italy, <sup>4</sup>Cross border Health Authorities (USMAF-SASN), Ministry of Health, Palermo, Italy

**Background and Objective:** The southern coasts of Italy have been characterised by massive influxes of migrants from the coasts of North Africa for several decades. COVID-19 pandemic has increased the complexity of the management of migrants flows because of the cross-border rules and the need to contain potential SARS-CoV-2 outbreaks and not to burden local health services. To carry out quarantine at point of entries or isolation for SARS-CoV-2 infection if asymptomatic or paucisymptomatic, before reaching reception facilities, migrants were hosted in Ro-Ro vessels where also healthcare interventions were delivered by Italian Red Cross personnel with the collaboration of the Ministry of Health. This study aims at exploring which healthcare interventions were delivered on board from 17/04/2020 to 6/06/2022 in order to investigate migrants' health needs.

**Methods:** All data were collected on board and registered in an informative system. A descriptive analysis of the sample and of healthcare interventions was carried out through Excel functions.

**Results:** 20 "Ship Missions" were conducted during the reference period. 59.684 migrants (10% female, 7% minors) were welcomed and managed in 13 quarantine vessels. 23.775 healthcare interventions were delivered, among these 27% were psychological counselling, 16% dermatological consults, 12% dressings, 9% gastrointestinal consultations, 5% otolaryngology visits, 4% orthopedics consults. The remaining ones were medical or nursing interventions (for example psychiatric or ophthalmic). Overall, only 134 (0.6%) medical transfer to hospitals or healthcare services on the ground were carried out.

**Conclusion:** Most of migrants asked for psychological support probably due to their past. Most of the other interventions delivered seem to be at the same time indicative of health needs emerged during migration route. Moreover, the presence of healthcare personnel on board, leading to promptly manage migrants' health and healthcare needs, avoided medical transfers and the overburdening of local health services.

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### Epidemiological transmission patterns and use of whole genome sequencing in investigating campus based covid-19 outbreaks during the second and third waves of SARS-Cov-2 infection

Jwenish Kumawat<sup>1</sup>, Devisri Sundaram<sup>2</sup>, Mary Codd<sup>1</sup>, Eamonn Gormley<sup>1</sup>, Anne Scrivener<sup>2</sup>, Peter Coulahan<sup>1</sup>, Patrick Wall<sup>1</sup>

<sup>1</sup>University College Dublin School of Public Health, Physiotherapy and Sports science "University College Dublin, Woodview House, Belfield, D04 V1W8, Dublin" Ireland, <sup>2</sup>University College Dublin

**Background:** This study describes the investigation and management of multiple outbreaks of SARS-Cov2 during the second and third wave of the pandemic at University College Dublin, Ireland from September 2020 to September 2021.

**Methods:** Relevant data were gathered as part of the public health outbreak investigations led by the UCD Internal COVID Control Team (ICCT) in collaboration with the public health teams of the Health Service Executive (HSE). Results are presented for PCR (polymerase chain reaction) confirmed cases and their close contacts, reported to the UCD ICCT between September 2020 to September 2021. **Results:** There were 189 cases notified to ICCT. Among these, 77 cases were in residence on-campus cases. Ten epidemiologically linked clusters identified, where the number of cases linked with each cluster varied between 2 to 12. Additional cases during this period had no obvious epidemiological link to the

identified clusters. Of 843 close contacts with PCR test results, 26% (n=217) tested positive. 77% (n=145) self-reported with mild to moderately symptoms while 23% (n=44) self-reported as asymptomatic. Retrospective Whole Genome Sequence (WGS) analysis was undertaken after the outbreaks had subsided. The test positive cases were grouped into 6 clusters and it was shown that many of the apparent sporadic cases were included in these clusters.

Conclusions: The proportion of close contacts testing positive varied significantly throughout the pandemic, with testing policy and type of exposure having the greatest impact. Whole genome sequencing can give a better understanding of webs of transmission to complement epidemiological investigations. It is now possible to undertake sequencing in real time where it can make a contribution to outbreak control and resolution. Public Health professionals should become familiar with WGS and bioinformatics as useful tools in their armoury for the control of all communicable diseases not only SARS-CoV-2.

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### **Policies and practices to attract, retain, support and reskill health and care workers during the covid-19 pandemic and future workforce development in Thailand**

Vichai Tienthavorn<sup>1</sup>, Wanicha Chuenkongkaew<sup>1</sup>, Vasuton Tanvatanakul<sup>1</sup>, Sukjai Charoensuk<sup>2</sup>, Phayong Thepakorn<sup>2</sup>

<sup>1</sup>Praboromarajchanok Institute, Ministry of Public Health Thailand,

<sup>2</sup>Sirindhorn College of Public Health, Trang, Faculty of Public Health and Allied Health Sciences, Praboromarajchanok Institute

The low number of COVID-19-positive cases in Thailand indicates the robustness of Thailand's Ministry of Public Health(MoPH) and health-care system in responding to public health responses and emergencies. Its comprehensive duty is to lead the emergency response to prevent, contain, and control health challenges ranging from the national agenda to primary care in the communities. Key elements for tackling burdens include building the health workforce capacity and crafting public health policy that facilitate the capacity to respond to this pandemic.

To enhance the capacity of health-care workers to respond to the pandemic, Praboromarajchanok Institute (PI) is a higher educational institution whose main mission is to produce and develop human resources according to the needs of the MoPH. PI has both implemented new policies and strengthened current policies to attract, retain, support and re-and up-skill health care workers during COVID-19 in Thailand. PI promotes community health through its affiliated colleges, which are located in every region of the country. PI also has close relationships with the communities it serves, which are akin to family. PI has been fully integrated at the primary health-care level, through its community and health promoting hospitals that provide first-contact services available to everyone.

To make health systems more resilient to disaster preparedness and crises, PI plays a major role in producing health science graduates. These graduates serve as health personnel in rural areas, and make up more than half of the health workforce in the country. The MoPH and PI has greatly contributed to solving the national crisis on COVID-19. It promoted proactive action to prevent and monitor the spread of COVID-19 through village health volunteers (VHVs). VHVs use a smartphone application tool for surveillance of the COVID-19 epidemic. PI also now offers additional instruction for VHVs in nursing assistant and public health assistant program.

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### **Epidemiological profile of covid-19 deaths in tunisia, 2020-2022**

Rim Mhedhebi<sup>1</sup>, Sonia Dhaouadi<sup>2</sup>, Nissaf Alaya<sup>2</sup>, Aycha Hechaichi<sup>2</sup>, Amenallah Zouayti<sup>2</sup>, Hejer Letaief<sup>2</sup>, Mouna Safer<sup>2</sup>, Chiraz Borji<sup>3</sup>, Emna Mziou<sup>2</sup>, Fatma Youssef<sup>2</sup>, Leila Bouabid<sup>2</sup>, Souha Bougatef<sup>2</sup>, Sondes Derouiche<sup>2</sup>

<sup>1</sup>National Observatory of New and Emerging Diseases Ministry of Health, Tunisia Tunisia 16 Rue Bayrem Tounssi Tunisia, <sup>2</sup>National Observatory of New and Emerging Diseases Ministry of Health, Tunisia, <sup>3</sup>Ministry of Health, Tunisia Tunisia

Background

The impact of SARS-CoV-2 on global public health and excess of mortality related to coronavirus disease-2019 were proven worldwide.

This study aimed to describe the epidemiological profile of COVID-19 deaths in Tunisia from march 2020 to November 2022, to inform prevention and control policies.

Methods: Tunisian COVID-19 deaths register were implemented since March 2020 by National Observatory of New and Emerging Diseases, Tunisia from three data sources (Regional Directorate of health, public and private health care centers...). Qualitative variables were described by number and percentages. Crude mortality

rate (CMR) per 100,000 inhabitants was calculated as the rate between the number of COVID-19 deaths and the size of population.

Results: Between 18 March 2020 and 13 November 2022, Tunisia has reported 29266 covid-19 deaths (CMR=247.9 per 100,000 inhabitants).

The southern region has been the most affected throughout the COVID-19 epidemic (2020-2022) with the highest CMR. The epidemiology of COVID-19 in Tunisia was found to be spatiotemporally diverse. The epidemiological death indicators varied by region and time with periodic large outbreaks. The severity varied over time with 5 outbreaks occurring between September 2020 and November 2022 with the circulation of new variants of concern.

The median age of deaths were 72 years (0 days (newborn) to 112 years). The sex-ratio M/F=1.4, the number of COVID-19 death was higher among male and adult population. About 7% occurred at home or in way to a health care center and 93% occurred in health care centers (10% of these deaths occurred in private centers). Conclusion: The combination of public health, non-pharmaceutical measures and the high vaccine coverage were the most important pillars to contain this pandemic and mitigate its severity The implementation of the national immunization program must continue to contain the pandemic.

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### **The use of telemedicine by physicians during the covid-19 pandemic in Brazil**

Ana de Sousa van Stralen<sup>1</sup>, Cristiana Carvalho<sup>2</sup>, Samuel Gomes da Silva<sup>1</sup>, Jackson Araujo<sup>1</sup>, Lucas Der Maas<sup>1</sup>, Joana Cella<sup>1</sup>, Ana Maciel Chagas<sup>1</sup>, Valeria Penzin Goulart<sup>3</sup>, Leda de Oliveira<sup>3</sup>, Sabado Girardi<sup>4</sup>

<sup>1</sup>Federal University of Minas Gerais Brazil, <sup>2</sup>Pontifical Catholic University of Minas Gerais, <sup>3</sup>Oswaldo Cruz Foundation Brazil, <sup>4</sup>leda.oliveira@fiocruz.br Brazil

Background and objectives: The COVID-19 pandemic had a stimulating effect on the use of telemedicine worldwide. The present study aimed to investigate the use of telemedicine by physicians in Brazil prior to and during the pandemic.

Methods: We carried out a descriptive exploratory cross-sectional study through an online survey with 2.541 physicians in Brazil between October 2020 and January 2021. Respondents were classified according to their primary specialties. Results: The prior use of telemedicine was more common among primary care physicians: 22% of respondents in this group already used telemedicine and 13,7% started to use it after the pandemic. However, most of the respondents started using telemedicine after the break of the COVID-19 pandemic: 41% of clinical specialists, 35% of primary care physicians, and 27,6% of surgical specialists. Among diagnostic/therapeutic specialists, 44% declared that they did not use or intend to use telemedicine in the future. More than half of the respondents declared not to have received any additional payments related to telemedicine, especially among primary healthcare physicians (80%). 66% and more of the respondents from all specialty groups believe that the use of telemedicine expands access to health care services. However, with the exception of primary care physicians, the majority opinion of the respondents is that telemedicine can reduce the quality and safety of care.

Conclusion: The use of telemedicine prior to the pandemic was more common among primary care physicians. Despite having expanded the use of this tool in all groups of specialists, in comparison to the others, primary care physicians still demonstrate greater familiarity with the use of telemedicine and possible benefits for health services.

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### **A multi-country assessment of societal resilience and preparedness during covid-19 times. A review among the coronad horizon 2020 project**

Anna D'Amelio<sup>1</sup>, Cristina Renzi<sup>2</sup>, Sarah Cataldi<sup>2</sup>, Giulia Dallagiacom<sup>3</sup>, Gianmarco Imperiali<sup>2</sup>, Anna Odone<sup>3</sup>, Carlo Signorelli<sup>1</sup>

<sup>1</sup>San Raffaele University - UniSR "Via Olgettina, 60 Milan" Italy, <sup>2</sup>San Raffaele University - UniSR Italy, <sup>3</sup>University of Pavia Italy

Background and Objective: The COVID-19 pandemic has led to complex challenges concerning the spreading of misinformation about origin, symptoms, and prevention of SARS-CoV-2. Unclear, changing, and variable guidelines confuse the public and plant seeds for misinformation. A wide range of strategies were used by leaders across many sectors to foster positive social norms and encourage people to protect their community and selves from COVID-19.

The study provides an overview of communications important role in influencing society's behaviour during the COVID-19 pandemic in ten different countries.

Methods: This paper presents a narrative analysis of the currently available data

on societal responses and resilience during the COVID-19 pandemic, spanning from February 1, 2020, to March 1, 2022. Ten nations – Italy, Denmark, Sweden, Israel, Spain, Portugal, Romania, France and Germany, United Kingdom, and Israel – were selected for inclusion both within and outside the EU, based on their heterogeneous COVID-19 responses. Academic literature was retrieved using PubMed/Medline and Google Scholar. Grey literature was consulted ranging from institutional reports to archival records, policy briefs, books, websites, and news from verified sources.

Results: Adoption of domestic and travel regulations was different across countries, some more efficient than others. Some specific official communication strategies about COVID-19 have shown to be effective in increasing vaccine uptake while social media as source of information was strongly related to vaccine hesitancy. Israel and Portugal were exploited as benchmarks for vaccination strategies by other countries.

Conclusions: Low public confidence due to infodemic and inconsistent policies underscored the central role of Public Health to develop proper strategies and exploit digital tools to increase awareness. The potential of social media and digital platforms in tackling health emergencies should be better understood. Additionally, healthcare workers' communication skills can be improved to effectively deal with future epidemics and be trusted by the population.

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### Gender differences in covid-19 vaccine hesitancy in Western Balkans

Stefan Mandić-Rajčević<sup>1</sup>, Janko Janković<sup>2</sup>, Smiljana Cvjetković<sup>3</sup>, Vida Jeremić-Stojković<sup>4</sup>, Sanja Matović-Miljanović<sup>5</sup>, Aleksandar Stevanović<sup>6</sup>, Michele Gross<sup>5</sup>

<sup>1</sup>University of Belgrade, Faculty of Medicine, Belgrade, Serbia Institute of Social Medicine and School of Public Health and Health Management Dr Subotića 15 Serbia, <sup>2</sup>Institute of Social Medicine and School of Public Health and Health Management, Serbia, <sup>3</sup>University of Belgrade, Faculty of Medicine, Belgrade, Serbia Department of Humanities Pasterova 2 Serbia, <sup>4</sup>University of Belgrade, Faculty of Medicine, Belgrade, Serbia Department of Humanities Serbia, <sup>5</sup>Euro Health Group Serbia, <sup>6</sup>University of Belgrade, Faculty of Medicine, Belgrade, Serbia Serbia

Background and Objectives: COVID-19 vaccines represent a life-saving solution for the pandemic which has resulted in millions of deaths around the world, but vaccine uptake has remained low in Western Balkan countries. Vaccine hesitancy is the result of a plethora of factors which are usually addressed using general messaging in vaccination promotion strategies. The aim of this study was to identify gender differences in factors influencing vaccine behaviour in the Western Balkans.

Method: This cross-sectional study was carried out from July to October 2021. Convenience sampling included 1605 individuals over the age of 18 from Albania, Bosnia and Herzegovina, North Macedonia, Montenegro and Serbia. The questionnaire was shared online through social media.

Results: Females were more commonly vaccinated in Serbia (73% vs 56%) and Bosnia and Herzegovina (40% vs 28%) while males were more often vaccinated in Albania (56% vs 37%), Montenegro (60% vs 53%), and North Macedonia (74% vs 57%). Statistically significant differences were seen between males and females in responses to questions on vaccine safety ( $p < 0.01$ ), vaccine efficacy ( $p < 0.01$ ), compulsory vaccination ( $p < 0.01$ ), disease comprehension ( $p < 0.01$ ), risk of disease and susceptibility ( $p < 0.01$ ) and trust in societal factors ( $p < 0.01$ ). Statistically significant differences between males and females were also seen in sources of information and health literacy, but these differences varied between Western Balkan countries.

Conclusions: Strategies to combat vaccine hesitancy should take into account the specificities of target populations. General strategies which were applied in most Western Balkan countries were set to fail as they did not address specific factors influencing vaccine hesitancy.

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### Sex differences in psychosocial and economic impact of covid-19 among migrant origin populations compared with the general Finnish population

Sanna Nykänen<sup>1</sup>, Natalia Skogberg<sup>2</sup>, Regina Velázquez<sup>3</sup>, Anu Castaneda<sup>4</sup>, Päivi Koponen<sup>4</sup>, Laura Mustajoki<sup>3</sup>

<sup>1</sup>Finnish Institute for Health and Welfare Finnish Institute for Health and Welfare Mannerheimintie 166, PL 30, 00271 Helsinki Finland, <sup>2</sup>Finnish Institute for Health and Welfare, Helsinki, Finland, <sup>3</sup>Finnish Institute for

### Health and Welfare, <sup>4</sup>Finnish Institute for Health and Welfare Finland

Background and Objective: COVID-19 impacted particularly migrant origin populations. While studies focusing on general populations have reported sex differences in COVID-19, few studies have addressed sex differences in migrant origin populations. This study examines sex differences in psychosocial and economic impact of COVID-19 among migrant origin populations in Finland.

Methods: Data from the Impact of the Coronavirus on the Wellbeing of the Foreign-born Population (MigCOVID) Survey (10/2020-2/2021; n=3668) conducted among adults aged 20-66 years was used, with participants in the FinHealth 2017 follow-up study as the general population reference group (n=3490). Perceived impact on economic situation, loneliness, hope for the future, contact with friends, and sleeping difficulties were examined. Prevalence rates and their 95% confidence intervals (95%CI) were calculated. Multivariate logistic regression analysis was applied to examine differences by sex, adjusting for sociodemographics.

Results: In preliminary analyses, loneliness increased 37.9% (95%CI 33.8-42.1) of migrant origin women, 33.2% (95%CI 29.2-37.4) of migrant origin men, and 34.8% (95%CI 31.2-38.5) of general population women, and 20.7% (95%CI 17.6-24.3) of general population men. Hope for the future decreased 36.5% (95%CI 32.5-40.6) of migrant origin women, 39.0% (34.8-43.3) of migrant origin men, 35.8% (95%CI 32.3-39.5) of general population women, and 24.3% (21.1-27.8) of general population men. Financial situation worsened 43.3% (95%CI 39.0-47.6) of migrant origin men, 42.0% (95%CI 37.9-46.2) of migrant origin women, 21.5% (95%CI 18.5-25.0) of general population women and 16.0% (95%CI 13.9-18.4) general population men. Logistic regression analyses will be reported in the presentation.

Conclusion: General population women reported greater psychosocial and economic impact than men. Sex differences within migrant origin populations were not significant, although men and women reported significantly higher adverse psychosocial and economic impact compared with men in the general population. Findings with intersectional approach should be used when planning restorative measures to reduce adverse societal impact in future crises.

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### SARS-CoV2 pandemic and its confrontation in indigenous people: An experience with 34 Brazilian districts

Viviane Lourenço<sup>1</sup>, Soraya Andrade<sup>2</sup>, Viviane Lourenço<sup>1</sup>, Rodrigo Santana<sup>2</sup>, Augusto Drumond<sup>2</sup>, David Naddler<sup>3</sup>, Ademir Lapa<sup>2</sup>, Alexandre Pozza<sup>2</sup>  
<sup>1</sup>Leader of innovation and digital health Brazil, <sup>2</sup>Ministry of health, Brazil Brazil, <sup>3</sup>Federal University of Tocantins, Brazil

Background: Studies show that indigenous peoples are more vulnerable to epidemics due to social, economic conditions and access to health, which amplifies the potential for the spread of diseases such as the coronavirus (COVID-19), an infectious disease caused by the SARS-CoV-2.

Objective: To present the Brazilian Government strategy to tackle the COVID-19 in indigenous communities, considering multiple stakeholders.

Methods: Besides communication strategies, this paper also discusses the proposition a repository with contingency plans for specific territorial realities.

Results: The strategies were developed under the Brazilian Governments leadership, with the support of the 34 indigenous districts (DSEI). The types of strategies developed involve policy ordinances, technical reports, reports, recommendations, clinical management protocols, epidemiological bulletins, multidisciplinary actions and a Communication Hub. The Communication Hub has involved social network channels with approximately four hundred thousand accesses, even in regions with difficult internet access. Brazil has continental dimensions and has one of the largest indigenous population in the world; therefore, the Brazilian Government articulated a strategy to ensure that the indigenous people would have access to health, food, security isolation and social benefits.

Conclusions: Features of this reported experience might be exported and adapted to local circumstances elsewhere to prevent widespread mortality in indigenous communities. As suggestions for future research related to fighting COVID-19, we recommend a study divided among health systems in countries with indigenous populations, as well as a study comparing the vulnerability of indigenous populations with general population and misinformation related to indigenous health.

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### App-based collection of real-world data on the covid-19 pandemic and vaccines in germany 2021-2022

Anna-Lena Lang<sup>1</sup>, Vukašin Višković<sup>2</sup>, Nils Hohmuth<sup>3</sup>, Stefan Konigorski<sup>4</sup>,

Rasmus Leistner<sup>5</sup>, Cornelius Remschmidt<sup>6</sup>

<sup>1</sup>Data4Life gGmbH Germany, <sup>2</sup>Data4Life, <sup>3</sup>Medizinische Klinik für Gastroenterologie-, Infektiologie-, und Rheumatologie, Charité University Medicine Berlin Germany, <sup>4</sup>Digital Health Center, Hasso Plattner Institute for Digital Engineering, Potsdam, Germany. Hasso Plattner Institute for Digital Health at Mount Sinai, Icahn School of Medicine at Mount Sinai, New York, USA. Department of Statistics, Harvard University, Ca Germany, <sup>5</sup>Medizinische Klinik für Gastroenterologie-, Infektiologie-, und Rheumatologie Campus Benjamin Franklin, Charité University Medicine Berlin, <sup>6</sup>Data4Life Germany

**Introduction:** The COVID-19 pandemic challenged health systems worldwide to collect data broadly, rapidly, and safely to better understand the virus and respond dynamically to new developments. As new variants require new vaccines, adaptive and scalable study solutions were needed to test vaccine effectiveness (VE) and drug safety under real-world conditions. We investigated the feasibility of a digital study app to collect data on COVID-19 in Germany with a focus on VE.

**Methods:** In a digital prospective cohort study, we collected self-reported data between May 2021 and April 2022 to assess test-positive rates, incidences, suspected adverse events after vaccination, and VE. We used binomial regression models adjusted for confounders to estimate VE.

**Results:** A total of 9,592 individuals participated in our study. Incidence and test-positive rates in our cohort reflected the course of the pandemic in Germany. 1,768 unvaccinated participants were compared with 5,368 participants who had received at least two doses of any COVID-19 vaccine and 2,433 participants who had received three doses. Adverse events after vaccination were consistent with previously published research. Preliminary analyses revealed VE against infections across all vaccine brands waning from 89.1% (95% CI 68.2-96.2) at week 4 to 45.5% (95% CI 29.6-57.8) at week 28 after the second dose. Third vaccine dose restored VE to 67.5% (95% CI 53.6-77.1) after 4 weeks. We observed similar preliminary results for two and three doses of the BNT162b2 vaccine.

**Conclusion:** We successfully tracked the course of the pandemic in the German population using self-reported data from a small, self-selected cohort. Registration of COVID-19 VE with self-reported data in our study app was feasible but presented numerous challenges and potential biases that require further refinement for successful use as a digital public health tool.

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### The role of ships hospital in pandemic emergencies: Public health lessons learnt from the transformation of a ferry in a covid-19 ship hospital

Antonello Campagna<sup>1</sup>, Rosa Russo<sup>2</sup>, Paolo Cremonesi<sup>3</sup>

<sup>1</sup>Italian Ministry of Health, Liguria Health Port Authority Via Ribotta 5, Roms Italy, <sup>2</sup>Italian Ministry of Health, Liguria Health Port Authority, <sup>3</sup>Department of Emergency Medicine, Galliera Hospital Genova Via Mura della cappuccine, Genova (Italy) Italy

During Covid Pandemia ship hospitals (USNS Mercy and USNS Confort) have been employed in the USA to provide medical care. In Europe in March 2020, a long-distance roro ferry (Splendid G.N.V. Company) moored in the port of Genova (Northwest of Italy) was transformed into a medical care facility for COVID-19 in 1 week. The project intended to help infected patients that required low-intensity care, were discharged from hospitals in the Liguria Region and were not yet able to return home. The aim was to share some of the treatment burden of the completely overcrowded local ashore hospitals and to free up bed spaces for patients in the acute phase of the disease.

To the best of our knowledge, this is the only example in the world in which a passenger ship was transformed into a hospital ship for COVID-19 patients in such a short space of time and with such excellent clinical results.

In this work we discuss under the health port authority perspective the public health and the safety issues resulting from the exceptional and very unusual allocation of ashore medical facilities on a passenger ship.

The area for hospitalization consisted of a first module of 27 cabins, followed by a second module consisting of 25 cabins adjacent to the previous one. A common area—the catering zone and fresh air zone—was also set up on the outdoor deck. From 23 March to 18 June 2020, 191 patients were admitted onto the ship with excellent clinical results and no cases of contagion between crew members were recorded.

**Conclusions:** Use of Ships Hospitals to provide medical care could be an option to consider during pandemic crises under specific conditions.

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### Impact of lifting COVID-19 restrictions in mental well-being: a quasi-experimental approach

João Santos<sup>1</sup>, Teresa Leão<sup>2</sup>

<sup>1</sup>Faculty of Medicine - University of Porto Portugal, <sup>2</sup>Faculty of Medicine - University of Porto; Institute of Public Health of Porto University Portugal  
**Background and objective:** Despite the contribution to SARS-CoV-2 dissemination control, lockdown measures severely affected the population's well-being. Previous cross-sectional studies described the prevalence of anxiety and depression symptoms during the pandemic, but longitudinal approaches are needed to understand the impact of implementation and lifting lockdown measures in populations' well-being.

With that purpose, we aimed to assess the impact of lifting lockdown policies in the mental health of the Portuguese population through the COVID-19 pandemic, among different socioeconomic strata.

**Methods:** We used the Diaries of a Pandemic database – a longitudinal, web-based, and self-administered questionnaire implemented in Portugal in 2020 and 2021. Using data from the weekly reports of fear, sleep disorders, and negative feelings, we performed an interrupted time series analysis using weekly-aggregated data and a longitudinal analysis using individual data. We further compared the effects across different income, education, and caregiver status.

**Results:** We observed negative trends in the proportions of negative feelings [b2020=-1.02, 95%CI2020=(-1.40;-0.64); b2021=-1.12 95%CI2021=(-1.55;-0.69)], sleep disorders [b2020=-3.65, 95%CI2020=(-4.70;2.61); b2021=-0.87 95%CI2021=(-1.25;0.49)], and feelings of fear [b2020=-3.65, 95%CI2020=(-4.70;2.61); b2021=-0.53 95%CI2021=(-0.78;0.29)], during both lockdowns, and a statistically significant short-term reduction in the risk of negative feelings in 2020 ([b2020=-6.32, 95%CI2020=(-8.33;-4.30)], sleep disorders [b2021=-4.35, 95%CI2021=(-8.10;-0.60)], and feelings of fear in 2021 [b2021=-3.25, 95%CI2021=(-5.47;-1.03)]. Trends became stable after restrictions' lifting in both waves. Results from the individual-data longitudinal analysis reflected those from the interrupted time series analysis with aggregated data, except for reports of fear, where a statistically significant increase after lockdown was observed in 2020. Regarding socioeconomic factors, although most favoured groups had lower proportions of symptoms, trends were overall similar to those observed in the non-stratified sample.

**Conclusion:** Mental health symptoms became less frequent during the 2020 and 2021 COVID-19 waves and its frequency was affected by the lifting of lockdown measures, globally and across socioeconomic groups.

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### Long-covid experience and perceptions among primary care practitioners in germany - results from a nation-wide online-survey 2022-2023

Salma Mekkes<sup>1</sup>, Lorena Dini<sup>2</sup>, John Gubernath<sup>3</sup>, Giselle Sarganas<sup>3</sup>, Christa Scheidt-Nave<sup>4</sup>, Sydney Odonkor<sup>5</sup>, Juliette Schreiber<sup>6</sup>

<sup>1</sup>Charité Universitätsmedizin Berlin Germany, <sup>2</sup>Charité Universitätsmedizin Berlin EUPHA Germany, <sup>3</sup>Robert Koch Institute Germany, <sup>4</sup>Robert Koch Institute Germany, <sup>5</sup>Charité Universitätsmedizin Berlin, Institute of General Practice, <sup>6</sup>Charité Universitätsmedizin Berlin, Institute of General Practice Germany

After the onset of the COVID-19 pandemic, a growing number of patients began to report prolonged COVID-19 symptoms lasting for more than four weeks after infection (Long COVID). These symptoms include among others, fatigue, difficulty concentrating, respiratory, cardiovascular, and metabolic issues, which cannot be explained by other causes. Persistence or reappearance of these symptoms often persist over more than three months. Lasting symptoms are diffuse and may vary depending on severity of SARS-CoV-2 infection, comorbidities, SARS-CoV-2 vaccination status, gender, age or circulating virus strain, among others. Most of these patients are seen in primary care and this problem has been increasing. Because patients with Long COVID are not considered a source of infection to others, there is no mandatory reporting to public health authorities, making the surveillance and monitoring of this condition more difficult. Clinical management guidelines are being discussed and there is still a lack of a harmonized definition and a clear patient referral pathway. Adding to the direct pathophysiological effects of the SARS-CoV-2 infection, the indirect effects such as the consequences of the pandemic-containment-measures is also leading to a higher psychosocial and economic burden for these patients and the society. In many countries national public health authorities are working towards assessing Long COVID from multiple perspectives including building alliances and networks with different stakeholders including primary care providers, rehabilitation clinics and patients' self-help groups.

This presentation is meant to share the results from the Germany about the experiences and expectations on the management of Long COVID including of the (expected and potential) impact on primary care, public health including how can risk factors, prevention, health care, management and rehabilitation be supported by informed based health policy amongst primary care physicians.

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### Sulodexide as a promising treatment of post COVID 19 symptomatic patients with endothelial dysfunction

Ahmed Makni<sup>1</sup>, Aimen Ghrab<sup>2</sup>, Salma Charfeddine<sup>1</sup>, Slim Torjmen<sup>1</sup>, Hassen Hadjamor<sup>3</sup>, Kamal Bouslama<sup>4</sup>, Sami Milouchi<sup>5</sup>, Salem Abdessalem<sup>6</sup>, Leila Abid<sup>7</sup>

<sup>1</sup>Cardiology department, Hedi Chaker University Hospital Sfax, Tunisia, <sup>2</sup>Cardiology department, Habib Bourguiba Hospital Medenine, Tunisia, <sup>3</sup>Cardiology department, Tahar Sfar Hospital Mahdia, Tunisia, <sup>4</sup>Internal medicine department, Mongi Slim LaMarsa Hospital, Tunis, Tunisia, <sup>5</sup>Cardiology department, Habib Bourguiba Hospital Medenine, Tunisia, <sup>6</sup>Clinic Pasteur Tunis, Tunisia

**Background:** It is established that COVID 19 infection causes endothelial dysfunction resulting in most of its acute symptoms and its long-term effects also known as post covid-19 syndrome.

**Aim:** The aim of the study was to evaluate the effect of Sulodexide, a purified glycosaminoglycan mixture, in the improvement of the endothelial function due to long COVID 19 syndrome.

**Methods:** We conducted a multicenter Tunisian prospective quasi-experimental analysis from the large TUN End-COV trial. Patients with long COVID-19 symptoms and endothelial dysfunction were included. The subset of symptomatic patients with proven endothelial dysfunction (Endothelial Quality Index (EQI)<2) assessed by a post-occlusive reactive hyperemia (PORH) finger thermal monitoring (E4-diagnose, Polymath Company) were assigned into two groups. The sulodexide group received sulodexide (Vessel, AlfaSigma) 250 RLU twice a day during 21 days. The control group adhered to the study protocol without any medical treatment. **Results:** A total of 290 patients from TUN End-COV study with long COVID-19 symptoms and endothelial dysfunction were included. The study population was assigned to a sulodexide group (144 patients) or a no-medical treatment group (146 patients). Clinical characteristics were similar at inclusion in the two groups. The sulodexide group presented significantly less chest pain and palpitations than controls ( $p < 10^{-3}$  and  $p = 0.009$  respectively). The sulodexide group presented also a significant endothelial function amelioration compared to control group (median delta-EQI 0.66 (0.6) vs 0.18 (0.3);  $p < 10^{-3}$ ). Endothelial function improvement was significantly correlated to chest pain and palpitations recovery (AUC = 0.66, CI = 0.57- 0.75,  $p = 0.001$  and AUC = 0.60, CI = 0.51- 0.69,  $p = 0.03$  respectively).

**Conclusion:** Our results support that sulodexide may accelerate long COVID 19 patients' recovery in parallel with vascular endothelium restoration.

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### Physical activity promotes social relationships during "lenient" COVID19 protection strategies

Mahmoud Alomari<sup>1</sup>, Khaled Alshajji<sup>2</sup>, Ahmed Al-Emadi<sup>3</sup>

<sup>1</sup>Jordan University of Science and Technology Department of Rehabilitation Sciences; Jordan University of Science and Technology POBox 3030 Department of Rehabilitation Sciences; Jordan University of Science and Technology Irbid, Jordan 22110 Jordan, <sup>2</sup>College of Basic Education, PAAET Khalid Bibi Qatar University Department of Physical Education, Qatar University Department of Physical Education, Qatar University, Doha, Qatar 2713. Qatar, <sup>3</sup>Qatar University Department of Psychological Sciences, Qatar University Department of Psychological Sciences, Qatar University, Doha, Qatar

**Background and objective:** During COVID19 outbreak, many governments worldwide shutdown public places including gyms, schools, universities, colleges, workplaces, and malls. These COVID19-induced procedures limited participating in physical and social activities immensely. In Qatar, however, the government allowed outdoor physical activities only with family members. The effect of such "lenient" COVID19 confinement procedures on physical and social activities is not known. Therefore, the current study examined the association between changes in physical activity and social relationships during COVID19 lockdown in Qatar.

**Methods:** The changes in physical and sedentary activities and social relationships during COVID19 were collected from 488 Qataris (mean age=26.9±9.6 years) using an online survey.

**Results:** The participants reported an increase in physical and sedentary activities

during versus before the pandemic. Further analysis revealed that this increase was reported among the participants who experienced improvement or no change in the relationship with spouses, children, parents, siblings, uncles, neighbors, work colleagues, and overall relationships. However, the participants reported worsened social relationships experienced no increase in physical activity during the pandemic.

**Conclusion:** The results show that "lenient" COVID19 regulations contribute to enhancing participation in physical activities. Uniquely, this increase is associated with improvement in social relationships. These results might suggest that participating in physical activities can help "mitigate" the possible deterioration in social relationships due to pandemic-induced confinement. Therefore, efforts should be made to promote physical activities during pandemic breakouts to protect the welfare of the social relationship. However, future studies are needed to confirm the current findings and verify these speculations.

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### The experience of the covid-19 pandemic in fortaleza, Brazil: Public health in turmoil?

Carl Kendall<sup>1</sup>, Ligia Kerr<sup>2</sup>

<sup>1</sup>Tulane University Visiting Professor, Federal University of Ceará Programa de Pós-Graduação em Saúde Pública Universidade Federal do Ceará, Fortaleza, Brasil, <sup>2</sup>Federal University of Ceará, Brazil

**Background:** While the title and goal of our conference is a positive response to having lived through the last three years of an infectious disease pandemic that we were promised as recently as the 1980s was part of the world's past – is public health in any condition to respond? Staff burnout, cuts in health budgets, low vaccine coverage, and a public fatigued with everything but new conspiracy theories and targets to blame is not a propitious start. While technological advances in rapid home tests, vaccines, antivirals, and surveillance methods were brilliant achievements and saved millions of lives, the behavioral and social sciences contributed relatively little to policy and program, and only a few national programs appear to have achieved transmission control goals. This presentation reviews public response to testing, isolation, vaccination, distancing, and mask use in the northeast state of Ceará.

**Methods:** Ethnographic case study applying formative research with expert and lay interviewees. A desk review of relevant published and unpublished information describes the chronology of response events, cases, and deaths attributed to COVID-19. Means of promoting recommendations, evaluating responses, and interactions among health authorities and political leaders will be described.

**Results:** Early efforts (spelled out in the paper) were successful at slowing epidemic spread and deaths, with little of the animosity experienced in other regions of Brazil. High levels of collaboration among health professionals and political authorities were achieved. As awareness of the magnitude of the pandemic grew, national and international coordination was required to sustain a response. Absent this, local political, rather than epidemiologic facts determined the next steps. Without an effective national response individuals calculated their own risk and acted accordingly.

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### Virtual mourning, the experiences of iranian diaspora during COVID-19

AHMADI Ali<sup>1</sup>, Ali Ahmadi<sup>2</sup>

<sup>1</sup>BPH Bordeaux, University of Allameh Tabatabai France, <sup>2</sup>BPH Bordeaux, University of Allameh Tabatabai France

With the onset of the COVID-19 pandemic, the phenomenon of mourning was marked worldwide by an unprecedented disruption of family visits not only for migrants living abroad, who were confronted with the closure of borders, but also for all family members who lived in the same city. In such a situation, the evolution of funeral rites and commemorations was more and more evident: visiting relatives at the end of life and seeing the deceased before death being impossible, burial ceremonies and almost all commemorations were restricted in order to respect the social distancing. Given the unprecedented ban on mourning ceremonies, social networks, and later special sites tailored to Iranian culture and rituals, became places for families of the deceased perform funeral and mourning rites. Thus, microblogging platforms have made it possible to invent ritual practices and to extend this process of expression to migrants.

The objective of this research is to understand the processes of distance mourning in migration by studying the experience of the Iranian diaspora in France and to discover the characteristics of virtual mourning. To achieve this objective, observation of social media and virtual mourning platforms and semi-structured

interviews were conducted. This study shows that migrants who are unable to attend the mourning ceremony of their family members for various reasons, including asylum or restrictions of the COVID-19, attempt to fill this gap by using social networks and communication platforms. According to this study, online platform is a place to meet and visit families after a long time but there are some limits such as not being able to hug and cry with family members and inability of emotional emojis for express feelings. Online grieving is an opportunity to move from intrapersonal to interpersonal communication that may facilitate the completion of grieving tasks.

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### Overdose deaths and the covid-19 pandemic in british columbia, canada

Heather Palis<sup>1</sup>, Amanda Slaunwhite<sup>1</sup>, Marc-Andre Belair<sup>2</sup>, Kevin Hu<sup>1</sup>, Andrew Tu<sup>3</sup>, Jane Buxton<sup>4</sup>

<sup>1</sup>BC Centre for Disease Control Canada, <sup>2</sup>PHAC, <sup>3</sup>BC Coroner Service Canada, <sup>4</sup>BC Centre for Disease Control

**Background:** British columbia (bc) declared an overdose public health emergency in 2016. Since then, bc has consistently reported the highest overdose death rates of any province in canada. In the context of the covid-19 pandemic, overdose deaths in bc reached a record high in 2020. This analysis reports on changes in the profile of people who have died of overdose since bc's declaration of covid-19 as a public health emergency on march 17th 2020.

**Methods:** Using bc coroners service data, chi-square tests and multivariable logistic regression were conducted to compare demographic, geographic, and post-mortem toxicology data between people who died of overdose before (march 17th- december 31st 2019) and after (march 17th- december 31st 2020) bc's declaration of covid-19 as a public health emergency.

**Results:** Overdose deaths observed since march 17th 2020 (n=1516) more than doubled those observed in the same period in 2019 (n=744). In the adjusted logistic regression model, odds of death in the post compared to pre-covid-19 period was significantly higher among males compared to females, among all older age groups compared to people aged 30-39, and was higher outside compared to in private residences.

**Conclusions:** Alongside a significant increase in overdose deaths, the demographics of people who have died of overdose has changed since march 2020. Ongoing overdose prevention efforts must seek to reach people who remain most isolated, including older adults, who during dual public health emergencies are facing compounded risk of preventable mortality.

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### Etiological and prognostic roles of socioeconomic characteristics in the development of sars-cov-2 infection and related severe health outcomes: systematic review of population-based studies

Jinane Ghattas<sup>1</sup>, Makovski Tatjana<sup>2</sup>, James Cottam<sup>3</sup>, Stephanie Besnard<sup>4</sup>, Monika Ambrozova<sup>5</sup>, Barbora Vasinova<sup>6</sup>, Rodrigo Feteira-Santos<sup>7</sup>, Peter Bezegh<sup>8</sup>, Felipe Bollmann<sup>9</sup>, Romana Haneef<sup>10</sup>, Brecht Devleeschauwer<sup>11</sup>, Niko Speybroeck<sup>1</sup>, Paulo Nogueira<sup>12</sup>, Maria Forjaz<sup>13</sup>, Joel Coste<sup>4</sup>, Laure Carcaillon-Bentata<sup>4</sup>

<sup>1</sup>Université Catholique de Louvain (UCLouvain) Institut de recherche santé et société (IRSS), Université catholique de Louvain, Woluwe-Saint-Lambert, Brussels, Belgium, <sup>2</sup>Santé publique France, <sup>3</sup>Sciensano Department of Epidemiology and Public Health, Sciensano, Brussel, Belgium / Department of Public Health, Institute of Tropical Medicine, Antwerp, Belgium, <sup>4</sup>Santé publique France Department of non-communicable diseases and injuries, Santé publique France, Saint-Maurice, Île-de-France, France France, <sup>5</sup>Institute of Health Information and Statistics of the Czech Republic, <sup>6</sup>Institute of Health Information and Statistics of the Czech Republic Institute of Health Information and Statistics of the Czech Republic, Prague, Czech Republic Czech Republic, <sup>7</sup>Faculdade de Medicina, Universidade de Lisboa Instituto de Saúde Ambiental, Faculdade de Medicina, Universidade de Lisboa, Lisboa, Portugal / Área Disciplinar Autónoma de Bioestatística, Faculdade de Medicina, Universidade de Lisboa, Lisboa, Portugal, <sup>8</sup>National Directorate General for Hospitals Directorate for Project Management, National Directorate General for Hospitals, Budapest, Hungary, <sup>9</sup>Universidad Nacional de Educación a Distancia, Universidad Nacional de Educación a Distancia, Madrid, Spain Spain, <sup>10</sup>Santé publique France Department of non-communicable diseases and injuries, Santé publique France, Saint-Maurice, Île-de-France, France, <sup>11</sup>Sciensano Department of Epidemiology and Public Health, Sciensano, Brussel, Belgium / Department of Translational

Physiology, Infectiology and Public Health, Ghent University, Merelbeke, Belgium, <sup>12</sup>Universidade de Lisboa Instituto de Saúde Ambiental, Faculdade de Medicina, Universidade de Lisboa, Lisboa, Portugal / Área Disciplinar Autónoma de Bioestatística, Faculdade de Medicina, Universidade de Lisboa, Lisboa, Portugal, <sup>13</sup>Instituto de Salud Carlos III, REDISSEC and RICAPPS National Center of Epidemiology, Instituto de Salud Carlos III, REDISSEC and RICAPPS, Madrid, Spain

**Background and Objective:** There is growing evidence on the role of biomedical factors and socioeconomic status in increasing vulnerability to COVID-19. We conducted a systematic review to investigate the etiological and prognostic roles of multimorbidity, frailty and socioeconomic determinants in COVID-19 outcomes severity among population-representative samples. This presentation focuses on socioeconomic determinants.

**Methods:** The following databases were searched: PubMed, Embase, WHO COVID-19 Global literature on coronavirus disease and PsycINFO between January 2020 and 7th April 2021. For the etiological role of socioeconomic determinants, the following outcomes were of interest: infection, hospitalisation, ICU admission, mechanical ventilation and mortality. For the prognostic role, we investigated hospitalization for COVID-19, ICU admission, mechanical ventilation, death, functional decline, quality of life, disability, mental health difficulties, work absence.

**Results:** Out of 9 701 reviewed titles and 411 articles read in full-text, 78 studies reporting on socioeconomic characteristics met the eligibility criteria and were included in the final synthesis. 47 studies reported on the etiological role, 24 studies reported on the prognostic role, and 7 reported on both. No studies reported on long term effects of socioeconomic determinants. Only short term COVID-19 related outcomes, such as COVID-19 infections, mortality, ICU admission, hospitalization etc. were identified. Data was often retrieved using administrative and hospital records. The evidence suggests that worse health outcomes were often seen in black and Asian populations, and associated with lower education level and higher deprivation score. Most of the studies cover populations in the United States and the United Kingdom.

**Conclusions:** The risk of severe short-term COVID-19 outcomes increase with socioeconomic vulnerability and among certain ethnic groups. There is a need for more evidence on the role of socioeconomic characteristics in short-term and long-term COVID-19 outcomes in other European, Asian and African countries. Future research should target specific races and ethnic groups.

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### Interviewing the interviewers: capturing oral histories and other qualitative evidence to describe the impact of covid-19 contact tracing

Anita Apau<sup>1</sup>, Perri Carrol<sup>2</sup>, Sarah Linden<sup>3</sup>, Marcia Pearlowitz<sup>4</sup>, Katherine Feldman<sup>5</sup>

<sup>1</sup>Maryland Department of Health 101 E Mount Royal Avenue, Apt 703. Baltimore -Maryland United States Maryland Department of Health Johns Hopkins Bloomberg School of Public Health 101 E Mount Royal Avenue, Apt 703. Baltimore-Maryland. United States, <sup>2</sup>Johns Hopkins Center for Health and Equity, <sup>3</sup>Maryland Department of Health "201 W. Preston Street. Baltimore- Maryland" United States, <sup>4</sup>Maryland Department of Health 201 W. Preston Street. Baltimore-Maryland United States, <sup>5</sup>Maryland Department of Health

**Background and Objective:** Contact tracing was a crucial component of the public health response to prevent the spread of COVID-19, albeit a time-consuming activity requiring many human and technical resources. Maryland contact tracers provided vital assistance to COVID-19 patients and close contacts. The purpose of this evaluation was to capture qualitative aspects of COVID-19 contact tracing to document impact (e.g., stories describing experiences contact tracers had while interacting with cases and close contacts).

**Methods:** We conducted semi-structured qualitative interviews with 14 contact tracers from various counties in Maryland via videoconference. We collected information about why they became contact tracers, explored the impacts they had on cases and close contacts, and captured the memorable experiences, challenges, and rewarding parts of contact tracing. Themes and quotes were manually coded from interview transcripts and analyzed manually using the classic method of qualitative data analysis.

**Results:** Data analyses revealed themes including altruism, being a source of support, being overwhelmed, satisfaction in closing cases, and interest in continuing a career in public health. Most participants indicated they became contact tracers to help fight the pandemic. Contact tracers recalled experiences of calling 911 for clients over the phone and sometimes being the last and only

person to speak to clients before they died. Many were overwhelmed with the large number of cases they had to call daily but found it rewarding to notify cases and close contacts to end isolation or quarantine. And those new to the field indicated they were now interested and wanted to stay in public health.

Conclusion: We documented the qualitative impact of contact tracing not captured in the contact tracing and disease surveillance metrics. The testimonials can be used to improve contact tracing processes and policies for future pandemics and to inspire the next generation to join the public health workforce.

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### Risk of sars-cov-2 reinfection in sicily: A population-based evaluation of covid-19 events using current health databases

Dario Genovese<sup>1</sup>, Domenica Matranga<sup>2</sup>, Laura Maniscalco<sup>1</sup>, Vincenzo Pisciotta<sup>1</sup>, Giuseppe Vella<sup>2</sup>, Alessandra Casuccio<sup>1</sup>, Emanuele Amodio<sup>1</sup>  
<sup>1</sup>University of Palermo Department of Health Promotion, Mother and Child Care, Internal Medicine, and Medical Specialties "G. D'Alessandro" Via del Vespro, 133 - Palermo (PA) Italy, <sup>2</sup>University of Palermo

Background and Objective: Worldwide, the COVID-19 outbreak resulted in more than 640 million cases as of 15 December 2022. As immunity to natural infection deteriorates with time and SARS-CoV-2 strains mutate, reinfections began to occur. The current study sought to assess the probability of SARS-CoV-2 reinfection among residents of Sicily, Italy, in relation to sex, age, number of mRNA COVID-19 vaccine doses administered, and occurrence of hospitalization during a previous infection.

Methods: A population-based retrospective cohort analysis was designed using the Sicilian COVID-19 monitoring system run by the National Institute of Health and vaccination flows acquired through a regional registry in Sicily. Only Sicilian adults were included in the study, and hazard ratios were calculated using Cox regression.

Results: After an average of 198 days, there were 39,509 reinfections among 1,089,782 previously infected people (overall cumulative incidence: 3.62%) from the start of the pandemic to 3 September 2022. Almost all reinfections (37,084; 93.9%) occurred during the Omicron variant period, with the remaining 6.1% attributed almost entirely to the period in which Delta and Omicron variants co-circulated (2,011; 5.1%). The risk of reinfection was significantly lower among males than females (HR:0.74, 95%CI.:0.73-0.76), decreased with age (from HR:1.24, 95%CI.:1.20-1.28 for 30-39 years old people to HR:0.36, 95%CI.:0.33-0.38 for 80+ individuals compared to 18-29 group), and lower for people receiving two or more mRNA vaccine doses (HR:0.39, 95%CI.:0.38-0.40 compared to the individuals who did not receive vaccination). Interestingly, those who were hospitalized during their previous SARS-CoV-2 infection exhibited a significantly lower chance of reinfection (HR:0.74, 95%CI.:0.70-0.78).

Conclusion: SARS-CoV-2 reinfection was found to be a relatively common occurrence, predominantly caused by the Omicron strain. COVID-19 vaccination provides significant protection against reinfection. Furthermore, the lower risk observed in the elderly and previously hospitalized persons reflects more stringent adherence to the use of personal protective equipment.

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### COVID-19 travel restrictions and Mongolians stranded abroad: mental health, discrimination, and social inequality

Javkhlanbayar Dorjdagva<sup>1</sup>, Javkhlanbayar Dorjdagva<sup>2</sup>, Enkhjargal Batbaatar<sup>3</sup>, Jussi Kauhanen<sup>4</sup>

<sup>1</sup>Institute of Public Health and Clinical Nutrition, University of Eastern Finland Finland, <sup>2</sup>University of Eastern Finland Institute of Public Health and Clinical Nutrition "Faculty of Health Sciences, University of Eastern Finland Kuopio Campus, Yliopistoranta 1 FI-70211 Kuopio, Finland, <sup>3</sup>University of Eastern Finland, <sup>4</sup>University of Eastern Finland Institute of Public Health and Clinical Nutrition "Kuopio Campus, Yliopistoranta 1 FI-70211 Kuopio, Finland

Introduction and Objective: Since the early stage of the COVID-19 pandemic, the government of Mongolia has taken strong measures, including border restrictions to protect its citizens from COVID-19. The border to all passengers, including Mongolians, was closed on March 11, 2020. Consequently, thousands of Mongolians were stuck abroad for months and faced enormous risks.

The aim of this study was to evaluate the mental health and financial situation of Mongolians who were stuck abroad due to COVID-19 during their temporary travels and to support public health policymakers to make quick responses to save lives.

Methods: The data was collected between April 27 and May 4, 2020 through an online Google form survey. A total of 118 Mongolian citizens stranded abroad

during their temporary travels due to COVID-19 from 25 different countries completed the questionnaire. The policies and regulations for evacuation flights for Mongolian citizens were reviewed in this study.

Results: The study participants travelled abroad for tourism, medical, family, training, and business purposes. The majority of the participants reported that they felt discrimination and anxiety, and faced financial difficulties in the stranded countries.

Language barriers, visa expiration, chronic diseases, and a lack of knowledge of the corona virus among the participants, and a limited number of evacuation flights have increased the uncertainty. Lower-income people might have been left behind not affording the high price of evacuation flight tickets and quarantine costs.

Conclusion: The Mongolians who were stuck abroad due to COVID-19 and border closure had greatly suffered mentally and financially. We recommended the government to provide financial aid, and online mental and health services for those in need. These aids from the government should be included in the support packages for citizens stranded abroad as pandemic preparedness for future pandemics. Ensuring equality during the process of evacuation is essential.

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### Using the ophelia process with marginalised communities during covid-19 crisis

Shandell Elmer<sup>1</sup>, Richard Osborne<sup>1</sup>

<sup>1</sup>Swinburne University of Technology 453/469-477 Burwood Road, Hawthorn, Australia Australia

Background and objective: In August 2021, Melbourne (Australia) entered another period of lockdown and restrictions in response to the COVID-19 pandemic. Messages about vaccinations and other COVID-safe behaviours were not reaching everyone because people's particular health literacy needs were not considered. People experiencing vulnerability and disadvantage, such as those living in social and public housing were most at risk. This research aimed to develop a granular understanding of the experiences and health literacy needs of people residing in these settings to optimise communication and engagement for COVID-19 prevention and safety.

Methods: The Ophelia (Optimising Health Literacy and Access) process, a participatory community-based method, was chosen for this research project to accelerate the generation and deployment of fit-for-purpose interventions. Community engagement processes included approaches through trusted local entities, incentives, and repeat targeting (with incremental trust development). Postcards were disseminated to recruit people for an online or phone survey. Doorknocking occurred in tandem with service providers to conduct the survey face-to-face. The research team also attended community events such as pop-up vaccination hubs. Sixteen workshops were held with 4 teams of health workers and weekly sense-making meetings were held over 9 months with executives from 5 health services.

Results: 865 people participated from public and community housing, rooming houses, caravan parks, supported residential services, disability services and homeless hotels. Overall, their health literacy was much lower than national average. Fifty vignettes of typical residents were developed, and these then elicited >400 rapid practice solutions for health workers and managers to implement.

Conclusion: The combination of COVID-19 related and other variables provided insights into the mechanisms required to inform and generate context-specific interventions. This is important, because it is this diversity that helps us understand why public health messages and engagement strategies, designed to reach the average person, can leave so many behind.

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### Capacity-Building for Complex Crises: Developing public health leadership and meeting decision-makers' evidence needs

Emilie McSwiggan<sup>1</sup>, Marshall Dozier<sup>2</sup>, Rowa-Dewar Neneh<sup>2</sup>, Gwenetta Curry<sup>2</sup>, Evropi Theodoratou<sup>2</sup>, Ruth McQuillan<sup>2</sup>, Agyei-Manu Eldad<sup>3</sup>, Thulani Ashcroft<sup>1</sup>, Nadege Atkins<sup>1</sup>, Emma Birley<sup>3</sup>, Udani Silva<sup>3</sup>, Kirsten Duggan<sup>4</sup>, Emma de los Godos<sup>5</sup>, Damilola Iduye<sup>6</sup>, Prerna Krishan<sup>6</sup>, Durga Kulkarni<sup>2</sup>, Bohee Lee<sup>2</sup>, Ashmika Motee<sup>2</sup>, Madhurima Nundy<sup>7</sup>

<sup>1</sup>Uncover, University of Edinburgh United Kingdom, <sup>2</sup>University of Edinburgh United Kingdom, <sup>3</sup>Uncover, University of Edinburgh, <sup>4</sup>Uncover, University of Edinburgh Germany, <sup>5</sup>Uncover, University of Edinburgh Denmark, <sup>6</sup>Uncover, University of Edinburgh Canada, <sup>7</sup>Uncover, University of Edinburgh India

Background/objective

Uncover is a global network of academics and students, based at the University

of Edinburgh, providing rapid evidence syntheses for decision-makers. Founded in response to COVID-19, UNCOVER now also addresses other complex real-world challenges with a public health dimension, from emerging infectious diseases to climate change. Despite starting as an urgent crisis response, UNCOVER has always taken a reflective, collaborative approach to its own methods and practices. This has shaped our critical focus on capacity-building – in order to meet decision-makers' evidence needs today and to prepare the public health leaders of the future – which may provide useful insights to others with similar priorities.

Methods: Uncover has taken various formal and informal approaches to understanding what works and identifying improvements. Among these, key initiatives include: \* Staff-led qualitative interviews with staff and student volunteers, carried out in the early months of UNCOVER's existence; \* An in-depth qualitative study carried out by UNCOVER student members in 2021; \* A 2022 workshop with student members, exploring how UNCOVER has contributed to their learning and development; \* After-Action Reviews of some UNCOVER projects.

Results: Uncover's working model contributes to four different dimensions of public health capacity-building, by bridging gaps between: \* NOVICES AND EXPERTS: Providing meaningful opportunities for applied, collaborative work, with a focus on nurturing and developing students' skills; \* DISCIPLINES: Developing tools and resources which support common understanding and knowledge translation between disciplines, with an emphasis on quality and rigour; \* ACADEMIA AND POLICY: Building partnerships with decision-makers and prioritising real-world questions; \* COUNTRIES: Creating a wholly online community, with a global membership, in which all community members bring valuable insights and knowledge.

Conclusion: Uncover's working model may provide some useful insights for others with an interest in public health capacity-building, with a twin focus on addressing the challenges of today and preparing the leaders of tomorrow.

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### Intensive care unit hospitalizations and outcomes among patients with severe covid-19 in gauteng province, south africa

Harsha Somaroo<sup>1</sup>

<sup>1</sup>Public Health Association of South Africa WITS School of Public Health South Africa

Background and objective: Gauteng Province was the South African epicentre during the coronavirus disease 2019(COVID-19) pandemic and subsequently experienced high rates of severe COVID-19 cases and hospitalisations, including intensive care unit(ICU) admissions. ICU beds are a scarce and costly resource in South Africa, and the increased demand and utilization during the COVID-19 pandemic provided an opportunity for further analyses to potentially inform future patient management and ICU policies.

Methods: A retrospective, observational, cohort study was conducted using COVID-19 hospital surveillance data for Gauteng. Demographic and clinical factors were described. Predictors of mortality were determined using logistic regression analyses.

Results: Of the 158737 patients hospitalised with COVID-19 from 6/03/2020 to 27/11/2022 in Gauteng, 8.8%(n=13907) were admitted into an Intensive Care Unit(ICU). Of these patients, 56.0%(n=7784) were male and 67.1%(n=9337) were aged 50 years and over. Using national, official definitions for COVID-19 waves, the last(fourth) wave in Gauteng ended on 31/12/2021. A total of 8796 patients were admitted into ICUs during all four COVID-19 waves in the province. The majority of ICU admissions[38,5%;n=3386] occurred during the third wave(27/05/2021-11/08/2021), when the SARS-CoV-2 Delta variant was the predominantly circulating viral strain. Most ICU admissions were into private-sector hospitals[88.6%;12316]. 5465(39.3%) of ICU admissions received mechanical ventilation, of which 83.5%(4561) was in private-sector facilities. 7588(54.6%) patients received supplemental oxygen therapy. Statistically significant (p-value <0.05) risk factors for mortality included older age; comorbid hypertension, diabetes mellitus, or active tuberculosis; and mechanical ventilation. Supplementary oxygen was protective against mortality.

Conclusion: The majority of ICU admissions for COVID-19 in Gauteng were into private-sector facilities, and less than 40% of these patients received mechanical ventilation. Additional analyses of outcomes observed, and further related research, is important to determine whether improved hospital efficiencies could be achieved. This could also inform future COVID-19 policy and planning decisions within the complex ICU environment.

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### Learning from the COVID-19 pandemic response to strengthen undocumented migrant-sensitive health systems: case studies from four countries

Eleonora Genovese<sup>1</sup>, Kathleen Page<sup>2</sup>, Johann Cailhol<sup>3</sup>, Yves Jackson<sup>4</sup>

<sup>1</sup>University of Milan-Bicocca Italy, <sup>2</sup>Johns Hopkins University, <sup>3</sup>Université Sorbonne Paris Nord, Bobigny France, <sup>4</sup>University of Geneva Switzerland

Background and objective: Undocumented migrants are among the most vulnerable in the COVID-19 pandemic. The study objective is to identify lessons learnt to strengthen migrant-sensitive health services and systems.

Methods: Review of empirical observations by clinicians and public health practitioners, peer-reviewed journals, and grey literature analyzed through country case studies (Italy, Switzerland, France, US) on the Governance, Service Delivery, and Information building blocks of Health Systems.

Results: Governance: Some countries expanded COVID-19 health services and alleviated immigration concerns, but implementation varied at sub-national level due to lack of specific migrant-sensitive provisions in policies, plans, and programs. Service delivery: Implementing outreach, engaging migrant communities, and integrating third sector actors are key elements to improve accessibility and uptake of health services including vaccination. Yet, these mostly operated through fixed delivery strategy, while targeted outreach through mobile clinics and outposts is more effective for people on the move. Socio-culturally sensitive information for risk communication was not developed, translated, and disseminated through the most used sources such as community networks. Authorities did not engage migrant communities and third sector actors as key partners with capacity and access. Information: Information about undocumented migrants' health is mostly based on ad hoc surveys at selected health facilities, while there is a lack of systematic monitoring and evaluation with collection and analysis of migrant-specific data.

Conclusion: Migrant-sensitive health services including vaccination are essential for public health. Yet, ad hoc approaches resulted in low and inequitable coverage, besides lacking information for monitoring and evaluation. Health Systems can be strengthened by: (1) learning from the COVID-19 pandemic response, (2) evaluating sustainable policy and financing changes, (3) sustaining multistakeholder partnerships, (4) expanding community engagement, (5) strengthening the health workforce, (6) developing systematic monitoring and evaluation of undocumented migrants' data, (7) consider migration, including undocumented status, as a social determinant of health.

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### Socioeconomic inequalities in vaccination against COVID-19 in Ecuador

María Rivadeneira<sup>1</sup>, Eulalia Torres<sup>2</sup>, Maribel Moreno<sup>2</sup>

<sup>1</sup>Pontificia Universidad Católica del Ecuador PhD, MD Ecuador, <sup>2</sup>Pontificia Universidad Católica del Ecuador Ecuador

Introduction: In January 2021, Ecuador began the administration of vaccination against COVID-19 following a staggered and phased process. It is necessary to identify gaps in vaccination coverage that could be related to the presence of future outbreaks of the disease.

General objective

Analyze the socioeconomic gaps in relation to vaccination against COVID-19, in the five of the most important cities in Ecuador: Quito, Guayaquil, Cuenca, Ambato and Machala Methodology: Analytical cross-sectional study, based on secondary data from the National Employment, Unemployment and Underemployment Survey (ENEMDU) that included a vaccination component against COVID-19 in 2021. Data from 91,169 surveyed people were included (with factor of proposed expansion 17,917,508 people). Poisson regressions were performed for complex samples, with crude and adjusted analysis.

Results: The coverage of the second dose reached percentages from 30.2% to 85.5% in the five cities studied. Significant differences were found in vaccination coverage by area of residence (Prevalence Ratio, PR, 0.51, 95% CI 0.45-0.55 for rural vs. urban areas), ethnicity (indigenous PR 0.21, 95% CI 0.19-0.23=, education (PR 0.05, 95% CI 0.03-0.09 for illiterates compared to higher level), income (PR 0.27, 95% CI 0.17-0.43 for those who earn less than USD 400, compared to those who earn USD 1,600 or more). significance was maintained after the adjusted analysis.

Conclusions: There are socioeconomic inequalities in vaccination coverage against COVID-19 in Ecuador. It is necessary to strengthen vaccination in rural and indigenous populations and in sectors with scarce economic resources, as well as establish policies and strategies that ensure timely access to vaccination for the entire population, including more specific strategies for vulnerable populations.

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### Developing the individual capacity, the sense of health responsibility of Hacettepe university faculty of education undergraduate students in the novel coronavirus disease (covid-19) struggle

Ali Korkmaz<sup>1</sup>, Dilek Aslan<sup>1</sup><sup>1</sup>Hacettepe University, Faculty of Medicine, Department of Public Health Turkey

It was aimed to evaluate the knowledge, the adaptation to preventive behaviours, the sense of health responsibility about COVID-19 and to contribute to the development of the capacity of the Hacettepe University Faculty of Education students to fight against the disease through health education.

In this educational intervention study, the intervention was carried out for two weeks with a total of eight hours. Before and after the intervention, pre-test and post-test were applied and the targeted differences, that were in line with the aims of the study, were determined. The data collection form was created by the researchers and the "Fear of COVID-19 Scale" and "Attitudes Towards the COVID-19 Vaccine" were used. SPSS 23.0 was used for the analysis. Ethics committee approval and other relevant official permissions were obtained.

73.1% of all 245 participants were women and the mean age was 21.76±2.76. 79.2% of the participants had never had COVID-19 disease, 98.8% had at least one dose of COVID-19 vaccine, and 51.4% had vaccine hesitancy before being vaccinated. When some capacities of the participants were compared between the pre-test and post-test, statistically significant results were found in fear scale scores ( $p<0.001$ ), in disease knowledge scores ( $p<0.001$ ), in infodemic scores ( $p<0.001$ ), in ability to distinguish high and low quality health resources on the internet ( $p<0.001$ ) and in attitudes towards COVID-19 vaccine ( $p<0.001$ ).

In terms of protecting their own health and their students' health, it's important to increase the capacity of teacher candidates to fight against COVID-19. It's also important for them to learn and develop these through health promotion activities before their graduation so they can perform the skills which are expected from them. In this research, it's been proven that health education intervention can be beneficial. In matters concerning public health, intersectoral cooperations and joint works are important.

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### Changes in behavioral cancer risk factors during the covid-19 pandemic: an umbrella review

Jayati Khattar<sup>1</sup>, Laura Anderson<sup>2</sup>, Jayson Habib<sup>2</sup>, Kiara Pannoza<sup>2</sup>, Nicolette Christodoulakis<sup>2</sup>, Jayati Khattar<sup>2</sup>, Laura Anderson<sup>2</sup><sup>1</sup>khattarj@mcmaster.ca Canada, <sup>2</sup>McMaster University, Canada

Background and objective: The COVID-19 pandemic significantly impacted behaviours and activities of daily life worldwide. Public health restrictions that were necessary to control the virus resulted in changes in health behaviours. This includes changes in established cancer risk factors, defined for this review as smoking, alcohol consumption, decreased physical activity, increased sedentary behavior, decreased consumption of fruits and vegetables, and increased red meat/meat intake. The objective of this umbrella review was to assess how the COVID-19 pandemic, compared to pre-pandemic, impacted the prevalence of behavioral cancer risk factors among community-based adults.

Methods: On October 12th 2022, five databases (PubMed, Web of Science, MEDLINE, Embase and the Cochrane Database of Systematic Reviews) were searched onwards of January 2020. Studies were eligible for inclusion if they were a systematic review, with or without meta-analysis, and if they examined the change in an identified cancer risk factor during the COVID-19 pandemic. Studies were excluded if they did not focus on the general adult population. Five reviewers independently assessed the studies for eligibility, extracted data and conducted critical appraisal using the AMSTAR-2.

Results: After screening, 31 reviews were included for smoking ( $n=3$ ), alcohol ( $n=9$ ), physical activity ( $n=14$ ), sedentary behaviour ( $n=8$ ), fruits and vegetables ( $n=6$ ), and red meat/meat ( $n=5$ ). Preliminary results based on low quality heterogeneous evidence did not suggest a consistent increase in smoking and alcohol use. Similarly, the evidence was mixed regarding fruit, vegetable and red meat/meat consumption and was dependent on study population. In contrast, the evidence consistently indicated a decrease in physical activity and an increase in sedentary behavior during the pandemic compared to the pre-pandemic period.

Conclusions: The results of our review suggest the COVID-19 pandemic had a mixed impact on cancer risk factors. Public health interventions should concentrate on mitigating negative consequences of changes in cancer risk post-pandemic.

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### Risk of covid-19 spread by undiagnosed cases in inpatients at a large tertiary hospital: transmission dynamics and learnings of two-year experience of surveillance (2020-2022)

Lourdes Barón Miras<sup>1</sup>, Blanca Torralbo<sup>1</sup>, Isabel Torá-Rocamora<sup>1</sup>, María Bertrán-Luengo<sup>1</sup>, Antoni Trilla<sup>1</sup>, Gemina Santana<sup>1</sup>, Isabel Fortes<sup>1</sup>, Laura Rodríguez<sup>2</sup>, Silvia Valls<sup>1</sup>, Juan Gualda-Gea<sup>1</sup>, Marta Tortajada<sup>1</sup>, Anna Vilella-Morató<sup>2</sup>

<sup>1</sup>Hospital Clínic de Barcelona (1) Department of Preventive Medicine and Epidemiology, Hospital Clínic de Barcelona; (2) Instituto de Salud Global (ISGlobal); Spain, <sup>2</sup>Hospital Clínic de Barcelona (1) Department of Preventive Medicine and Epidemiology, Hospital Clínic de Barcelona; (2) Instituto de Salud Global (ISGlobal); (3) Department of Medicine and Health Sciences, Faculty of Medicine, Universitat de Barcelona (UB) Spain

Hospital-Onset COVID-19 Infection (HOCl) encloses still a major risk of transmission and morbimortality, threatening regular activity. The aim of this study is to compare the dynamics of transmission of HOCl of patients attended along the pandemic. This observational longitudinal study included all COVID-19 cases identified, by polymerase chain reaction or rapid antigen tests, in a large tertiary hospital in Barcelona, Spain, between February 25, 2020 and March 25, 2022. HOCl cases were diagnosed either by symptoms or weekly screening during admission, and therefore isolated. Cases and their in-hospital contacts were followed-up. Six periods were defined according to Barcelona's COVID-19 incidence waves. Serial intervals and secondary attack rates (SAR) were calculated, comparing SARs by incidence rate ratios (IRR) between periods and by other clinical and epidemiological factors, using negative binomial regression. From the 11,752 COVID-19 cases attended, 531 (4.5%) were HOCl cases, which fluctuate with community incidence. Morbimortality decreases along time (18% and 11.4% reduction in ICU admission and deaths rates, respectively). Contacts ( $n=1976$ ) were identified in rooms (12.9%) and other settings. Series interval reduces, from a median (IQR) of 4.0 (1.5-6.5) to 3.0 (1.5-4.5) days in the last period. Global SAR is 11.0 cases/100 contacts, reaching 26.8 cases/100 contacts when sharing room, the main factor affecting SAR (IRR 1.8; 95%CI 1.5-2.3). Vaccination did not significantly influence transmission (IRR 0.8; 95%CI 0.7-1.0). SAR peaks in the third period (37.5 cases/100 contacts), resurging in the last period (21.4 cases/100 contacts). HOCl's SAR remains high, specially in shared rooms. Transmission becomes faster, as new variants spread (e.g. omicron). Vaccination impact on transmission is low-moderated in COVID, as in other respiratory infections (e.g. influenza). Thus, surveillance in vulnerable hospital population remains key for rapid identification, early treatment, prevention of new cases and avoiding services collapse in high incidence periods, as winter.

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### Job strain during covid-19 in private healthcare facilities sousse: prevalence and associated factors (tunisia)

Waad Belgacem<sup>1</sup>, Sihem Fredj<sup>2</sup>, Nawel Zammit<sup>2</sup>, Rim Ghammam<sup>2</sup>, Amani Maatouk<sup>1</sup>, Sirine Ghribi<sup>1</sup>, Jihene Maatoug<sup>2</sup>, Hassen Ghanem<sup>2</sup>, Imed Harrabi<sup>2</sup>  
<sup>1</sup>Farhat Hached Hospital, Epidemiology Department, "LR19SP03", 4000, Sousse, Tunisia Tunisia, <sup>2</sup> Farhat Hached Hospital, Epidemiology Department, "LR19SP03", 4000, Sousse, Tunisia 2. University of Sousse, Faculty of Medicine of Sousse, 4000, Sousse, Tunisia

Background: According to the WHO, COVID-19 pandemic has had a negative impact on the health, well-being of people worldwide. Healthcare workers (HCWs) represent a particularly vulnerable group due to increasing work stress. Our study aimed to describe the prevalence of job strain among healthcare workers (HCWs) in private clinics in Sousse and evaluate the association between job strain and mental health

Methods: A cross-sectional study conducted among HCWs working in private clinics Sousse, from September 2020 to November 2020. The calculated sample size was 454 employees. In collaboration with the Group of Occupational Medicine of Sousse (GOMS), convenience sampling was conducted to include 5 private clinics and GOMS. Hospital Anxiety and Depression Scale (HADS) used to assess anxiety and depression disorder and the KARASEK model to assess work-related stress. We used SPSS 20 software for statistical analysis.

Results: A total of 543 participants with a female predominance (68.3%) and a sex ratio of 0.36. The mean age was 34.15±8.73 years. The prevalence of job strain was 17.5% ( $n=95$ ). It was higher in women (19.1%) than men and in employees between 25-35 years (18.4%). Also, employees who had certain anxiety according to the HADS scale were more predisposed to have a Job-Strain (25.9%) than those with doubtful or no anxiety ( $p=0.002$ ). The same for employees suffering

from certain depression were more likely to have a job strain with a percentage (24%) than those with doubtful or no depression ( $p=0.007$ ). Being a laborer was significantly associated to having a job strain (24,2%) than the others job positions ( $p=0.035$ ). Conclusion: HCWs are at the forefront of combating any emerging diseases, which increases the risk of job strain and mental health problems. Studying our COVID-19 experience can help us be more prepared in case of another health emergency or pandemic.

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### Surveillance of sars-cov-2 load and types in open sewage streams within slum districts of medellin-columbia, caracas-venezuela, kampala-uganda, and suva-fiji: a multidisciplinary approach to inform public health on pathogen spread in low resource settings

Eric Arts<sup>1</sup>, Justin Donovan<sup>1</sup>, Adebowale Abebiyi<sup>1</sup>, Jessica Pardy<sup>1</sup>, Amanda Hamilton<sup>1</sup>, Christopher DeGroot<sup>1</sup>, Richard Gibson<sup>1</sup>, Quinones-Mateu Miguel<sup>2</sup>, Michael Siemon<sup>1</sup>, Hector Rangel<sup>3</sup>, Wildeman Zapata<sup>4</sup>, Brian Lubega<sup>5</sup>

<sup>1</sup>Western University Canada, <sup>2</sup>University of Otago New Zealand, <sup>3</sup>Instituto Venezolano de Investigaciones Cientificas Venezuela, <sup>4</sup>Universidad Cooperativa de Colombia Colombia, <sup>5</sup>Joint Clinical Research Centre Uganda

Background and objective: Surveillance of SARS-CoV-2 during the pandemic has shifted from individual PCR testing to population-based surveillance using wastewater (WW). Our ongoing WW surveillance of SARS-CoV-2 load/types has been effective in Ontario, Canada and Otago, New Zealand, a catchment of ~13 million people. With minimal sewage processing in low-income, densely populated regions (slums), WW collection should involve sampling open sewage streams for optimal pathogen surveillance and for future targeted public health initiatives.

Methods: During June-August of 2021 and 2022, over 1000 samples were collected from streams in slum areas of Medellin-Columbia, Caracas-Venezuela, Kampala-Uganda, and Suva-Fiji. Extracted RNA, converted to cDNA was subject to qRT-PCR and ARTIC v4 Illumina sequencing to measure SARS-CoV-2 load and type. Chemical composition of WW, sample clarity, rainfall, and GPS coordinates for all collection sites were recorded.

Results: Over 40% of stream samples were positive by qRT-PCR for SARS-CoV-2 with the Delta variant dominating in summer 2021. Rainfall diluted viral levels even when standardizing with Pepper mild mottle virus, a "human" excrement standard. Populations in these slums were estimated based on roof density from satellite imagery using GISArcPro. Expected SARS-CoV-2 case loads from WW virus levels were modeled from WW and case load monitoring for SARS-CoV-2 cases in Ontario, Canada during the Delta wave. Based on these models, case loads predicted from WW in the slums of Caracas and Kampala were at least 100x higher than the total cases reported for the entire country of Venezuela and Uganda during the Delta wave.

Conclusions: During the pandemic, SARS-CoV-2 case loads have been under reported in low-income settings. Improve pathogen surveillance directly impacting public health response is feasible through WW but for low income countries, proper sampling and procedures are critical.

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### Efficacy of COVID-19 vaccination campaign in elderly people residing in long-term care facilities: a retrospective observational study from Lombardy region, Italy

Riccardo Vecchio<sup>1</sup>, Roberta Lattanzio<sup>2</sup>, Chiara Marrocu<sup>3</sup>, Sudwaric Sharma<sup>3</sup>, Giovanni Cicconi<sup>2</sup>, Sara Piccinelli<sup>3</sup>, Gaia Ferraguzzi<sup>3</sup>, Anna Odone<sup>3</sup>, Catia Borriello<sup>4</sup>, Danilo Cereda<sup>4</sup>

<sup>1</sup>Università di Pavia via Santa Maria delle Selve, 9 Biassono (MB) 20853 Italy, <sup>2</sup>Università di Milano, <sup>3</sup>Università di Milano Italy, <sup>4</sup>Directorate General for Health, Lombardy Region Italy

Background and objective: Prevention Unit from GD Welfare Lombardy evaluated COVID vaccination efficacy among elderly patients who reside in Lombardy long-term care facilities. Aim of the study was to observe the trend of COVID infections and related hospitalizations and deaths in the trimester September-November 2022, in relation to the number of anti-COVID vaccination shots received.

Methods: Population included 55,478 patients. Data were extracted from regional disease reporting application "tableau server". Based on number of inoculations received, patients were stratified and four categories were identified: unvaccinated, vaccinated with less than three doses (patients who did not complete the primary cycle were excluded), vaccinated who received a third dose (1st booster shot), vaccinated who received a fourth dose (2nd booster shot). Only mRNA-based vaccines were employed. For each category, different outcomes were assessed: infection rate, hospitalization rate, mortality rate.

Results: 138 out of 521 unvaccinated became infected (26,5%); infection rate in vaccinated resulted 7,3% for patients with primary cycle completed (120/1643), 11,1% for vaccinated with 1st booster shot (1085/9718) and 11,4% among patients who received a 2nd booster dose (4970/43422). Overall infection rate was significantly higher in unvaccinated (26,5%) than vaccinated (0,11%) cohort. Among unvaccinated patients, 6 were hospitalized (1,2%) and 15 died (2,9%). Hospitalization rate in vaccinated was 0,3%, mortality rate 0,5%: in patients with primary cycle completed, 5 hospitalizations (0,3%) and 8 deaths (0,5%) were counted. Hospitalization rate was 0,4% and 0,2%, respectively, in 1st boost (n=35) and 2nd boost cohorts (n=108). Furthermore, mortality rate resulted 0,1% among vaccinated with 1st booster shot (n=67) and slightly increased to 0,4% among 2nd booster group (n=198).

Conclusion: Infection, hospitalization and mortality rates significantly decrease as patients complete at least the primary vaccination cycle. Data confirm the importance of COVID-19 vaccination campaign as prevention tool in elderly patients residing in long-term care facilities.

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### Socio-economic deprivation and sars-cov-2 related mortality: A retrospective observational study in the pre-vaccinal era.

Fabrizio Cedrone<sup>1</sup>, Emilio Greco<sup>2</sup>, Livio Duca<sup>1</sup>, Federica Carfagnini<sup>1</sup>, Valterio Fortunato<sup>1</sup>, Giuseppe Di Martino<sup>1</sup>

<sup>1</sup>Local Health Authority of Pescara, Abruzzo Italy, <sup>2</sup>Research Department Link Campus University, Rome Vincenzo Montagna Università Politecnica delle Marche, Ancona Italy

Background Social determinants of health heavily impact population outcomes. The association between the impact of covid-19 pandemic and health inequalities have been identified in several countries. Comorbidities such as diabetes, cardiovascular diseases and obesity are more prevalent among people from deprived areas. This study aimed to evaluate the association between socio-economic status, based on a Deprivation Index, and the covid-19 related mortality in a Region of Southern Italy in the pre-vaccination pandemic era. Methods A retrospective observational study was conducted considering all SARS-CoV-2 positive patients from Abruzzo Region, Southern Italy, from February 24th, 2020 to January 15th, 2021. Data such as demographic information, comorbidities, hospitalizations and mortality, was obtained during contact-tracing procedures. The Italian socioeconomic deprivation index (DI), divided in quintiles (from 1st less deprived to the 5th most deprived) was attributed to all patient, based on the municipality of residence. A multivariable logistic regression models was performed to evaluate the association between death, as a dependent variable, and DI, dividing the study population in two samples, hospitalized patients and non-hospitalized patients. Results In the study period, 67,489 SARS-Cov-2 positive were considered, of which 2,746 (4.06%) were hospitalized. The prevalence of deaths among those who have been hospitalized is 4.66%, for all others 0.18%. Among hospitalized patients, no association between death and DI was shown. Among patients died outside the hospital, there is a positive association with the fourth (aOR 2.58;95%CI 1.34-4.94) and fifth quintile (aOR 2.39;95%CI 1.21-4.17) of the DI. Conclusions The socioeconomic deprivation is associated with mortality in non-hospitalized SARS-CoV-2 patients and not among hospitalized patients. The care of patient out of the hospital represents an important challenge and these evidences can be of help the policy maker in order to promote preventive measures to address inequalities.

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### From alpha to omicron: how variants shaped sars-cov-2 school transmission

Javier Perez-Saez<sup>1</sup>, Mathilde Bellon<sup>1</sup>, Andrew Azman Johns<sup>2</sup>, Julie Berthelot<sup>1</sup>, Emma Hodcroft<sup>3</sup>, Maria-Eugenia Zaballa<sup>1</sup>, Hélène Baysson<sup>1</sup>, Francesco Pennacchio<sup>1</sup>, Julien Geneva<sup>1</sup>, Arnaud L'Huillier<sup>1</sup>, Klara Posfay-Barbe<sup>1</sup>, Sebastian Maerckl<sup>4</sup>, Idris Gessous<sup>1</sup>, Isabella Eckerle<sup>1</sup>, Silvia Stringhini<sup>1</sup>, Elsa Lorthe<sup>1</sup>

<sup>1</sup>Geneva University Hospitals Switzerland, <sup>2</sup>Hopkins Bloomberg School of Public Health United States, <sup>3</sup>University of Bern Grégoire Michielin Ecole Polytechnique Federale de Lausanne Switzerland, <sup>4</sup>cEole Polytechnique Federale de Lausanne Switzerland

Background and objective: SARS-CoV-2 transmission among young children in schools is of major importance due to their potential role in fueling community-wide transmission. Initial studies found little within-school transmission, with few reports after more infectious variants emerged. We aimed to determine how variants of concern (VOCs) altered within-school transmission dynamics among

young children.

**Methods:** We implemented a prospective observational surveillance study in 3 pre-school and 2 primary schools in the canton of Geneva, Switzerland. We sampled children between 2 and 6 years of age, educational staff, and household members. We collected oral-swab PCR tests, capillary blood for anti-spike serology and questionnaires for household and class members at the time of outbreak declaration and at two subsequent time points (day+2 and day+30). All available virological samples underwent whole genome sequencing. We developed a mathematical model of SARS-CoV-2 transmission to infer time-varying force of infection within schools and from the community at large.

**Results:** Between March 2021 and June 2022, we recruited a total of 351 children and 107 staff, and 111 of their household members. We investigated eleven SARS-CoV-2 outbreaks (two Alpha, six Delta and three Omicron), involving a total of 33 classes. Phylogenetic analysis on 56 available sequences from seven of the outbreaks (one Alpha, three Delta and three Omicron) indicate that clustering differed between variants, with a higher degree within-school clustering for the Alpha outbreak and lower for the Omicron outbreaks. Modeling results integrating epidemiological and genetic data supported a changing importance of within-school vs. community transmission as more infectious variants emerged.

**Conclusion:** The importance of within-school SARS-CoV-2 transmission changed with the emergence of more infectious variants. The potential impact of interventions in educational settings depends on these changes and could be tailored to specific transmission scenarios.

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### Impacts of the Oswaldo Cruz foundation plan to combat covid 19 in the favelas of Rio de Janeiro: Community participation and inter-institutional work in response to the pandemic

Richardlls Martins<sup>1</sup>

<sup>1</sup>Fiocruz Brazil

**Background and objective:** The Oswaldo Cruz Foundation (Fiocruz) Plan to Combat COVID19 in the Favelas of Rio de Janeiro (PFECFRJ) is an inter-institutional action coordinated by Fiocruz, in partnership with the Brazilian Association of Collective Health, Brazilian Society of Progress for Science, universities and civil society, which acts directly to mitigate the multidimensional effects of COVID19 pandemic in favelas. With a budget of USD 4 million dollars, PFECFRJ supported 54 projects with a focus on comprehensive territorial-based health actions aimed at reducing COVID19. The main objective of this work is to analyze the results of the implementation of this public health policy between 2020-2022 and point recommendations for health actions aimed at socially vulnerable populations in contexts of health emergencies.

**Methods:** The research methodology has as its object the analysis of the genesis, formulation and implementation of the PFECFRJ, based on thematic axes: political actors; political process; agenda setting; policy formulation; and policy implementation. The theoretical approach focuses on Kingdon's multiple flows model (Kingdon, 2003). The research used data from the monthly and final reports of the 54 projects supported by the PFECFRJ as a source and carried out 70 semi-structured interviews with actors who acted in the set of these health actions.

**Results:** The study shows the direct impact of the actions carried out on indicators associated with the reduction of food insecurity in the analyzed territories, the expansion of territorial-based health surveillance actions and the expansion of community communication in health with a focus on the prevention of COVID19. **Conclusion:** The research points out that the partnership between academia, public health management and civil society has a greater potential for incidence in territories in contexts of greater social vulnerability in the response to COVID19 when community participation is a structural element of the organization of the health network.

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### Buffer spaces in healthcare facilities: strategies for managing and designing strategic areas

Marco Gola<sup>1</sup>, Daniele La Milia<sup>2</sup>, Chiara Cadeddu<sup>2</sup>, Chiara Cadeddu<sup>2</sup>, Francesco Altems<sup>2</sup>, Barbara Altems<sup>2</sup>, Raffaella Altems<sup>2</sup>, Marcello Altems<sup>2</sup>, Cristina Altems<sup>2</sup>, Albino Altems<sup>2</sup>, Giuseppe Altems<sup>2</sup>, Alexander Johnson<sup>3</sup>, Gianfranco Damiani<sup>2</sup>, Carlo Altems<sup>2</sup>, Maddalena Buffoli<sup>1</sup>, Andrea Rebecchi<sup>1</sup>, Stefano Capolongo<sup>1</sup>, Walter Ricciardi<sup>2</sup>

<sup>1</sup>Design & Health Lab, Politecnico di Milano Italy, <sup>2</sup>Universita Cattolica del Sacro Cuore Italy, <sup>3</sup>Columbia University United States

**Introduction:** The recent covid-19 experience highlighted the difficulty of healthcare facilities in responding promptly to emergencies. hospitals had to reorganize their

spaces, suspending the ordinary medical activities for ensuring the emergency management of the patients' surplus.

A working group of the postgraduate training course in healthcare management by atems school in rome conducted a survey on the buffer space (bs), which could support, in case of emergency, the hospitals.

**Methodology:** The team elaborated a double questionnaire to be administered respectively to healthcare staff and designers with a series of questions aimed at understanding the features of bss. the questions were divided into general information, activities carried out during the pandemic and specific questions on the features of bss. many questions were the same for the two types of participants, while some differed in relation to the respective organizational and design skills of the users.

**Results:** 102 healthcare professionals and 56 designers took part to the survey. the data analysis permitted to highlight a series of specific inputs that the bs project should take in consideration, such as: a) proximity to the emergency department (ed), intensive care (icu) and inpatient wards (iws); b) location within the hospital but separate from other medical areas; c) independent access; d) organizational and spatial features similar to ed, icu and iws; e) configuration of an operational space ready for whatever type of need; f) the bs should host approximately 12% of the ed stations (40 sqm/per station).

**Conclusions:** The research aims to become a starting milestone for future investigations: in fact it is necessary to carry out a widespread analysis at the international level.

Although the research was focused in hospital settings, the covid-19 pandemic referred also to the territorial healthcare facilities and therefore some considerations on that issue need to be improved.

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### Mental health during the covid-19 pandemic, a population-based observational study of antidepressant dispensing

Julie Arnott<sup>1</sup>, Paul Corcoran<sup>2</sup>, Ivan Perry<sup>1</sup>

<sup>1</sup>University College Cork School of Public Health Western Road Western Gateway Building Ireland, <sup>2</sup>University College Cork

**Background:** In Ireland, national surveys have been conducted to measure the impact of COVID-19 pandemic on well-being, however national statistics on mental distress are lacking. This study aimed to investigate the effect of the pandemic by analysing a key indicator of mental distress, antidepressant prescribing.

**Methods:** Population-based observational study over 7 years analysing two national datasets of anonymised aggregate dispensing data of WHO ATC classification N06A (antidepressants). The Health Market Research Ireland Ltd. (HMR) dataset is based on national retail pharmacy sales for both private and public patients; and the General Medical Services (GMS) dataset is based on publicly-funded prescriptions (approx. 31% of population eligible). Non-GMS figures are derived from the HMR and GMS datasets. Gender and agegroup data only available for GMS dataset. Descriptive statistics, and poisson regression were performed using STATA 15. Incidence Rate Ratios (IRR) with a p-value of <0.05 were considered statistically significant.

**Results:** Annual trends found statistically significant changes in the prescribing of antidepressants. Rates increased year on year in both datasets. In the HMR dataset increased prescribing was accelerated by the pandemic; a rate of prescribing in 2020 was 1.07 times higher than 2019 (IRR:1.03), increasing further in 2021 (IRR:1.09). However, in the GMS dataset, the rates decelerated from an IRR of 1.05 in 2019 to 1.04 in 2020 and 1.01 in 2021. By deducting the GMS figures from the HMR figures 'non-GMS' prescriptions increased from 1.02 in 2019 to 1.09 in 2020 to 1.16 in 2021.

**Conclusion:** This study validates national well-being studies with findings that mental distress increased over time during the pandemic. A novel finding is the different impact on two study populations. In the publicly funded GMS dataset, females accounted for two thirds of prescriptions, and the pandemic impacted the mental health of younger age groups greatest, particularly young females.

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### Brazilian northeast's responses to the covid-19 pandemic: what was missed to end the epidemic?

Ligia Sansigolo Kerr<sup>1</sup>, Carl Kendall<sup>2</sup>

<sup>1</sup>Universidade Federal Do Ceara Professor Rua Cumbuco, 94 Residencial Alphaville Fortaleza Brazil, <sup>2</sup>Tulane University Federal University of Ceara Brazil

**Background:** Brazil's response to the COVID-19 pandemic was one of the worst in the world. However, governors and mayors of the northeast region of the country,

among the poorest states in Brazil, joined to organize their technical, economic and political responses to the pandemic to reduce hospitalizations, deaths and the economic impact of the pandemic. However, as the pandemic continued, the response became less effective and appropriate. The aim of this study is to document and review this history and the reasons for the growing ineffectiveness of the planning and the interventions.

Methods: A timeline of intervention events was established for the nine states.

Surveillance data was added to the timeline. A desk review was conducted reviewing published and unpublished accounts of policies and programs as well as pandemic major news and political events that captured public attention.

The narrative constructed was then shared with expert public health specialists in the nine states to guarantee accurateness.

Results: In the first wave of the pandemic, most governors in northeastern Brazil responded actively to mitigate the impact of the pandemic. Physical distancing was promoted, including some lockdowns, the use of masks was made mandatory throughout 2020 and part of 2021, vaccination was carried out as doses were received from the federal government, the number of ICU beds was increased, economic measures were instituted to alleviate the situation of families that were left without permanent or temporary employment. However, over time as economic pressure increased and despite the entry of several more transmissible variants, masks were withdrawn, emphasis on immunization was reduced, communication with the population regarding the increase in cases declined, as well as the need to return to masks, complementing doses or boosters of the vaccine and the impact of repeated reinfections on the body, even among those with frank disease.

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### **Risk factors associated with in-hospital death of COVID-19 patients in Khouribga province-Morocco, March, 13, 2020- March, 13, 2021**

Said Zaria<sup>1</sup>

<sup>1</sup>FETP- MOROCCO, Khouribga, Morocco

The spread of the new coronavirus SARS-CoV-2, discovered in China in January 2020, led to a pandemic as early as March 2020. On March 13, 2021, the number of Morocco confirmed cases reached 488 632, and 8 718 deaths were recorded. The province of Khouribga recorded its first case on March 13, 2020. It was a Moroccan residing abroad (Italy). Until March 13, 2021, had 4239 confirmed cases, of whom 4086 were cured and 153 cases of death by COVID-19 including 115 cases at the hospital level. This study aimed to identify the risk factors associated with mortality of patients hospitalized with COVID-19, in Khouribga provincial hospital. This was a case-control study conducted from March 13, 2020 to March 13, 2021. The research involved 339 Patients residing in the province of Khouribga, 113 deceased COVID-19 patients and 226 discharged patients were included as the case group and control group, respectively. Sociodemographic, epidemiological, clinical, biological, radiological, therapeutic and comorbidity variables on admission were collected from medical records. The risk factors were determined by bivariate and multivariate analyzes. The Backward Stepwise Regression demonstrated that age of 62+ years (OR = 3,10 ; IC 95% : [1,34-7,17]), patients reported having two or more comorbidities (OR =5,94 ; IC 95% : [2,05-17,23]), Diabetes (OR = 3,23 ; IC 95% : [1,16-8,98]), lymphopenia  $<1.2 \times 10^3 / \text{mm}^3$  (OR = 2,45 ; IC 95% : [1,09-5,46]), Oxygen saturation  $<89\%$  (OR = 8,86 ; IC 95% : [3,60-21,78]), and Time between onset of clinical signs and admission to hospital  $>7$  days (OR = 3,30 ; IC 95% : [1,44-7,53]) were independent risk factors of mortality of COVID-19 patients. The risk factors identified may help to determine patients at high risk of death at an early stage and guide the optimal treatment.

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### **Protection of Omicron BA.5 from previous Omicron BA.1/BA.2 infection- and vaccine-induced immunity**

Shohei Yamamoto<sup>1</sup>

<sup>1</sup>Department of Epidemiology and Prevention, National Center for Global Health and Medicine, Tokyo, Japan

Background and Objective: The role of previous SARS-CoV-2 infection/vaccine-induced humoral immunity against protection of Omicron BA.5 infection is unknown. We examined the association between pre-infection anti-SARS-CoV-2 spike antibody titers and the effectiveness against Omicron BA.5 infection among staff of a medical and research center in Tokyo.

Methods: A total of 2610 staff participated in a serosurvey in June 2022 (baseline), were measured with anti-SARS-CoV-2 antibodies (spike and nucleocapsid [N] proteins; Abbott and Roche), and answered a questionnaire. Previous SARS-CoV-2 infection was defined according to a history of COVID-19 and anti-N seropositivity

at baseline. Using in-house COVID-19 registry, we followed participants for SARS-CoV-2 infection from baseline to September 21, 2022, during the Omicron BA.5 epidemic in Japan. We used a Cox proportional hazard model to estimate the hazard ratio of Omicron BA.5 infection; and calculated effectiveness as  $(1 - \text{hazard ratio}) \times 100$ .

Results: At baseline, 92% have completed 3-dose vaccinations, whereas 16% had previous SARS-CoV-2 infection (mainly occurred during Omicron BA.1/BA.2 waves). Those with previous infection had higher anti-spike antibody titers than infection-naïve (median titer: 29,201 v.s. 4,849). After adjusting confounders, higher anti-spike antibody titers were associated with higher effectiveness (3.7% per 1000 titer [95% CI: 3.3–4.2]). The association appears stronger among those previously infected; 50% effectiveness was achieved at 20,000 and 28,000 AU/ml among those previously infected and infection-naïve participants, respectively, and 80% effectiveness was achieved only among the former at 54,000 AU/ml.

Conclusions: Among vaccine recipients (mainly 3-dose) who had experienced Omicron BA.1/BA.2 wave, we found that higher anti-spike antibody titers were associated with a lower risk of Omicron BA.5 infection, and the association was enhanced by previous infection. These data suggest that pre-infection spike antibody titers inform the risk of Omicron BA.5 infection and that high effectiveness can only be achieved with hybrid immunity from infection and 3-dose vaccination.

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### **The role of biomarkers in diagnosis of COVID-19: a systematic review**

Raveena Khasla<sup>1</sup>

<sup>1</sup>St George's University of London, United Kingdom

Background: COVID-19 impacted healthcare worldwide. Biomarkers are a critical tool in monitoring health and guiding treatment to the novel strain. Aim: To assess whether biomarkers can successfully predict clinical outcomes and associate with the severity of the disease. Methods: A systematic review of the literature was carried out to identify relevant articles using six different databases. Keywords to refine the search included COVID-19, SARS-CoV2, Biomarkers, among others. Only studies which reported data on pre-defined outcomes were included. Key Findings: Thirty-four relevant articles were identified which reviewed the following biomarkers: C-reactive protein, serum amyloid A, interleukin-6, lactate dehydrogenase, neutrophil-to-lymphocyte ratio, D-dimer, cardiac troponin, renal biomarkers, lymphocytes and platelet count. Of these, all but two, showed significantly higher levels in patients with severe complications of COVID-19 infection compared to their non-severe counterparts. Lymphocytes and platelet count showed significantly lower levels in severe patients compared to non-severe patients. Conclusions: Although research is still in its early stages, the discovery of how different biomarkers behave during the course of the disease could help clinicians in identifying severe disease earlier and subsequently improve prognosis. Nevertheless, we urge for more research across the globe to corroborate these Findings. Keywords: biomarkers; blood tests; COVID-19; SARS-CoV-2. Links:-----[1] mailto:m1606869@sgul.ac.uk

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### **Regional differences in population ageing and death rate due to COVID-19 in Bulgaria**

Dima Tsanova<sup>1</sup>, Eleonora Mineva-Dimitrova<sup>2</sup>, Stela Georgieva<sup>3</sup>, Mariela Kamburova<sup>3</sup>

<sup>1</sup>Department of Social Medicine and Health Management, Faculty of Public Health, Medical University-Pleven, Bulgaria, <sup>2</sup>Department of Social Medicine and Health Management, Faculty of Public Health, Medical University of Pleven, Pleven, Bulgaria, <sup>3</sup>Department of Social Medicine and Health Management, Faculty of Public Health, Medical University-Pleven, Pleven, Bulgaria

Background: Bulgaria is one of the countries with the highest level of ageing using the share of people over 65 years of age /22% for 2022/ - on the eighth position in the world ranking. The population ageing in Bulgaria is one of the most significant demographic problems nowadays. The level of ageing in different regions of Bulgaria has varied values. This report Aims to investigate and conduct a comparative analysis of indicators of the death rate due to COVID-19 and population ageing in 2021 in Bulgaria.

Methods: The regional indicators for ageing and mortality due to COVID-19 were analysed based on the National Statistical Institute data. The absolute numbers were regrouped and the main indicators for population ageing were calculated. Analysis and calculations were performed by MS Excel 2019. Data have been

statistically processed with SPSS v.24. To establish the relationship between death rates and ageing, Pearson's correlation coefficient has been used. Results: The study found that the death rate due to COVID-19 in Bulgaria for 2021 is 401.12 per 100000 population but there are six regions where the level of the indicator is above 500 – Silistra, Vratsa, Gabrovo, Montana, Vidin, and Kyustendil. Kyustendil, Gabrovo, and Vidin are the regions with the highest level of ageing in our country - respectively 27.77%, 29.11%, and 29.69%, the level for the country is 21.67%. The statistical analysis shows that there is a positive correlation between ageing and death rate due to COVID – 19, The Pearson coefficient is 0.503. Conclusions: The regional health inequalities in Bulgaria are very important in order to control and decrease the level of mortality in the country especially the death rate due to COVID-19.

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### Associated factors with acceptability of vaccination against COVID 19 among health workers in Koumpentoum Health District (Senegal)

El Diop<sup>1</sup>

<sup>1</sup>District Sanitaire de Koumpentoum, Senegal

Background and objectives: Vaccination of health providers is one of the priorities in the response to COVID 19. During this pandemic, the relaxation of vaccine licensing procedures has led to scepticism and mistrust among health care providers and the emergence of rumors that are harmful to COVID 19 vaccination, particularly through social networks. The Objective of this study was to identify factors associated with the uptake of the second dose of Sinopharm by health workers in Koumpentoum health district.

Methodology: This was a cross-sectional, descriptive and analytical survey. We conducted a descriptive and analytical study that explored the knowledge, attitudes and practices and acceptability of COVID 19 vaccination by health workers in Koumpentoum health district. Multiple logistic regression was used to identify factors associated with taking the second Sinopharm dose. .

Results: In total, we had (168) respondents of whom (59.95%) were women. The mean age was (37.05 ±9.76) years and the median (35) years. Almost all of them, (85.71%), were living with a partner. Unskilled workers represented (74.4%) of respondents. The average length of professional experience was (8.51 ± 5.81) years with median of (7) years. Frequency of co-morbidities was (8.93%), this of the COVID 19 (10.12%) and this of adverse events (16.67%). The second dose coverage of Sinopharm was (82.74%) and the statically and significantly associated factors were age > (35 years (ORa = 4.51 [1.71-11.91]; p = 0.0023), living with a partner (ORa = 4.11 [1.36-12.45]; p = 0.0123) and work experience > (5) years (ORa = 3.15 [1.01-9.08]; p = 0.0321).

Conclusions: Factors related to vaccination of health workers against COVID 19 in Koumpentoum district are age, marital status and work experience. Awareness raising and vaccination of young health workers should be a prerequisite for the plan to revive and intensify vaccination against COVID 19.

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### Factors influencing the practice for COVID-19 prevention among health personnel in Tertiary Hospital, Bangkok Thailand

Kampong Kamnon<sup>1</sup>

<sup>1</sup>Rajavithi Hospital, Bangkok, Thailand

Background and Objective: COVID-19 infection among health personnel is a major problem and has severe impacts. This cross-sectional survey design aimed at the factors influencing the practice of COVID-19 prevention among health personnel.

Methods: The sample consisted of health personnel working in the emergency department, in-patient wards, and out-patient department in Rajavithi hospitals (n=60) selected using a purposive sampling method. Data were collected using questionnaires which were validated by 5 experts and had a content validity index of 0.83. The reliability of the questionnaires was 0.91. Data were analyzed using descriptive statistics and multiple regression.

Results: The results of this study revealed that subjects had good attitudes toward behaviors, subjective norms, perceived behavioral control, and intention for COVID-19 infection prevention. In addition, perceived behavioral control was the only factor that statistically predicted practice intention for COVID-19 infection prevention and may explain 25.6% of the variability of intention (p < .001).

Conclusions: Based on the Results of this study, it is suggested that relevant authorities including wards and infection control units should support perceived behavioral control among registered nurses to encourage COVID-19 infection prevention intention for COVID-19 infection prevention.

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### Effect of the COVID-19 pandemic on diet among university students in France

Marie-Pierre Tavolacci<sup>1</sup>, Joel Ladner<sup>2</sup>, Lise Miller<sup>3</sup>

<sup>1</sup>Clinical Investigation Centre CIC 1404, INSERM and CHU Rouen, France,

<sup>2</sup>Chu Rouen INSERM, France, <sup>3</sup>Department of Health Promotion, CHU de Rouen, France

Introduction: The COVID-19 pandemic and the lockdowns have affected many aspects of university students' daily lives, including their dietary habits. This study aimed to evaluate the change of diet quality of university students before and during the COVID-19 period, and the factors associated with unfavorable changes in diet quality. Methods: An online cross-sectional study was performed in May 2021 among Rouen (France) university students. Socio-demographic characteristics, body mass index, depression (CESD-8), academic stress, risk of eating disorders (SCOFF test) and food security (FSSM) were collected. The French "Programme National Nutrition Santé- Guidelines Score 2" (PNNS-GS2) was used to access diet quality.

Results: A total of 3508 students were included, 74.4% were female, the mean age was 20.7 (SD = 2.3). Mild and food insecurity concerned 11.3% and 7.0% of the university students, respectively. The risk of eating disorder was detected among 46.6% of the university students. The PNNS-GS2 score decreased between the pre- and the COVID-19 pandemic period for 33.1% of university students. After logistic regression, the associated factors with the decrease in the PNNS-GS2 score were food insecurity, financial insecurity, not living with parents, depression, academic stress, eating disorders, being in the two first years of study and having been infected by COVID-19. Conclusions: Diets with healthy components decreased for one-third of university students since the COVID-19 pandemic, and this was shown to be associated with food insecurity, poor mental health and eating disorder. This study provides important information to help public health authorities and universities give better support to student health feeding programs during pandemics and lockdowns. Further research could help develop innovative prevention programs that would seek to promote healthy food and mental health at all times among university students.

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### Impact of restrictive preventive measures during the COVID 19 pandemic on mortality in Bulgaria

Penka Kostadinova<sup>1</sup>, Sergey Kostadinov<sup>2</sup>, Irena Stoilova<sup>3</sup>, Stefan Kostadinov<sup>4</sup>

<sup>1</sup>Department of Social Medicine and Health Management, Pleven Medical University, Pleven, Bulgaria, <sup>2</sup>Department of General Medicine, Forensic

Medicine and Deontology, Faculty of Public Health, Pleven Medical

University, Bulgaria, <sup>3</sup>Department of Hygiene, Medical Ecology and

Occupational Diseases, Faculty of Public Health, Medical University, Pleven,

Bulgaria, <sup>4</sup>Neurosurgery Clinic, General Hospital for Active Treatment Heart

and Brain, Pleven, Bulgaria

Introduction: Compared to other countries in Europe, Bulgaria is in first place in terms of total mortality and occupies leading positions both in terms of mortality from COVID 19 and other socially significant diseases. During the pandemic, prohibitions were repeatedly introduced to conduct general preventive examinations and examinations for periodic monitoring of the condition of persons with chronic diseases. In addition, people limited visits to their GP due to fear of contagion. The purpose of the present study is to determine the impact of the introduced restrictive measures for prevention among the population during the COVID 19 pandemic on mortality among the population in Bulgaria. Materials and methods: Official data for the period 2018-2021 from the National Statistical Institute in Bulgaria were used, which were processed with statistical Methods.

Results: Total mortality increased significantly during the pandemic (compared to 2019, an increase of 28.5% in 2020 and 39.8% in 2021). One of the reasons is the death rate from COVID 19, which in Bulgaria is higher than the average values for European countries. A significant increase in deaths from diseases of the respiratory system and diseases of the circulatory system was found. The growth in mortality from malignant neoplasms, diseases of the endocrine system and mental illnesses is also impressive. During the pandemic, a lower coverage of the population with preventive examinations is reported (below 35%).

Conclusions: The pandemic of COVID 19 and its consequences gave a reflection, besides as a direct cause of death among the population, and as an indirect cause of death in persons mostly with chronic diseases. Restrictions on prevention and early detection of diseases, as well as irregular monitoring of chronically ill people is an additional reason for the increased mortality from socially significant diseases.

Keywords: COVID 19 pandemic, prevention, mortality, causes

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### Attitude of personnel's of Estonian nursing homes towards vaccination against COVID-19

Ülle Parm<sup>1</sup>

<sup>1</sup>Tartu Health Care College, Estonia

**Background and Objectives:** Since the beginning of COVID-19 pandemic, many studies have been conducted to assess public attitudes and readiness for vaccination against COVID-19. Less attention has been paid to nursing home workers, though they have important role in achieving immunity in a vulnerable population. The aim was to clarify the readiness of Estonian nursing home workers to be vaccinated against COVID-19 and the factors influencing their opinion.

**Methods:** Web-based electronic questionnaire was fulfilled online by nursing home personnel in May 2021. Descriptive statistics, t- or Mann-Whitney, and  $\chi^2$ - or Fisher Exact tests were used. In order to measure attitudes Likert-scale (5 degrees), and to identify risk factors associated with decision to vaccinate univariate logistic regression analyses were used.

**Results:** 139 nursing home workers (caregivers, nurses, cleaners, board members and other specialists) participated. They were divided into pro-vaccination (87.8%); the skeptics (3.6%); anti-vaccination (8.6%) groups. Pro-vaccinators wanted to protect themselves (73.8%). Anti-vaccinators believed that there is not enough information about vaccines (75%) and vaccination is not necessary (33.3%) or even dangerous (41.7%). Vaccination was influenced by married/long-term relationship status and caregiver occupation (OR=3.01, 95% CI 1.04–8.76; OR=0.26, 95% CI 0.09–0.75, respectively). Most participants agreed that vaccination is important because it prevents severe illness (84.2%), protects others (82.7%) and limits the spread of disease (81.3%). The belonging to vaccination group was positively influenced by family status (cohabitation or marriage) (OR=3.01, 95% CI 1.04–8.76) but negatively by belonging to caregiver group (OR=0.26, 95% CI 0.09–0.75).

**Conclusions:** Employees of Estonian nursing homes are mostly in favor of receiving COVID-19 vaccine. There were also skeptics and opponents of vaccination, which could have a negative impact on the health behavior and health of nursing home residents. Vaccine skepticism is a global problem and thus awareness and vaccination campaigns must continue.

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### Attitude of the Estonian-speaking population towards the COVID-19 vaccination

Anna-Liisa Tamm<sup>1</sup>

<sup>1</sup>Tartu Health Care College, Estonia

**Background and Objectives:** Vaccination is a simple, safe and effective way to protect from harmful diseases, but unfortunately, vaccine resistance is on the rise worldwide. The aim of study was to clarify the attitude of Estonian-speaking population towards COVID-19 vaccination and main reasons for accepting or refusing vaccination.

**Methods:** The online electronic questionnaire was completed online by Estonian-speaking citizens in May 2021. Descriptive statistics, t- or Mann-Whitney, and  $\chi^2$ - or Fisher Exact tests were used. In order to measure attitudes Likert-scale (5 degrees), and to identify risk factors associated with decision to vaccinate univariate logistic regression analyses were used.

**Results:** Participants (n=508; 33.5±12.3y) were divided into: pro-vaccination (78.7%), many of them had already been vaccinated with either one or two doses (36.5%, 31.5%, respectively) or were planning vaccinate soon (32%); the skeptics had not decided (12%); anti-vaccination (9.3%). The main reason why vaccination was preferred was the belief that by vaccinating we help those who for some reason cannot vaccinate themselves (81.7%) and in case of concomitant diseases COVID-19 can be extremely severe (80.9%). 6.5% of anti-vaccinators believed that their body protects itself from the disease, and 4.7% believed that vaccination should not violate the sanctity of the human body. The main reasons for vaccination resistance were insufficient research on vaccines (80.9%) and general attitude towards the necessity of vaccines (48.9%). The belonging to vaccination group was influenced by living in an urban area and student status (OR=1.96, 95% CI 1.28–3.02; OR=2.39, 95% CI 1.26–4.55, respectively). Anti-vaccination status was primarily influenced by a secondary vs higher education (OR=2.34, 95% CI 1.14–4.77, p=0.02). Skeptics and opponents of vaccination mainly believe media (24.6%); vaccinators mostly the opinion of health professionals (16%).

**Conclusions:** Vaccine skepticism is a global problem and thus awareness and vaccination campaigns must continue.

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### The impact of the COVID-19 pandemic on the physical activity of the population of adult residents of Lithuania

Rokas Arlauskas<sup>1</sup>, Rimantas Stukas<sup>2</sup>, Donatas Austys<sup>1</sup>

<sup>1</sup>Faculty of Medicine, Vilnius University, Lithuania, <sup>2</sup>Vilnius university Faculty of Medicine, Lithuania

**Background and objective:** The COVID-19 pandemic has introduced changes in physical activity of various populations. The aim of this study was to assess the impact of the COVID-19 pandemic on physical activity in a representative sample of adult residents of Lithuania. **Methods:** The survey data was collected from October to November 2021. After the exclusion of missing data, this study included a representative sample of 1502 adult residents of Lithuania aged from 18 to 64 years old. The chi-square criterion was used to estimate the association between sociodemographic variables, COVID-19 experience and food selection criteria with change in physical activity during the pandemic.

**Results:** Although the majority (54.7%) of the participants of this study indicated no effect of the COVID-19 pandemic on their physical activity, 33.8% of the sample indicated the decrease in physical activity. During the pandemic, physical activity increased among 11.4% of the respondents. Decrease in physical activity was more frequent among younger respondents (38.6% vs. 29.6%), people from the largest towns of Lithuania (39.9% vs. 29.4%), single respondents (45.7% vs. 31.2%) and those who suffered from COVID-19 personally or had COVID-19 cases in their families (28.6% vs. 41.8%) (p<0.05). Physical activity increased more frequently among respondents with university education and those who selected their foods with respect to its impact on health (respectively, 14.4% vs. 5.8% and 15.6% vs. 9.6%) (p<0.05). Gender, employment status, number of family members, having children under 18 years, monthly income per family member and severeness of COVID-19 of the respondents were not associated with changes in physical activity during the pandemic (p>0.05). **Conclusions:** The COVID-19 pandemic has reduced the physical activity in one third of the population of adult residents of Lithuania. The decrease was observed among both – residents with higher and lower prepandemic physical activity.

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### Study of the continuity of tuberculosis-related care during the COVID-19 pandemic between march 2020 and February 2021 in Senegal

Mamadou Leye<sup>1</sup>

<sup>1</sup>Medecine Preventive and Public Health, University Cheikh Anta Diop of Dakar, Dakar, Senegal

**Introduction:** Tuberculosis is one of the major public health problems. The COVID 19 pandemic has impacted the health system globally and nationally. Faced with this situation, it was deemed necessary to study the continuity of services related to tuberculosis in Senegal during the COVID 19 pandemic period between March 2020 and February 2021.

**Methodology:** A cross-sectional study for analytical purposes was conducted between March 2020 and February 2021. The study population was represented by all tuberculosis patients seen in consultation between March 2020 and February 2021 and who reside in Senegal. A multistage survey was carried out at the level of each district. Univariate and multivariate analyzes were performed using Epi Info 3.3.2 and R 3.4.4 software.

**Results:** The average age of respondents was 41.43 years with extremes 13 and 81 years. Possession of a television was significantly associated with the impact of COVID 19 on the continuity of tuberculosis services. Patients sensitized before Senegal recorded its first case (ORaj 0.09 [0.02-0.43]) were less likely to continue their health care compared to those who received it after the first case. The request for follow-up consultation service was significantly associated with the impact of COVID 19 on the continuity of services related to tuberculosis. Patients who were in the attack phase (ORaj 107.69 [5.94-1951.97]) and maintenance phase (ORaj 50.06 [7.32-342.07]) were more likely to continue their health care compared to those who did not know what phase they were in.

**Conclusions:** The Results of this work suggest to the health authorities to reorganize the health system and to adopt a policy based on the community approach and to the populations to overcome the “fear of COVID 19”. **Keywords:** continuity, services, prevention, Tuberculosis, COVID 19, Senegal

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### Changes of influenza vaccination coverage rates due to the

### expanded free influenza vaccination program before and during the COVID-19 pandemic in Korea

Jun Hwang<sup>1</sup>, Soon-Woo Park<sup>1</sup>

<sup>1</sup>Department of Preventive Medicine, Daegu Catholic University School of Medicine, Republic of Korea

**Background and Objectives:** As the COVID-19 pandemic prolongs, the threat of twindemic with influenza and COVID-19 remains. Therefore, this study Aims to evaluate the effect of improving the influenza vaccination coverage rates of free vaccination expansion program before and during the COVID-19 pandemic.

**Methods:** The present study used the 2020~2021 Korea Community Health Survey (KCHS) data from Kyungpook province in Korea, which includes 23 cities/counties. We analyzed annual influenza vaccination rate, and the 2020 KCHS and 2021 KCHS Results meant the influenza vaccination rates for the 2019-2020 season and the 2020-2021 season, respectively, considering the KCHS survey period (mid-August to mid-October) and adult influenza vaccination period (mid-October or later). During the 2020~2021 season, unlike other regions, one city (Andong) of Kyungpook province introduced free vaccination program for all citizens.

**Results:** The adult influenza vaccination coverage rate of 2020 and 2021 KCHS increased by only 1.8%p (52.9% in 2020, 54.7% in 2021) in Kyungpook, but increased by 9.4%p (55.9% in 2020, 65.3% in 2021) in Andong. As a Results of comparison by age group in 10-year intervals, vaccination coverage rates for those in their 60s and 70s or older, who were not subject to vaccination expansion program, showed no difference or slightly decreased in both regions between the 2020 and 2021 KCHS. However, the vaccination coverage rate increased respectively by 19.0%p, 15.0%p, and 21.6%p for those in their 30s, 40s, and 50s in Andong. On the other hand, in the 20s, the rate of increase was low in both regions. **Conclusions:** The expansion of the free influenza vaccine program was effective in improving the vaccination coverage rate among adults in their 30~50s, excluding those in their 20s. The temporary expansion of free vaccination programs will be efficient in preventing the twindemic between influenza, and COVID-19 or other emerging infectious diseases.

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### Users' perceptions of medical services in primary health care during the COVID-19 pandemic in Fortaleza, Brazil

Lourrany Costa<sup>1,2</sup>, Luciano Cavalcanti<sup>3,2,4</sup>, Leonardo Rocha<sup>5</sup>, Sarah Oliveira<sup>5</sup>, José Barreira<sup>5</sup>, Fernanda Faria<sup>5</sup>, Letícia Pontes<sup>5</sup>, Ingrid Vasconcelos<sup>5</sup>, João Freitas<sup>5</sup>, Vitor Malheiro<sup>5</sup>, Iana Marques<sup>5</sup>, Gustavo Bezerra<sup>5</sup>, Pedro Aquino<sup>5</sup>, Lara Medeiros<sup>5</sup>, Leonardo Andrade<sup>5</sup>, Tiago Farias<sup>5</sup>

<sup>1</sup>School of Medicine, Universidade de Fortaleza, Brazil, <sup>2</sup>Universidade Federal do Ceará, Brazil, <sup>3</sup>Department of Conservative Dentistry, Periodontics, Faculty of Dentistry, Centre for Biomedical Research and Innovation (CIIB), Brazil, <sup>4</sup>Centro Universitário Christus, Brazil, <sup>5</sup>Universidade de Fortaleza, Brazil

**Introduction:** Due to the COVID-19 pandemic, several countries reorganized their health systems, prioritizing emergency consultations over primary care. **Objective:** To evaluate adult users perceptions of medical care received between April 2020 and July 2021, in public primary health care (PHC) in Fortaleza, Northeast of Brazil. **Methods:** This is a cross-sectional study involving a survey and analysis of medical records (MR). Between August and November 2021, 126 participants were enrolled, invited by convenience, from 3 PHC units. We performed an ordinal logistic regression to verify the factors associated with users perceptions regarding the medical care received.

**Results:** 107 women (84.9%) and 19 men (15.1%) participated, with a mean age of 39.7 years; 42.9% of participants waited 30 to 60 minutes for appointments; 69% believed the pandemic interfered with that time; 78.6% believed there were not enough doctors to provide proper care. Distancing, masks, and face shields interfered with consultations, according to 16.7% of respondents. 53.2% rated the services received as "very good". EMR data were collected from 58 participants: 49 women and 9 men. The average number of consultations in the period was 4.47. General consultations and nonspecific complaints were the most frequent ICD-10 codes in the MR, followed by respiratory symptoms and suspected or confirmed cases of COVID-19 (11.5%), and prenatal care (9.6%). The average number of times a user received medication was 9.33. Their perceptions of care were influenced by: believing there were enough doctors available to meet appointments; believing that the pandemic interfered with their waiting time; the availability of professionals for counseling; the user's gender; and the times a user received medication ( $p = 0.0002$ ). **Conclusions:** Clinical consultations maintained their quality according to users despite the pandemic overload and changes in health professionals work. It is possible to use these results in future crises to improve assistance.

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### Suffering and pleasure in health workers on the front lines of COVID-19

Patricia Baptista<sup>1</sup>, Cristiane Gallasch<sup>2</sup>, João Silva-Júnior<sup>3</sup>, Daniela Lourenção<sup>4</sup>

<sup>1</sup>School of Nursing, University of Sao Paulo, Brazil, <sup>2</sup>Faculty of Nursing of the State of Rio de Janeiro, Brazil, <sup>3</sup>Department of Occupational Medicine, University of Sao Paulo, Sao Paulo, Brazil, <sup>4</sup>School of Nursing, University of Sao Paulo, Sao Paulo, Brazil

**Background and objective:** The COVID-19 pandemic occurs in a scenario that already reveals great concern for health workers. Added to this, in a context of constant changes and unpredictability, the risk of increased mental suffering is a worldwide finding. The present study aimed to verify indicators of suffering and pleasure in health workers in the pandemic context. **Methods:** Exploratory, analytical, cross-sectional study with a quantitative approach. The sample consisted of 437 health professionals invited electronically, who answered the questionnaire on sociodemographic information, occupational aspects and clinical conditions. Suffering and pleasure at work were considered as outcomes, which were analyzed with multinomial logistic regression regarding the associated independent variables.

**Results:** Most participants were female (71.0%), nurses (55.6%), mean age of 38.4 years, with an employment relationship (60.9%) and weekly workload of 40 hours or more (75.8%). Regarding suffering, 61.6% of participants were in mental distress, with the average score having critical levels in professional exhaustion and lack of recognition. As for pleasure at work, it is presented at a critical level, with the freedom of expression factor at a critical level. However, despite the difficulties faced in working on the front lines of COVID, health workers still feel some pleasure in their professional activities, especially due to the professional fulfillment of the tasks performed. **Conclusions:** Suffering at work is associated with occupational characteristics and mental exhaustion and lack of recognition among health workers in the COVID-19 setting.

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### Pre-COVID-19 cognitive social capital trajectories and peri-COVID-19 depression: a prospective cohort study in China, 2014-2020

Yang Han<sup>1</sup>, Roger Chung<sup>1</sup>

<sup>1</sup>The Chinese University of Hong Kong, China

**Background:** Social capital is dynamic; however, little is known about the association of its dynamics with health resilience in a pandemic. We examined the longitudinal association of pre-COVID-19 cognitive social capital trajectories with peri-COVID-19 depression and the moderating effect of province-level COVID-19 severity on the association in China.

**Methods:** We employed four-wave adult ( $\geq 16$  years) data (follow-up  $n=6,228$ ) from the biennial China Family Panel Studies between 2014 and 2020 with peri-COVID-19 depression in 2020 measured by the 8-item Center for Epidemiological Studies-Depression Scale. Pre-COVID-19 cognitive social capital from 2014 to 2018 included dichotomized (high/low) generalized trust, trust in neighbors, trust in local government officials, and reciprocity, with each of them categorized into five trajectories: persistently low, decreased, fluctuated, increased, and persistently high. Province-level COVID-19 severity in 2020 was a factor score constructed by the number of COVID-19 cases and deaths in each province. Mixed-effects linear regression was conducted to answer our research question. **Results:** Persistently low generalized trust ( $\beta: 0.46; 95\% \text{ CI: } 0.15, 0.78$ ), persistently low ( $\beta: 0.57; 95\% \text{ CI: } 0.22, 0.92$ ), decreased ( $\beta: 0.36; 95\% \text{ CI: } 0.07, 0.65$ ), and increased ( $\beta: 0.40; 95\% \text{ CI: } 0.12, 0.68$ ) trust in neighbors, and persistently low ( $\beta: 0.39; 95\% \text{ CI: } 0.02, 0.77$ ) and decreased ( $\beta: 0.68; 95\% \text{ CI: } 0.38, 0.97$ ) reciprocity, compared with their persistently high trajectories, were associated with increased peri-COVID-19 depression. Province-level COVID-19 severity did not significantly moderate the association between pre-COVID-19 cognitive social capital trajectories and peri-COVID-19 depression.

**Conclusions:** Long-term strategies to maintain high cognitive social capital are needed to protect mental health against a pandemic, regardless of the expected severity of the pandemic.

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### COVID-19 outbreak: challenges reorganizing a university hospital setting and preserving non-deferrable cares in the South Italy

Emma Montella<sup>1</sup>

<sup>1</sup>Public Health Department, University of Naples Federico II, Napoli, Italy

**Background and objective:** This study shares the experience of a covid-19 outbreak response in the university hospital of Naples "Federico II", elected as covid-19 regional hub for the mother-child department and the Paediatric Department. **Methods:** It has been composed a hospital task force with different experts which developed a hospital incident management system (HIMS) requiring a general reorganization of the hospital settings, ensuring hospital services both to the covid-19 patients and to those who needed non-deferrable cares. Data were collected from March 9 to May 8, 2020, and the HIMS efficacy was measured by key performance indicators such as number of covid-19 patients hospitalized/recovered/deads; number of patients/day for cancer therapies; number of patients/day for immunological therapies and many others data on SARS-CoV-2 patients were extracted from the platform "sinfonia". This is the increase in department's capacity: 1. intensive care unit: +57%, 2. sub intensive care unit: creation of a new unit dedicated to covid-19 patients, +18 beds, 3. infectious disease department, all the 14 beds. 4. Paediatric Department, regional hub, 18% converted in covid beds, 5. mother-child department, regional hub, 35,7% of converted in covid beds, 6. internal medicine department, 46,6 % of converted in covid beds **staff management:** training SARS-CoV-2 exposed staff-staff re-allocation phases. 1) permanent staff: already involved in emergency departments, 2) contingency staff: new workers hired to work in covid departments, +27,2%, 3) crisis staff: workers reallocated from ordinary activities, +18,6% result the ordinary healthcare, despite the pandemic period, ensured 100 patients/day for cancer therapies, 50 patients/day for immunological therapies, 20 patients/week for cancer surgery, 20 patients/week for dialysis, 5 kidney transplants, in line with 2019 data. **Conclusions:** HIMS provided an appropriate response to covid-19 and guaranteed the non-deferrable hospital services. Our experience taught us the importance to have an extra-ordinary management plan to respond to future emergency challenges.

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### Comparative profiles of anti-SARS-CoV-2 IgG in the blood and milk of Brazilian lactating women vaccinated by mRNA and other vaccine platforms

Daniele Marano<sup>1</sup>, Yasmin Amaral<sup>2,3</sup>, Maria Zuma<sup>4</sup>, Fernanda Mazzoli<sup>5</sup>, Zilton Vasconcelos<sup>5</sup>, Marina Vilarim<sup>5</sup>, Fátima Monteiro<sup>5</sup>, Paulo Borges<sup>5</sup>, Maria Moreira<sup>6</sup>

<sup>1</sup>Oswaldo Cruz Foundation (Fiocruz), Brazil, <sup>2</sup>Fiocruz, Rio de Janeiro, Brazil, <sup>3</sup>Universitário Serra dos Órgãos (UNIFESO), Brazil, <sup>4</sup>Fundação Oswaldo Cruz (Fiocruz), Brazil, <sup>5</sup>Fiocruz, Brazil, <sup>6</sup>Fiocruz, Brazil

**Background:** The presence of SARS-CoV-2-IgG is directly correlated with the degree of vaccine efficacy. Recent studies have shown the presence of this antibody in the blood and milk of breastfeeding mothers vaccinated with mRNA (Pfizer). However, limited information is available in lactating women that received other vaccine platforms used in developing countries, such as the inactivated SARS-CoV-2 vaccine and the non-replicating adenovirus vaccines. **Objective:** To compare the amount anti-SARS-CoV-2 IgG protein in the blood and milk of lactating women vaccinated against SARS-COV-2 based on vaccine platforms used. **Methods:** A cross-sectional study was carried out with 48 Brazilian lactating women, over 18 years old, contacted by the main social networks. The milk and blood collection will be carried out by professionals previously trained in the human milk bank and clinical laboratories. For the detection of SARS-CoV-2-IgG in samples of blood and breast milk, the technicians used the method of direct enzyme immunoassay (ELISA).

**Results:** From the total number of lactating women evaluated, 48% received the vaccine with mRNA, 29.2% non-replicating adenovirus and 23% inactivated SARS-COV-2. The average of IgG in blood (5.39) was higher than in milk (1.19), but without significant difference when comparing the results obtained using different vaccine platforms. Most lactating women received the second Pfizer booster dose. There was a reduction in the amount of IgG between the first dose and the second booster dose. However, after applying the second booster dose (40), regardless of the vaccine manufacturer, there was an increase in the average levels of IgG in blood (5.50) and in milk (1.25). **Conclusions:** The present study showed that, regardless of the technology used in developing countries, after the second booster dose there was an increase in the levels of IgG in the blood and milk of nursing mothers, reinforcing the importance of completing vaccination schedule.

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### KenyaRelief.org as an example of organized improvisation during the COVID-19 outbreak

Elizabeth Studley<sup>1</sup>, James Johnson<sup>2</sup>

<sup>1</sup>Kenya Relief, United States, <sup>2</sup>School of Health Sciences, Central Michigan University, Mount Pleasant, United States

Kenya Relief (KR) is an NGO in Migori, Kenya, founded in 2001. KR's tripart mission comprises a K-8 school (760 children), an orphanage (165 children), and a 9000 square foot medical clinic that hosts 25 medical-surgical teams per year. On March 13, 2020, international travel was halted, preventing 17 teams from serving. KR CEO, Steve James, immediately halted outside visitors from entering the 60-acre compound. By March 16, all but 14 of KR's 142 employees were sent home with full pay. Fourteen employees (managers, dorm parents, chefs, missionaries, security guards, housekeepers) committed to stay on campus one month to care for the orphans. All revenue from the clinic and school halted from government-mandated shutdowns while orphan sponsorship payments plummeted. By March 18, the CEO had collected educational material on COVID-19 from the WHO and CDC; Discussions were had with the Migori County MOH about new rules pertaining to Kenya and the county; and an emergency board meeting was held regarding the budget and creation of COVID policies, with the board committed to weekly meetings until further notice. The CEO raised 60000 USD by mid-April 2020 that covered salaries and expenses for three months. Ten touchless handwashing stations were placed throughout the campus in April 2020. The local MOH agreed to a staged reopening of the medical clinic after a three-week shutdown. During the nine month school shutdown, teachers sent weekly lesson plans with 82% participation. All KR employees were vaccinated by August 2021. Medical teams resumed February 2021 with missionaries providing vaccination proof; surgical patients received PCR tests within three days of surgery. Lastly, the CEO raised funding toward construction of the Kenya Relief Maternal Child Health Center; groundbreaking on the 65-bed hospital was July 12, 2022, to help address Migori County's maternal mortality rate of 673 deaths/100000 live births.

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### Knowledge, attitudes, and practices in adapting to COVID-19 pandemic conditions: a cross-sectional survey among the Mongolian population (The second phase follow up study)

Sarantuya Altansukh<sup>1</sup>

<sup>1</sup>National Center for Public Health, Mongolia

**Background:** In fact, of COVID-19 confirmed cases, Mongolia is in the top five countries in the West Pacific. A lack of practice to prevention from coronavirus infection period presents a need to improve the prevention, response, and risk communications of Mongolians and ensure the adaptability of citizens. Conducting the knowledge, attitudes, and practices towards coronavirus infection will help identify and address the population's information needs and concerns, provide relevant information, and to save lives.

**Methods:** The study was conducted participants from 3 remote provinces and 2 districts of Ulaanbaatar Capital city. Kazakh ethnic group in Bayan-Ulgii province, which make 3.9 percent of the total population, was selected through targeted sampling Methodology to determine whether cultural and religious factors influence attitudes towards spreading COVID-19. The survey data was collecting using quantitative, and qualitative methods among three specific groups (health specialists, general population, teenagers). Observations were performed on the population's handwashing situation, duration, use of soap, wearing and removing masks, frequency, and social distancing behavior of people.

**Results:** Positive changes made in the behavior of handwashing frequency (50.5% to 83.2%), wash hand in the correct order (21.4% to 39.1%), use soap regular (26.0% to 53.2%), wash hand duration (16.1% to 33.5%), the frequency of cleaning and disinfecting of home and the use of disinfections has been increased, the practice of wearing masks in crowded places and outdoors were increased by 6.8 percent.

**Conclusions:** To divide the target group into children, adolescents, adults and the elderly and implement activities aimed for them. Promote and develop training program and curriculum for all level education institution and create a supportive environment. Continue to provide essential knowledge sharing activities.

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### Healthcare workers and COVID-19 vaccination: a living systematic review

Mario Poz<sup>1</sup>, Alesandra Silva<sup>2</sup>, Luciana Castaneda<sup>3</sup>, Raphael Chança<sup>4</sup>, Leila Maia<sup>3</sup>, Inês Frontera<sup>5</sup>, Isabel Craveiro<sup>5</sup>, Ana Olivieira<sup>3</sup>, Paulo Ferrinho<sup>5</sup>

<sup>1</sup>Institute of Social Medicine, University of Rio de Janeiro State, Brazil,

<sup>2</sup>Cancer National Institute, Health Ministry, Brazil, <sup>3</sup>Institute of Social Medicine, University of Rio de Janeiro State, Brazil, <sup>4</sup>Cancer National Institute, Brazil, <sup>5</sup>Global Health and Tropical Medicine, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Portugal

**Background and Objective:** The COVID-19 has shaken the scientific community and highlighted the lack of policies to protect and support health care workers (HCWs) in public health emergencies. The discovery of the vaccine was not enough to defeat the pandemic for several reasons, such as antivaccine behavior, deficit of vaccines in several countries and fragile policies for vaccine coverage worldwide. We aimed to identify HCWs' skills and requirements for covering a target population; countries' politics to uptake vaccination; and strategies for improving vaccination team's performance.

**Methods:** Living systematic review of studies retrieved from PubMed, Embase, Scopus, Lilacs, Web of Science, WHO COVID-19 database, and Google Scholar published between January 2020 and March 2022. The PICO search tool was used for the research questions about requirements, policies and strategies for HCWs and target population vaccination. Risk of bias and Certainty of evidence were assessed by GRADE CERQual tool.

**Results:** A total of 4556 studies were identified in the databases. First, 193 studies were selected for retrieval. Then, 162 studies were selected for full-text reading. We identified 29 publications that met the inclusion criteria. After full texts reading, 10 studies were excluded. Data extraction was done from 19 studies. Most of the evidence came from cross-sectional surveys and qualitative studies. The main findings are related to vaccine hesitancy, which is not a minor issue among the HCWs. Countries have embraced few policies for covering the target population and the HCWs worldwide.

**Conclusions:** The pandemic has yet to be overcome entirely. Skepticism, mistrust, and hesitancy are global issues that can jeopardize immunization coverage. Governments will need guidance to develop and advance policies for vaccine coverage, control outbreaks of new strains. We propose to continue the living systematic review method to accompany the development of strong evidence studies to support public policies on this subject.

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### Crimes against life, health, sexual violence and accidental death during the COVID-19 pandemic in Bulgaria

Sergey Kostadinov<sup>1</sup>, Penka Kostadinova<sup>2,3</sup>, Stefan Kostadinov<sup>4</sup>

<sup>1</sup>Department of General Medicine, Forensic Medicine and Deontology, Faculty of Public Health, Medical University, Pleven, Bulgaria, <sup>2</sup>Department of Social Medicine and Health Management, Pleven Medical University, Pleven, Bulgaria, <sup>3</sup>Bulgarian Public Health Association, Kostadinova, Bulgaria, <sup>4</sup>General Hospital "Heart and Brain", Pleven, Bulgaria

**Introduction:** The COVID 19 pandemic has imposed numerous restrictive measures leading to social isolation. The aim of the current study is to determine the impact of the COVID 19 pandemic and the restrictive measures implemented on crime against bodily integrity and accidental mortality.

**Materials and Methods:** Official data published by the National Statistical Institute for the period 2019-2021 were used, and the same were processed with statistical methods.

**Results:** It was found that in 2020 and 2021, total registered crimes against the person decreased compared to the previous two years by an average of about 6%. Compared to those registered in 2019, in 2020 and 2021 the following are reported: murders – 49, a decrease of 12.2% and 10.2%; attempted murders – 26, an increase of 7.7% and 19%; bodily injuries – 825, down 6% and 2.7%; violations against sexual privacy: Debauchery – 98, growth 31.6% and 11.22%; Rape (committed and attempted) – 51, growth 21.7% and no dynamics. Mortality due to accidents decreased from 23 per 100000 people in 2019 to 21 per 100,000 people in 2020 and 2021, being more significant in road traffic injuries - from 8.1 per 100,000 in 2019 to 6.3 per 100000 people in 2020 and 2021.

**Conclusions:** In Bulgaria, the COVID-19 pandemic and related restrictive measures and social isolation are manifested by a decrease in registered crimes against life and health, an increase in crimes against sexual privacy, a decrease in the death rate from accidents, most significantly in the death rate from road traffic traumatism.

**Keywords:** COVID-19 pandemic, crimes, mortality

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### Prevalence of postpartum depression symptoms in developed and developing countries in the COVID-19 pandemic: a systematic review with meta-analysis

Marina Vilarim<sup>1</sup>, Fernanda Rebelo<sup>2</sup>, Ianne Vieira<sup>3</sup>, Fernanda Mazzoli<sup>2</sup>, Antonio Nardi<sup>4</sup>, Daniele Marano<sup>2</sup>

<sup>1</sup>Oswaldo Cruz Foundation (Fiocruz), Brazil, <sup>2</sup>Fiocruz, Brazil, <sup>3</sup>Fundação Oswaldo Cruz (Fiocruz), Brazil, <sup>4</sup>Federal University of Rio de Janeiro, Brazil

**Background:** The prevalence of postpartum depression (PPD) possibly increased during the COVID-19 pandemic due to numerous direct and indirect stressors associated with the virus as well as modifications to the social, economic, and health landscape. **Objective:** We aimed to carry out a systematic literature review of cross-sectional studies that assessed the prevalence of PPD symptoms in the pandemic, then meta-analyze and compare the prevalence between developed and developing countries. **Methods:** Studies published on PubMed, Embase, Virtual Health Library, Scopus, Web of Science, PsycINFO and Cinahl from inception to October 2022, that reported prevalence of PPD symptoms, using Edinburgh Postnatal Depression Scale, among puerperal women aged  $\geq 18$  were included. Quality assessment was performed according to Joanna Briggs Institute Critical Appraisal Checklist. The metaprop command was used in the Stata statistical software v.12.0 to run a random-effects meta-analysis. Heterogeneity was explored by subgroup analysis and meta-regression, considering human development index (HDI), age, time after childbirth, breastfeeding and parity. **Results:** The initial search strategy identified 691 articles. A total of 15 studies with 4788 postpartum women during the COVID-19 pandemic were included. Seven studies were conducted in developed countries and eight in developing countries. The overall prevalence of PPD symptoms was 31% (95% CI: 21.85-40.99). The pooled prevalence of PPD symptoms among women from developed countries [30,5% (95% CI: 16.95–46.02)] did not differ significantly from that in developing countries [31,5% (95% CI: 19.26–45.15)]. In the meta-regression, the proportion of breastfeeding was direct associated with the prevalence of PPD ( $\beta=0.006$ ,  $p=0.04$ ). Studies that analyzed women up to one month after childbirth had a lower prevalence of PPD compared to those that observed them up to one year after childbirth. High heterogeneity was detected across studies.

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### Institutional care of older people during the COVID-19 epidemic in Croatia

Branko Kolaric<sup>1</sup>

<sup>1</sup>Andrija Stampar Teaching Institute of Public Health, Croatia

**Background and Objective:** During 2020 in Croatia there have been two highly stressful events that could have caused professional burnout among nursing home employees: the COVID-19 epidemic and two earthquakes. After the emergence of COVID-19, the Department of Public Health Gerontology at the Andrija Stampar Teaching Institute of Public Health became the coordinator for the preparation of the Guidelines for the Prevention and Suppression of the COVID-19 Epidemic for Social Service Providers in the Social Welfare System incorporating examples of good practice.

**Methods:** A special team is formed consisting of two specialists in epidemiology and three specialists in public health, three nurses and one IT specialist. The teams tasks were: implementation of official anti-epidemic measures and their coordination in nursing homes in the City of Zagreb, supervision of the implementation of the official guidelines, 24/7 standby telephone, expert consultation of family medicine doctors regarding the application of prescribed measures and vaccines and reporting on the epidemiological situation in nursing homes on a daily basis.

**Results:** During the peak of the epidemic in 2020/2021, special isolation departments for infected residents were organized in the nursing homes. Due to the well-defined treatment protocols and immediate ensurance of the necessary hospitalizations, we had a low death rate among nursing home residents. Among 8667 infected nursing homes residents in Croatia, there have been 1132 (13%) deaths.

**Conclusions:** Well-defined protocols and good organisation reduced the number of deaths among nursing homes residents, and later the number of infected residents through the active implementation of vaccinations in nursing homes. Based on the experience gained during the epidemic, we have designed a special two-year program „Control of the consequences of the COVID-19 epidemic and the earthquake in Zagreb in nursing homes“with the quantitative and qualitative research on professional burnout among employees which is still ongoing.

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### Epidemiological profile of children and adolescents with COVID-19 in Tunisia, Mars 2020-August 2022

Fatma Ben Youssef<sup>1</sup>, Aicha Hechaichi<sup>1</sup>, Mouna Safer<sup>1</sup>, Hejer Letaief<sup>1</sup>,

Sonia Dhaouadi<sup>1</sup>, Emna Mziou<sup>1</sup>, Souha Bougatef<sup>1</sup>, Leila Bouabid<sup>1</sup>, Sondes Derouiche<sup>1</sup>, Nissaf Bouafif ép Ben Alaya<sup>2</sup>

<sup>1</sup>National observatory of new and emerging diseases, Tunisia, <sup>2</sup>T-Field epidemiology training program, Tunisia

During the COVID-19 pandemic, the proportion of SARS-CoV2 cases and related deaths is lower in children and adolescents than in adults.

Aim: to describe the transmission and severity of SARS-Cov-2 infection among children and adolescents during the different waves of the pandemic in Tunisia.

Methods: A national descriptive study was conducted from March 2020 to August 2022. Data was extracted from the National Database of SARS-Cov2 Cases including those under 18 years of age. The transmission and severity indicators calculated were: cumulative incidence, hospitalization rate, mortality rate and case fatality.

Results: A total of 104517 COVID-19 cases (9.1% of total new cases), 137 deaths (0.46% of total deaths) and 2390 hospitalizations (8.5% of total hospitalizations) were reported among children and adolescents. The cumulative incidence per 100 000 children was 3101.88. The mean age of cases was 11.14 ± 4.85 [0– 17] years with a sex ratio(M/F) of 0.97. The mortality rate per 100 000 children was 4.07. The median age of deaths was 2 months with an interquartile range [0-13 years]. Sex ratio (M/F) was 1.45. The overall case lethality was 0.13%. The overall hospitalization rate was 2.3%. Median age of hospitalizations was 1 month with an interquartile range [4.9-17years]. Sex ratio (M/F) was 1.36. The cumulative incidence was higher among those aged between 15 and 18 years. The crude death rate, lethality and hospitalization rate were higher in the group age [0-5 years]. The epidemic curve showed that the highest incidence was observed during the omicron outbreak (Incidence =1621.9/100000 children). However, the highest mortality rate was recorded during the Delta outbreak (2.1/100000 children).

Conclusions: Sars-Cov2 infection, associated deaths, and hospitalizations in the pediatric population are not negligible. The highest severity indicators were observed in the youngest age group, thus the need to consider vaccination of children in Tunisia.

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### Citizen involvement in COVID-19 contact tracing with digital tools: a qualitative study to explore citizens' perspectives and needs

Akke Meer<sup>1</sup>

<sup>1</sup>National Coordination Centre for Communicable Disease Control, Centre for Infectious Disease Control, National Institute for Public Health and the Environment, The Netherlands

Background and Objectives: Contact tracing (CT) is a key strategy for controlling outbreaks of infectious diseases, including COVID-19. The scale of the COVID-19 pandemic often made it difficult for public health professionals (PHPs) to execute CT adequately. This may be compensated by more actively involving citizens in CT-tasks that are traditionally executed by PHPs (further referred to as 'self-led' CT). However, there is limited insight into citizens' perspectives and needs regarding self-led CT. Therefore, we aimed to explore the perspectives and needs of Dutch citizens regarding self-led CT. We additionally explored if and how self-led CT may be facilitated with digital tools.

Methods: In November 2021, we performed an exploratory qualitative study among Dutch citizens (N=27), in which we conducted online semi-structured interviews. Questions were based on constructs of the Reasoned Action Approach and the Health Belief Model. Interviews were audio-recorded and transcribed verbatim. A thematic analysis was conducted to identify citizens' perspectives and needs regarding participation in self-led CT.

Results: Most interviewees held a positive attitude towards self-led CT and the use of digital tools in this context. Seven main themes related to citizens' perspectives and needs arose from the interviews: 1) 'Perspective on self-led CT influenced by prior experiences with regular CT for COVID-19', 2) 'Anticipated responsibilities in regular CT shape interviewees' perspectives on self-led CT', 3) 'Self-led CT may have various impacts on the execution of CT', 4) 'Perceived self-efficacy to participate in self-led CT', 5) 'Shame and social stigma may hamper participation in self-led CT', 6) 'Concerns about privacy and data security: a barrier for self-led CT', and 7) 'Interviewees' anticipated needs for self-led CT in practice'.

Conclusions: Citizens' attitude towards participating in self-led CT may depend on various factors. Their perspectives and needs should be considered for the future implementation of self-led CT in practice

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### Brazilian National Front for strengthening long-term care facilities for older people: a necessary and efficient social movement

Karla Giacomini<sup>1</sup>

<sup>1</sup>Oswaldo Cruz Foundation (Fiocruz), Brazil

Since March 2020, the high mortality rates due to COVID-19 among European residents of long-term care facilities (LTCF) call attention to the need for quick action to avoid this reality in Brazil. The COVID-19 pandemic revealed the invisibility and vulnerability of older people in LTCF. If the situation of the Brazilian ILPI for the elderly was quite fragile before the pandemics, due to the denialist government, it would probably be worse. In April 2020, several older adult human rights groups organized an online group for text, audio, and video communication on how to act quickly against social and health threats to Brazilian LTCFs during the pandemic. As a result, the National Front for Strengthening ILPI (NF-ILCF) was created. The NF-LTCF has 1400 volunteers - supporters and participants - who help care institutions meet these challenges by providing robust scientific evidence, newsletters, training protocols, reports, etc., emphasizing institutional care best practices and gathering information for each LTCF to produce a situational diagnosis and contingency measures against COVID-19. For national coverage, the NF-LTCF uses group communication applications, social media, live online sessions and its website to share materials digitally. In addition, the units can contact the group through WhatsApp groups, email or telephone. The media are designed to provide a friendly, stimulating and encouraging experience. Without financial support, the NF-ILCF initiatives carried out 250 live webinars across the country, disseminated the material to interested parties and ILPI employees (managers, administrators, supervisory technicians, caregivers, cooks, cleaners, nurses, rehabilitators, social workers) on social networks and reached more than 750000 people. Mortality rates in Brazilian LTCF were much lower than expected. This social movement persists in facing prejudice against these institutions, defending the life of each elderly person who resides in them and relentlessly seeking support for a national continuing care policy.

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### Perceptions on prevention measures for COVID-19 by users of Brazilian basic health units

Kellen Gasque<sup>1</sup>, Jonatas Conceição<sup>2,3</sup>, Fábio Amorim<sup>4</sup>, Magda Mattos<sup>5</sup>, Débora Nascimento<sup>6</sup>, Letícia Goulart<sup>5</sup>

<sup>1</sup>Regional Board of Brasilia, Oswaldo Cruz Foundation, Brasília, Brazil,

<sup>2</sup>Regional Board of Brasilia, Brasília, Brazil, <sup>3</sup>Oswaldo Cruz Foundation,

Brazil, <sup>4</sup>Superior School of Health Sciences, Health Secretariat Federal

District Government, Brasília, Brazil, <sup>5</sup>Federal University of Rondonópolis,

Rondonópolis, Brazil, <sup>6</sup>Fiocruz Pantanal, Oswaldo Cruz Foundation, Campo Grande, Brazil

The behavior of populations in the context of the COVID-19 pandemic is influenced by sociodemographic, health and cultural factors. This study sought to analyze the perceptions and daily practices for the prevention of COVID-19 that were adopted by users of Basic Health Units in the Midwest region of Brazil. This is a cross-sectional study. A total of 403 Primary Health Care users participated in the survey. A block-structured questionnaire covering sociodemographic issues, preventive practices for COVID-19 and sources of information about the infection was applied. A robust Poisson model was generated to determine the factors associated with the perception of avoiding crowding as very important. The most searched sources of information were newspapers and the internet (73.9%), television (65.0%) and social networks (61.8%). Mask use (82.6%), alcohol gel (65.0%) and hand washing (63.0%) were the most adopted preventive methods. The majority (91.1%) perceived social isolation as a very important preventive method against COVID-19, associated with working in an essential service, getting information on TV, considering government officials as reliable source for information and social distancing practice. In addition to the development of health education actions in their territories by the basic health professional teams, it is essential that the health professional assumes the role as a source of health information for the user, as well as develops self- autonomy and the ability to distinguish reliable sources from fake news, whether in the context of the COVID-19 pandemic or in other health situations and their social determinants.

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### Social skills associated with stress in university students after the return to face-to-face classes

Sol Sanchez<sup>1</sup>, Yoshio Gonzalez<sup>1</sup>, Hugo Vida<sup>1</sup>, Karime Diaz<sup>1</sup>, Josue Villegas-Dominguez<sup>1</sup>

<sup>1</sup>Universidad del Valle de Mexico, Mexico

Background: During the confinement experienced in different countries due to the COVID-19 pandemic, symptoms related to mental health were identified as

a consequence of this stage, such as stress, so it is essential to identify the factors that positively or negatively influence the to start with early identification and attention programs. General Objective: Determine the association between social skills associated with stress in university students after returning to face-to-face classes. Methodology: A cross-sectional, prospective, observational and analytical study was carried out between January and April 2022 in Veracruz-Boca del Río, including university students of both sexes, in face-to-face classes, excluding subjects with a previous diagnosis of stress, anxiety or who do not they wanted to participate. The main variables studied were social skills (degree of assertiveness, communication, self-esteem and decision-making) and stress level. Surveys were conducted using Google Forms, including the social skills test (a.Cronbach 0.75) and the perceived stress scale (a.Cronbach 0.84). Statistical significance was assigned with a value of  $p < 0.05$ .

Results: 485 participants were included, 83.6% men and 16% women. Sex, age, major studied, and academic degree had values of  $p > 0.05$ , while other factors (OR/CI95%) such as having an average of 6-7.9 (0.2/0.1-0.6) or 9-10 (1.8/ 1.1-2.9), as well as the degrees of low assertiveness (0.05/0.01-0.1), low average (0.3/0.2-0.9) or very high (2.8/1.3-6.1), low degree of communication (0.2/0.1-0.4) or high average (2.4/1.2-4.8), degree of low self-esteem (0.2/0.1-0.4) or high (3.2/1.5-6.9) and degree of low (0.3/0.1-0.5) and high (2.4/1.3) decisions -4.5) showed values of  $p < 0.05$  for the perception of stress. Conclusions: Being a worker is positively associated with the development of stress in students, while school achievement, the degree of assertiveness, communication, self-esteem and decision-making are both positively and negatively associated with the development of stress, according to the intensity of each of these characteristics.

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### The fight for the human right to health in the COVID-19 pandemic: the political participation of social movements

Denise Diniz<sup>1</sup>, Wânia Almeida<sup>2</sup>, Eliane Teixeira<sup>3</sup>, Marina Souza<sup>4</sup>

<sup>1</sup>Instituto Unimed-Rio, Brazil, <sup>2</sup>Faculdade de Direito Milton Campos, Brazil, <sup>3</sup>ENSP/FIOCRUZ, Brazil, <sup>4</sup>Faculdade de Medicina Souza Marques (FTESM), Brazil

Background and Objective: Social movements are the root of struggles for the recognition of human rights, which means that these are the fruits of historical struggles for access to material and immaterial goods that are indispensable for a life with dignity. The objective is to survey and analyze the performance of social movements in the construction and realization of the human right to health during COVID-19 pandemic.

Methods: Based on a narrative review of the literature, a critical analysis was carried out on the Brazilian Sanitary Reform Movement (BSRM), the Declaration of Human Rights and the Brazilian Federal Constitution (CFB/88), and the concept of the "Right Found in the Street", as bases for the discussion of three social movements that emerged in the pandemic.

Results: 1st The BSRM emerged in the 1970s, with social movements against the dictatorship, from the interaction between students, intellectuals, health workers and the popular classes, acting as a strong protagonist in the process that generated the CFB/88 and the Unified Health System/1990. 2nd Law can emerge on the street and legality must also emerge from formality, with the participation of civil society, targeting to achieve democratic legitimacy in decision-making. 3rd Thus, the right to health was implemented during pandemic with the participation of slum residents' associations of Paraisópolis/São Paulo, Complexo do Alemão and Morro da Mangueira/Rio de Janeiro, highlighting the hiring of ambulances to assist symptomatic patients and the collection and distribution of food baskets, water and hygiene products.

Conclusions: Social movements can be agents for building the human right to health, at any time, without disregarding other civil society sectors and the international community. It is necessary to recognize and value the micropolitics constituted in the daily life of the territories, facilitating the political participation of social movements in the right's struggle.

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### Containing Delta in Waikato New Zealand - partnering with Maori for better outcomes

Richard Vipond<sup>1</sup>

<sup>1</sup>National Public Health Service Waikato, Te Whatu Ora Waikato, Hamilton, New Zealand

Background: In the Waikato region of New Zealand, the delta variant of COVID-19 disproportionately affected our most vulnerable populations - Maaori, and the less socioeconomically resourced. COVID-19 presented challenges unable to be

prioritised within already complex lives. Historical experiences with government services resulted in a legacy of wariness. Persistence with conventional contact tracing method would perpetuate inequities. New relationships and working pathways were vital in order to successfully control the spread of disease and protect the community. The Waikato response weaved conventional public health approaches with indigenous knowledge (Te Ao Maaori). It was guided by 3 key Maaori values: KAWEA AKE (looking ahead), Manaakitanga (respect and support), and Mahitahi (working as one).

Objectives: 1. Describe the COVID-19 delta outbreak in the Waikato District Health Board region between October 2021 and January 2022, 2. Describe the approach taken to manage the outbreak.

Results: The delta outbreak disproportionately affected Maaori (70% of cases) and low socioeconomic communities (57% quintile 5). The partnership approach was successful in reducing the spread of COVID-19. Delta was stamped out in a number of vulnerable communities and nearly eliminated from the Waikato region. The outbreak response combined Maaori approach with traditional contact tracing methods: 1. Manaaki first - respecting, enhancing and uplifting others in a way that is culturally appropriate and acceptable, 2. Whaanau centered - placing the priorities of affected families at the center of the response, 3. Mahitahi - working together with indigenous leaders through the sharing of power and collaborative decision making, 4. High trust model - shared understanding of expectations and consequences. Conclusions: The Waikato approach is an example of a successful outbreak response model that was equity-centric and committed to the practical application of Te Tiriti o Waitangi principals.

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### Distress and dependency during meals: the effect of COVID lockdowns on individuals with type-2 diabetes

Márcio Araújo<sup>1</sup>, Rejane Costa<sup>1</sup>, Vitória Rebouças<sup>2</sup>, Vivian Veras<sup>3</sup>, Maria Serra<sup>4</sup>, Roberto Freitas<sup>1</sup>

<sup>1</sup>Oswaldo Cruz Foundation, Brazil, <sup>2</sup>Cariri Regional University, Brazil, <sup>3</sup>University for International Integration of the Afro Brazilian Lusophony, Brazil, <sup>4</sup>Maranhão Federal University, Brazil

Background: Social isolation and confinement were some of the public health measures continually employed in several countries around the world throughout the COVID-19 pandemic. Such measures had a strong influence on public health management and care.

Objective: This study sought to understand the influence of lockdown confinements during the COVID-19 pandemic on the eating behaviors of patients with type 2 diabetes.

Methods: A study was conducted via an interpretive-qualitative approach in two primary health care centers located in Eusébio, Brazil, in 2022. We collected relevant patient health information, such as sociodemographic data, quality-of-life indicators, physical activity levels, nutritional status, and overall eating habits. We then carried out home visits to conduct in-depth interviews with 11 patients with type 2 diabetes and poor metabolic control (glycosylated hemoglobin levels  $> 7\%$ ). The data analysis was supported by the software Iramuteq, and by the interpretive description approach.

Results: The sample group mostly consisted of physically active, middle-aged women showing poor glycemic control, and negative experiences linked to the disease. In the patients reports, we verified the prevalence of words associated with strategies of individual diabetes control. During home visits, we uncovered 20 pieces of data related to two main recurring themes: distress and passive dependency regarding their own eating behaviors.

Conclusions: It is necessary to intensify measures of health education aiming at the empowerment of diabetic individuals under confinement regarding the self-management of their eating. This is due to the fact that, in this scenario, these individuals experience feelings of distress and of lack of autonomy over the management of their meal choices and eating patterns.

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### Surveillance of SARS-CoV-2 in wastewater of Piemonte Region (Italy): trend and relationship to COVID-19 cases

Lisa Richiardi<sup>1</sup>, Silvia Bonetta<sup>2</sup>, Cristina Pignata<sup>1</sup>, Lucia Decastelli<sup>3</sup>, Angelo Romano<sup>3</sup>, Manila Bianchi<sup>4</sup>, Angela Costa<sup>5</sup>, Bartolomeo Griglio<sup>5</sup>, Chiara Pasqualini<sup>6</sup>, Carlo Pietrantonj<sup>6</sup>, Giuseppina Rosa<sup>7</sup>, Elisabetta Suffredini<sup>8</sup>, Elisabetta Carraro<sup>1</sup>

<sup>1</sup>Department of Public Health and Pediatrics, University of Turin, Italy,

<sup>2</sup>Department of Life Sciences and Systems Biology, University of Turin, Italy,

<sup>3</sup>Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d' Aosta,

Italy, <sup>4</sup>Istituto Zooprofilattico Sperimentale del Piemonte, Liguria e Valle d'Aosta, Italy, <sup>5</sup>Health and Welfare Department, Piedmont, Italy, <sup>6</sup>Regional Service for Surveillance and Control of Infectious Diseases (SEREMI), Piedmont, Italy, <sup>7</sup>Department of Environment and Health, Istituto Superiore di Sanità, Rome, Italy, <sup>8</sup>Department of Food Safety, Nutrition and Veterinary Public Health, Istituto Superiore di Sanità, Rome, Italy

**Background and Objective:** Wastewater-Based Epidemiology (WBE) is a complementary approach to laboratory-based surveillance for monitoring SARS-CoV-2 circulation and variants, as well as an early warning system for possible new outbreaks. Following Recommendation (EU) 2021/472, since October 2021, a systematic environmental surveillance of SARS-CoV-2 has been activated in Italy. For the Piemonte Region, the study aimed to track virus circulation in local wastewater and evaluate the relationship to COVID-19 cases.

**Methods:** Raw wastewater samples (n=424) from 6 wastewater treatment plants (WWTPs) covering 44% of the regional population were concentrated via polyethylene glycol precipitation, and viral RNA was quantified by RT-qPCR targeting ORF1b-nsp14. Weekly SARS-CoV-2 concentrations in wastewater were compared with the prevalence rates per 1,000 inhabitants of COVID-19 positive subjects in the WWTPs catchment areas.

**Results:** Viral RNA was detected in 96.9% of the samples, with concentrations ranging from 4.4x10<sup>3</sup> to 1.6x10<sup>7</sup> genome copies/ (die\*equivalent inhabitant). For the period December 2021-January 2022, an increase in the SARS-CoV-2 RNA concentration in wastewater was observed with a clear advance of about 7 days compared to the prevalent cases. In general, good agreement was found between environmental data and prevalent cases during the observation period, even during periods of low prevalence (< 25 cases per 1000 population).

**Conclusions:** WBE has the potential to effectively integrate laboratory-based and syndromic surveillance because of its ability to describe spatial and temporal trends of COVID-19 at the population level in near-real time. A study is underway to develop a more reliable correlation model with clinical data to make WBE a possible driver for public health decisions. The activities of the SARI network are conducted with the financial support of the Italian Government (Decreto Legge 25.05.2021 n. 73), of Ministry of Health (Program CCM2020) and of EU Commission, DG ENV (Grant Agreement 060701/2021/864481/SUB/ENV.C2).

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### Glycemic control, self-care, self-efficacy, and knowledge of people with type 1 diabetes using an insulin pump system before and after the COVID-19 pandemic

Vivian Veras<sup>1</sup>, Marcio Araújo<sup>2</sup>, Maria Zanetti<sup>3</sup>, Carla Teixeira<sup>4</sup>

<sup>1</sup>University for International Integration of the Afro Brazilian Lusophony, Brazil, <sup>2</sup>Oswaldo Cruz Foundation, Brazil, <sup>3</sup>São Paulo University, Brazil, <sup>4</sup>São Paulo University, São Paulo, Brazil

**Background:** The unique confining experience caused by the COVID-19 changed the normality and daily routine of most of the global population, including people with diabetes, especially their routines of glycemic control, self-care, self-efficacy, and knowledge. Besides that, in handling insulin for diabetes and practices of users under the insulin pump system before and after the COVID-19 pandemic is worrying problem. **Aims:** The current study analyzed the glycemic control, self-care, self-efficacy, and knowledge of people with type 1 diabetes using an insulin pump system before and after the COVID-19 pandemic. **Materials and Methods:** Quantitative, descriptive, and longitudinal study, developed in two phases: the first phase was accomplished in December 2019 (n=50). The second phase occurred from June to December 2021 (n=35) and the participants were contacted through phone calls or using WhatsApp. In both phases, the following surveys were filled: self-care activities with diabetes; a Self-efficacy scale concerning the handling of insulin in diabetes, and an instrument to evaluate the users' knowledge and practices about the insulin pump system. The individual glycemic measures and the scores from the scales were compared before and after the pandemic by using the T-test of Student or Wilcoxon for related samples.

**Results:** In comparison, it was possible to observe a decrease in the average of glycemia during fasting and the HbA1c (p<0.05). Regarding the self-care, the domains, specific feeding, and physical activity experienced a deterioration after the pandemic. In the self-efficacy scale, all domains got worse after the pandemic. The knowledge experienced a slight decrease in its domains' score averages. **Conclusions:** These results highlight that despite the continuous advances in the care of diabetes, the adequate control in every field in which the disease affects requires a complex task for this public, especially in periods of a health crisis.

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### Hospital Information System administrative data to identify comorbidity and mortality among hospitalized COVID-19 patients (single center retrospective study)

Iskra Mircheva<sup>1</sup>, Martin Mirchev<sup>1</sup>, Natalya Usheva<sup>1</sup>, Tzonko Paunov<sup>2</sup>

<sup>1</sup>Medical University "Prof. Dr. "Paraskev Stoyanov", Varna, Bulgaria,

<sup>2</sup>University Hospital "Saint Marina", Varna, Bulgaria

**Background:** COVID-19 is associated with hospitalization and high mortality rate. Previous studies suggested higher mortality rate in COVID-19 patients with comorbidities, however controversies among different studies about the burden of comorbidity were found. **Objective:** To identify what and to what extend comorbid diseases are associated with hospitalized COVID-19 patients' mortality. **Methods:** A retrospective single-center study was conducted using anonymized HIS administrative data for 71330 patients in the university hospital "Saint Marina"-Varna, Bulgaria, for the period 14/06/2020-31/12/2021. Non-parametric tests and logistic regression were applied at  $\alpha = .05$ ; 95%CI.

**Results:** Up to seven comorbidities per patient were registered, 9036 for discharged, 4967 for deceased COVID-19 patients. Comorbidities registered for < 30(1.5%) patients were discarded. From 8319 COVID-19 patients, 1809(21.7%) died - 54.3% male; mean age 70.7(SD=11.38); 130(7.2%) had seven, 207(11.4%) had no comorbidities. Deceased comorbid patients had more comorbidities (z=23.314; p<.001), were older (z=15.345; p<.001) and had shorter hospital stay (z=15.749; p<.001). Infectious/Parasitic diseases (A) were registered for 157(8.7%) patients, (157 diseases: A41.9; A04.7;A94.1); cardiovascular diseases (I) registered for 1266(70%) patients (2430 diseases: I11.9;I20.8;I11.0;I48;I50.1;I69.3;I67.9;I13.2;I25.8;I50.1); respiratory diseases (J) - registered for 617(34.1%) patients (651 diseases: J96.0;J80); renal diseases (N) - registered for 192(10.6%) patients (283 diseases: N18.8; N18.9;N40); endocrine/metabolic diseases (E) - registered for 478(26.5%) patients (643 diseases: E11.9;E11.4;E11.7;E78.4); malignant neoplasms (C) - registered for 89(4.9%) patients (92 diseases). Patients with (A),(J),(I),(N),(E) and (C) comorbidities had higher odds of dying (ORA = 20.284; 95%CI=12.371-33.256); (ORJ = 4.08; 95%CI=3.604-4.618); (ORI =2.752; 95%CI=2.461-3.077), (ORN = 2.866; 95%CI=2.359-3.481), (ORE=1.539; 95%CI=1.362-1.737); (ORC=1.633; 95%CI=1.265-2.107), correspondingly. **Conclusions:** Death with COVID-19 was associated with sepsis, pulmonary, cardiovascular, endocrine, renal and cancer comorbidities, however with lower odds. Monitoring COVID-19 patients for comorbidities is highly recommended to prevent mortality. HIS administrative data can be used for analyses of hospital comorbidity and mortality in pandemics and disasters.

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### COVID-19 and mortality risk factors in a tertiary care center in central eastern Tunisia: a survival analyses

Emna Hariz<sup>1</sup>, Hela Ghali<sup>1</sup>, Sana Bhiri<sup>1</sup>, Rania Bannour<sup>1</sup>, Souhir Ayadi<sup>2</sup>, Aroua Kamel<sup>3</sup>, Fatima Khouya<sup>3</sup>, Arwa Nafetti<sup>1</sup>, Sofien Aidani<sup>3</sup>, Salwa Khefacha<sup>1</sup>, Mohamed Rejeb<sup>1</sup>, Asma Cheikh<sup>1</sup>, Houyem Latiri<sup>1</sup>

<sup>1</sup>Department of Prevention and Security of Care, Sahloul University Hospital, Sousse, Tunisia, <sup>2</sup>Faculty of Medicine of Sousse, Sousse, Tunisia, <sup>3</sup>Family Medicine, Faculty of Medicine of Sousse, Sousse, Tunisia

**Introduction and Objective:** The novel coronavirus illness quickly swept the globe. With a high rate of patients presenting severe acute respiratory syndrome, Tunisia is one of the most affected nations but clinical factors associated with COVID-19 mortality among Tunisian hospitalised patients are rarely studied. Our study aimed to identify independent risk factors of hospital COVID-19 mortality in a tertiary care center since the start of the pandemic.

**Methods:** An observational prospective study was conducted among confirmed COVID-19 patients who were hospitalized in Sahloul university hospital between September 2020 and November 2022. To identify risk factors of hospital COVID-19 mortality, Kaplan Meier survival analysis and Cox Proportional Hazard regression were used.

**Results:** A total of 1978 patients were hospitalized in Sahloul University Hospital between September 26th 2020 and November 30th 2022. The mean age was 55.65± 21.39 years [1 - 94]. During the study period, a total of 417 Deaths were reported, with a median survival 30+/- 3.11 days (95% CI [23.904; 36.096]). Mortality was significantly associated with: age (p< 10-3), comorbidities (p= 0.01), obesity (p< 10-3), cardiovascular disease (p =0.015), endocrine pathologies (p= 0.01), obesity (p< 10-3), hospitalization in intensive care units (ICU) (p< 10-3) and Oro tracheal intubation (p< 10-3). At multivariable analyses, hypertension (HR 1.93; CI [1.2; 3.72]), cardiovascular disease (HR 4.11; CI [1.99; 17.09]) and being admitted in ICU (HR 31.49; CI [11.04; 72.9]), were independent associated factors with COVID-19 mortality.

**Conclusions:** The early identification of high-risk COVID-19 patients is mandatory

to decrease this virus morbi-mortality. And this can only be reached by multidisciplinary interventions to solve this public health problem.

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### Brazil's primary health care response to the COVID-19 pandemic

Ligia Giovanella<sup>1</sup>, Maria Mendonça<sup>2</sup>, Aylene Bousquat<sup>3,4</sup>, Luiz Facchini<sup>5</sup>, Fúlvio Nedel<sup>6</sup>, Geraldo Cury<sup>7</sup>

<sup>1</sup>Oswaldo Cruz Foundation (Fiocruz), Rio de Janeiro, Brazil, <sup>2</sup>Ensp/FIOCRUZ, Brazil, <sup>3</sup>FSP, Brazil, <sup>4</sup>USP, Brazil, <sup>5</sup>UFPEL, Brazil, <sup>6</sup>UFSC, Brazil, <sup>7</sup>UFMG, Brazil

Background: Brazil has more than 33,000 primary health care facilities (PHCFs) which could have played an important role in combating the COVID-19 pandemic. This study examines PHC performance during the pandemic in the country's five macro-regions.

Methods: A cross-sectional study was carried out as a survey using probability sampling of PHCFs. A composite COVID PHC Index (CPI) was generated aggregating 26 variables along four axes: COVID-19 treatment, health surveillance, care continuity and social support. A CPI of 100 would represent best PHCF performance. Factor analysis revealed that the axes reflecting collective actions (health surveillance and social support) behaved similarly, in contrast with those focused on individual actions (COVID-19 care and care continuity). Differences between macro-regions in the CPI and the 4 axes were analysed. Associations between the CPIs and socioeconomic, political and health indicators were examined.

Results: 907 PHCFs participated in the survey. The highest CPI value was observed in health surveillance (70) and the lowest, in social support (59). In the dimension expressing more individual care practices (care continuity and COVID-19 care), a higher value was found among South region PHCFs than among those of the Northeast. The relationship was reversed in the collective dimension: higher values were found in the Northeast. PHCFs with the highest CPIs belong to municipalities with lower per capita income, population and number of hospital beds.

Conclusions: In the absence of national government coordination, PHC potential in the Unified Health System (SUS) was not fully realised. The two performance profiles, with their differing emphases on the individual and collective dimensions, reflect the political projects disputing PHC approaches in Brazil's healthcare system since 2016, as well as structural inequalities between regions.

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### Comparison, by country, of the uptake of COVID-19 vaccination by health care workers in the EU/EEA January - June 2021

Therese McGlacken<sup>1</sup>, Therese McGlacken<sup>2</sup>

<sup>1</sup>Department of Public Health, Royal College of Physicians Ireland, Dublin, Ireland, <sup>2</sup>Royal College of Physicians Ireland, Department of Public Health, Ireland, Health Service Executive Area C, Dublin, Ireland

Health Care Workers (HCWs) are at high risk of exposure to COVID-19 when providing care to patients. We investigated the uptake of COVID-19 vaccination among HCWs in the EU/EEA and discuss the factors which influence this uptake. The aim of this study was to compare, by country, COVID-19 vaccination uptake by HCWs from January to June 2021, to assist with policy making and prospective planning in these countries during the current pandemic and into the future. The study population included all the countries in the European Union (EU) and European Economic Area (EEA). The secondary data file was downloaded from the European Centre for Disease Prevention and Control (ECDC) website. Descriptive and comparative data were analysed and presented using Excel and Chi-square test of hypothesis. The percentage of HCWs in EU/EEA countries ranged from 1.2% to 5.1% per population. From January to June 2021, the percentage of first and second dose vaccinations of HCWs ranged from 20% to 100% and from 21% to 100%, respectively. The Comirnaty–Pfizer/BioNTech vaccine (COM) was the most administered vaccine in all EU/EEA countries, followed by the Moderna mRNA-1273 vaccine (MOD) and the Astra-Zeneca–Vaxzevria vaccine (AZ). The Janssen–Ad26.COV.2.5 vaccine (Janss) use ranged from 0.1% to 4.8% for the one dose vaccine. In January 2021, a median of 29% of HCWs received their first dose of COVID-19 vaccination. Italy was the only country with a mandatory vaccination policy for HCWs. Vaccination uptake rates were statistically different among EU countries ( $p < 0.05$ ). Data such as these could be used in mathematical modelling potential future pandemics to predict vaccine up-take by selected, exposed, vulnerable sectors of the population, for whom it is relevant.

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### Implementation of the international health regulations during the COVID-19 pandemic, a scoping review

Daniel Saldanha Resendes<sup>1</sup>, Eunice Crisóstomo<sup>2</sup>, Inês Mendes Pacheco<sup>3</sup>, Marcelo Godinho<sup>2</sup>, Joana Miguel Carvalho<sup>4</sup>

<sup>1</sup>ACES Lisboa Central Portugal, <sup>2</sup>ULS Litoral Alentejano, <sup>3</sup>ACES Tâmega II Portugal, <sup>4</sup>ACES Entre Douro e Vouga I

Background and objective: The International Health Regulations (IHR) is a legal instrument that sets out to control infectious disease epidemics worldwide and that makes countries accountable for monitoring and notifying the World Health Organization (WHO) of any event that could constitute a public health emergency. The COVID-19 pandemic set an unprecedented challenge to the IHR commitments and so this scoping review sets out to identify the challenges, successes and limitations of the IHR during the COVID-19 pandemic.

Methods: We conducted a scoping review following a PRISMA methodology of the following online databases and sources: PubMed and SCOPUS. Only articles mentioning both IHR and COVID-19 were eligible. Eligible articles were then read by two reviewers independently and in duplicate. A total of 15 articles between 2020 and 2022 met the criteria and were included.

Results: Most articles refer to the IHR as still a vital instrument in Public Health action especially in Health Emergency situations, but most countries faced limitations in its implementation during the COVID-19 pandemic. Reinforcing the global health security strategy, reviewing the IHR to address current challenges and strengthening the commitment of countries and states to comply with its resolutions, are key lessons mentioned.

Conclusion: The lessons learned from this scoping review should act as a warning sign that the IHR should be reviewed and updated to meet current societies' requirements. A more effective response grounded on the IHR is needed to face upcoming and expected events of COVID-19's magnitude and severity.

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### Vaccination in children under 6 years old and the impact of the covid 19 pandemic. Cartagena, Colombia

Irma Castillo Avila<sup>1</sup>, Luis Alvis Estrada<sup>1</sup>, Edna Gómez Bustamante<sup>1</sup>

<sup>1</sup>Universidad de Cartagena, Colombia

Background: Childhood vaccination is a widely used strategy to reduce the population impact of vaccine-preventable diseases. Some social circumstances can significantly affect the coverage and achievements of immunization programs. Objective: Determine vaccination coverage before and after the pandemic in children under 6 years old in the Cartagena district.

Methods: A descriptive study was performed. The vaccination coverage of the biologics included in the national vaccination program was evaluated. A total of 3,829 boys and girls under 6 years old were included, using random cluster sampling. Two coverage measurements were made: one in 2019 and one in 2022. Descriptive statistics were applied to the data.

Results: The highest vaccination coverage is presented in the newborn doses (Anti-tuberculosis (BCG) and Anti-hepatitis B) with 99.6% for the year 2019 and 100% for the year 2022. The biologicals with the lowest coverage are the 5-year reinforcements (Antipolio and reinforcement against Measles, Rubella and Mumps), with percentages of 68.4% and 69.3% respectively. In all the biologicals, a coverage reduction of 11% on average is observed for the year 2022. The main reason for not vaccinating is the lack of time for parents and caregivers to attend consultations, mainly due to the restrictions derived from the COVID 19 pandemic. Conclusion: Vaccination coverage depends on the availability of parents and caregivers to attend the consultations. A greater impact due to the restrictions of the COVID 19 pandemic is observed.

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### Public perception and perspective towards COVID19 vaccination among students of University of Debrecen

Puong Nguyen Thi<sup>1</sup>

<sup>1</sup>University of Debrecen, Hungary

Background: COVID19 pandemic is most remarkable concern since early 2020. Public Health has constantly made effort to alleviate the crisis. Vaccination is one of the ultimate control methods of COVID19 that were created at incredibly rapid rates. The implication of vaccines comes with divergent opinions. To maximize the coverage, the understanding of perspectives towards the vaccination is crucial. No health promotion campaign can achieve its goals without local adjustment. The study was conducted with students in University of Debrecen to investigate local tendencies and to suggest the vital local adjustments when promoting vaccines.

**Objective:** The study aims to investigate the perceptions and perspectives towards COVID-19 vaccinations among students in University of Debrecen. Motivations, beliefs and concerns on taking COVID-19 vaccination are the major focus to study the decision-making process and the crucial factors behind.

**Methods:** A cross-sectional survey was launched at the end of 2021, in the third outbreak with 386 students from University of Debrecen. The questionnaire was distributed online and in-person. The key factors are demographic features, common beliefs and concerns about vaccination. The tendencies, levels of acceptance and the potential decision-turning factors were identified.

**Results:** Among 386 participants, 87% believed that COVID-19 vaccines are necessary. However, around 45% are concerned by being vaccinated. Information and emotion are the most important in decision making, 88% agreed that unreliable news affects their choices and 47% consider social media to be worrying for them. Side effect and controversies play a significant role in public perspective. Valid and consistent information source was confirmed to ease the unrest about vaccination.

**Conclusions:** The findings suggest the positive sides of vaccination situation and suggest space for improvement. Naming hesitations and missings in trust-building, we can elaborate the interventions for certain areas, demographic groups; equip the young with health protecting skills and improve health literacy.

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### Repercussion of the covid-19 pandemic on academic activity in graduation in health in a private education institution

Caroline Castro<sup>1</sup>, Margareth Conceição<sup>2</sup>, Bárbara Lacerda<sup>1</sup>, Marcos Silva<sup>1</sup>, Jeanine Barbosa<sup>2</sup>, Dherik Santos<sup>3</sup>, Jeremias Simões<sup>1</sup>, Rafael Caliarí<sup>1</sup>, Rita Lima<sup>1</sup>, Maria Andrade<sup>1</sup>

<sup>1</sup>Universidade Federal do Espírito Santo, Programa de pós-graduação em saúde coletiva, Brazil, <sup>2</sup>Universidade Federal do Espírito Santo, <sup>3</sup>Universidade federal de catalão, Departamento de medicina, Brazil

**Background:** During the COVID-19 pandemic, quarantine and other prevention measures impacted the educational system by affecting the preparation and the quality of teaching.

**Objective:** To identify factors associated with the discontinuance of academic activities by students due to funding issues in the context of the pandemic.

**Method:** This quantitative, exploratory cross-sectional study was carried out in a private higher education institution (HEI) in the city of Vitória, Espírito Santo (ES), Brazil. Data was collected through google forms from Nov/2021 to Jan/2022. Analysis was made with SPSS Statistics version 24 and STATA version 15.1 programs.

**Results:** 846 students participated in the research, 52% of the students enrolled at the HEI in 2021, with an average age of 22 years, 75.3% women, 63.1% white, and 54.3% from social class A, of which 80.5% of students do not work. Results showed that 9.46% students were unable to complete academic activities due to tuition issues, of which the majority were brown/black unmarried women, without a job, enrolled in the social service program, from social class B, with an income of up to 3 minimum wages, and received financial support from a family member aside from student grants.

**Conclusion:** This study contemplates the multifunctional role of women in society, as well as the difficulties they encounter. It was demonstrated that, although student grants promote social protection, they alone were not enough to prevent the cessation of academic activities. It is necessary to carry out an analysis considering the different intersections that relate to women's experiences in the COVID-19 pandemic due to economic and political instability in Brazil, reinforcing inequalities in educational public policies for women.

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### COVID-19 and life expectancy in Mexico between 2019 and 2021

Guillermo Gonzalez-Perez<sup>1</sup>, Maria Vega-Lopez<sup>1</sup>

<sup>1</sup>University of Guadalajara, Mexico

**Background/Objectives:** Life expectancy at birth (LEB) is an important indicator of the health status of a population. Recent studies have shown the reduction of the LEB in different countries due to the COVID-19 pandemic. In this sense, this study aims to identify the impact of COVID-19 on life expectancy in Mexico in the year 2021.

**Methods:** Abridged life tables by sex were constructed for Mexico in 2019 and 2021. Using the Arriaga method, the years of life expectancy lost (YLEL) were estimated between 0 and 85 years due to COVID-19 and selected causes in each year. Adjusted mortality rates from these causes were calculated for the period 1998-2021 and their trend was analyzed using a "joinpoint" regression analysis

**Results:** The male LEB decreased 5.2 years and the female 4.1 years between 2019 and 2021. COVID-19 was directly responsible for 4.3 YLEL in men and 2.8 in women between 2019 and 2021, but in other causes of death such as diabetes mellitus (DM), ischemic heart disease (IHD) and acute lower respiratory infections (ALRI), a substantial increase was also observed in YLEL between both years. The trend analysis reveals for all the analyzed causes an upward inflection point at the end of the period studied, with a marked statistically significant annual percentage change.

**Conclusions:** The COVID-19 pandemic has reduced LEB in Mexico, especially in men; These figures are higher than those found internationally. In addition to the YLEL directly due to COVID-19, the YLEL due to other causes studied also reflect the impact of the pandemic in Mexico. While the prevalence of DM and IHD in the Mexican population is high, strategies to reduce the impact of the pandemic necessarily involve achieving greater control of these diseases in patients who suffer from it and trying to reduce its prevalence.

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### Prejudice and discrimination faced by nursing professionals in their community during the COVID-19 pandemic

Stephanía Mendes Demarchi<sup>1</sup>, Fabiane Lima Simões<sup>1</sup>, Jeremias Campos Simões<sup>1</sup>, Marcos da Silva cordeiro<sup>1</sup>, Jeanine Pacheco Moreira Barbosa<sup>1</sup>, Caroline Feitosa Dibai De Castro<sup>1</sup>, Rafael Vulpi Caliarí<sup>1</sup>, Gabriela de Brito Martins<sup>1</sup>, Rita Duarte Lima<sup>1</sup>, Maria Carvalho Andrade<sup>1</sup>

<sup>1</sup>Universidade Federal do Espírito Santo, Brazil

**Introduction:** In the context of the pandemic, additionally to the already known effects of the disease, many suffer from prejudice and discrimination related to COVID-19, which are usually motivated by fear and uncertainty based on distorted perceptions of risk. Among others, this treatment can negatively affect health professionals.

**Objective:** To describe situations of prejudice and discrimination faced by nursing professionals during the COVID-19 pandemic

**Methods:** Qualitative and descriptive research, for data collection interviews were conducted with a semi-structured script with 40 participants.

**Results:** 17 participants (42.5%) reported episodes of prejudice or discrimination in their communities. The reports are diverse and took place in different places such as banks, supermarkets, bakeries, or the home environment of family members. Such reports included: "they moved my chair away from me when I went to the bank", "they did not want to sit next to me on the bus", "the neighbor crossed the street when he saw me", "I was not invited to an event with family and friends", "feeling looks towards me when entering the establishment", "people with expressions of fear when they see me", "they separated the household items for me to use at my mother-in-laws house", "they refused to enter the elevator with me", "condominium where I live with an elevator exclusive for me", "my relatives were afraid of my children", "they refused to see me at the beauty salon".

**Conclusion:** Considering the social panic caused by the high mortality rates, and the fact that it is a recent and unknown disease, the population has become afraid and concerned about the contagiousness of the disease. Information distorted from reality, fake news, and wrong approaches to dealing with the pandemic can exacerbate prejudice and discrimination by part of the population.

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### Effects of the COVID-19 pandemic on access and delays in care for people with diabetes

Adesola Odiah<sup>1</sup>

<sup>1</sup>Central michigan university, 21 arnold court, east rockaway, ny 11518, united states

**Background and Objective:** During COVID-19, health and coverage restrictions, increased healthcare system demands, and patient uncertainty were important barriers to uninterrupted diabetes care. Diabetes patients are solely responsible for managing their disease through on-time access to care, proper diet, glucose monitoring, and medication. The present study was designed to examine the effect of socioeconomic variables such as employment and insurance change, on patient-self-reported delays in access to medical care, difficulties obtaining medication, forgoing CGM/Insulin pump (and refilling), for diabetes patients in the US, during the pandemic.

**Methods:** This cross-sectional study used secondary data of 2,595 U.S. diabetes patients (December 2020, thrivable survey). The analysis examined associations between insurance change and type, employment, income, and patient education, with the following outcomes: (i) delay in care, (ii) difficulties in obtaining medications, (iii) foregoing CGM/Pump, (iv) foregoing refilling CGM/

Pump. Bivariate statistics were first conducted, followed by multivariate analysis using binary logistic regression in spss.

Results: Patients with recent insurance status changes were 1.5 times more likely to report delays in care, 33% more likely to experience difficulties obtaining medication, twice more likely to forego CGM/Insulin pump, and four times more likely to forego refilling CGM/Insulin pump. Those with a recent employment change were 1.5 times more likely to have delays in care and difficulties obtaining medication, while those without insurance were twice as likely to have difficulty obtaining medication. Education, unemployment, and income were also found to be associated with challenges in seeking diabetes care.

Conclusion: Diabetes patients experienced challenges during the pandemic, which can be attributed, to an extent, to socioeconomic factors. Statewide policies need to be established for non-delayed access to diabetes care in times of crisis, such as during the recent pandemic.

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### Building on local strength: the Philippine toolkit on community-based management of COVID-19

Miguel Dorotan<sup>1</sup>, Romelei Alfonso<sup>2</sup>, Aileen Espina<sup>3</sup>, Paolo Medina<sup>4</sup>, Gabriele Domingo<sup>2</sup>, John Abadiano<sup>5</sup>, Maria Medina<sup>5</sup>

<sup>1</sup>Alliance for Improving Health Outcomes (AIHO), Philippine Society of Public Health Physicians (PSPHP), Philippines, <sup>2</sup>Alliance for Improving Health Outcomes (AIHO), <sup>3</sup>Foundation for Family Medicine Educators, World Organization of Family Doctors (WONCA), Philippines, <sup>4</sup>University of the Philippines Manila College of Medicine, Philippine Academic Society of Social and Community Medicine (PASCOCM), Inc.; AIHO, Philippines, <sup>5</sup>Zuellig Family Foundation, Philippines

Background: In the Philippines, the earliest pandemic response has been hospital-centric. With looming hospital congestion, a group of public health professionals urgently asserted that the community should be the first line of defense. Volunteers convened to contextualize evidence and practice to the Philippines' decentralized governance setting, anticipating the need for non-existent operational guidance.

Method: A Viber group allowed rapid consultation between public health convenors, technical experts, and local government implementers to determine knowledge needs and tailor-fit guidelines for COVID-19 response, guided by these principles: existing disaster response structures must be activated, primary care resources must be mobilized, and the Filipino family/household as the unit of care must be recognized. The modified Delphi method was used to refine and finalize contents. Modules have been iterated based on user feedback.

Results: The Community Based Management of COVID-19 (CBMC) toolkit was consolidated in eight weeks. Its four modules contain slide decks, user manuals, and implementation checklists. The first centers on local Disaster Risk Reduction and Management - Health (DRRM-H) for Emerging and Reemerging Infectious Diseases (EREIDS) using disaster response strategies that local governments are already familiar with. The second contains clinical algorithms to guide primary care providers in low-resource settings. The third details the operations of a community-run isolation and treatment facility. The fourth provides a family-oriented approach to COVID-19, including for special and vulnerable groups. Overall, this ensured that the Barangay (village) Health Emergency Response Teams and the primary care system with its community-managed isolation and treatment facilities, take central roles. This strengthened local response and pulled away strain from hospitals.

Conclusion: The CBMC framework was eventually adopted and institutionalized by the Philippine government for the local government COVID-19 response. This initiative reasserts that pandemic response should empower local communities by building on their local resources and strengthening existing systems and institutions.

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### Investigating Nurses' Perceptions of Organizational Resilience due to COVID-19 Pandemic

Eliza Wong<sup>1</sup>, Annie Cheung<sup>1</sup>, Zoe Tam<sup>1</sup>, Eng-Kiong Yeoh<sup>1</sup>

<sup>1</sup>The Chinese University of Hong Kong, Hong Kong

Background and Objective: The challenges including healthcare materials supply shortage, inadequate manpower, patient overload etc have happened in worldwide healthcare organizations during the COVID-19 global pandemic. Organizational resilience in the healthcare setting thus is an important issue to review which enables healthcare organizations to plan, retain and recover to their normal function even in a crisis. The study aimed to explore views on organizational resilience from nurses' perspective due to the Omicron impact in Hong Kong.

Method: A qualitative study design was adopted to understand nurses' experience on how their organizations responded to the wave of Omicron. To capture a breadth of diverse experience of the nurses and enrich the findings, a heterogeneous sampling in terms of ranks of nurses and working settings in both public and private sectors were considered for the recruitment. The interview was guided by a semi-structured discussion guide and qualitative content analysis with an inductive approach was applied.

Results: A purposive sample of 22 nurses were recruited to participate in the individual interviews between March and June 2022. Most of the nurses expressed that the capability of nurses was good enough in local healthcare settings during the pandemic due to the pre-pandemic training and previous SARS experience. However, the overall nurse capacity was lower than expected because of the patient overload and staff sickness absence at the beginning of the Omicron wave. The respondents also picked "preparedness and planning" as the main factor influencing the organisation's resilience and "Leadership practice" was followed. Conclusion: The findings indicate the key challenges that local healthcare organizations faced during the pandemic. It also provides insights for the management team to better rethink and transform their organizations for managing the effectiveness and continuity of the healthcare systems in disaster in future.

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### Uptake of non-mandatory bivalent COVID-19 booster vaccine among healthcare workers: results from an Italian teaching hospital

Eleonora Marziali<sup>1</sup>, Mario Nurchis<sup>2</sup>, Domenico Pascucci<sup>3</sup>, Alberto Lontano<sup>4</sup>, Giuseppe Vetrugno<sup>2</sup>, Umberto Moscato<sup>3</sup>, Gianfranco Damiani<sup>3</sup>, Patrizia Laurenti<sup>3</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore L.go F. Vito 1, 00135 Roma (RM), Italia Italy, <sup>2</sup>Università Cattolica del Sacro Cuore, <sup>3</sup>Università Cattolica del Sacro Cuore / Fondazione Policlinico Universitario "A. Gemelli" IRCCS Italy, <sup>4</sup>Università Cattolica del Sacro Cuore Italy

Background and Objective: In September 2022, the bivalent Comirnaty Original/Omicron BA.4-5 vaccine was authorized for use as a booster dose for individuals aged 12 years and older. The aim of this retrospective study was to assess the acceptance of the fourth dose among healthcare workers (HCWs) of an Italian teaching hospital and to describe changes in uptake trend compared with the previous COVID-19 vaccination campaigns, considering that the fourth dose is not mandatory.

Methods: Pearson's X2 test was used to test the correlation between the fourth dose vaccination rate and the previous doses vaccination rate. A linear regression model was adopted to predict fourth dose vaccination coverage. Multivariate logistic regression was performed to investigate the influence of sex, age, and occupation on vaccination uptake.

Results: Overall, 8159 employees were included in the study. Among them, 1077 received the bivalent booster dose between September and December 2022. Compared with men, women had a lower tendency to receive vaccination, but this difference was not statistically significant. The mean age at the time of vaccination was 44.1 years, and the probability of vaccination increased significantly ( $p < 0.001$ ) as age increased. The logistic regression showed that being a physician is significantly ( $p < 0.001$ ) associated with higher uptake compared to nurses (OR 0.25, 95%CI 0.20-0.31), other HCWs (OR 0.21, 95%CI 0.16-0.27) and administrative employees (OR 0.33, 95%CI 0.25-0.42). In contrast, working in low-risk, medium-risk or high-risk operating units did not affect vaccine uptake significantly. When analyzing the uptake of previous COVID-19 vaccine doses, the expected value, according to the linear regression model, was estimated to be 30.7%, but the observed value was significantly lower (13.0%).

Conclusion: To mitigate the socio-economic and health effects of COVID-19, it is critical to further promote vaccination of HCWs, given their crucial role in vulnerable settings.

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### In vitro evaluation of virucidal activity of epoxy/clay nanocomposites

Isabella Marchesi<sup>1</sup>, Claudio Cermelli<sup>2</sup>, Francesco Ricchi<sup>3</sup>, Stefania Paduano<sup>1</sup>, Giuseppina Frezza<sup>4</sup>, Sara Turchi<sup>1</sup>, Anna Fiorentin<sup>5</sup>, Fabio Tateo<sup>6</sup>, Roberta Bertani<sup>5</sup>, Annalisa Bargellini<sup>1</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>Dental Department of Morphological Sciences Related to Transplant,

Oncology and Regenerative Medicine, University of Modena and Reggio Emilia, Modena, Italy, <sup>3</sup>Dental Department of Morphological Sciences Related to Transplant, Oncology and Regenerative Medicine, University of Modena and Reggio Emilia, Modena, Italy, <sup>4</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy, <sup>5</sup>Department of Industrial Engineering, University of Padova, Padova, Italy, <sup>6</sup>CNR, Institute of Geosciences and Earth Resources, Padova, Italy

**Background:** Healthcare-associated infections (HCAI) are considered a major challenge worldwide, a public health risk and an economic burden. Besides hand hygiene practices, the strategies to prevent HCAI include the use of disinfectants and cleaning of high-touch surfaces which favor microbial transfer by hands. The emergence of novel pathogenic viruses and antibiotic-resistant bacteria have prompted research into developing alternative microbial materials such as plastics with long-term biocidal activity in nanostructured bulk material. Currently, there is a large amount of literature on multifunctional nanocomposites with improved mechanical and antimicrobial properties against bacteria and fungi, whilst data against viruses are lacking. This study aims to assess the in vitro virucidal activity of three epoxy/clay nanocomposites against viruses transmitted by salivary droplets and/or through contact with contaminated objects/surfaces. **Methods:** Two natural clays from Morocco were used to reinforce the epoxy resins with 1% and 5% wt, achieving the clay dispersion by milling and mechanical stirring. A third nanocomposite was obtained adding 1, 3 and 5% wt Cloisite® 15A, a commercial montmorillonite, organically modified, containing quaternary ammonium chloride.

**Results:** To date, only the experimental protocol has been developed. Four viruses will be tested: Human Coronavirus OC43, as a SARS-CoV-2 surrogate, Herpes Simplex Virus 1, chosen for its low environmental resistance and for its rapid in vitro growth, Human Adenovirus type 5 and Monkeypox Virus, chosen for their high environmental persistence and resistance to treatments. Tablets of each nanocomposite and epoxy resin as control will be contaminated and after defined contact times the residual virus will be recovered and quantified by end-point titration.

**Conclusion:** Our study could lead to the development of innovative epoxy/clay nanocomposites with virucidal activity for potential use in end-products such as food packaging, medical devices or hospital furniture, opening interesting perspectives in the treatment of surfaces potentially contaminated by viruses.

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### Environmental surveillance of Sars-Cov-2 in wastewater in Apulia region, Southern Italy

Francesca Apollonio<sup>1</sup>, Osvalda De Giglio<sup>2</sup>, Francesco Triggiano<sup>3</sup>, Giuseppina La Rosa<sup>4</sup>, Elisabetta Suffredini<sup>4</sup>, Luca Lucentini<sup>3</sup>, Nicola Ungaro<sup>5</sup>, Giuseppe Di Vittorio<sup>6</sup>, Necludoff Albano<sup>6</sup>, Onofrio Mongelli<sup>6</sup>, Maria Montagna<sup>1</sup>

<sup>1</sup>Interdisciplinary Department of Medicine, University of Bari Aldo Moro, Piazza G. Cesare 11, 70124 Bari, Italy, <sup>2</sup>Interdisciplinary Department of Medicine, University of Bari Aldo Moro, Piazza G. Cesare 11, 70124 Bari, Italy, <sup>3</sup>Department of Environment and Health, Istituto Superiore di Sanità, 00161 Rome, Italy, <sup>4</sup>Department of Food Safety, Nutrition and Veterinary Public Health, Istituto Superiore di Sanità, 00161 Rome, Italy, <sup>5</sup>Agency for the Environmental Prevention and Protection (ARPA Puglia), Corso Trieste 27, 70126, Bari, Italy, <sup>6</sup>Department of Health Promotion and Animal Welfare, Apulia Region, Bari, Italy

**Background and Objective:** Monitoring SARS-CoV-2 in untreated wastewater can provide an early warning system for virus circulation. The Istituto Superiore di Sanità coordinates the SARI project (Environmental surveillance using wastewater in Italy) in Italy which enlists 18 Regions and two Autonomous Provinces. The activities were carried out with the financial support of the Italian Government (L.D. 25.05.2021 n.73), and the European Commission, DG ENV (Grant Agreement 060701/2021/864481/SUB/ENV.C2). The study aims to: 1) predict the number of COVID-19 cases/100,000 inhabitants in the 15 days after SARS-CoV-2 detection in wastewater 2) investigate the factors influencing the presence of the virus in wastewater.

**Methods:** Overall, 16 wastewater treatment plants (WWTPs) were enrolled in Apulia Region (Southern Italy), serving municipalities with 50,000-150,000 inhabitants (14 WWTPs) and >150,000 inhabitants (2 WWTPs). Sampling was carried out weekly or biweekly, respectively, by Regional Agency for Protection of Environment. The laboratory analyzes were performed according to national SARI protocol. A ROC curve model was applied to predict number COVID-19 cases and a Poisson Regression model was used to investigate the factors influencing the viral presence/load in wastewater.

**Results:** From October 2021 to July 2022, 607 samples were analyzed, of which 592 (97.5%) tested positive for SARS-CoV-2. The statistical analyses showed that at least 11 COVID-19 cases/100,000 inhabitants served by WWTP would occur after a wastewater sample resulted positive for SARS-CoV-2. In the period January-July 2022, winter months were associated with a higher probability of virus detection. An inverse correlation was found between the SARS-CoV-2 load in wastewater and the range of atmospheric temperature and mean atmospheric pressure/sampling day.

**Conclusions:** The presence of SARS-CoV-2 in wastewater can be used to predict COVID-19 cases, supporting the potential of wastewater-based epidemiology. However, further studies are required because our predictive model remains limited for the complexity and uncertainties associated with the process.

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### The safe resumption of face-to-face teaching in the COVID-19 era: precision containment strategies project (horizon Europe seeds, cup: H91121001650006)

Francesco Triggiano<sup>1</sup>, Francesca Apollonio<sup>2</sup>, Michele Camero<sup>3</sup>, Giuseppe Colafemmina<sup>4</sup>, Raffaele Del Prete<sup>5</sup>, Gianvito Lanave<sup>3</sup>, Helena Mateos<sup>4</sup>, Adriana Mosca<sup>6</sup>, Gerardo Palazzo<sup>4</sup>, Antonio Parisi<sup>7</sup>, Valentina Terio<sup>3</sup>, Maria Montagna<sup>8</sup>, Osvalda De Giglio<sup>8</sup>

<sup>1</sup>Interdisciplinary Department of Medicine, Section of Hygiene, University of Bari Aldo Moro, Piazza G. Cesare 11, 70124 Bari, Italy, <sup>2</sup>Interdisciplinary Department of Medicine, Section of Hygiene, University of Bari Aldo Moro, Piazza G. Cesare 11, 70124 Bari, Italy, <sup>3</sup>Department of Veterinary Medicine - University of Bari Aldo Moro, 70121 Valenzano, Italy, <sup>4</sup>Chemistry Department, University of Bari Aldo Moro, via Orabona 4, 70125 Bari, Italy, <sup>5</sup>Interdisciplinary Department of Medicine, Section of Microbiology, Policlinico University Hospital of Bari, Italy, <sup>6</sup>Interdisciplinary Department of Medicine, Section of Microbiology, Policlinico University Hospital of Bari, Italy, <sup>7</sup>Experimental Zooprophyllactic Institute of Puglia and Basilicata, 71121 Foggia, Italy, <sup>8</sup>Interdisciplinary Department of Medicine, Section of Hygiene, University of Bari Aldo Moro, Piazza G. Cesare 11, 70124 Bari, Italy, Italy

**Background and Objective:** The transmission of SARS-CoV-2 occurs through direct contact (person to person) and indirect contact by means of objects and surfaces contaminated by secretions from individuals with COVID-19 or asymptomatic carriers. In this study, we evaluated the presence of SARS-CoV-2 RNA on surfaces made of different materials located in university environments frequented by students and staff involved in academy activity during the post pandemic era.

**Methods:** A total of 679 surfaces samples were collected from classrooms, computer room, desks, common areas from May to November 2022 between 1.00 and 2.00 p.m. Standard sanitation of all university areas was carried out at the end of all work activities. Swab samples were subjected to Real-Time Reverse Transcription to evaluate the presence of SARS-CoV-2 RNA by amplification of ORF-1ab gene (nsp 14). Cell cultures were set up for the isolation of SARS-CoV-2 and to demonstrate virus viability.

**Results:** Overall, 41 (6.09%) swabs resulted positive for SARS-CoV-2 RNA with a median Ct value of 38.12 [IQR: 36.4–39.48]. All examined samples resulted negative after viral culture, since no cytopathic effect was observed. The number of positive samples was directly proportional to average number of COVID-19 cases/week (Poisson regression Intercept  $\beta = 1.217$ ;  $\beta = 0.000227$ ;  $p < 0.0001$ ). Statistically significant difference were found between number of positive swabs for number of students/classroom (Fisher's exact  $p < 0.05$ ). In the summer-autumn the number of positive samples (7.3%) was higher than in the winter (3.3%) ( $\chi^2 = 3.92$ ;  $p < 0.05$ ).

**Conclusion:** Screening of environmental samples for the presence of virus provides evidence of the number of infected people shedding the virus in the vicinity. Environmental monitoring of SARS-CoV-2 RNA could effectively support public health prevention strategies in the academic and school world. Also, when compared with clinical-testing protocols, it could streamline all procedures related to informed consent, sample collection and operational logistics.

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### Antibiotic therapy in severe COVID-19 between march 2020 and July 2022 and correlations with outcome in an intensive care unit in central Italy

Giancarlo Ripabelli<sup>1</sup>, Vittorio Viccione<sup>2</sup>, Roberta De Dona<sup>3</sup>, Antonio D'Amico<sup>3</sup>, Sonja Manocchio<sup>2</sup>, Maria Pilla<sup>3</sup>, Andrea Pompei<sup>3</sup>, Erika Scattareggia<sup>3</sup>, Nicandro Samprati<sup>3</sup>, Arturo Santagata<sup>3</sup>, Carmen Adesso<sup>3</sup>, Michela Di Palma<sup>3</sup>,

Anna Natale<sup>3</sup>, Manuela Tamburro<sup>4</sup>

<sup>1</sup>University of Molise Department of Medicine and Health Sciences

"Vincenzo Tiberio", University of Molise, Italy; School of Specialization in Hygiene and Preventive Medicine, University of Molise, Italy; Regional Health Agency of Molise region, Italy, <sup>2</sup>University of Molise, <sup>3</sup>University of Molise School of Specialization in Hygiene and Preventive Medicine, University of Molise, Italy, <sup>4</sup>University of Molise Department of Medicine and Health Sciences "Vincenzo Tiberio", University of Molise, Italy

**Background and Objective:** COVID-19 can evolve into severe clinical manifestations requiring hospitalization in intensive care unit (ICU) where antibiotic therapy is extensively undertaken. Antimicrobials use was evaluated in relation to the outcomes (transfer in other wards/death) in COVID-19 patients in ICU between May 2020-July 2022 in Molise region, central Italy.

**Methods:** Data were obtained from clinical records and internal ward software. A descriptive and univariate analysis was performed through SPSS v28.0 setting p2 antibiotics, and a significant relation with outcome was observed, as 86% and 98% deaths occurred among who took ≤2 and >2 antibiotics, respectively. Further differences were found between outcome and treatment with azithromycin, meropenem, ceftazoline, linezolid and teicoplanin. Polypharmacotherapy with ≥3 antibiotics was more common in male patients (81.3% vs 18.7%), while no differences with respect of age <65 and ≥65 years emerged.

**Conclusions:** Most patients were male who had largely received polypharmacotherapy due to high predisposition to severe COVID-19 according to national studies. Azithromycin did not show effects on disease evolution, and none of the broad-spectrum therapies had a significant impact on clinical improvements. The association between death and minor drug intake should be considered in the light of the complexity of patients and underlying diseases, suggesting a marginal impact of antibiotic therapy on COVID-19 outcomes.

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### Registration of the activity of community health agents during the pandemic

Gabriela de Brito Martins<sup>1</sup>, Barbara Sthefany de Paula Lacerda<sup>2</sup>, Caroline Feitosa Dibai de Castro<sup>3</sup>, Marcos Vinicius da Silva Cordeiro<sup>3</sup>, Margareth Nunes Neves Conceição<sup>2</sup>, Maria Carvalho Andrade<sup>3</sup>, Rita de Cassia Duarte Lima<sup>3</sup>, Jeanine Pacheco Moreira Barbosa<sup>4</sup>, Dherik Fraga Santos<sup>5</sup>, Stephania Mendes Demarchi<sup>6</sup>

<sup>1</sup>Universidade Federal do Espírito Santo, Vitória-ES, Brasil Programa de Pós Graduação em Saúde Coletiva, Universidade Federal do Espírito Santo, Vitória-ES, Brasil "Direção do CCS - Prédio do Centro de Ciências da Saúde Av. Mal. Campos, 1468 - Maruípe, Vitória-ES, Brasil. CEP: 29047-105

Telefone: (+55 021 27) 3335-7201, <sup>2</sup>Universidade Federal do Espírito Santo, Vitória-ES, Brasil, <sup>3</sup>Universidade Federal do Espírito Santo, Vitória-ES, Brasil Programa de Pós Graduação em Saúde Coletiva, Universidade Federal do Espírito Santo, Vitória-ES, Brasil Direção do CCS - Prédio do Centro de Ciências da Saúde Av. Mal. Campos, 1468 - Maruípe, Vitória-ES, Brasil. CEP: 29047-105

Telefone: (+55 021 27) 3335-7201 Brazil, <sup>4</sup>Universidade Federal do Espírito Santos, Vitória-ES, Brasil Direção do CCS - Prédio do Centro de Ciências da Saúde Dherik Av. Mal. Campos, 1468 - Maruípe, Vitória-ES, Brasil. CEP: 29047-105

Telefone: (+55 021 27) 3335-7201 Brazil, <sup>5</sup>Universidade Federal do Catalão, Catalão-GO, Brasil Departamento de Medicina da Universidade Federal do Catalão, Catalão-GO, Brasil., Brasil. Avenida Doutor Lamartine Pinto de Avelar, 1120, loteamento Vila Chaud, Catalão-GO CEP: 75704-020 Brazil, <sup>6</sup>Universidade Federal do Espírito Santos, Vitória-ES, Brasil Programa de Pós Graduação em Saúde Coletiva, Universidade Federal do Espírito Santo, Vitória-ES, Brasil Direção do CCS - Prédio do Centro de Ciências da Saúde Av. Mal. Campos, 1468 - Maruípe, Vitória-ES, Brasil. CEP: 29047-105

**Introduction:** This study gives insight to work processes in health. It presents letters, chronicles and writings about the activity of community health agents (CHA) who, in their field, have strengths, desires and aspirations. The study was based on Yves Clots clinic of activity and used Michel Foucaults theory of ethics of self-care. Thus, this study proposes a correlation of the clinic of activity, by Yves Clot, and Registration, by Conceição Evaristo, in the construction of narratives and writings of the agents daily work, in a self-confrontation of the activity as a living triad.

**Objective:** To analyze the daily encounters of Primary Care in the city of Vitória, ES, during the COVID-19 pandemic, from the perspective of community health agents.

**Methods:** Focus groups, Interviews and Participant observations were carried out, subdivided into 3 stages, which culminated in the preparation, sharing and self-confrontation of letters/chronicles.

**Results:** Writings from a perspective of self, work and the collective constitute directions for analysis and construction of a policy of resistance and (re)existence of health workers, in a context of the COVID-19 pandemic. The study focused on the pandemic as an analyzer of relationships, public policies, the intensification and precariousness of working with health. The results show limitations to both have and execute activities, overloads and uncertainties, differences in womens work and their intersections, but they also show, mainly, ways to escape and deviate, in other words resistances and (re)existences of making history and caring for women agents in health communities.

**Conclusion:** When experimenting with writing about experiences, in a pandemic context, the CHAs self-confront and characterize the work for community health agents, as a form of reinventing work and health production, led by the (re) flourishing of those who take part in this practice.

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### Community narratives of members of a samba school in Brazil about the experiences and challenges of the COVID-19 pandemic

Marcos da Silva Cordeiro<sup>1</sup>, Dherik santos<sup>2</sup>, Jeanine Barbosa<sup>1</sup>, Caroline de castro<sup>1</sup>, Rafael caliar<sup>3</sup>, Gabriela de brito martins<sup>4</sup>, Jeremias simões<sup>1</sup>, Stephania demarchi<sup>1</sup>, Rita de cássia duarte lima<sup>1</sup>

<sup>1</sup>Postgraduate Program in Collective Health, Federal University of Espírito Santo. Brazil, <sup>2</sup>Department of Medicine, Federal University of Catalan.,

<sup>3</sup>Postgraduate Program in Collective Health, Federal University of Espírito Santo., <sup>4</sup>Postgraduate Program in Collective Health, Federal University of

Espírito Santo Brazil

**Introduction:** The COVID-19 pandemic imposed the need for social isolation on the communities of the samba schools, with consequences for meetings, coexistence and forms of grouping between the components. Samba schools are part of the Brazilian black cultural heritage. This research is an excerpt from the master's thesis in Collective Health.

**Objective:** To analyze narratives of members of a samba school community about and their experiences in the context of the Coronavirus pandemic.

**Methodology:** Exploratory research. Qualitative approach. Chosen a samba school in the city of Vitória, Espírito Santo - Brazil. Inclusion criteria, over 18 years old, being an effective member of the samba school and residing in the territory. For the sample, a snowball technique with theoretical saturation was used. Semi-structured interviews were conducted. All interviews were recorded and later transcribed and analyzed.

**Results:** 8 semi-structured interviews were carried out, all participants declared themselves to be black, living in neighborhoods on the outskirts and in the favela. Among the analysis categories, the interviewees pointed out the difficulty of carrying out social isolation, due to the precariousness of the residences and the size of the families. The absence of activities at the samba school mobilized categories such as "mental illness" caused by "sadness" and "emptiness" by the absence of the samba school environment. In addition to feelings of "mourning", "loss" and "deaths".

**Conclusion:** The members of the samba schools worked with civil society, particularly with their communities, aiming to face the pandemic, publicize and promote vaccination and social assistance for their members. Social isolation imposed that many families, in addition to facing the challenges of the pandemic, could not experience their moment of mourning.

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### Barriers to leisure-time physical activity during the covid-19 pandemic: results from the longitudinal study of adult health (elsa-brasil)

Maria de Almeida<sup>1</sup>, Maria de Almeida<sup>2</sup>, Estela de Aquino<sup>3</sup>, Sheila de Matos<sup>4</sup>, Ana Patrão<sup>5</sup>, Rogerio de Almeida<sup>6</sup>, Ciro Queiroz<sup>7</sup>

<sup>1</sup>Instituto Gonçalo Moniz - FIOCRUZ Rua Waldemar Falcão 121 - Candeal

Brazil, <sup>2</sup>Instituto Gonçalo Moniz - FIOCRUZ Rua Waldemar Falcão, 121 -

Candeal Brazil, <sup>3</sup>Universidade Federal da Bahia, <sup>4</sup>Universidade Federal da

Bahia Brazil, <sup>5</sup>Universidade do Porto Portugal, <sup>6</sup>Universidade Estadual de

Feira de Santana, <sup>7</sup>Universidade Estadual do Sudoeste da Bahia, Brazil

Physically inactive populations are more exposed to the occurrence of chronic non-communicable diseases and to a higher risk of complications from COVID-19. During the pandemic, health behaviours in the adult population changed, including the practice of leisure-time physical activity (LTPA). The objective of this work is to identify barriers to the practice of physical activity in leisure-time during the COVID-19 pandemic. In 2020, a survey on COVID-19 was carried out with participants from ELSA-Brasil. 5,639 civil servants from 5 Brazilian teaching

and research institutions were interviewed, and 57.7% of whom were women. The median age was 59 years. LTPA during the period of social distancing was reported by 46.2% of the participants, however, 19.0% of those who did it in the pre-pandemic period stopped doing it. Among those engaged, 53.0% were women, half of them were married, 30.2% cared for children or the elderly, 71.3% reported meeting the recommendations to stay/work at home and 46.5% increased weight. Among the physically inactive, 45.0% were married, 70.1% complied with the recommendations to stay/work at home, 37.5% took care of children or the elderly, 50.8% gained weight and 97.6% performed housework. The profile of men is similar except that around 80.0% of them, active or inactive, were married. According to the results, the COVID-19 pandemic decreased the practice of LTPA among study participants. The inactive men and women performed more household chores, took care of children and the elderly and had an economic impact on the family, whether due to the loss of a source of income or because a member was left without a job, constituting possible barriers to the practice of LTPA. This finding could be used in the elaboration of policies aimed at promoting health by focusing on different aspects of barriers to LTPA.

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### **Sociodemographic and clinical profile for the tests used for the diagnosis of covid-19 in the state of Rio de Janeiro, Brazil - 2020 to 2021**

Gabriella Nazario<sup>1</sup>, Silvia Cardoso<sup>2</sup>, Felipe Tavares<sup>1</sup>

<sup>1</sup>Universidade Federal Fluminense Brazil, <sup>2</sup>Secretaria de Estado de Saúde do Rio de Janeiro

**Background:** Testing is an important pandemic control tool for covid-19, allows the identification of vulnerable populations and regions, where strategies can be adopted both for intensification and relaxation of control actions. In Brazil, access to health services is unequal, consequently, access to tests for covid-19 may be hampered for different population profiles.

**Objective:** Describe the frequency of each type of diagnostic test performed for covid-19 in residents of the state of Rio de Janeiro according to sociodemographic and clinical characteristics.

**Methods:** Cross-sectional descriptive study with a quantitative approach, using secondary data from the esus notifica database, where suspected cases of covid-19 are reported. The study population is individuals notified to the system, residents of the state of Rio de Janeiro and who have undergone some test. The frequency distributions of the studied population were described by sex, race/color, age group and health region of residence, health conditions and symptoms, according to the type of test performed. The research period was from 2020 to 2021, divided into 4 semesters, according to the offer of tests and change in testing criteria guided by the ministry of health.

**Results:** The year 2020 the most used test was the rapid antibody test, in the first half of 2021 was rt-pcr and in the second the rapid antigen test. In relation to rt-pcr, in all periods the indigenous race/color presented the lowest percentage and the white race/color the highest. Under 20 s of age have higher percentages for rapid antigen or antibody tests.

**Conclusion:** The temporal change of the guidelines on testing from the ministry of health was observed. There was a difference in access to the tests between the categories of race/color, age groups and health regions studied. To reduce inequity, specific actions must be taken for each population so that access is egalitarian.

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### **Lessons from the bolivian covid-19 vaccine mandate**

Diana Zeballos Rivas<sup>1</sup>, Juan Aguilar Ticona<sup>1</sup>, Doss-Gollin Simon<sup>2</sup>, Marcigle Morais<sup>1</sup>, Luis de Souza<sup>1</sup>

<sup>1</sup>Universidade Federal da Bahia Brazil, <sup>2</sup>Boston Children's Hospital United States

**Background:** The study analyzed the Bolivian governments implementation of the COVID-19 vaccination card, which purports to increase vaccination rates and strengthen coverage with the entire vaccination schedule in the country. We aimed to describe the measures adopted, their effectiveness and impacts on adherence to the vaccine.

**Methods:** We conducted an exploratory study, based on the analysis of Supreme Decrees 4640 and 4641 of 2021, and secondary data from the Bolivian Ministry of Health and Our World in Data. The 7-day moving average of COVID-19 vaccination was calculated. We also estimated the difference of the cumulative vaccination rate between December 22, 2021, and January 19, 2022, referring to the dates of enactment and suspension of the decrees.

**Results:** The requirement of a vaccination card to enter public and governmental

spaces increased vaccination coverage by 9.6% for the first dose and 4.4% for the second dose. Resistance to the measure resulted in its postponement and, later, suspension after only 28 days of effectiveness, which was followed by a decrease in the 7-day moving average of COVID-19 vaccination. The short time span between the measures announcement and implementation left insufficient time to plan vaccine distribution and manage supply shortages. New vaccination centers were not created, and existing centers were overcrowded and often had to share their spaces with testing centers. Long queues fueled public discontent with the policy, which then was exploited by the anti-vaccine movement, responsible for spreading misinformation and contesting the measures.

**Conclusion:** The COVID-19 vaccination card had a positive impact on the vaccination rate, principally among the unvaccinated, however, it was not a long-term effect, because it was soon revoked. Management challenges and misinformation about the vaccines had a negative impact on adherence to the proposal and the lack of planning placed a heavy burden on the health system.

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### **Psychosocial effects on the elderly, during the period of lockdown due to the COVID-19 pandemic, in a city in the interior of the state of São Paulo, Brazil, between 2020 and 2022**

Mario Angelo Cenedesi Junior<sup>1</sup>, Silvia Vouillat<sup>2</sup>

<sup>1</sup>Cenedesi Junior University of Business and Social Sciences (UCES) Brazil,

<sup>2</sup>University of Business and Social Sciences (UCES)

**Background and Objectives:** The lockdown caused by the COVID-19 pandemic brought about important changes in the daily lives of Brazilians, a fact that needs to be observed especially in the elderly, a portion that is in constant population growth. This confinement can trigger several psychosocial effects, such as feelings of loneliness, sadness, anxiety, among others, so that knowing them, in the elderly population, is understanding what is going on with their Mental Health and, thus, being able to reorganize the Health Services (through strategies and protocols) to provide the necessary support to patients.

**Methods:** This is a basic, observational and cross-sectional study with a descriptive objective and a mixed methodology. 253 elderly people were interviewed in a city in the interior of the state of So Paulo, Brazil, in the last quarter of 2022 - health professionals and people with severe mental disabilities were excluded from the study.

**Results:** 38.25% of the elderly surveyed are male and 61.73% are female. In relation to thinking that, during lockdown, the ability to identify their own emotions and those of others worsened, 19.13% answered yes; as for feeling sad for not being able to share time with their loved ones, 83.61% answered yes; in relation to feeling anxiety for not being able to predict what would happen, 77.6% answered yes; when asked if they suffered from loneliness, 66.3% answered yes.

**Conclusion:** The present study shows that a large part of the elderly population presented sadness, anxiety and/or loneliness during lockdown due to the COVID-19 pandemic, even surpassing the values mentioned by the World Health Organization (WHO), so that Public Politics in Mental Health need to be created (or expanded) to serve this portion of the population, improving their quality of life.

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### **Safety and efficacy beliefs on covid-19 vaccination in perspective of the second booster dose administration: A survey experiment in the italian population**

Dario Menicagli<sup>1</sup>

<sup>1</sup>IMT School Advanced Studies Lucca Via S.Agostino 66 Italy

**Background and objective:** During the Summer of 2022, many European countries started administering the fourth dose of COVID-19 vaccines upon developing an efficacious vaccine against the newly detected variants. However, despite governmental perspectives and previous findings reporting both actual and potential high acceptance rates on first-dose vaccination, more is needed to know about the diachronic evolution of the citizens engagement and how the change in perception of vaccine safety and efficacy affects vaccination intention. This study aims to investigate Italys fourth dose COVID-19 vaccination acceptance rates and how the differential presentation of positive-framed messages regarding the scientific evidence on the fourth dose safety and efficacy could influence citizen beliefs and responsiveness.

**Methods:** We designed a multi-scale survey to study retrospectively the evolution of the beliefs behind each decision to vaccinate in the different stages of the vaccination campaign (i.e., from the first up to the third booster dose) and individual trust in scientific and political institutions in each period of the vaccination campaign. Secondly, we implemented different message-framed vaccine safety and efficacy treatments to evaluate how they influence individual

intention to uptake the new dose.

Overall, theory-driven structural equation analysis will reveal what factors are significant predictors of the willingness to vaccinate in a balanced sample of 500 Italian participants.

Results: We show a distinct evolution of the perceived efficacy and safety during the vaccine campaign and the importance of message targeting this latter component to increase vaccination intention. Moreover, we investigate how trust in political and scientific institutions changes during a pandemic according to vaccine beliefs. Conclusion: Vaccination campaign could benefit from messages based on vaccination safety more than efficacy perception and needs to consider a dynamic evolution of these components during multiple vaccination stages and the role of trust in scientific institutions more than governmental ones.

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### Lessons learnt from the vaccination strategy against COVID-19 in Spain

Ana Fernandez-Dueñas<sup>1</sup>, Carmen Olmedo<sup>1</sup>, Aurora Limia<sup>1</sup>, Laura Sanchez-Cambronero<sup>1</sup>, Sonia Fernandez-Conde<sup>1</sup>, Elena Cantero<sup>2</sup>, Rocio Villa-Pizarro<sup>3</sup>

<sup>1</sup>Immunization Programme Area, General Directorate of Public Health, Ministry of Health, Spain, <sup>2</sup>Technical Assistance TRAGSATEC to the Ministry of Health of Spain, <sup>3</sup>Servicio de Medicina Preventiva y Salud Pública - Hospital Clínico Universitario de Valladolid, Spain

Background and objective: Vaccination policy in Spain is characterised by the decentralisation of national health system. Regional departments of health are the vaccination programmes managers and the Ministry of health, coordinates and oversees. However, a single vaccination strategy against COVID-19 was developed. The objective is to describe the lessons learned from this process and the strategy. Methods: Structure, work and decision-making process of the working groups (WG) of the strategy were assessed: the multidisciplinary technical WG for the development of the strategy (which included the national immunization technical advisory group and experts from bioethics, sociology, pharmacovigilance, etc.), WGS on mathematical models, vaccine effectiveness and on the development of the COVID-19 registry. Additionally, results of a survey to the members of the technical WG.

Results: Recommendations from the technical WGs were not always implemented at political level.

Given the uncertainty of the pandemic, the strategy was continuously revised. Having a multidisciplinary team of independent experts and other useful tools for decision-making such as mathematical models, effectiveness studies was essential.

COVID-19 vaccination registry is the first single national vaccination registry developed in Spain. It has boosted regional information systems and enabled a real-time monitoring of the vaccination strategy implementation. Vaccination data from all residents was brought together in a homogeneous and standardized way. A lack of technical information suitable to the needs of the population was identified.

Conclusion: Having multidisciplinary WGs are necessary along with their independence in the decision-making process.

Mathematical models and effectiveness studies are valuable tools to revise and improve vaccination policies.

High quality information on vaccination implementation programmes is essential to monitor them. Strengthening information systems in public health is critical, notably their flexibility and interoperability.

It is necessary to incorporate providing technical communication to the population as an essential element in vaccination strategies.

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### Genomic surveillance of sars-cov-2 in tunisia : January 2021-december 2022

Mouna Safer<sup>1</sup>, Wissal Kalai<sup>1</sup>, Arwa Neffati<sup>1</sup>, Aicha Hchaichi<sup>1</sup>, Sonia Dhauouadi<sup>1</sup>, Hajer Letaief<sup>1</sup>, Fatma Youssef<sup>1</sup>, Emna Mziou<sup>2</sup>, Souha Bougateg<sup>2</sup>, Leila Bouabid<sup>2</sup>, Sondes Derouiche<sup>2</sup>, Nissaf Alaya<sup>2</sup>, Ilhem Boutiba<sup>1</sup>, Henda Triki<sup>3</sup>, Hela Karray<sup>4</sup>, Tunisia MASTOURI<sup>5</sup>

<sup>1</sup>Observatory of New and Emerging Diseases Tunis Tunisia, <sup>2</sup>Charles Nicolle Hospital, Tunis Tunisia, <sup>3</sup>Pasteur Institute, Tunis Tunisia, <sup>4</sup>Habib Bourguiba Hospital Sfax TUNISIA, <sup>5</sup>Fattouma Bourguiba Hospital Monastir Tunisia

Background and objective: Since emergent Variant Of Concern (VOC) has threatened public health and has impacted vaccination effectiveness, genomic surveillance of these variants was becoming a crucial approach allowing to monitor the evolution of SARS-CoV-2 variants and to guide COVID-19 pandemic response.

The objective of this study was to describe the genomic epidemiology from January 2021 to December 2022.

Methods: Sequences were performed on nasopharyngeal specimens With CT less than 25 tested in all Tunisian laboratories of clinical virology. The sample selection strategy was conducted in accordance with the Tunisian sequencing strategy of SARS-CoV-2 based on two approaches : First, on a weekly randomly stratified sample by governorate and second on a targeted sampling focusing on specific subsets: imported cases, vaccinated cases, reinfections, severe cases... SARS-CoV-2 genome sequencing methods applied during this study were: whole-genome sequencing (wgs), partial s gene sequencing and variant-specific real-time rt-pcr tests. clinical virology laboratories involved were : charles nicolle hospital, tunis : pasteur institute : habib bourguiba hospital sfax and fattouma bourguiba hospital, monastir.

Results: During this study a total of 5999 nasopharyngeal samples have been sent to laboratories of clinical virology. Using the three sequencing methods a total of 4937(82 ;3%) lineages were assigned and 4105(83.15%) were classified as VOC : 1442 Omicron(35.2%), 1418 Delta(34,6%), 1230 Alpha(30%), 7 Beta(0.2%) ; 1 Alpha and 1 coinfection Delta omicron.

Periods of predominance of VOC were identified as following : Alpha variant was predominant from ISO week3/2021 to ISO week 25/2021 ; Delta variant from ISO week 26/2021 to ISO week 50/2021 and Omicron from ISO week 1/2022.

Conclusion: This study was the first Tunisian national analysis of main lineages of SARS-CoV-2 circulating during two years . This Epidemiological genomic surveillance of SARS CoV 2 have contributed to implement preventive measures in a timely manner.

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### Ethical justifications for the need for pandemic preparedness from sars to SARS-CoV-2: a scoping review

Rocio Villa-Pizarro<sup>1</sup>, Miguel Ángel Royo Bordonada<sup>2</sup>, Fernando José García López<sup>2</sup>, Marife Muñoz Moreno<sup>4</sup>, María Pilar Arnáiz Ibañez<sup>5</sup>, Natalia Madueño Moreno<sup>6</sup>

<sup>1</sup>Servicio de Medicina Preventiva y Salud Pública - Hospital Clínico Universitario de Valladolid Spain, <sup>2</sup>Escuela Nacional de Sanidad (Instituto de Salud Carlos III), <sup>3</sup>Centro Nacional de Epidemiología, Instituto de Salud Carlos III Spain, <sup>4</sup>Unidad de Investigación Biomédica (iBC), Hospital Clínico Universitario de Valladolid, Spain, <sup>5</sup>Hospital Clínico Universitario Natalia, <sup>6</sup>Instituto de Psiquiatría y Salud Mental, Hospital Gregorio Marañón Spain

Background and objective: The 21st century has seen numerous epidemics with pandemic potential, and during these years literature has been published urging competent authorities to prepare regions for a future pandemic. However, the crisis caused by SARS-CoV-2 has been devastating and marked by improvisation. We ask what part of this literature clarified the ethical justifications for choosing to prepare and what arguments were present in it.

The objective of this overview review is to describe the ethical justifications for pandemic preparedness proposed in the period between 2004 and 2020.

Methods: Any type of literature published between 2004 and 2019 in whose title or abstract the ethical justification for pandemic preparedness is described as the main topic was included. The sources of information searched were PubMed and Cochrane. The literature available in full text was examined for eligibility. Finally, data (curation) was extracted.

Results: From an initial identification of 120 articles, 13 were finally included for analysis. That is, although some texts deal with the ethical obligation to be prepared for a pandemic, these are scarce and rarely develop this ethical justification beyond how this preparation should be fulfilled. Ethical guidance is even presented in an instrumental manner (as a way to improve citizen collaboration), without going into the discernment (principles, assumptions...) that underpins these moral proposals.

Conclusion: The disparity between the insurances of the last 15 years before the SARS-CoV-2 pandemic and the response capacity and preparedness that were available at the beginning of the crisis is an area for improvement in risk communication. Moreover further reflection on the ethical justifications could help authorities and society as a whole to focus their efforts, during this inter-pandemic period, on preparing for future pandemics. A need to involve the population in preparedness and to make decisions in a transparent manner was shown.

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### The impact of the COVID-19 pandemic on mental health in South Korea

Eun-Whan Gyeonggi<sup>1</sup>

<sup>1</sup>Research Institute Korea, Republic Of Eun-Whan Lee Gyeonggi Research Institute Korea, Republic Of

**Objective:** This study was conducted to find out the impact of the COVID-19 pandemic on mental health in South Korea.

**Method:** We surveyed 2,000 people across the country in South Korea. To assess the severity of mental health, this study used the Generalized Anxiety Disorder 7-items (GAD-7) and Patient Health Questionnaire-9 (PHQ-9) scale and so on.

**Result:** 55.8% of the people were experiencing feeling depressed, and 30.6% of the people suffering from sleep disorders due to the COVID-19 pandemic. As measured by the PHQ-9 scale, a clinical depressive symptom screening tool for mental health, the risk group for depression that required psychiatric treatment was 17.6%, and the generalized anxiety disorder (GAD-7) reached 31.9%. In particular, there were differences in depressive symptoms and generalized anxiety disorder depending on the individuals income level. In the case of the prevalence of severe depressive symptoms, the lowest and highest income groups were 5.2% and 1.9%, respectively, and the difference reached about three times. In addition, the prevalence of severe anxiety disorder were 8.6% and 4.4% in the lowest and highest income groups, respectively, and the difference reached about twice.

**Conclusion:** This study confirmed the negative impact of COVID-19 on mental health. In particular, it was revealed that the negative impact of COVID-19 on mental health differs depending on the individuals socioeconomic level.

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### Preventing pandemics: the vital role of the law. Strengthening countries' legal preparedness for public health emergencies

Martha Achan<sup>1</sup>, Gian Burci<sup>2</sup>, Sam Halabi<sup>3</sup>, Emem Udoh<sup>4</sup>, Maria Campisi<sup>5</sup>, Maria Campisi<sup>5</sup>, Sam Halabi<sup>6</sup>, Cédric Apercé<sup>7</sup>

<sup>1</sup>Infectious Diseases Institute, Uganda, <sup>2</sup>Graduate Institute of International and Development Studies, Geneva, Switzerland, <sup>3</sup>O'Neill Institute for National and Global Health Law, Georgetown University, United States, <sup>4</sup>Resolve to Save Lives, Nigeria, <sup>5</sup>International Development Law Organization, Italy, <sup>6</sup>Global Health Security Agenda (GHSA) - Legal Preparedness Action Package (LPAP), O'Neill Institute for National and Global Health Law, Georgetown University, USA, United States, <sup>7</sup>Resolve to Save Lives, United States

#### Outline

While the world is watching WHO Member States revising the global health security architecture in Geneva, research shows that one of the main bottlenecks to the COVID-19 response was the lack of public health emergency (PHE) preparedness at country level (Source: Report of the Independent Panel for Pandemic Preparedness and Response, 2021). COVID-19 has dramatically illustrated the gaps and weaknesses of national legislation and systems in effectively preventing and responding to the pandemic. The law has a vital role to play in strengthening countries' preparedness and in advancing global health security. Effective national legal and policy frameworks that comply with international norms and standards are key components of a comprehensive system that enables countries to promptly and efficiently prevent and manage public health threats. Legal barriers, however, can hinder countries' capacity to respond rapidly and effectively to an emergency, including by hampering effective and equal access to protective measures and medical countermeasures, delaying decision making processes, and undermining the legitimacy of response measures.

PHE Legal Preparedness is a core competency that enables a country to effectively use the law to plan for and implement strategies to prepare for, prevent and respond to PHEs. Despite this, Legal Preparedness has not received much attention as a critical capacity for PHE preparedness and many countries still lack local capacities that can support governments in strengthening and mobilizing their legal frameworks in line with international guidance.

**Objective:** This workshop will raise participants' awareness about the concept of Legal Preparedness and discuss the role of the law in advancing PHE preparedness and response. It will discuss the importance of Legal Preparedness as a critical capacity for PHE prevention and preparedness. The workshop will be delivered as a dialogue among panelists, and will be aimed at non-legal public health practitioners. It will provide an overview of the concept of Legal Preparedness and its role in PHE prevention and response, discuss the need for capacity building on legal preparedness and present experience and best practices from LMICs. By facilitating a dialogue between national and international experts, it will present lessons learned from the COVID-19 pandemic and other past emergencies to identify gaps, needs and opportunities to strengthen countries' capacities to enhance PHE legal preparedness.

#### Key Questions

The workshop will address the following key questions:

What is legal preparedness for PHEs? What legal challenges and barriers have been recognized during the COVID-19 pandemic and other public health emergencies? How can the law enhance countries' preparedness to prevent, detect and respond to PHEs? What is the process by which countries can assess and improve their legal preparedness?

What capacities are needed, and which tools are available, to enhance legal preparedness at country level?

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### Could humanity build a new planetary governance system able to tackle pandemics and other existential threats? a thought experiment

Alejandro Jadad<sup>1</sup>, Francesca Zanni<sup>2</sup>, Iveta Nagyova<sup>3</sup>, Jean-Marie Okwo-Bele<sup>4</sup>, Jeff Smith<sup>5</sup>, Luís De Souza<sup>6</sup>, María Sáenz Madrigal<sup>7</sup>, Costa Gualtieri (Walter)<sup>8</sup>

<sup>1</sup>Centre for Digital Therapeutics (Toronto, Canada), Canada, <sup>2</sup>University of Bologna, Italy, <sup>3</sup>Department of Social and Behavioural Medicine, Faculty of Medicine, PJ Safarik University, Kosice, Slovak Republic, <sup>4</sup>World Federation of Public Health Associations (WFPHA), Independent, Switzerland, <sup>5</sup>Australian Centre for Climate and Environmental Law, NA, Australia, <sup>6</sup>World Federation of Public Health Associations (WFPHA), Federal University of Bahia (Brazil), Brazil, <sup>7</sup>Health Equity Network of the Americas (HENA), <sup>8</sup>Ricciardi, Università Cattolica del Sacro Cuore, Italy

Thought experiments are mental exercises in which human imagination is used to put a hypothesis or idea to the test without actually conducting an experiment or research project.

From February to November 2022, we sought to answer the following question: "If we had the power to add just one resource to what was available the day COVID-19 was declared a pandemic, so that we could change its course for the better, which resource would we choose?"

Soon, we concluded that the key missing piece was a species-wide, representative, accountable and empowered governance system. In light of this, the one imaginary resource we chose to add was a Planetary Health Protection Council (PHPC). This would be a body that would convene leaders from the government and the corporate, academic and civil society sectors with the goal of developing trustworthy measures that would allow humans to interrupt the spread of a pandemic, or curb other existential threats.

Given that the success of the PHPC would depend on being perceived as trustworthy by the general public, it could be complemented with two independent related structures, which could be spearheaded and coordinated by the public health community: A platform to facilitate equitable, transparent and inclusive participation by representative samples of the world's population, and a system of in-person and virtual tools designed to encourage community engagement around controversial issues during the pandemic, from villages to the entire globe. Workshop participants will be invited to join the ongoing reflections around the proposed governance system, and to identify the optimal contributions of the public health community to prepare the world for the next pandemic or for other existential threats.

During the workshop, participants will have the opportunity to explore:

The feasibility of a new planetary governance system able to tackle pandemics and other existential threats. The optimal role of the public health community to open spaces for discussions, reflections and initiatives related to the emergence of a new species-wide, representative, accountable and empowered governance system. The contributions of thought experiments as tools for public health leaders to confront difficult questions, mostly in relation to complex ethical issues or policy decisions.

By the end of the workshop, participants would have contributed to answering the following key questions:

What structure and working mechanisms would constitute a system of governance that is species-wide, representative, trustworthy, accountable and empowered to tackle the next pandemic or other major existential threats? How could public health leaders and the public health community at large become more effective at engaging the population they serve, as well as leaders of the government, corporate, academic and civil society sectors while facing the next pandemic or other major existential threats? What contributions could thought experiments play as tools for public health leaders to confront difficult questions?

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### Pandemic Preparedness and Response in the post-COVID-19 era: Governance and PHSMs

Yanping Zhang<sup>1</sup>, Chao Ma<sup>2</sup>, Yi Cai<sup>3</sup>, Zijian Feng<sup>4</sup>, Xiaofeng Liang<sup>5</sup>  
<sup>1</sup>China CDC, Division of Infectious Diseases, China, <sup>2</sup>Evidence-Based Vaccine Policy Research Office, Chinese Center for Disease Control and Prevention, China, <sup>3</sup>School of Public Health, Wuhan University, China, <sup>4</sup>Chinese Preventive Medicine Association; Asia-Pacific Regional Liaison Office, WFPHA; China Association for Science and Technology UN Consultative Committee on Life Science and Human Health (CCLH), China, <sup>5</sup>Chinese Preventive Medicine Association; Disease Control and Prevention Institute of Jinan University; China Association for Science and Technology UN Consultative Committee on Life Science and Human Health (CCLH); WFPHA, China

In this workshop we will review the experiences and lessons learnt in the fight against COVID-19 in China for the purpose of better preparing for and responding to future pandemics, from the following perspectives:

Taking a whole-of-government and a whole-of-society approach for the governance of COVID-19 pandemic is a key of success in the early phase of rapid containment. Immediately after the outbreak is reported, the Chinese government established a multi-sectoral joint response mechanism, consisting of 32 ministries, under the overall leadership of State Council. The national office for joint response mechanism oversees the epidemic situation and response actions, and over 4 million of community workers from 600,000 neighborhood committees in urban/rural areas were all mobilized for the implementation of public health and social measures (PHSMs) and the provision of logistic services during lockdown. Those approaches above have served as the fundamental basis for the successful elimination of COVID-19 outbreaks for a long period in China.

The technical tools including massive testing, contact tracing using digital tools, and lockdown are key prerequisites for 'Zero-COVID' policy in China. Massive testing is necessary to rapidly screen the infected persons and put them under isolation so as to prevent further transmission. China has established sufficient PCR testing capacity. Digital tools and apps using big data technique are the enabler for timely epidemiological investigation and contact tracing to identify potential sources of infection and close contacts for quarantine, which attributed to the close collaboration between the public health sector, information technology sector, and the public security sector. Strict lockdown of high-risk areas is a useful tool to ensure the cut-off of the transmission at community level, while the basic services and logistic support are challenging and needs to be well arranged.

The status and challenges of mass vaccination program in China. China was the first country to launch the COVID-19 vaccination campaign and has made positive progress in the fight against the COVID-19, with a complete vaccination rate of over 90% for the entire population. Details of COVID-19 mass vaccination campaign and practical challenges will be introduced in this workshop.

Specific aims/objectives and component parts

To provide an overview on China's collaborative governance mechanism and cross-sectoral cooperation approaches in response to COVID-19 pandemic;

To demonstrate how technology plays a key role in mass testing, contact tracing, and lockdown through the experiences sharing;

To share the practices how China pushed forward with the mass vaccination program and implemented public health and social measures by engaging and integrating community resources.

Key questions that the dialogue will address

What is the structure and mechanism of the WGA collaborative governance in China? What is the key of success in the early phase of rapid containment?

How the use of technology enables China's dynamic Zero-COVID policy? What challenges have been encountered in the implementation and how have they been effectively addressed?

What are the challenges of COVID-19 vaccination in China and how we address those challenges in the preparedness for next pandemic?

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### Research use cases measuring the impact of COVID-19 on population health feeding into a federated research infrastructure

Martin Thißen<sup>1</sup>, Juan Gonzalez-Garcia<sup>2</sup>, Francisco Estupiñán-Romero<sup>3</sup>, Petronille Bogaert<sup>4</sup>, Enrique Bernal-Delgado<sup>5</sup>, Population Health Information Research Infrastructure (PHIRI)<sup>6</sup>

<sup>1</sup>Robert Koch Institute (RKI) Germany, <sup>2</sup>Institute for Health Sciences in Aragon, Spain, <sup>3</sup>Institute for Health Sciences in Aragon (IACS), Spain,

<sup>4</sup>Sciensano, <sup>5</sup>Institute for Health Sciences in Aragon (IACS) Spain,

<sup>6</sup>Sciensano Belgium

Outline: The COVID-19 pandemic has clearly demonstrated the urgent need for a cross-border and structured European mechanism to exchange, organize and access reliable health information between countries, especially in the area

of population health. Population health information, defined by data on health status, health determinants and healthcare systems performance, allows for oriented research to increase the knowledge base in Europe and underpin political decision-making. Its exchange requires timely and topical provision of high-quality health information. There are many indirect effects of the COVID-19 pandemic that affect health through various pathways including secondary consequences on health and wellbeing due to delayed prevention, diagnosis and medical treatment. Within the Population Health Information Research Infrastructure (PHIRI) project we measured the impact of COVID-19 on population health through four research use cases demonstrating how a broad variety of routine data can be pooled and/or used for secondary analysis in a distributed way across Europe aiming to facilitate research by making scalable, reproducible methods available. These real-life use cases represent pilot activities for the benefits and added value of an infrastructure supporting federated analysis by bringing together data from different European countries. In over 20 data contributing countries data is mobilized and analyzed in a distributed manner. The use case outputs will be processed in an interoperable way by formalising data models, data management processes and analytical pipelines, all of which are part of the client-server PHIRI federated infrastructure on population health science implemented as here 10.5281/zenodo.6483177 [1]. Aims and component parts: This workshop aims to ensure a better understanding of COVID-19 impacts in specific subgroups and risk settings by conducting research through use cases of immediate relevance to provide actionable outcomes to guide policy makers in preparedness and response scenarios. We will provide insight into the backbone of the analyses, the PHIRI federated research infrastructure (FRI) achievements, in which the governance step-wise approach and the technological solutions will be described. Finally, we will touch ground on the future developments, in particular, the interaction of the PHIRI infrastructure with existing European-wide initiatives like the European Health Data Space for secondary use (EHDS2). Knowledge and capacity developed across Europe is shared in this workshop. The three presentations will focus on selected aspects of COVID-19 impacts on population health as well as the development and implementation of the PHIRI federated approach. The first presentation will be on the FAIRified use cases analysis results focusing on comparisons between countries. This will be followed by a presentation on what the PHIRI FRI has achieved so far. The third presentation looks at the interlinkages and an enhanced version of a fully operative PHIRI infrastructure improving the analytical services. Exchange with the audience will facilitate knowledge and opinion exchange through an interactive Mentimeter poll during the session. Key questions: 1) What are the impacts of COVID-19 in specific subgroups and risk settings compared across European countries? 2) What do population health researchers' need to enhance their research when reusing individual sensitive data and how PHIRI FRI can help? Links: [1] <https://zenodo.org/record/6483177>

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### Global coordinated surveillance of human pathogens for public health responses to new, emerging, and re-emerging epidemics

Eric Arts<sup>1</sup>, Elena Pariani<sup>2</sup>, Miguel Quinones-Mateu<sup>3</sup>, Christopher DeGroot<sup>1</sup>, Eric Arts<sup>1</sup>, Elena Pariani<sup>4</sup>

<sup>1</sup>Western University 1151 Richmond St., London, ON, Canada, N6A 3K7 Canada, <sup>2</sup>Department of Biomedical Sciences for Health, University of Milan, Italy, <sup>3</sup>University of Otago, Dunedin, New Zealand, <sup>4</sup>University of Milan Department of Biomedical Sciences for Health Via Carlo Pascal, 36 - 20133, Milan, Italy

Background and key objectives

Early in the pandemic, researchers in Lombardy, Italy pioneered the measure of SARS-CoV-2 load in wastewater (WW) as a strong correlate of SARS-CoV-2 case loads within the Lombardy region/population, a WW surveillance program that continued to present day. Starting in late 2020, the province of Ontario in Canada also established a comprehensive program to monitor SARS-CoV-2 in WW representing a population of 11 million (of 14 million in Ontario), similar in population size to Lombardy but across a sampled area the size of Italy. Ontario added next generation sequencing to the WW program to identify and monitor of the spread of specific SARS-CoV-2 variants of concern. During the pandemic, Public Health units in both Italy and Canada relied on individual case testing to determine SARS-CoV-2 load and variant type but this all changed in Ontario with the Omicron wave. In January 2022, to save costs, Ontario cancelled nearly all individual, PCR-based SARS-CoV-2 testing and switched to population-based monitoring of estimated SARS-CoV-2 case loads from the WW surveillance data. However, despite immediate data availability, estimated SARS-CoV-2 case loads from WW was slowly adopted by public health for SARS-CoV-2 prevention

initiatives. For this workshop the first key objective is to determine how to remove barriers in using these alternative surveillance tools by Public Health professionals to respond to regional epidemics. As the pandemic progressed around the world, more countries established SARS-CoV-2 WW surveillance programs. However, there is little coordination between Public Health agencies around the world or by the World Health Organization (WHO) to share WW surveillance data which would inform recommendations for prevention and strategic distribution of vaccines in specific regions. Furthermore, the current WW surveillance is heavily reliant on well-maintained wastewater systems, often absent in low-income settings. Starting in June 2021, an international consortium piloted a WW surveillance program in Medellín–Columbia, Caracas–Venezuela, Ibadan–Nigeria, Kampala–Uganda, and Suva–Fiji using WW from open drainage systems in slum districts. An interdisciplinary team of health geographers, virologists, epidemiologists, and engineers are developing tools to monitor the load and type of pathogens in these low-income settings. For the second objective we will explore the feasibility, effectiveness, and cost to establish a global, coordinated WW surveillance program to monitor for new and re-emerging pandemics to help public health reduce or prevent the next global pandemic. The third objective will involve a discussion of pros and cons of using individual case testing compared to using WW and environmental sampling for pathogen surveillance. AGENDA Workshop will involve an open discussion to provide valuable insights into a working document to present as a future program to the WHO.

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### Interventions to fight against covid-19 in different countries: Challenges and lessons learned

Henrique Barros<sup>1</sup>, Thais Aranha-Rossi<sup>2</sup>, James Macinko<sup>1</sup>, Arnaud Simeon<sup>3</sup>, Ines Dourado<sup>4</sup>

<sup>1</sup>University of Porto University of Porto Portugal, <sup>2</sup>State University of Bahia, Brazil, <sup>3</sup>Université Lumière Lyon 2 Université Lumière Lyon 2 France, <sup>4</sup>Federal University of Bahia Federal University of Bahia Brazil

Brief Outline Of The Overall Workshop

This workshop proposition aims to address interventions to fight against COVID-19 focusing on Primary Health Care (PHC) services and surveillance strategies in countries with different responses as a possibility to systematize learning for future pandemics. Non-governmental responses will also be discussed. Portugal's response to COVID-19 is considered successful by the adoption of different surveillance strategies, and multiple actions in its health system. In the United States and Brazil, countries with different health systems, high numbers of cases and deaths were observed due to COVID-19. In coping with these scenarios, we highlight the importance of strengthening health systems, expanding testing, and surveillance actions, integrating the healthcare network, and wide vaccination coverage.

Specific Objectives And Component Parts

The specific objectives of this workshop are: (1) To present interventions to fight against COVID-19 focusing on primary care services and surveillance strategies in countries with different responses as a possibility to systematize learning for future pandemics, and (2) To discuss the role of Primary Health Care in the COVID-19 pandemic. This workshop will address pandemic response interventions, especially actions in primary care, expansion of testing, and surveillance strategies. The main pillars on which the Portuguese response and the lessons learned were structured will be presented. Intervention in France will be also discussed. The role of primary care in the response to COVID-19 will be presented as a contribution to thinking about future scenarios in different countries. A research intervention that aimed to expand testing, isolation, quarantine, and telemonitoring (TQT-COVID-19) in primary care units in two Brazilian capitals will also be systematized. From these experiences, we seek to bring contributions to understanding the different answers and thinking about coping with future problems.

The Key Questions That The Workshop Will Address

\* What are the main components of interventions and/or responses to fight against the COVID-19 pandemic?

\* What is the role of Primary Health Care in the COVID-19 pandemic?

\* What are the main lessons for future pandemics?

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### Simulation exercises to enhance public health pandemic/epidemic preparedness

Emanuela Frisicale<sup>1</sup>, Maria Dente<sup>2</sup>, Francesco Maraglino<sup>3</sup>, Anna Palamara<sup>4</sup>

<sup>1</sup>Italian Ministry of Health General directorate of health prevention, Ministry of Health Italy, <sup>2</sup>National Institute of Health, National Center for Global

Health, Italy, <sup>3</sup>Italian Ministry of Health Head of office Prevention of communicable diseases and international prophylaxis, general directorate of health prevention Italy, <sup>4</sup>National Institute of Health Director, infectious disease department, National Institute of Health Italy

The COVID-19 pandemic revealed weaknesses in healthcare systems globally, above all in the detection, preparedness and response to biological threats such as emerging pathogens. The pandemic was not completely unexpected, considering for example how in 2018 WHO included "Pathogen X" among the list of pathogens which could threaten global health security and have a pandemic potential. In a simulation exercise (SIMEX) there are three principle phases: \* A PRE-EXERCISE PHASE dedicated to planning, logistics, implementation of exercise materials and recruitment of participants; \* AN EXERCISE IMPLEMENTATION PHASE, which includes the preparation of the facilitators, the beginning of the exercise, its conduct, the "hot" debriefing with the participants and the closure of the exercise itself; and finally \* A POST-EXERCISE PHASE dedicated to the collection of results, the debriefing with the facilitators, the preparation of a report and evaluation of the exercise and the administrative reporting. This workshop will present epidemic and pandemic preparedness from an international perspective through the experience of two international experts of the European Centre for Disease Prevention and Control and the example of pandemic simulations carried out currently as part of the National strategic and operational plan for preparedness and response to an influenza pandemic (PanFlu) 2021-2023, in Italy. The Congress takes place in a time of change in the global health security governance context with the revision of the International Health Regulations, the discussions around the Pandemic Treaty and, in the European Union, with the issue of the recent regulation EU 2022/2371 of the European Parliament and of the Council on serious cross-border threats to health. In addition, at the time in which the workshop will take place, the European Centre for Disease Prevention and Control will have a newly expanded mandate and Italy will have performed and analysed one of two national simulation exercises on a single scenario that will take place during 2023 to test the implementation of above-mentioned plan. The changing pandemic preparedness context, with specific reference to simulation exercises and their role in supporting effective and resilient health care systems during epidemics and pandemics, will thus also be discussed.

Specific aims/objectives and component parts

The workshop aims at promoting discussion among experts about the role and impact of simulation exercises for pandemic preparedness. The specific objectives are to share experiences in SIMEX implementation, discuss how to build national capacity in this field and deepen knowledge on the potential development of SIMEXs taking into account COVID-19 pandemic lessons learnt. The workshop will take place at a time in which the results of the first Italian SIMEX will be available, and Ministry of Health and the National Health Institute could be able to contribute to the debate also sharing preliminary results.

The key questions that the workshop will address

\* The role of simulation exercises within the emerging global health governance landscape \* Are States aware about the potential of SIMEXs in improving preparedness and readiness to emergencies? \* Can SIMEX be effective in helping during an emergency? \* How could SIMEX evolve in light of the COVID-19 pandemic legacy?

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### From national to international health policy making: Lessons learned from ASPHER's covid-19 task force

Alison McCullum<sup>1</sup>, Nadav Davidovitch<sup>2</sup>, John Middleton<sup>1</sup>, Nadav Davidovitch<sup>3</sup>  
<sup>1</sup>ASPHER United Kingdom, <sup>2</sup>Ben-Gurion University, Israel, <sup>3</sup>BGU and ASPHER Israel

\* brief outline \* ASPHER, (Association of Public Health Schools in the WHO European Region), convened a COVID-19 Task Force (TF) in early 2020. TF has involved over 60 experts, 30 member schools, more than 20 countries across four continents, supported by young professionals (YPs). The COVID-19 TF became a unique expert forum for mutual support, sharing, reviewing, and presenting evidence on epidemiological, technical, societal, and political dimensions of the COVID-19 pandemic across Europe. Working with European and national health authorities and non-governmental organisations (NGOs), it prompted and supported the coordination of policy responses across WHO European Region. \* Drawing on members' collective knowledge and expertise, the TF produced a significant body of work on different public health aspects of the pandemic and gaps in responses. Since its inception, the TF has produced more than 30 peer-reviewed publications, regular position statements, reports on topics from personal to planetary protection including: face masks, testing, tracking, vaccination, health inequalities, safe schools, advocacy for wider social protection and global

vaccine equity. \* This workshop will reflect on how to set-up, build, scale-up, and sustain collaborations with wide geographic, cultural, linguistic, and political-administrative coverage to support the capacity and preparedness of public health institutions during future challenges in the context of strengthening global health response. \* specific objectives \* The panel will explore key lessons from ASPHER's COVID-19 Task Force: fostering independence, interdisciplinarity, and trust; a flexible, bottom-up organisation; and involving young professionals. It will consider what should be replicated, scaled up, improved, and reshaped to improve preparedness and response to other public health challenges, including future pandemics. \* Key questions\* The panel will explore how to set up collaborations across cultural and political-administrative boundaries to strengthen the advisory capacity of public health institutions during future challenges with a strong focus on international collaboration and the need to move from national to international / global health perspectives.

\* The panel will reflect on three key lessons. First, effective cross-country comparative work was made possible by the group's independence, interdisciplinarity, and high trust between members. These characteristics enabled unencumbered rapid sharing of ideas, utilisation of data, insights in local languages, and access to the front-line experience of members, those in health authorities or advising national or regional governments. Shifting perspective from national to international perspective will be emphasized, with vaccination policies, TRIPS waivers and addressing inequities as examples.

\* Lesson 2 is the importance of a flexible, bottom-up organisation, enabling members to pursue individual research, education, and advocacy agendas while acting in concert. The TF strengthened and deepened collaborations between ASPHER Schools of Public Health.

\* Lesson three combines policy advocacy, shaping public health education and providing training opportunities. YPs' expertise has been critical, preparing weekly situation reports, horizon scanning exercises, surveys of ASPHER members, and contributing an early-career perspective to the groups' outputs. These opportunities in knowledge transfer and leadership should be replicated as we tackle wider public health challenges including climate change, austerity and war.

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### Evaluation methods applied to digital health interventions: What is being used beyond randomised controlled trials? A scoping review

Robert Hrynyschyn<sup>1,4</sup>, Christina Prediger<sup>1</sup>, Christiane Stock<sup>1,2</sup>, Stefanie Maria Helmer<sup>3,4</sup>

<sup>1</sup>Institute of Health and Nursing Science, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Berlin, Germany, <sup>2</sup>Unit for Health Promotion Research, University of Southern Denmark, Esbjerg, Denmark, <sup>3</sup>Human and Health Sciences, University of Bremen, Bremen, Germany, <sup>4</sup>Leibniz ScienceCampus Digital Public Health Bremen, Bremen, Germany

**Background and Objective:** Digital health interventions (DHI) can deliver health interventions with lower barriers to a wide audience and support behaviour change. Despite the potential of DHIs, evaluating their effectiveness is challenging. DHIs are often designed as complex interventions, and established evaluation methods, e. g., randomised controlled trials (RCT), have limited applicability for evaluating complex interventions. In this context, alternative evaluation methods are often discussed. Therefore, a scoping review was conducted to provide an overview of existing evaluation methods of DHIs beyond RCTs.

**Methods:** The Cochrane Central Register of Controlled Trials, MEDLINE, Web of Science, and EMBASE were screened in May 2021 to identify relevant publications. Studies were included that were (1) applying alternative evaluation Methods, (2) testing and reporting effects of interventions, and (3) dealing with DHIs. Inclusion was not restricted to any specific population or to specific contexts in which studies were conducted.

**Results:** Eight studies were identified, which included four alternative assessment designs. The most used evaluation design for DHIs were factorial designs (n=5), followed by stepped-wedge designs (n=1), sequential multiple assignment randomised trials (SMARTs) (n=1), and micro randomised trials (MRTs) (n=1). Some of these methods enable the adaptation of interventions (e. g., SMARTs or MRTs) and the evaluation of specific components of interventions (e. g., factorial designs).

**Conclusions:** Alternative study designs are appropriate for addressing some specific needs in the evaluation of DHIs. Alternative study designs might be beneficial in overcoming the current evaluation challenges in DHIs. However, it remains unclear how to establish these alternative evaluation designs in research practice and how to deal with the limitations of the designs.

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### Marketing in the metaverse, noncommunicable diseases and human rights

Andres Constantin<sup>1</sup>, Maia Daniel<sup>2</sup>

<sup>1</sup>O'Neill Institute for National and Global Health Law, Georgetown University, Washington, United States, <sup>2</sup>Center of Technology and Society (CETYS), Universidad de San Andres, Argentina

The metaverse will change the world in many ways. Essentially creating virtual spaces owned by private companies where individuals, corporations, and even governments can interact with minimal oversight. Although the Web 2.0 had already offered a brand-new way of interacting with others, the interactions that the metaverse's immersive technologies enable will bring about a new worldview and multiple challenges. The metaverse will definitely offer numerous benefits for users—such as organizing virtual field trips for students or getting a telemedicine consultation with a doctor in any part of the world. However, the use of these technologies could also entail potential serious risks for the right to health and health-related rights. In this study we examine the legal and policy implications of marketing and advertising by unhealthy commodities companies (tobacco, alcohol, ultraprocessed foods/beverages) in the metaverse and what it means for people's health. In particular, we aim to answer questions, such as: what is or should be the role of public health authorities in the metaverse? Are current health-related legal standards applicable in the metaverse? Do we need specific norms to protect the right to health? What are the anticipated health and human rights risks that a poorly regulated metaverse—or poorly enforced laws and regulations in this space—can facilitate?

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### The effectiveness of telemedicine interventions, delivered exclusively during the postnatal period, on postpartum depression in mothers without history or existing mental disorders: a systematic review and meta-analysis

Nivine Hanach<sup>1</sup>, Nanne Vries<sup>2</sup>, Hadia Radwan<sup>3,4</sup>, Nour Bissani<sup>5</sup>

<sup>1</sup>Department of Health Promotion, Maastricht University, The Netherlands, <sup>2</sup>Department of Health Promotion, Maastricht University, Netherlands, <sup>3</sup>Department of Clinical Nutrition and Dietetics, College of Health Sciences, University of Sharjah, Sharjah, United Arab Emirates, <sup>4</sup>Research Institute of Medical and Health Sciences (RIMHS), University of Sharjah, Sharjah, United Arab Emirates, <sup>5</sup>Department of Nutrition and Food Science, Faculty of Agricultural and Food Sciences, American University of Beirut, Beirut, Lebanon

**Background and Objective:** Postpartum depression, one of the most common forms of depression, is highly prevalent worldwide among women during childbirth. Despite available treatments for postpartum depression, numerous barriers hinder women to access care including time, financial constraints, and childcare concerns. Telemedicine interventions are suggested to be feasible to prevent and improve postpartum depression. The study Objective is to examine the effectiveness of telemedicine interventions -delivered exclusively during the postnatal period, on postpartum depression symptomatology in women with no history of mental disorders. Design: A systematic review and meta-analysis of randomized controlled trials.

**Methods:** PubMed, Web of Science, Cochrane Library, and ProQuest Dissertations and Theses databases were used to identify relevant randomized controlled trials, until 7 January 2020. Studies were quality assessed using the Cochrane Library Risk of Bias Tool. The Results of postpartum depression scores were pooled using a random-effects model. Intervention completion rate and participants' satisfaction were reported in a narrative form, as secondary outcomes.

**Results:** Ten trials including a total of 2366 participants, contributed data to the review. Seven studies were included in the quantitative synthesis. Women who received technology-based interventions, regardless of the type (web-based versus telephone-based), had a statistically significant improvement in postpartum depression (mean difference: -1.81, 95% CI: -2.68 to -0.93; P < .0001). The completion rate was 80% in the intervention groups compared to 76% in the control groups. Three studies reporting participants' satisfaction revealed that the participants were highly satisfied with the technology-based interventions.

**Conclusions:** Overall, telemedicine interventions appear to be promising in preventing and improving postpartum depression. Further larger-scale high-quality research is required to establish an evidence-based telemedicine approach, in terms of structure, content, and providers. Future economic evaluation is also vital to evaluate the long-term use of telemedicine in improving postpartum depression.

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### The ethics of point of care devices and the need for AI policy frameworks in resources limited settings

Mimmie Watts<sup>1</sup>, Ismaila Imahi<sup>2</sup>, Tesfay Gebrehiwet<sup>3</sup>, Maha Gmira<sup>4</sup>, Wendy Cross<sup>5</sup>, Ian Rouse<sup>5</sup>

<sup>1</sup>Policy Committee World Federation of Public Health Associations (WFPHA), Institute of Health and Wellbeing, Federation University Australia, Victoria, Australia, <sup>2</sup>University of Energy and Natural Resources, Sunyani, Ghana, <sup>3</sup>School of Public Health, College of Health Sciences, Mekelle University, Ethiopia, <sup>4</sup>School of Digital Engineering and Artificial Intelligence, Euromed University of Fez, Morocco, <sup>5</sup>Federation University Australia, Institute of Health and Wellbeing, Australia

Access to quality healthcare is a fundamental human right and one of the Sustainable Development Goals (SDGs), as adopted by the United Nations in 2015. Thus, so is the maintenance of high ethical standards in providing healthcare. An important requirement for healthcare practitioners is the practice of the concept of avoiding harm while doing good. Advances in technology, global industrialization, and more recently Artificial Intelligence (AI) have undoubtedly led to significant improvements and advances in healthcare delivery, including the Introduction of Point-Of-Care Testing (POCT) devices that can instantly provide data about measures of a patient's health. Unfortunately, these advances have inadvertently affected the ethical standards in the field and there are calls for appropriate structures to ensure that all healthcare beneficiaries, especially the vulnerable ones in society continue to enjoy high ethical standards expected in receiving healthcare. This article drawing on the TAM and UTAUT theories, provides comprehensive analysis on the need to develop policy and ethical framework for AI technologies in healthcare. We believe that this has great potential to accelerate scientific discovery in medicine and to improve health care services. Keywords: e-health, ethical policy, artificial intelligence, healthcare records, vulnerable groups, minority rights, mobile technologies, health equity

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### Factors affecting successful post-discharge engagement of emergency department patients with opioid use history who received telehealth recovery coaching services

Dennis Watson<sup>1</sup>, Peter Phalen<sup>2</sup>, Spencer Medcalf<sup>3</sup>, Sarah Messmer<sup>4</sup>, Alan McGuire<sup>5</sup>

<sup>1</sup>Chestnut Health Systems, Chicago, United States, <sup>2</sup>University of Maryland School of Medicine, Baltimore, United States, <sup>3</sup>Indiana University Health, Indianapolis, United States, <sup>4</sup>University of Illinois at Chicago, Chicago, United States, <sup>5</sup>Indiana University-Purdue University Indianapolis, Indianapolis, United States

Background and Objectives: In recent years, emergency departments across the United States have implemented peer recovery coach (PRC) services to support patients who use opioids. The majority of such interventions discussed in the literature follow an in-person modality where PRCs engage patients directly at the emergency department bedside. However, telehealth services that connect PRCs with emergency department patients in real-time using secure communications technology are becoming more popular, and even less is known about the effectiveness of such programs as related to services and clinical outcomes. The current study sought to assess factors associated with successful post-discharge follow-up of patients with a history of opioid use who received PRC telehealth services while in the emergency department. Methods: Data come from records for 917 patients who engaged a telehealth PRC one or more times (1208 total engagements) at one of 13 emergency departments within the same large health system. A multilevel Poisson regression model was used to assess the degree to which variables predicted successful post-discharge follow-up by a PRC.

Results: Twenty-three percent of enrolled patients were successfully followed-up with at least once. Significant predictors of successful follow-up included patient employment at baseline (Incidence Rate Ratio [IRR]: 2.8, CI: 2.05-3.9), living in a rural area (IRR: 1.8, CI: 1.04-3.2), PRC provision of referrals (IRR: 1.7, CI: 1.2-2.2), number of emergency department presentations in previous 365 days (IRR: 0.99, CI: 0.98-0.99), and duration of the initial PRC telehealth interaction (IRR: 0.87, CI: 0.85-0.88). Conclusions: Understanding successful follow-up associated with telehealth engagement is of importance to the developing PRC profession, considering relationship development is one of their key functions. The results have potential utility for planning and implementing peer telehealth services in EDs and other locations, which is needed considering the expansion for peer telehealth services is likely to continue.

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### Pilot-testing the prototype of a smartphone application for smoking prevention and cessation among HIV care providers

Irene Tami-Maury<sup>1</sup>, Samuel Tundealao<sup>2</sup>, Jenna Guzman<sup>2</sup>, Valeri Noe-Diaz<sup>3</sup>, Christine Markham<sup>2</sup>, Karen Vigil<sup>2</sup>

<sup>1</sup>University of Texas Health Science Center, Houston, United States, <sup>2</sup>University of Texas Health Science Center Houston, United States, <sup>3</sup>Universidad Intercontinental (UIC) in México City, Mexico

Background and Objectives: The diagnosis and continuous care of chronic conditions such as HIV present potential teachable moments for delivering smoking prevention and cessation interventions for patients. During our study, we designed and pre-tested a prototype of a smartphone application (app), Decision-T, specifically designed to assist physicians and non-physicians when providing personalized smoking prevention and cessation services to their patients.

Methods: We developed the Decision-T app based on the transtheoretical algorithm for smoking prevention and cessation following the 5 As model. Our study used a mixed-methods approach among 18 HIV care providers recruited from the Houston Metropolitan Area for pre-testing the app. Each participant took part in three mock sessions using the Decision-T app. The average time spent by the provider at each mock session was measured. We also measured accuracy by comparing the smoking prevention and cessation treatment offered by the HIV care provider using the app to the treatment approach chosen by a tobacco specialist who designed the case. The system usability scale (SUS) was used to assess usability quantitatively. Transcripts of individual interviews with study participants were analyzed to assess usability qualitatively. STATA 17/SE and NVivo Version 12 were used for quantitative and qualitative analysis, respectively. Results: The average time for completing each mock session was 5 minutes 17 seconds. The participants achieved an overall average accuracy of 88.89%. The average SUS score achieved was 87.5 (±10.26). A total of five major themes (i.e., the apps contents are beneficial and straightforward, apps design is easy to understand, apps user experience is uncomplicated, apps tech is intuitive, app needs improvements) emerged after analyzing the qualitative interviews.

Conclusions: The Decision-T app has the potential to increase HIV care providers engagement in offering smoking prevention and cessation behavioral support and pharmacotherapy recommendations to their patients briefly and accurately.

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### CORēHealth: operating center of telemedicine for chronic conditions and clinical networks

Giovanni Gorgoni<sup>1</sup>, Pasquale Notarangelo<sup>2</sup>, Vito Petrarolo<sup>3</sup>

<sup>1</sup>Regional Agency for Health and Social Care of Apulia, Italy, <sup>2</sup>AreSS Puglia, Regional Agency for Health and Social Care of Apulia, Italy, <sup>3</sup>Regional Agency for Health and Social Care of Apulia (ARESS Puglia), Italy

Background and Objectives: The transformation of remote healthcare pathways (telemedicine) in Apulia starts a long time ago with the POR Puglia 2014-2020 projects: HL7-CM and TALsMAN (winner of the Digital Innovation Award in Healthcare 2021) from which CORēHealth directly derives, set up at ARESS. Methods CORēHealth offers: HL7-FHIR interoperable web-cloud platform; Televisit, teleconsultation, telemonitoring, telecooperation and teleconference; Device tracking system; patient synoptic; central alarms; Mobile App for Citizens (Android and iOS); Integration with the Regional Health Information System, the Electronic Health Record and others. Results: The APP promotes the patients involvement in the care process: keeping in touch with your specialist doctor and caregiver (video calls and chat); consult the agenda of the televised programs with your care team; view your care plan; enter the vital parameters that are communicated to the doctor in real time; manage their clinical diary and possibly share it with the care team; facilitate the measurement of compliance with the treatment path (drug intake, lifestyle). From January 2022 the transformation of the Apulian Oncological Network into a digital key was started and therefore the training of the operators of the Oncological Guidance Centers and the Breast Units and the enrollment of about 23,000 cancer patients. Conclusions: ARESS has launched a virtuous path of training, change management and digital literacy for all users of the system (medical and administrative teams) and for patients to promote continuous training and the consolidation of digital skills. CORēHealth overturns the traditional patient care pathways, bringing, for the first time, digital innovation directly into their hands (App Mobile) allowing them to have their own medical history, their treatment plan and to maintain a constant and regulated dialogue with your doctor, the medical team and the care giver, as well as being able to take the most suitable measurements for the management of your pathology.

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### Association between e-health literacy and vaccine hesitancy among non-health college students at King Faisal University

Abdullah Ramadan<sup>1</sup>, Mohammed Abadi<sup>1</sup>, Edric Estrella<sup>1</sup>, Mohammed Habrity<sup>1</sup>, Mujtaba Salman<sup>1</sup>, Hussain Mokinah<sup>1</sup>, Hashem Suwajj<sup>1</sup>

<sup>1</sup>King Faisal University, Saudi Arabia

**Background and Objectives:** Vaccine hesitancy has been rated among the top 10 global Public Health threats by the World Health Organization (WHO). Causes of vaccine hesitancy are heterogeneous and the media environment can negatively influence vaccination acceptance and contribute to vaccine hesitancy. The purpose of this study was to determine the association between eHealth literacy and vaccine hesitancy towards flu and HPV among non-health colleges students at King Faisal University.

**Methods:** This analytical cross-sectional study obtained data from 876 non-health undergraduates at King Faisal University selected through two-stage cluster sampling procedure. Two validated instruments, particularly, the eHealth Literacy Scale (eHEALS) and the Adult Vaccine hesitancy Scale were used. Statistical analysis was done using JASP. Logistic regression was performed to determine the association between the student's level of eHealth literacy and vaccine hesitancy towards flu and HPV.

**Results:** Half of the students had high eHealth literacy level. The estimated proportion of students who displayed hesitancy towards the HPV and flu vaccine was 52.85% (95%CI=49.49%-56.20%) with the statement "I am concerned about serious adverse effects of vaccines" (89% CI: 87.00%-91.00%) as the most prevalent reason for vaccine hesitancy. Students with high eHealth literacy were roughly three times more likely to be not vaccine hesitant ( $p < .001$ ) compared to those with low eHealth literacy. **Conclusions:** The present data confirms that eHealth literacy was significantly associated with vaccine hesitancy which necessitates the university to take initiatives to further enhance the eHealth literacy levels of the non-health students by utilizing the electronic platforms to share credible health information. The Ministry of Health should also enhance their social media presence in order to spread reliable health information, specifically regrading vaccines and their safety.

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### AI governance in public health systems

Robyn Whittaker<sup>1,2</sup>, Rosie Dobson<sup>3</sup>

<sup>1</sup>Te Whatu Ora Waitemata, New Zealand, <sup>2</sup>University of Auckland, Auckland, New Zealand, <sup>3</sup>University of Auckland, New Zealand

**Background:** Artificial Intelligence (AI) tools are increasingly being introduced into practice within health systems globally. While great work has been done to develop and adapt ethical principles for AI in healthcare, there are few practical exemplars of implementing good governance of the Introduction of AI into practice. We will describe the AI Governance that has been put in place in Aotearoa New Zealand to guide the public health system on decisions and agreements around the development and use of AI tools.

**Methods:** Background research on existing international guidance (e.g. WHO 'Guidance on Ethics and Governance of AI for Health') and best practice (e.g. UK NHSX 'Artificial Intelligence: How to get it right.'), was conducted alongside technical AI advice. Surveys were conducted to determine patients' perspectives on the use of their health information for the development of AI. New Zealand specific requirements such as the National Ethical Standards, Algorithm Charter for Aotearoa NZ and the Māori Data Sovereignty charter and principles, were integrated. A Governance Group was established with diverse membership including consumers to develop a governance framework that considered all perspectives.

**Results:** A framework and checklist were developed that included nine areas for consideration: appropriateness of AI in this context, ethics, equity, technical, data, legal/contractual, and clinical, consumer and Māori perspectives. This checklist has been used to review proposals at all stages of the AI lifecycle for more than one year. It is now being used by a National Expert Advisory Group.

**Conclusions:** International guidance can provide the basis for local adaptation of principles that can be applied to the governance of the development and use of AI within national public health systems. The opportunity for AI is large but the potential to do harm is real, and therefore the implementation of AI tools in healthcare should be carefully considered.

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### The effect of WhatsApp group-based digital health interventions on increasing anemia knowledge in college female students

Andi Silwanah<sup>1</sup>, Suriah Suriah<sup>1</sup>, Nurhaedar Jafar<sup>1</sup>, Intan Areni<sup>1</sup>, Muh Zamaa<sup>2</sup>, Nurlili Nurlili<sup>2</sup>, Basri Basri<sup>2</sup>, Rezky Yusuf<sup>3</sup>

<sup>1</sup>Hasanuddin University Indonesia, Indonesia, <sup>2</sup>Sekolah Tinggi Ilmu Kesehatan Makassar, Indonesia, <sup>3</sup>Universitas Muslim Indonesia, Indonesia

**Background:** The prevalence of adolescent female anemia and reproductive age remains alarming. By 2025 globally, it is predicted that there will be an increase in prevalence by more than double by 31.2%. Data on the prevalence of Indonesian adolescents aged 15-24 years has increased, namely in 2013 by 18.4%, an increase of 26.8% in 2018, and this shows that Indonesia is a country with a worsening anemia rate that is difficult to reach the Global nutrition target (anemia) in 2025, namely 14.3%. This study Aims to determine the effect of group WhatsApp-based digital health interventions on improving anemia knowledge in female college students.

**Methods:** The type of research is pre-experimental, using a one-group pretest-posttest approach without a control group. The study sample was 36 female students, using the Purposive sampling technique.

**Results:** The study's results using the paired t-test showed an influence of group WhatsApp-based digital health interventions on the increase in anemia knowledge in female students  $p$  value = 0.012 < 0.05.

**Conclusions:** This study concludes that there is an influence of WhatsApp group-based digital intervention on increasing anemia knowledge among female college students, so this group WhatsApp-based digital health interventions method can be applied as one of the promotional efforts in the delivery of health education about anemia among women of productive age.

**Keywords:** anemia, digital intervention, WhatsApp, knowledge

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### Culturally safe eHealth: what is 'best practice' and who determines it?

Georgina Chelberg<sup>1</sup>, Ray Mahoney<sup>1</sup>, Charankarthi Musuwadi<sup>2</sup>, Kaley Butten<sup>2</sup>

<sup>1</sup>Commonwealth Scientific and Industrial Research Organisation, Australia,

<sup>2</sup>Commonwealth Scientific and Industrial Research Organisation, Herston, Australia

**Background/Objective:** Evidence for the relevance, effectiveness, and socio-cultural benefits of eHealth interventions with First Nations peoples is growing. In Australia, a research program is preparing a best practice framework (BPF) for eHealth with Aboriginal and Torres Strait Islander people [1]. The 7 phases aim to establish the themes and characteristics of culturally safe eHealth, as voiced by Aboriginal and Torres Strait Islander people.

**Methods:** A systematic literature review and scoping review were conducted (Phases 1 and (ii) what guidelines or best practice evidence should inform eHealth interventions with Aboriginal and Torres Strait Islander people. PROSPERO and Open Science Framework protocols were registered. Search strategies incorporated variations of 'eHealth'; 'Aboriginal and Torres Strait Islander health'; 'guidelines, ethics'. Database searches included Web of Science, Scopus, Cochrane, Embase, CINAHL, PubMed, PsycINFO, plus grey literature. Screening, data extraction and quality assessments were conducted by 3 authors, with narrative analysis to generate themes (Phase 3). Modified Delphi processes will confirm final themes and principles of the BPF (Phases 4-6). Delphi participants will include stakeholders of eHealth feasibility trials, subject matter experts, and community-controlled partners with expertise in Aboriginal and Torres Strait Islander health.

**Results:** The BPF scientific protocol was published in June 2022 [1]. Phases 1&2 commenced November 2022 with findings on-track for release in early 2023. In December 2022, qualitative data collection was completed for several eHealth feasibility trials with Aboriginal and Torres Strait Islander communities. Key findings from stakeholders will contribute to subsequent Delphi processes scheduled for May 2023. Dissemination of the foundational BPF is expected December 2023 (Phase 7). This presentation will highlight key findings from completed research phases.

**Conclusions:** A BPF will contribute to rigorous eHealth innovations that promote genuine co-design, ensure cultural safety and clinical effectiveness for Aboriginal and Torres Strait Islander people. [1]doi:10.2196/34904

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### A digital solution to support the Multidisciplinary Tumor Board activities: implementation process and impact analysis

Maria Specchia<sup>1,2</sup>, Andrea Pilla<sup>2</sup>, Maria Gambacorta<sup>1,2</sup>, Alessandro Filippella<sup>2</sup>,

Flavia Beccia<sup>2</sup>, Sara Farina<sup>2</sup>, Elisa Meldolesi<sup>1</sup>, Chiara Lanza<sup>1</sup>, Rocco Bellantone<sup>1,2</sup>, Vincenzo Valentini<sup>1,2</sup>, Giampaolo Tortora<sup>1,2</sup>  
<sup>1</sup>Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy,  
<sup>2</sup>Università Cattolica del Sacro Cuore, Rome, Italy

**Background and Objective:** Colorectal cancer (RC) is the third most common cancer, with an increasing incidence in recent years but also significant improvements in clinical outcomes. Modern treatment strategies are based on the close working of related disciplines within Multidisciplinary Tumour Boards (MTBs). This study has been aimed to implement a digital solution within the RC-MTB and analyse its impact in the context of the Fondazione Policlinico 'A. Gemelli' in Italy. **Methods:** A multidisciplinary working group was created for the platform customization according to the RC-MTB specific needs (definition of the data to be recorded and stored in the platform for each clinical case discussed) and its integration into the hospital IT system to allow the automatic import of patients' data. Subsequently, the platform was validated through a pilot test and operatively launched. The platform impact analysis was carried out through a pre-post comparison of the RC-MTB. Descriptive and inferential analyses were performed, with a p-value < 0.05 being considered statistically significant.

**Results:** The implementation of the platform allowed more healthcare professionals to attend meetings (p<0.001) and resulted in a decrease of patients sent to the RC-MTB for re-staging after radiotherapy-chemotherapy (RT-CT) (p=0.001) and an increase of patients sent to the RC-MTB for the definition of treatment strategies (p<0.001). The shared clinical decision "Needed further diagnostic investigation results" showed a significant reduction (p=0.023) and the "Referring patients for RT-CT" one a statistically significant increase (p<0.001). **Conclusions:** The study showed a positive impact of the platform for organizational and patient-related aspects. For future perspectives, a) the assessment of virtual MTBs impact could be expanded to other cancer diseases and analysed also in terms of processes (e.g. clinical paths timing/adherence to guidelines), and clinical outcomes (e.g. survival/quality of life); b) the IT platform could be used also for research and teaching activities.

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### How can we build public trust in personal data use in health systems? Evidence-based guidance

Felix Gille<sup>1</sup>, Sarah Smith<sup>2</sup>, Nicholas Mays<sup>3</sup>

<sup>1</sup>University of Zurich, Switzerland, <sup>2</sup>The London School of Hygiene & Tropical Medicine (LSHTM), United Kingdom, <sup>3</sup>London School of Hygiene & Tropical Medicine (LSHTM), United Kingdom

**Objective:** Public trust in health systems is pivotal for their effective and efficient functioning. In particular, public trust is essential for personal data use, as demonstrated in debates in many countries, for example, about whether data from COVID-19 contact tracing apps should be pooled or remain on individuals' smartphones. Low levels of public trust pose a risk not only to health system legitimacy but can also harm population health. **Methods:** Synthesising our previous qualitative and theoretical research in the English National Health Service which enabled us to conceptualise the nature of public trust in health systems, we present guiding principles designed to rebuild public trust, if lost, and to maintain high levels of public trust in personal data use within the health system, if not.

**Results:** To build public trust, health system actors need to not rush trust building; engage with the public; keep the public safe; offer autonomy to the public; plan for diverse trust relationships; recognise that trust is shaped by both emotion and rational thought; represent the public interest; and work towards realising a net benefit for the health system and the public. **Conclusions:** Beyond policymakers and government officials, the guiding principles address a wide range of actors within health systems so that they can work collectively to build public trust. The guiding principles can be used to inform policymaking in health and health care and to analyse the performance of different governments to see if those governments that operate in greater conformity with the guiding principles perform better. This research is published in: Gille F, Smith S, Mays N. Evidence-based guiding principles to build public trust in personal data use in health systems. DIGITAL HEALTH. 2022;8. doi:10.1177/20552076221111947 [1] Links: -----[1] <https://doi.org/10.1177/20552076221111947>

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### Promoting physical activity among university students using social media or text messaging: a systematic review

Roberta Lo Bue<sup>1</sup>, Alessandra Buja<sup>2</sup>, Federico Mariotti<sup>3</sup>, Chiara Zampieri<sup>2</sup>, Giovanni Leone<sup>2</sup>, Stefano Tardivo<sup>4</sup>, Vincenzo Baldo<sup>2</sup>

<sup>1</sup>Department of Cardiological, Thoracic and Vascular Sciences, and Public

Health, University of Padova, Italy, <sup>2</sup>Department of Cardiological, Thoracic and Vascular Sciences, and Public Health, University of Padova, Italy, <sup>3</sup>University of Padova, Italy, <sup>4</sup>Department of Diagnostics and Public Health, Section of Hygiene, University of Verona, Italy

**Background and Objective:** Regular physical exercise lowers the risk of all-cause mortality and of various chronic diseases. Sedentary lifestyles are very common among college students. Individuals who do not engage in sufficient levels of physical activity at this age are at high risk of persisting in this behavior for the rest of their adult lives. New technologies, such as smartphones and social media, have been used successfully as health promotion tools in college populations. The purpose of this study was to conduct a systematic review of studies examining the effectiveness of interventions that used modern technologies to promote physical activity in college students, and to propose a protocol for such interventions based on the evidence emerging from the review. **Methods:** A systematic review was conducted on the PubMed and SCOPUS databases, considering studies published from 2012 to 2022 that aimed to assess the effectiveness of interventions to promote physical activities for college students using modern technologies. For a total of 19 articles selected, an evidence table was drawn up, and the quality of the studies was assessed using the PRISMA checklist.

**Results:** The interventions differed enormously in design, the strategies implemented and the types of outcome measure considered. Fifteen (79%) of the 19 studies reviewed demonstrated an improvement in participants' physical activity levels, while three studies (16%) found no such improvement, and a worsening of the baseline activity levels was reported in one study (5%). **Conclusions:** Interventions to improve college students' physical activity levels with the aid of modern technology tend to be effective. Many factors can influence the effectiveness of such interventions, however. For example, a gender-related difference emerged in students' participation in the studies reviewed, and the interventions proved more effective if they were accompanied by the creation of social groups.

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### How to measure digital public health system maturity on a national level: an international interdisciplinary Delphi study

Laura Maaß<sup>1,2</sup>

<sup>1</sup>Research Center on Inequality and Social Policy (Socium), University of Bremen, Bremen, Germany, <sup>2</sup>Leibniz ScienceCampus Digital Public Health Bremen, Bremen, Germany

**Background and Objective:** The COVID-19 pandemic showed how crucial digital public health (DiPH) interventions are for continuous treatment and system sustainability. Several studies highlighted how the digital system transformation might improve access to and quality of healthcare services. However, there is no consensus on how to best assess the national readiness for the digitalization of such systems. Therefore, this Delphi study aimed to collect indicators to measure the maturity of DiPH systems nationally.

**Methods:** The three-stage international and interdisciplinary Delphi study included 82 participants. During the first round, participants were invited to propose indicators to measure maturity among the technological and legal requirements of DiPH tools, the willingness of the general public to use them, and the degree of application of DiPH tools to the national healthcare system. The suggestions were qualitatively assessed and presented for ranking on a 4-point Likert scale during the second round. Experts were also able to rephrase or add indicators. In the third round, experts could only rank indicators.

**Results:** 106 indicators to measure the maturity of DiPH systems were included. Of these, 33 fall under the legal and 30 under the technological requirements. 27 assess the social level and 16 the degree of application. All dimensions can be clustered further into 3-4 sub-groups each. The qualitative analysis pointed to the importance of data protection regulations, affordable access to smartphones and the internet, interoperability between interventions, financial incentives, user motivation and literacy, and whether interventions were implemented as local pilots or national system services.

**Conclusions:** The study identified indicators for interdisciplinary assessing DiPH system maturity. While this Delphi can't answer how best to integrate these indicators into national health system evaluation procedures, this approach is an essential first step towards an index to measure the maturity of DiPH systems.

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### Adjusting to digital change: learnings from five hospitals using mHealth for gestational diabetes management

Kaley Butten<sup>1</sup>, Marlien Varnfield<sup>1</sup>

**<sup>1</sup>Australian eHealth Research Centre, CSIRO, Australia**

**Background and Objective:** Mobile health (mHealth) platforms are becoming increasingly common as health services try to meet the growing demand for quality care in managing chronic health conditions. Conditions such as gestational diabetes which require consistent record-keeping and monitoring lend themselves to digital solutions, yet the implementation of these technologies remains challenged. The Objective of this study was to examine the change management experiences of stakeholders utilising the MoTher platform which consists of a patient facing App and a web-based clinician dashboard, to support the management of gestational diabetes across five Australian hospitals.

**Methods:** A mixed-methods approach has been used to understand stakeholder experiences implementing MoTher. Clinicians, project staff including engineers across five Australian hospitals where the platform has been used with 5000+ patients since June 2020 are sharing their views in interviews and contributing via a survey based on the Unified Theory of Acceptance and Use of Technology (UTAUT). Additionally, communications and pain points raised with project staff across study sites are being thematically analysed to understand common and potentially overlooked implementation challenges.

**Results:** Preliminary findings (final results expected by conference date) suggest that the Introduction of mHealth has had multi-level implications, particularly in the health service eco-system, affecting care-coordination, staffing, allocation of resources, billing, and potentially other service models (with clinical outcomes reported to be affected).

**Conclusions:** Although the COVID-19 pandemic has given innovation a nudge, mHealth is not a brand-new option for health service support. Research suggests there has been a lack of appropriate change management principles within health systems which has delayed adoption. Initial takeaways from this study suggest there is room for more structured frameworks to support technology transitions, particularly for clinicians and services. This study will provide important learnings which can inform future digital health integration, supporting the change management process and long-term sustainability.

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**Exploiting digital social diffusion: problematic dissemination of prescription drug news in Latin America**

Matthew Flynn<sup>1</sup>, Andres Lombana-Bermudez<sup>2</sup>

<sup>1</sup>Georgia Southern University, United States, <sup>2</sup>Pontificia Universidad Javeriana, Colombia

**Background and Objective:** Due to public health concerns, most countries of the world ban companies from directly advertising medicines to the public. However, the rise of new digital media allows for the dissemination of information that does not promote the rational use of prescription drugs. The objective of this study is to evaluate reports on medicines and analyze their diffusion on social media platforms.

**Methods:** This study searched for the top 19 drugs sold in 2018 using Media Cloud, an engine that organizes digital media on the Internet and places them in a database, published in Brazil, Argentina, Mexico, Chile, Peru, and Colombia. Three coders decided on the following criteria: Source of information (news media, op-ed, university, company, government, NGO); Propaganda (Yes/No/Maybe); Content (new treatment, abuse, regulation, price, industry, other); Tone (neutral, laudatory, critical); and Adverse Reactions (ADRs) mentioned (Yes/No).

**Results:** A total of 424 stories mentioning the top brands (329 in Spanish, 95 in Portuguese) were collected. A subgroup of 213 stories was shared on Facebook (FB) (141 in SP, 72 in PT), of which 35 stories had more than 100 FB shares. The count of articles coded as laudatory, critical, and neutral are 75, 91, and 47, respectively, and a majority (N=155) not mentioning ADRs. For stories shared more than 100 times on FB, 19 were coded as laudatory compared to critical (N=10) or neutral (N=6), and stories not mentioning ADRs (N=25) totaled more than those that did not (N=10).

**Conclusions:** Prescription drug news with laudatory frames as well as content that fails to mention potential side effects appears to disseminate more on social media.

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**Association of waiting time and satisfaction level of patients with online registration system in a tertiary level medical institute Outpatient Department (OPD)- a case control study**

Arun Aggarwal<sup>1</sup>, Nitika Sharma<sup>2</sup>, Pankaj Arora<sup>3</sup>, Pankaj Bahuguna<sup>1</sup>

<sup>1</sup>Department of Community Medicine, School of Public Health, Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, India,

<sup>2</sup>Postgraduate Institute of Medical Education and Research, Department of Community Medicine and School of Public Health, Chandigarh, India, <sup>3</sup>Department of Hospital Administration, Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, India

**Background and Objectives:** In 2015 the Government of India started a Computerized Online Registration System (CORS) for scheduling online appointments. This study was conducted to assess whether the Introduction of CORS had any impact on patient satisfaction and patient waiting time for outpatient registration.

**Methods:** A study comprising 50 online registered patients and 70 walk-in registered patients was conducted at the adult outpatient departments registration windows (Internal Medicine and General Surgery) of a tertiary level hospital. A pre-tested interview schedule was used to capture the satisfaction levels (%), waiting time (in minutes) and their associated factors in both group of patients.

**Results:** The Median waiting time for walk-in registered patients was approximately four times (60 minutes, IQR (30-90)) as compared to the online registered patients (15 minutes, IQR (10-30)) (p=0.000). The satisfaction level among the online registered patients (90%, 95% CI (83-97)) was three times higher than the walk-in registered patients (29%, 95% CI (18-40)). The online registered patients were ten times more likely to be satisfied as compared to the walk-in registered patients (Adjusted Odds Ratio 9.8, 95% CI (2.2-43.5)). Additionally, for every 1% increase in the waiting time at the online registration window (>30 minutes) the satisfaction decreased by 3% (-3.2%).

**Conclusions:** The study showed that the CORS improved the user experience by reducing the waiting time and increasing the satisfaction levels at the registration window.

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**Data sharing barriers and enablers for healthcare Artificial Intelligence (AI) in Low- and Middle-income countries**

Capucine Barcellona<sup>1</sup>, Aprajita Kaushik<sup>1</sup>, Nikita Mandyam<sup>2</sup>, Si Tan<sup>2</sup>, Jasper Tromp<sup>2</sup>

<sup>1</sup>Saw Swee Hock School of Public Health, National University of Singapore, Singapore, <sup>2</sup>National University of Singapore

**Background:** Health systems in low- and middle-income countries (LMICs) can greatly benefit from AI interventions, including electronic decision support tools and predictive analytics. Unfortunately, challenges to data sharing pose a significant obstacle to the development and use of AI in healthcare.

**Objective:** This systematic review identified barriers to and enablers for data sharing related to AI in healthcare in LMICs.

**Methods:** A systematic literature search was performed using PubMed, SCOPUS, Embase, Web of Science and ACM (Association for Computing Machinery) for articles describing barriers to and enablers for data sharing for AI in healthcare in LMICs. Qualitative data extraction and thematic analysis was conducted on selected studies. Barriers and enablers were classified according to a framework formulated by merging two existing framework (Panhuis 2014 and Sun and Medaglia 2019), comprising eight categories: 1) Technical, 2) Motivational, 3) Economic, 4) Political, Legal and Policy, 5) Ethical, 6) Social, 7) Organisational and Managerial and 8) Data-related.

**Results:** The systematic search identified 2471 records, of which 22 met the eligibility criteria. The studies were from 13 countries, with the majority from Africa (12 studies, 55%) and Asia (6 studies, 27%). The most important barriers were technical (e.g. lack of hospital infrastructure) and data-related (e.g. lack of interoperability standards). Significant enablers for data sharing included political and regulatory enablers (e.g. government support, clear policies and guidelines on data sharing) and technical enablers (e.g. shifting from paper-based to electronic data collection).

**Conclusions:** This systematic review identified various barriers and enablers relevant to LMICs. These results can inform context-specific recommendations to promote local AI development in resource-limited settings. Recommendations and best practices arising from this review can also indicate ways to mitigate common data sharing barriers for transitioning economies and health systems.

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**Machine learning prediction of suicidal ideation among college students during the COVID-19 pandemic**

Mélissa Macalli<sup>1</sup>, Marie Navarro<sup>1</sup>, Océane Pic<sup>1</sup>, Nathalie Texier<sup>2</sup>, Stéphane Schück<sup>2</sup>, Christophe Tzourio<sup>1</sup>

<sup>1</sup>University of Bordeaux, France, <sup>2</sup>Kappa Santé, France

**Background and Objective:** College students are particularly vulnerable to mental health problems, including suicidal ideation. The COVID-19 pandemic, and the

restrictive measures imposed to limit the spread of the virus, such as lockdown or university closures, have increased the vulnerability of college students to mental health problems. In this particular epidemic context, our objectives were to (1) develop a predictive model of suicidal ideation among college students with a machine learning model; and (2) identify the most predictive factors.

**Methods:** We used random forest models to predict suicidal ideation among 346 French college students involved in the French CONFINS longitudinal cohort. We created models for predicting suicidal ideation at follow-up, based on 128 potential predictors reported at baseline that reflected socio-demographics, health, lifestyle habits, familial characteristics, and COVID-19-related characteristics.

**Results:** The most important predictors identified were depressive symptoms, self-reported mood, and anxiety symptoms. The predictive models showed moderately good mean values for the area under the receiver operating characteristic curve (0.74), sensitivity (0.69), specificity (0.74), and negative predictive value (0.89). To a lesser degree, the level of stress before the COVID-19 pandemic, optimism about the quality of life after lockdown, and health literacy contributed to the suicidal ideation prediction. In a subsample of students that did not report suicidal ideation at baseline, the main predictors were quite similar.

**Conclusions:** Few factors were required for predicting the SI. The strongest predictors were related to the college student's mental health, and they were not specific to the pandemic. These findings may facilitate the development of a routine screening tool for the early identification of students at risk.

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### Exploring maternal mortality in Southern Ethiopia: a qualitative study

Niguse Kara<sup>1</sup>, Mary Codd<sup>2</sup>, Takele Tadesse<sup>3</sup>, Abenet Desalegn<sup>4</sup>

<sup>1</sup>School of Public health, Wolaita Sodo University, Wolaita Sodo, Ethiopia,

<sup>2</sup>School of Public Health, Physiotherapy and Sport Science, University

College Dublin, Ireland, <sup>3</sup>School of Public health, Wolaita Sodo University, Sodo, Ethiopia, <sup>4</sup>School of Medicine, Wolaita Sodo University, Wolaita Sodo, Ethiopia

**Background:** Maternal mortality in Ethiopia is the fifth highest in the world, estimated to be 401/100000 population. Even though Ethiopia has been applying strategies to reduce maternal mortality such as Basic (BEmOC) and Comprehensive Emergency Obstetric Care (CEmOC), upgrading health facilities, training health officers and midwives, providing institutions with essential equipment, and regular monitoring and supervision, maternal mortality is still unacceptably high. The objective of this study is to explore factors associated with maternal deaths in the Wolaita Zone, Southern Ethiopia.

**Methods:** The study used a grounded theory method with theoretical sampling. Four focus group Discussions (FGD) with 24 health care providers at four hospitals, and in-depth interviews with 10 family members of deceased mothers in Wolaita Zone who were identified from hospital records and from maternal death response officers and health extension workers in the district were carried out. All interviews and focused Group Discussion (FGD) were recorded, transcribed, and analysed using NVivo software with constant comparison analysis.

**Results:** Grounded data from FGD and in-depth interviews revealed factors very likely associated with and contributing to the high maternal death from health care providers and deceased family perspectives. The findings evolved as important were heavy bleeding, uterine rupture, delay in decisions to seek care, delay in getting to hospitals, and delay in receiving adequate health care.

**Conclusions:** To reduce maternal mortality to Sustainable Development Goal (SDG) 2030 level, maternal complications found in this study along with others should be given critical emphasis from service users, health care providers and government.

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### Data quality assessment of mHealth systems: strengths, potential limitations and opportunities for improvement; Case of Yendanafe system in Neno District, Malawi

Othniel Nimbabazi<sup>1</sup>, Macdonald Kudambo<sup>2</sup>, Fabien Munyaneza<sup>3</sup>, Rex Wong<sup>4</sup>, Chiyembekezo Kachimanga<sup>5</sup>, Karim Benali<sup>6</sup>

<sup>1</sup>University of Global Health Equity, Rwanda, <sup>2</sup>University of Global Health

Equity, Malawi, <sup>3</sup>Partners in Health Malawi, Rwanda, <sup>4</sup>University of Global

Health Equity, United States, <sup>5</sup>Partners in Health Malawi, Malawi, <sup>6</sup>Havard

University, Algeria

**Background:** Good quality data enables proper decision making in healthcare settings leading to better planning, higher management efficiency and improved patient outcomes. The Yendanafe data system in Malawi was designed to

promote comprehensive patient care and improve public health services through an evidence-based approach. This study assessed the quality of the Yendanafe data system.

**Methods:** All available data in the Yendanafe data system for the year 2021 were analyzed in their data completeness, timeliness, accuracy, and consistency by measuring against the who recommended standards. A quantitative survey was conducted on a random sample of community health workers at six participating sites to identify end-user perspectives on the system and potential sources of variability.

**Results:** The median completion rate was 100%, significantly higher than the who recommended standard of 90% ( $p=0.043$ ). The overall timeliness of the Yendanafe system was 87.4%, significantly higher than the who recommended score of 80% ( $p>0.001$ ). The overall average accuracy rate was 48.8%, significantly below the who recommended accuracy rate of 95% ( $p>0.001$ ). The overall consistency was 98.77%. The strength of the system included having a language that is easy to understand (86%), having enough time to synchronize data into database (89%) and the ability to make edits in case information is wrongly filled (88%). However, some respondents found the phone were not user-friendly (86%), the system operated slowly (75%) and limited previous experience in collecting data via phone (85%).

**Conclusions:** The Yendanafe system is an innovative and powerful tool that has the potential to revolutionize data collection and use to contribute positively to the improvement of the healthcare system in Malawi. Future studies to validate the accuracy of the Yendanafe system and to assess the accuracy of EMR data systems are needed. More technical support was needed and the design of the system could be improved.

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### Medical artificial intelligence readiness of medical students in Turkiye

Sevda Sungur<sup>1</sup>, Didem Oktar<sup>1</sup>, Selma Metintas<sup>1</sup>, Muhammed Onsuz<sup>1</sup>, Mediha Bal<sup>1</sup>

<sup>1</sup>Department of Public Health, Faculty of Medicine, Eskisehir Osmangazi University, Eskisehir, Türkiye

**Background and Objectives:** Medical artificial intelligence readiness (MAIR) is the state of readiness of the health care provider in the knowledge, skills and attitude to use health care-Artificial intelligence (AI) applications in its mix with their own professional knowledge. The study aimed to measure the MAIR level of medical students and related variables amalgam with own professional knowledge and related variables. **Methods:** This cross-sectional study was conducted on 108,876 medical students in Turkiye in the 2022 spring semester. In the questionnaire, sociodemographic characteristics, participants thoughts on AI and AI usage areas were questioned. MAIR was measured with the MAIR Scale for medical students (MAIRS-MS). MAIRS-MS was found to be a valid and reliable (Cronbach's alpha 0.87) for evaluating and monitoring medical students' on AI technologies and applications. The questionnaire was administered on digital platforms with online Google forms.

**Results:** The study group consisted of 2407 students, 55.6% of whom were female. The scores obtained from the scale ranged 22-110, with a median of 67. Of 60.4% students scored above the average. Among the areas where AI is used in health services, the most known was medical imaging with 59.3%, and the least known was early response planning and needs analysis for disasters with 17.9%. MAIR level was higher in those who had heard of AI before, studied AI, knew the use of AI in medicine, reported more than three areas of AI in medicine ( $p<0.001$ ). Of 70.0% students thought that AI should be included in their curriculum. The students stated that AI is safe in medicine (47.8%), can be used in their professional business work (44.3%), but it might be abused (43.4%). **Conclusions:** The AI readiness level of future physicians is moderate. More educational programs for the applications of AI in medicine are recommended for medical students.

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### Patient satisfaction on the utilization of Video Observed Therapy (VOT) at the Vicente Sotto Memorial Medical Center (VSMMC), Cebu City, Programmatic Management of Drug Resistant Tuberculosis Satellite Treatment Center (PMDT STC) during the COVID-19 pandemic

Anro Begontes<sup>1</sup>, Grace Melchor<sup>1</sup>, Alfredo Lim<sup>1</sup>, Vince Araneta<sup>1</sup>

<sup>1</sup>Vicente Sotto Memorial Medical Center, Cebu City, Philippines

**Introduction:** The face-to-face directly observed treatment (DOT) of multi drug resistant tuberculosis (MDRTB) was constrained by the implementation

of community lockdowns and travel restrictions to contain the Severe Acute Respiratory Syndrome Corona Virus-2 (SARS CoV-2). The pandemic resulted in disruptions of the usual operations in almost all sectors of the Philippines. The development of a new strategy like video telephony technology in healthcare have raised the remote video-observed treatment (VOT) as an alternative approach to DOT for monitoring. The utilization of this new strategy in our present setting in Cebu City, Philippines has to be explored yet.

**Objective:** To assess and determine the patient's satisfaction on the utilization of VOT among MDR Tuberculosis patients in the time of COVID 19 pandemic at the PMDT – VSMMC from May 2022-July 2022.

**Methods:** A purposive sampling method was utilized involving the enrolled patients at PMDT STC. The patient satisfaction with VOT was measured using survey questionnaires from the study of Sekandi et al., (2020).

**Design:** The study design used in this research were both descriptive and analytical cross-sectional study during the COVID-19 pandemic within the time period of May 2022 to July 2022).

**Results:** Among the 45 respondents, 95.6 % were satisfied with the mode of therapy and 4.4 % were not. Most of the patients, 55.6%, recommend the VOT in the management of MDRTB. The Fisher's Exact Test showed that there were no significant associations existing among the different demographic parameters.

**Conclusions:** Video Observed therapy is an acceptable method of monitoring among patients receiving MDRTB treatment in VSMMC, wherein the respondents of the study were satisfied with this mode of therapy and recommends its use. This innovative mode of treatment can be used in a pandemic period wherein lockdowns or travel restrictions interfere with DOT.

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### Italy's journey throughout the pandemic: sentiments and attitudes in 2 million tweets

Andriy Melnyk<sup>1</sup>, Andrea Agostini<sup>2</sup>, Mario Nurchis<sup>3</sup>, Gerardo Altamura<sup>1</sup>, Chiara Cadaddu<sup>1</sup>, Fidelia Cascini<sup>4</sup>, Walter Ricciardi<sup>4</sup>

<sup>1</sup>Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Roma, Italy, <sup>2</sup>ETH Zurich, Switzerland, <sup>3</sup>Department of Woman and Child Health and Public Health, Fondazione Policlinico Universitario A. Gemelli IRCCS, Italy, <sup>4</sup>Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy

**Background and Objective:** Artificial Intelligence (AI) and Machine Learning (ML) techniques offer an opportunity for profound analysis of public attitudes, sentiments, and key discussion topics from a diverse range of sources, including social media data. Among social media platforms, Twitter offers a unique and potentially powerful data source due to its ease of access, real-time nature and support for academic endeavors. The analysis of tweets allows identification of dominant themes, topics, and changing trends pertaining to the pandemic, lockdowns and vaccinations. This might fundamentally improve public health programs, policies and vaccine rollout strategies both locally and nationally.

**Methods:** Twitter API v2 for academic purposes was used to extract Italian language tweets using a keyword set. Daily twitter volume and 2000 sample tweets per day were obtained from February 21st, 2020, to December 1st, 2022. A hybrid algorithm combining a rules-based approach and machine learning, specifically tuned for Italian, classified tweets according to sentiment (positive or negative) and topics (topic modelling). Weighing daily twitter volume, a Regression Discontinuity Design was used to identify changes in attitudes around a spectrum of relevant national events (e.g., pandemic, policies, COVID Certificate).

**Results:** More than 2,000,000 tweets were analyzed. Topics of discussion identified ranged from restrictive measures to economic stability. The model identified a change in positive attitudes and daily twitter volume around specific events, such as the first COVID-19 cases, the implementation of COVID-19 zones, vaccine related news and the implementation of the Green Pass.

**Conclusions:** Pandemic response strategies necessitate a deep understanding of the relationship between public health policies and population attitudes towards restrictive measures, vaccinations and their effect on people's lives. Applying AI and ML techniques on social media allows policy makers to improve their decision making for the current pandemic and future ones.

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### Prediction models for intrauterine growth restriction using artificial intelligence and machine learning: a systematic review and meta-analysis

Riccardo Rescinito<sup>1</sup>, Matteo Ratti<sup>1</sup>, Massimiliano Panella<sup>2</sup>

<sup>1</sup>Department of Translational Medicine (DiMeT), Università del Piemonte

Oriente, Novara, Italy, <sup>2</sup>Department of Translational Medicine (DiMeT), Università del Piemonte orientale, Novara, Italy

Intrauterine growth restriction (IUGR) is a fetal restriction associated with an abnormal fetal growth rate and has major implications for neonatal health. Artificial intelligence (AI) and machine learning (ML) models are increasingly being used to identify risk factors and provide early prediction of IUGR. We performed a systematic review (SR) and meta-analysis (MA) aimed to evaluate the use of AI/ML models in detecting fetuses at risk of IUGR. This SR was conducted according to the PRISMA checklist. SR included 14 studies reporting the performances of AI/ML models for the prediction of IUGR, of which 10 studies were used for meta-analysis. In the SR, the variables or data analyzed in the studies to predict IUGR were the fetal heart rate (n=7, 50%), biochemical or biological markers (n=4, 29%), DNA profiling data (n=2, 14%), and MRI data (n=1, 7%). Overall, we found that AI/ML techniques could be effective in predicting and identifying fetuses at risk for IUGR during pregnancy with the following pooled overall diagnostic performance: sensitivity = 0.84 (0.80 - 0.88), specificity = 0.87 (95% CI 0.83 - 0.90), positive predictive value = 0.78 (0.68 - 0.86), negative predictive value = 0.91 (0.86 - 0.94) and diagnostic odds ratio = 30.97 (19.34 - 49.59). In detail, the RBF-SVM (Radial Basis Function - Support Vector Machine) model (with 93% accuracy) showed the best Results in predicting IUGR from FHR parameters derived from CTG. In Conclusions: Our findings showed that AI/ML could be part of a more accurate and cost-effective screening method for IUGR and be of help in optimizing pregnancy outcomes. However, before the introduction into clinical daily practice, an appropriate algorithmic improvement and refinement is needed, and the importance of quality assessment and uniform diagnostic criteria should be further emphasized.

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### Analysis of the specialist outpatient visits potentially deliverable via telehealth: a cross-sectional study

Toni Cappelletti<sup>1</sup>, Giacomo Scaioli<sup>1</sup>, Veronique Sotong<sup>2</sup>, Aldo Angelis<sup>1</sup>, Giuseppina Moro<sup>1</sup>, Fabrizio Bert<sup>1</sup>, Roberta Siliquini<sup>1</sup>

<sup>1</sup>Department of Public Health Sciences, University of Turin, Italy, <sup>2</sup>University of Turin, Italy

**Background and Objective:** Telemedicine is a useful tool to deliver care to patients who have difficulties to reach healthcare facilities. During the recent COVID-19 pandemic period, the use of telemedicine increased exponentially. However, the use of this tool could be further incremented. The aim of this study was to analyze the prevalence of specialist outpatient visits currently delivered in presence that can be delivered via telemedicine, and the potential predictors of the willingness of the patients to use this tool.

**Methods:** A cross-sectional study was conducted in outpatient facilities located in Piedmont, Italy. Patients referred to Neurology, Diabetology/Endocrinology, and Pediatrics were included in the study. A 40-items survey was administered by trained researchers to the patients who were waiting for the visits. Characteristics of the visits ("first visit" or "follow-up visit", use of medical devices) were also retrieved. Specific criteria were defined to select the visits that could be potentially delivered in telemedicine.

**Results:** A total of 287 patients were included (115 pediatrics, 124 diabetology/endocrinology, 48 neurology). The percentage of specialist outpatient visits that could be provided via telemedicine was 2.6% for pediatric visits and 5.2% for other specialties. When considering deliverable in telemedicine also the visits in which medical devices were used, the percentages reached 38.7% overall. In 51.9% of cases, the assisted person declared the willingness to do the visit via telemedicine. Potential predictors of this willingness were the educational level and the age of the person.

**Conclusions:** Patients demonstrated the willingness to use telemedicine for specialist outpatient visits. However, to date it is difficult to increase the number of visits that can be provided remotely. There is the need of investments in new technologies, and to raise awareness among the most hesitant categories of persons about the use of this service.

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### A novel geographic ecological momentary assessment tool used to measure wellbeing and sleep quality based on exposure to parks

Alexander Wray<sup>1</sup>, Sean Doherty<sup>2</sup>, Jed Long<sup>1</sup>, Jinyung Lee<sup>1</sup>, Dan Rainham<sup>3</sup>, Jason Gilliland<sup>4,5,6,7</sup>

<sup>1</sup>Department of Geography and Environment, The University of Western Ontario, Canada, <sup>2</sup>Department of Geography and Environmental Studies, Wilfrid Laurier University, Canada, <sup>3</sup>School of Health and Human

Performance, Dalhousie University, Canada, <sup>4</sup>Department of Geography & Environment, The University of Western Ontario, Canada, <sup>5</sup>Department of Epidemiology & Biostatistics, The University of Western Ontario, Canada, <sup>6</sup>Department of Pediatrics, The University of Western Ontario, Canada, <sup>7</sup>School of Health Studies, The University of Western Ontario, Canada

**Background:** Parks and recreational facilities in the Canadian context are critically important to overall wellbeing as they provide opportunities to connect with nature, mitigate climate change, and facilitate social connections for the entire population. The ParkSeek project is a national research initiative funded by the Public Health Agency of Canada to establish a self-sustaining suite of tools to support the surveillance of parks and recreational facilities as health promoting resources. **Methods:** A geographic ecological momentary assessment tool (GEMA) was developed to survey participants via their smartphone device in real-time about their experiences in parks, relating it to their WHO-5 wellbeing score, and sleep quality score. Participants complete these surveys twice per day, and whenever entering or exiting a park. Participants were recruited from the mid-sized Canadian cities of London, Ontario and Waterloo, Ontario. In addition, the research team evaluated the physical features of parks visited by participants using a standardized audit tool and incorporated these features into analyses of park experiences and wellbeing outcomes.

**Results:** Pilot results demonstrate participants engage with parks based on their perceived features rather than objective features as measured by the research team, with moderate changes to their self-reported wellbeing and sleep quality scores. The time spent in parks, and daily exposure to greenness outside of parks may mediate these relationships. **Conclusions:** The advent of "park prescriptions" in Canadian primary care and public health practice requires further monitoring and evaluation. The ParkSeek GEMA could be used to monitor the effectiveness of these prescriptions in responding to mental wellbeing and physical health conditions.

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### Territorial health digitalization in a Local Health Authority of central Italy

Michele Totaro<sup>1</sup>, Mauro Pitorri<sup>1</sup>, Antonio Boncompagni<sup>1</sup>, Francesca Fornara<sup>1</sup>, Ottavio Fasciolo<sup>1</sup>, Marinella D'Innocenzo<sup>1</sup>, Anna Petti<sup>1</sup>, Assunta Luca<sup>1</sup>

<sup>1</sup>ASL Rieti, Italy

**Background and Objective:** COVID-19 forced health systems to embrace newer methods of health data sharing, in order to reduce patients' transfers, thus decreasing the risk of communicable diseases. The so-called "once only" strategy allows to centrally collect health data in an electronic health record (EHR), and avoid incomplete data from non-digital records such as papers or anamneses. Health digitalization is one of the main goals of Italian National Recovery and Resilience Plan.

**Methods:** We analyzed previous non-digital processes and defined possible interventions in the Local Health Authority (LHA) of Rieti, in central Italy. Medical prescriptions of general practitioners (GPs) are the starting point of every non-urgent territorial health process. Prescriptions were mostly sent in paper. Paper prescriptions were collected, associated to a paper patient dossier, and then physically sent to clinical providers (nurses, specialists, physiotherapists), in order to schedule and then execute the prescribed services. After performing the service, a copy of the report was then returned on paper in order to be filed and stored.

**Results:** In the actual process, digital prescriptions are directly acquired from GPs or scanned at arrival. Prescriptions are then uploaded in the local EHR, associated to patient file. Digital prescriptions are then assigned to the appropriate clinical provider, who can directly schedule the service in the EHR itself. The execution of the service is then signaled, with the possibility to write the report directly on the EHR, or attach a scanned copy. The system lets also fine monitoring of timing from prescription to schedule and execution, thus allowing detailed quality management.

**Conclusions:** The adoption of an EHR in Rieti LHA, after COVID-19 outbreak, lent to an improvement in the quality of care. EHR reduced the risk of errors and improved humanization of care.

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### The "PAITA" study: a multicentric cross-sectional study on physicians' attitude and trust towards Artificial Intelligence applications in healthcare

Valentina Nicolò<sup>1</sup>, Corrado Vito<sup>2</sup>, Paolo Villari<sup>2</sup>

<sup>1</sup>Sapienza Università di Roma, Rome, Italy, <sup>2</sup>La Sapienza, Italy

**Background and Aim:** In this study we intend to build a model to evaluate the attitude of Italian doctors towards AI applications in medicine and evaluate the factors that predispose them to be more favourable to its use. **Methods:** A 27-item questionnaire was distributed from September 1 and October 15 2022 to physicians from different healthcare facilities and with different background, using snowball technique. **Statistical analysis:** First, the descriptive statistics were made. A confirmatory factor analysis was performed to reduce the items on the Aptitude for AI scale and the reliability was evaluated through the Cronbach's alpha index. To predict the new variable, a multiple linear regression was performed. Finally, to classify the units into groups, a hierarchical and then, a non-hierarchical cluster were performed. For all tests the significance level considered was  $p < 0.05$ . Analyses were conducted with Stata v16 software.

**Results:** Globally 500 physicians fully responded; 54% men, mean age 50.53 years (SD +/-15.54), 38% of whom with more than 30 years of professional experience. The factor of AI explained 83% of the original variability and Cronbach's alpha was 0.81. The variables statistically significant in the regression model were Telemedicine, Clinical decision support system, Training and education of physician, Multi professional teams, Partnership, AI systems final supervision and Equity, with  $R^2=0.6761$ . The subdivision in clusters was associated only with the type of use ( $X^2 = 41.9499$ ;  $p < 0.001$ ) and not with gender ( $X^2 = 1.1471$ ;  $pV = 0.284$ ); area of competence ( $X^2 = 7.0801$ ;  $pV = 0.528$ ) and professional experience ( $X^2 = 5.7251$ ;  $pV = 0.221$ ). **Conclusions:** PAITA is the first study with the aim of assessing Italian doctors' attitudes toward AI and its results might represent a starting point for monitoring doctors' trust and issues regarding AI in the medical field in order to entail several future interventions.

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### Mobile-assisted medication adherence support intervention among tuberculosis patients: a parallel group randomized control trial

Zekariyas Sahile<sup>1</sup>, Anthony Maeder<sup>2</sup>, Lua Perimal-Lewis<sup>2</sup>, Paul Arbon<sup>2</sup>

<sup>1</sup>Flinders University Ambo University, Department of Public Health Ethiopia,

<sup>2</sup>Flinders University Australia

**Background:** There is conflicting evidence regarding the efficacy of SMS texts to promote TB medication adherence. Thus, we developed a mobile-assisted medication adherence support (Ma-MAS) intervention using the medical research council (MRC) framework based in a local context targeting audience needs and the effectiveness of this intervention evaluated in a sample of TB patients in Addis Ababa, Ethiopia.

**Methods:** A parallel group randomized control trial design was used to evaluate the effectiveness of Ma-MAS intervention. In total, 186 adult TB patients (93 per group) were randomly assigned 1:1 to one of the two groups. Participants in the Ma-MAS group received daily SMS texts and weekly phone calls regarding their daily medication intake and reminders to attend clinic visits for 8 weeks. Participants in the control group did not receive SMS texts or phone calls but received the same routine standard care as the Ma-MAS group. The primary outcome was the proportion of adherence measured by urine tests for isoniazid (INH) metabolites at the end of the 4th and 8th week of follow-up period. Analysis of a multivariable binomial generalized linear model was employed to evaluate the effect of Ma-MAS at  $P$  value  $< 0.05$ .

**Results:** Ma-MAS significantly improved adherence to TB medications by 15.25% (95%CI: 5.38, 25.12;  $P$ -value=0.0065) after 8 weeks of intervention compared to the standard care alone in the control group. At the end of the 8 weeks follow-up period, the predicted probability of adherence to TB medication in the Ma-MAS group was 86% (95%CI: 81, 93), and in the control group was 70% (95%CI: 61, 79). Ma-MAS also improved adherence to TB medication by 15.30% (95%CI: 6.68, 23.90;  $P$ -value=0.0022) after 4 weeks of intervention compared with the control group.

**Conclusion:** Ma-MAS intervention based on information-motivation-behavioural skills model and behavioural change techniques is useful to improve adherence to TB medication.

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### The Italian national artificial intelligence platform to enhance health experience and outcomes

Domenico Mantoan<sup>1</sup>, Elettra Carini<sup>1</sup>, Alice Borghini<sup>1</sup>, Simone Furfaro<sup>1</sup>,

Roberta Cosi<sup>1</sup>, Domenico Mantoan<sup>1</sup>

<sup>1</sup>National Agency for Regional Health Services (AGENAS), Via Piemonte 60, 00187 Rome, Italy

**Background and Objective:** Even though the potential of Artificial Intelligence (AI)

in health is undeniable, still there are many issues that concern the users such as privacy, the complex and opaque relationships between analysis performed by AI and clinical output, efficacy and effectiveness of AI tools. The aim of this study is to analyse the impact of the introduction of a national AI platform for primary care. Methods: A before-and-after study will be performed by AGENAS to analyse the efficiency and effectiveness of the AI platform over a time span of 12 months of implementation. A sample of General Practitioners (GPs) working in the community health houses using the AI platform will be selected and indicators will be analysed at baseline, 6 and 12 months. A survey to analyse satisfaction of patients and GPs will be carried out.

Results: The national AI platform is funded with 40 million euros by NextGenerationEU plan and a call is ongoing to commit its realization. The first release of the AI platform will be implemented by 2024. The overall number of GPs in Italy is 39.270, the sample will involve a significant number of them, at least 1 doctor per urban zone (as defined by Istat) per region. The indicators measured will be about the utilization of the platform, changes in diagnosis and therapy. The questionnaire will survey the satisfaction of both patients and GPs using the platform.

Conclusion: The implementation of the AI platform is expected to enhance access to health services for patients, and accuracy and timeliness of diagnosis and therapy for professionals as well as enhance the experience of care and reduce the administrative burden on professionals. Digitalisation and AI can produce massive changes in health and can lead to a new era in health delivery.

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### Moral health resources assessment using Mobile Application Rating Scale (MARS)

Hyewon Lee<sup>1</sup>, Hyewon Lee<sup>1</sup>, Oral Health Workgroup, WFPHA<sup>2</sup>

<sup>1</sup>World Federation of Public Health, Seoul National University School of Dentistry and Dental Research Institute, Korea, Republic Of, <sup>2</sup>World Federation of Public Health, Switzerland

This presentation aims to showcase how the World Federation of Public Health Association's (WFPHA) oral health workgroup identified assessment tools and a set of questionnaires to evaluate moral health and web-based resources that promote oral health literacy and training in oral health.

The presentation will showcase how the oral health workgroup from 13 different countries identified moral health and web-based resources and evaluated them using MARS and other questions. The presentation will also discuss the dissemination of such resources, which align with the first two priority goals of the WHO's implementation guide on mobile technologies for oral health.

In 2021, the WHO published a guideline on moral health focused on promoting oral health, training health workers, detecting oral health conditions, collecting epidemiological data, and monitoring the quality of patient care. The WFPHA oral health workgroup consists of 24 public health dental leaders from 13 different countries. The group discussed the quality assessment of such moral health or other online sources and selected the MARS scale and other customized questionnaires to perform expert panel evaluation for mobile or online oral health resources. The MARS is a mobile health app quality rating tool, used on mental health primarily, to measure the quality of an app on engagement, functionality, aesthetics, and information quality, as well as app subjective quality. Using MARS, the workgroup evaluated those resources that were aligned with the first two priority areas of the WHO's guideline: oral health literacy for the general public or training for dental or non-dental providers. This presentation will share the strengths and uniqueness of each resource to the audience as expert opinions and how those resources can promote oral health and oral health care experience. The presentation will also share non-English moral health resources, their concept, and how other countries can adapt to those models.

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### Support to responsive parenting through m-health

Svetlana Mladenovic Jankovic<sup>1</sup>, Dusanka Matijevic<sup>1</sup>, Gordana Tamburkovski<sup>1</sup>, Aleksandra Andric<sup>1</sup>, Marija Markovic<sup>1</sup>, Nemanja Stefanovic<sup>1</sup>, Andjelka Grujicic<sup>1</sup>, Nevenka Kovacevic<sup>1</sup>, Inga Mijailovic<sup>1</sup>, Jelena Vasojevic<sup>1</sup>, Aleksandra Vuckovic<sup>1</sup>, Vladimir Glisovic<sup>1</sup>, Svetlana Miltenovic<sup>1</sup>

<sup>1</sup>Institute of Public Health of Belgrade, Serbia

Background: Mobile applications on child health and development are available resource for improvement of parental capacities and promotion of positive family environment. Mob app "Bebbo" is comprehensive interactive guide for parents and offers different functionalities as daily reads, monitoring child development, reminder for preventive checkups and immunization, advices for stimulation

child development. The application was created based on the prototype of the application "Hello Baby - Your companion in parenthood" developed by UNICEF in Serbia and the Institute for Public Health with the Nordeus. The UNICEF regional office for Europe and Central Asia enabled the application to be improved and to cross the borders of Serbia and start living under the new, international name "Bebbo" in as many as 11 countries and territories, in 19 language variants. Objective of this paper is to present utilization of mobile application.

Method: Retrospective analysis of data on mob app utilization in Serbia between Oct 2021 and Nov 2022. Data were available through mob app statistics.

Results: More than 39000 users downloaded mob app from Play store and App store. Most of them are parents, mainly mothers of newborns and infants. Articles that raised most of the attention of users were about child development, nutrition and breastfeeding, health and wellbeing, immunization, play and learning, responsive parenting, safety and protection. Most popular games were about stimulation of motor development, language and communication, and socio emotional development. Most of users was interested in monitoring of child milestones, and less in measuring of child growth. Functionalities on child checkups and immunization has been also utilized.

Conclusion: The mobile application "Bebbo" was used by parents for various contents of importance for children's health. Aspect of child development was most prominent through articles and functionalities most used. Data on mobile app utilization is important tool for further content management.

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### Health care risk assessment of the effectiveness and efficiency of COVID-19 remote patient telemonitoring

Chiara Parretti<sup>1</sup>, Micaela La Regina<sup>2</sup>, Paul Barach<sup>3</sup>, Riccardo Tartaglia<sup>1</sup>

<sup>1</sup>Department of Science Engineering, Marconi University, Rome, Via Plinio 44 00192 Rome, Italy, <sup>2</sup>Healthcare Agency 5 La Spezia, Via Fazio, 30 La Spezia, Italy, <sup>3</sup>Jefferson College of Population Health, United States

Background and Objective: The COVID-19 pandemic accelerated the spread of telemedicine (TM). The WHO stresses the importance of developing digital solutions with the goals of making care more effective, safe, and of better quality. While market forces are eager to drive innovation, problems with usability and interoperability remain. We analyzed two TM applications in different Italian facilities. The objective was to highlight key gap areas of criticality, and to develop a proactive implementation model to guide implementation of future effective telemedicine services.

Methods: We analyzed the inherent risks of TM using robust mixed methods, including failure mode and effects analysis (FMEA), a prospective, team-based risk management methodology structured to identify high-risk process system vulnerabilities and failures before they occur. We report on a remote patient monitoring (RPM) program in which 200 COVID-19 patients were followed remotely to evaluate the effectiveness in treating and monitoring patients in home settings. Results: We demonstrated that a telemedicine device reduced the number of hospitalizations and costs significantly. Assessment based on FMEA offers important insights and considerations for evaluating the future implementation of RPM and the direction of TM. Telemedicine solutions are technically feasible, easy for staff to use, achieving high adherence rates, but rigorous evaluation of devices and platforms is needed to clarify their value and guide optimal adoption strategies.

Conclusions: Telemedicine saved lives and improved decision making during the pandemic, helped prevent the collapse of the health care system, and had a positive impact on continuity of care, quality of life, and self-care. Integration of electronic medical records and telemedicine devices represents a compelling innovative solution that could greatly improve quality of care and lower the error rates. Rigorous and ongoing evaluation of devices and platforms is essential to clarifying their value and guiding national decisions and adoption programs.

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### A global adoption of cryptocurrency and blockchain technology; assessing the challenges of integrating digital coins and blockchain technology into the healthcare system

Teresa McKelvy<sup>1</sup>, James Johnson<sup>1</sup>, Steven Berkshire<sup>2</sup>

<sup>1</sup>Central Michigan University, 1726 Victoria Ave., Berkeley, IL 60163, United States, <sup>2</sup>Central Michigan University, The Herbert H. & Grace A. Dow College of Health Professions, 1280 E. Campus Dr., Mount Pleasant, MI 48859, United States

Background and Objective: To determine if cryptocurrency and blockchain technology can be leveraged to strengthen a hospital or private practices financial

position. We also want to establish if blockchain technology will provide a more secure mechanism for protecting patient records and payments.

**Methods:** Examined 34 global research and professional writings published between 2008 to 2022 to assess the future and recognize the potential of cryptocurrency and blockchain technology. Reports were analyzed using qualitative research methods.

**Results:** Dozens of medical cryptocurrencies/digital coins are already available to purchase and spend. Using cryptocurrency will provide a more secure decentralized payment platform that does not use third-party financial intermediaries. Adopting blockchain technology is a safe component of protecting payments and patient records. It uses cryptography that makes data modifications virtually impossible once recorded; it promotes fidelity, transparency, and security. Data can only be altered if you alter all subsequent blocks, which requires a consensus of the network majority. Blockchain technology also protects against ransomware attacks on healthcare providers and facilities. United Healthcare Group, Anthem, and Aetna are a part of a group to test blockchain technology. 55% of U.S. Executives plan on investing 1Mil USD in blockchain technology. Companies are creating EMR systems powered by technology to be prepared for adoption.

**Conclusion:** The evidence indicates an upcoming disruption in how we finance our office visits, co-pays, co-insurance, procedures, hospital stays, and prescriptions. It also suggests that cryptocurrency and blockchain technology in healthcare will become more mainstream within the next ten years. With common sense governmental intervention and the stabilization of the crypto market, cryptocurrency can augment the financial position of a hospital or private practice if appropriately managed.

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### Fluoride-related misinformation analysis on Twitter: Infodemiology study

Matheus Lotto<sup>1</sup>, Zakir Irfhana<sup>2</sup>, Jasleen Kaur<sup>1</sup>, Zahid Butt<sup>1</sup>, Thiago Cruvinel<sup>3</sup>, Plinio Morita<sup>1</sup>

<sup>1</sup>School of Public Health Sciences, University of Waterloo, Waterloo, ON, Canada, Canada, <sup>2</sup>School of Public Health Sciences, University of Waterloo, Waterloo, ON, Canada, India, <sup>3</sup>Department of Pediatric Dentistry, Orthodontics and Public Health, Bauru School of Dentistry, University of São Paulo, Bauru, Brazil

**Background & Objectives:** The presence of misinformation on social media significantly harms communities since accessing trustworthy information is a ground principle for people to achieve better health-related outcomes. In this context, anti-fluoridation content is broadly shared on social media, deceiving people about fluoride's relevance and safety. Considering the potential negative implications of online fluoride falsehoods, the present study aimed to analyze fluoride-related misinformation on Twitter.

**Methods:** First, 23,436 tweets were collected using the Twitter Application Programming Interface (API) from the keyword "fluoride-free" between May 2016 and May 2022. After data preprocessing, Latent Dirichlet Allocation (LDA) topic modeling techniques were applied with remain 21,169 tweets to determine the salient topics linked to the falsehood. Finally, time series decomposition methods were applied to define fluoride misinformation trends and seasonality over time using pandas, NumPy, and statsmodels.tsa.seasonal libraries in Python 3.

**Results:** From a coherence score of 0.542, a total of 3 different salient topics emerged from the LDA topic modeling analysis. As a result, fluoride-related misinformation was mainly associated with the people's perception of a healthy lifestyle (topic 1), followed by the consumption of natural and organic oral care products (topic 2), and recommendations of fluoride-free products and measures (topic 3). Notably, all topics displayed a decreasing trend between 2016-2019 and an increasing trend from 2020 onwards. Moreover, they presented a seasonal pattern of searches with peaks mainly at the beginning and middle of each year.

**Conclusion:** Fluoride misinformation was primarily related to personal concerns about a healthier lifestyle. The recent increasing trends of falsehoods have probably contributed to the popularization of fluoride-free products and the suspension of fluoridated water community programs. Hence, user-centered digital health strategies are required to control the spread and consumption of fluoride misinformation on social media.

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### Can the apple watch ECG app be successfully used for measuring stress?

Pedro Velmovitsky<sup>1</sup>, Paulo Alencar<sup>1</sup>, Matheus Lotto<sup>1</sup>, Scott Leatherdale<sup>1</sup>, Donald Cowan<sup>1</sup>, Plinio Morita<sup>1</sup>

<sup>1</sup>University of Waterloo, 162 McGarry Dr, Canada

**Background and Objective:** Stress is a major public health issue correlated with severe health conditions, including depression, obesity, and cardiovascular diseases. Public health efforts typically are designed regarding the self-perceived stress of people. Interestingly, new advances in smart technology can support stress quantification, complementing traditional measurement methods. Hence, this study aimed to examine the prevalence of stress among the Canadian population using the Apple Watch ECG app.

**Methods:** Forty-one participants were invited to use an iPhone 7 and an Apple Watch 7 for 2 weeks to measure self-perceived stress and ECG metrics six times per day. The iPhone contained an app that collected ECG from Apple Watch and allowed participants to self-report stress through a questionnaire composed of the Depression, Anxiety, and Stress Scale (DASS-21) and a Likert-based scale question about self-perceived stress level. Both scales were dichotomized into non-stress and stress concerning a cut-off score of 14 points for DASS-21 and 2 points for the single item. Statistical analysis was performed using the Statistical Package for Social Sciences (v. 28.0). First, Heart Rate Variability (HRV) data were extracted from the ECG. Next, the data normality and homogeneity were determined using the Kolmogorov-Smirnov and Levene tests. Then, Mann-Whitney was used to compare HRV variables with self-perceived stress. For all analyses, P<.05 was considered significant.

**Results:** Several features were statistically significant, including the standard deviation of NN intervals (SDNN), the root mean square of successive differences (RMSSD), the heart's acceleration (AC) and deceleration (DC), and several high-frequency features.

**Conclusion:** Features widely used in HRV analysis (SDNN, RMSSD) proved statistically significant when measuring stress. In addition, AC and DC are relatively new indicators and lack research with a focus on stress, suggesting new avenues of research. Ultimately, the results support using the Apple Watch ECG to study stress.

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### Telemedicine in the monitoring of covid-19 patients: general practitioners' usage, facilitators and barriers in the local health authority roma 1

Andrea Barbara<sup>1</sup>, Leonardo Villani<sup>2</sup>, Paolo Lombardo<sup>1</sup>, Paolo Parente<sup>3</sup>, Antonella Gemma<sup>3</sup>, Lavinia Barone<sup>1</sup>, Fabiano Grassi<sup>4</sup>, Mauro Goletti<sup>3</sup>, Enrico Di Rosa<sup>3</sup>, Corrado De Vito<sup>1</sup>

<sup>1</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome; <sup>2</sup> Local Health Authority Roma 1. Italy, <sup>3</sup>Department of Hygiene, University Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>4</sup>Local Health Authority Roma 1., <sup>4</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome

**Background and Objective:** Telemedicine is a powerful tool for managing of COVID-19 patients.

Our study aims to evaluate the use, barriers and facilitators of the "Lazio ADVICE" telemedicine platform according to General Practitioners (GPs) and Family Paediatricians (FPs) of the LHA Roma 1 to contrast the pandemic. This could be useful for the wider implementation of telemedicine in primary healthcare.

**Methods:** We performed an interview-based survey composed of questions investigating the demographic information of GPs/FPs, the knowledge of the platform, frequency of utilization, usefulness, strengths and weaknesses and the hypothesis of future implementation proposed.

**Results:** We interviewed 214 physicians (21.75% of the total population): 89 (41.59%) users and 125 (58.41%) non-user. Older age and working in District 1, 14 and 15 (vs. District 13) significantly reduced the probability of using the platform by the physician.

Among the users, 19 (21.35%) used the platform every day or even several times a day, 40 (44.34%) several times a week but less than one access per day, 30 (33.71%) several times a month. Most of them (92.26%) consider the platform useful. Suggested improvements: integration between physician's applications (86.26%), presence of data regarding COVID-19 diagnosis and contact tracing (69.6%), facilitating access and usability (52.81%). Difficulties: poor integration among software and work routine (76.4%), deficiencies regarding contact tracing (67.41%), access and usability issues (53.93%).

Among the non-users, 14 (11.2%) didn't know the platform existence, 60 (48%) never tried and 51 (40.8%) tried to use it. Reported reasons for the interruption of use were: not very user-friendly (45.1%), perceived useless (37.26%), non-optimal functioning (23.53%) and lack of time (19.61%).

**Conclusion:** The COVID-19 pandemic has accelerated the implementation of

telemedicine services. Telemedicine for monitoring patients has potential but certainly, to be competitive it must offer something different or additional than telephone consultation.

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### Digital divide older adults' approach to digital health: an integrative review

Elisabetta Corvo<sup>1</sup>, Walter De Caro<sup>2</sup>

<sup>1</sup>Canterbury Christ Church University, United Kingdom, <sup>2</sup>CNAI Italian Nurses Association, Italy

**Introduction:** There is a growing use of in primary and secondary care facilities of digital health in terms of receiving exam results, repeating prescriptions, health promotion, and disease prevention. There is a general agreement in the literature that this approach is cost-efficient and time efficient for National Health Systems, specific health facilities, and, more generally, for individuals' health. Due to the demographic change in Europe, there is a high number of older people.. The introduction of technology to improve health promotion and health care provided to citizens must be balanced by a sufficient level of participation and use of the technology itself by all citizens, especially by those who potentially have the most need (older adults).

**Methods:** This integrative review aims to identify the state of the arts across Europe regarding access, use, and confidence in using digital health technology by older people (65+). Three central databases have been interrogated: Pubmed, Cinhal, and EMBASE in the last 5 years. Inclusion criteria were research carried out in English, focused on older people above the age of 65.

**Results:** The results displayed a frustration perceived by older people in using these tools of which they recognize the usefulness but at the same time need to have perfect mastery. Results show a general difficulty for older people to access hospital portals, due to a need for digital and health literacy and a general lack of confidence about privacy and security in disclosing their data on the internet.

**Conclusion:** If, on the one hand, these technologies have demonstrated value in the management of some illnesses and in facilitating the patient-health system relationship, these mustnt become a barrier to adequate access to care which is a social determinant of health. A process of education and support for older people should be implemented.

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### A systematic review of conversational artificial intelligence for smoking cessation

Hollie Bendotti<sup>1</sup>, Henry Marshall<sup>2</sup>, Sheleigh Lawler<sup>3</sup>, Coral Gartner<sup>4</sup>, David Ireland<sup>5</sup>

<sup>1</sup>The University of Queensland, Thoracic Research Centre, Faculty of Medicine, Australia, <sup>2</sup>The Prince Charles Hospital, Queensland Health, <sup>3</sup>The University of Queensland, School of Public Health, Faculty of Medicine, Australia, <sup>4</sup>The University of Queensland, NHMRC Centre of Research Excellence on Achieving the Tobacco Endgame, School of Public Health, Faculty of Medicine, Australia, <sup>5</sup>The Australian e-Health Research Centre, Commonwealth Scientific and Industrial Research Organisation

**Background:** Conversational artificial intelligence (AI) (chatbots, dialogue systems and virtual agents) is an emerging tool for tobacco smoking cessation which has the potential to emulate personalised human support and increase engagement. We aimed to determine the effect of conversational AI interventions with or without standard smoking cessation interventions on smoking cessation outcomes among adults who smoke, compared to no intervention, placebo intervention or an active comparator.

**Methods:** A comprehensive search of six databases was completed in June 2022. Eligible studies included randomised controlled trials (RCTs) published since 2005. The primary outcome was sustained tobacco abstinence, self-reported and/or biochemically validated, of at least 6 months. Secondary outcomes included point-prevalence abstinence, sustained abstinence of less than 6 months. Data extraction of cessation outcomes and risk of bias assessments was completed independently by two authors.

**Results:** Five RCTs met inclusion criteria (n=58,796) from 819 studies; all differing in setting, methodology, intervention, participants and endpoints. Conversational AI interventions included chatbots embedded in multi- and single component smartphone apps (n=3), a social media-based (n=1) chatbot, and an internet-based avatar (n=1). Random effects meta-analysis found participants in the conversational AI enhanced intervention were significantly more likely to quit smoking at the end of the trial compared to control group participants (RR = 1.61, 95% CI (1.21, 2.13), p = .001). High heterogeneity was found between studies

(Q(4) = 53.84, p<.001), as well as high overall risk of bias. Loss to follow-up was generally high.

**Conclusion:** There is limited but promising evidence on the effectiveness of conversational AI interventions for smoking cessation. While all studies found benefit from conversational AI interventions, substantial heterogeneity means the results should be interpreted with caution. Given the rapid evolution and potential of AI interventions, further well-designed RCTs are warranted in this promising area.

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### Evaluation of data management systems for COVID-19 vaccine rollout in Australian health systems: a public health perspective

Bret Gutierrez<sup>1</sup>

<sup>1</sup>The University of Melbourne, Melbourne School of Population and Global Health, E. Rodriguez Sr., Ave., Quezon City, Philippines

Vaccination is one of the greatest breakthroughs in public health and remains one of the best weapons against infectious diseases. Health Information Systems (HISs) are cloud-based, population-focused and confidential public health platforms that aid the COVID-19 vaccination programme at Northern Health Australia. They established their own HIS on vaccination while CVMS was being developed. This paper uses the RE-AIM (Reach, Effectiveness, Adoption, Implementation and Maintenance) framework, based on continued involvement in the implementation of two immunisation information systems: COVID-19 Vaccination Management System (CVMS) and the in-house Northern Health System (NHS). Through engagement with various stakeholders, the author established analytical frameworks, a logic model and HIS documentary analysis from a public health perspective with an emphasis on three major HIS utility parameters. The key findings are (1) vaccination information systems promote vaccine equity among populations, (2) information systems promote improved decision-making of clinicians and government, which strengthens the health system and (3) vaccination information systems evaluate the safety and effectiveness of vaccines. Despite the challenges, the two immunisation HIS are instrumental in improving vaccination-related activities from managing and consolidating data in the booking system, AIR data compliance and adverse events reporting, are used to guide policymakers and further support public health emergency decision-making. The ideal system would centralise data exchange, submission and analysis across the whole state, provide easy accessibility to the public, and promote coordination between stakeholders for continuous improvement. However, it is worth noting that balancing requirements while setting up these large systems may imply a longer development time.

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### Digitize to reach and track: An retrospective analysis of digitalized immunization data for children under one year in Bangladesh from Pre-COVID and during-COVID era

Avijit Saha<sup>1</sup>, Mahbub Latif<sup>2</sup>, Md. Hossen<sup>3</sup>, Zahid Hasan<sup>4</sup>, Malabika Sarker<sup>1</sup>

<sup>1</sup>BRAC James P Grant School of Public Health, BRAC University, 6th Floor, Medona Tower, 28 Mohakhali Commercial Area, Bir Uttom A K Khandakar Road, Dhaka-1213, Bangladesh, <sup>2</sup>Institute of Statistical Research and Training (ISRT), <sup>3</sup>EPI & Surveillance, EPI, DGHS, MoHFW, Bangladesh, <sup>4</sup>UNICEF Bangladesh, United Nations Children's Fund, UNICEF House, Plot # E-30, Syed Mahbub Morshed Avenue, Sher-E-Bangla Nagar, Agargaon, Dhaka-1207, Bangladesh

**Introduction:** With an impressive track record in expanding childhood immunization and an inclination to adopt digitalization in healthcare service delivery, Expanded Program on Immunization (EPI) Bangladesh piloted the e-Tracker intervention in Moulavibazar district and Dhaka South City Corporation (Zone-5) from 2019 till the end of 2021.

**Objective:** We analyzed the digitalized e-Tracker data intending to calculate vaccination coverages, dose timeliness, and dropout rates for children under one year of age from Pre-COVID and during-COVID era to aid with informed decision-making by the policymakers.

**Method:** With help from Health Management Information System (HMIS) and UNICEF Bangladesh, we retrieved e-Tracker data for infants born between January 1, 2019, and December 31, 2021. Childhood vaccination coverage and dropout rates were determined using a Traditional approach traditionally used by WHO and a Conditional technique with a modified denominator. Using a multivariate logistic regression model, we examined the relationship between vaccination rates and birth cohorts, mother education, and location.

**Result:** The conditional estimation yielded a lower full vaccination coverage

(68.7%) than the national (from aggregated data, 89.0%) and global coverage (81.0%). Coverage and dropout rates increased more during the 'during-COVID' era than in the 'pre-COVID' period. However, dropouts were estimated lower in the 'conditional method.' The average age (in months) for getting BCG was higher in Moulavibazar (~2.5 months) than that in Dhaka (~1.4 months). All child birth-cohorts from 'the during-COVID' era had about a 30% lower chance of getting fully vaccinated than those from the 'pre-COVID' era.

Conclusion: Age-cohort-specific studies showed a reduction in coverage estimates before and after COVID, but e-Tracker didn't have enough data to draw additional conclusions. The server only stored the child's gender, the caregiver's monthly salary, and the mother's education. It didn't track the dropout factors or if families departed pilot regions. Future updates and system expansion should help.

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### Changing dimensions in immunization: Implementation research on the E-tracker intervention for improving vaccination of children in Dhaka and Moulvibazar, Bangladesh

Humayra Anwar<sup>1</sup>, Saima Mehjabeen<sup>1</sup>, Avijit Saha<sup>1</sup>, Md. Hossen<sup>2</sup>, Md. Islam Fuad<sup>3</sup>, Zahid Hasan<sup>4</sup>, Md Hossen Shahed<sup>4</sup>, Malabika Sarker<sup>1</sup>

<sup>1</sup>BRAC James P Grant School of Public Health, BRAC University, 6th Floor, Medona Tower, 28 Mohakhali Commercial Area, Bir Uttom A K Khandakar Road, Bangladesh, <sup>2</sup>EPI Bangladesh, Directorate General of Health Services, EPI Headquarter, Mohakhali, Dhaka, Bangladesh, Bangladesh, <sup>3</sup>EPI Bangladesh, Directorate General of Health Services, <sup>4</sup>UNICEF Bangladesh

Background: Achievement in the national Expanded Programme on Immunization (EPI) is globally recognized as an example in Low- and Middle-Income Countries (LMICs). However, the 2019 Coverage Evaluation Survey (CES) shows that 84% of children are fully vaccinated nationally. Digital solutions like mobile phone help reduce vaccination program challenges. Therefore, Bangladesh has been implementing a pilot intervention of individual electronic tracking (e-tracking) of children in Moulvibazar District and Dhaka South City Corporation and planning to scale it up.

Objective: The current implementation research was conducted to understand the implementation process, success, and challenges of the e-Tracker system in Bangladesh and obtain lessons learned and scaling-up recommendations.

Methods: The study followed the embedded mixed-method design, including both beneficiaries and implementers. This study occurred in selected areas of Moulvibazar District and Zone-5 of Dhaka South City Corporation and lasted from 1st April to 30th June 2021. A secondary analysis of existing vaccination coverage data of both the e-Tracker and the paper-based system was performed. Data were analyzed using Re-AIM Implementation Framework.

Results: According to the implementors, they get individual accurate coverage data, minimize dropouts, avoid mistakes, monitor, and recognize invalid doses from a single device. The caregivers receive SMS reminders of the child's vaccination date, yet many reported not receiving the SMS regularly. The frontliners, mostly from urban were comfortable using the e-Tracker app; however, the ageing rural field workers initially struggled to use the device. The e-tracker system creates additional load and requires regular troubleshooting and will require regular internet support and technical staff, especially from the government.

Conclusion: This study found that the e-Tracker can produce accurate real-time data and identify dropouts; however, we need technology friendly manpower, feasible technology, the uninterrupted internet, and logistics support with a sustainable maintenance mechanism to implement and scale up this technology-dependent intervention successfully.

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### Implementation of the PANDA mHealth system for providing a positive pregnancy experience in Tanzania

Susanna Campani<sup>1</sup>, Stefania Paduano<sup>1</sup>, Athanase Lilungulu<sup>2</sup>, Theresia Masoi<sup>2</sup>, Annalisa Bargellini<sup>1</sup>, Federica Stornelli<sup>3</sup>, Giovanna Stancanelli<sup>4</sup>, Maria Rweyemamu<sup>2</sup>, Federica Incerti<sup>1</sup>, Lucia Borsari<sup>5</sup>, Anne Benski<sup>6</sup>, Alex Ernest<sup>2</sup>, Ipyanya Mwampagatwa<sup>2</sup>, Paola Borella<sup>1</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy,

<sup>2</sup>Department of Obstetrics and Gynecology, University of Dodoma, Tanzania,

<sup>3</sup>Cooperazione paesi emergenti, COPE NGO, Nyoilolo, Tanzania, <sup>4</sup>Terre

innovative Healthcare s.r.l., Catania, Italy, <sup>5</sup>Department of Public Health,

AUSL Modena, Modena, Italy, <sup>6</sup>Service d'obstétrique - Département de la

femme, de l'enfant et de l'adolescent - Hôpitaux Universitaires de Genève,

Genève, Suisse; Takemi Program in International Health, Harvard T.H. Chan

### School of Public Health, Boston, USA, Swaziland

Background and Objective: Antenatal care (ANC) is an essential component of women's reproductive health. Many women face difficulties in attending high-quality ANC visits for a positive pregnancy experience in low/lower-middle countries, such as Tanzania. Information and Computer Technologies (ICTs) are part of the core solutions for bridging the coverage and quality gap in health care. PANDA (Pregnancy And Newborn Diagnostic Assessment) is a mHealth system that incorporates WHO recommendations for ANC. This study aimed to assessing the effectiveness of PANDA system in provision of high-quality ANC in Mufindi district, Tanzania.

Methods: A cluster-based non-randomized interventional trial were performed from June 2019 to September 2020 to compare the quality of ANC visits by using PANDA system in the intervention site with standard visits conducted in the control site. We enrolled pregnant women attending at analogous health facilities in both sites. The indicators used to assess the ANC quality were: performed measurements and screening tests (syphilis, HIV, malaria, hemoglobin, glucose, height/weight, blood pressure, temperature, fetal movement, fundal height, urine dip stick), and prophylaxis provided for malaria, anemia and intestinal worms. Data Analysis was done using SAS version 9.4.

Results: A total of 597 pregnant women at the implementation site and 398 at the control site were enrolled. Most of them were in the age group 25-34 years (44.0%) and 15-24 (42.3%). The majority (60.8%) had more than one pregnancy. In the implementation area a significant higher coverage of performed screening tests and provided prophylaxis was recorded compared to the control area except for malaria prophylaxis. The provision of mebendazole and iron/folic acid was significantly higher in the intervention site.

Conclusion: PANDA system has been shown effective in providing ANC according to WHO recommendations for a positive pregnancy experience. We recommend the mHealth solution for bridging the quality gap in low/lower-middle income countries.

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### Mortality and Adverse Health Outcomes Associated with Telehealth: Systematic Review and Meta-Analysis

Fidelia Cascini<sup>1</sup>, Paul Barach<sup>2</sup>, Walter Ricciardi<sup>1</sup>

<sup>1</sup>Università Cattolica del S. Cuore, Italy, <sup>2</sup>Thomas Jefferson University, United States

Background: The COVID-19 pandemic's contagion has forced healthcare to use telehealth. Evidence shows significant risks of telehealth use and potential issues that could compromise patient safety and decrease quality of care. This study aims to systematically review telehealth interventions assessed by randomized controlled trials (RCTs) and their effects.

Methods: We searched for randomized controlled trials of interventions to patients that received any type of telehealth tool as an intervention and compared it with a control group that also reported outcomes. We searched for PRISMA guideline English-language studies published until March 2021 in multiple databases including PubMed, Embase, and Scopus. Studies were categorized according to methodological quality, sample size, intervention characteristics, outcome, statistical significance, and direction of effects. A meta-analysis of sufficiently homogenous studies was conducted after quality assessment and data extraction.

Results: Of the 5,144 articles identified, 78 were included in the review. 8 were chosen to perform 2 separate meta-analyses (n=4 for each). The first assessed mortality rate in heart failure patients, showing the pooled relative risk of mortality to be 0.60 (95% CI, 0.0999-3.5478), p=0.42. The second assessed mortality in patients with cardiac implants: the pooled relative risk of mortality was 0.65 (95% CI, 0.4389-0.9541), p=0.028. Pooled qualitative assessment of the remaining studies was performed, producing two groups: telerehabilitation and miscellaneous studies.

Conclusions: The results suggest that monitoring patients using telehealth techniques is associated with 40% lower mortality risk among patients suffering from heart failure or cardiac implants, compared to those who received traditional care methods. Telerehabilitation was observed to be comparable with the conventional rehab methods. Telehealth applications that manage chronic disease resulted in lower or comparable mortality rates and hospitalization/re-admission rates. Cognitive behavioral and online psychotherapy show promise as alternative to conventional methods. Telehealth should be considered a safe alternative to traditional medical procedures.

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### Preliminary results from a multi-country survey investigating citizens' attitudes towards personalized medicine and data sharing

Francesco Casuso<sup>1</sup>, Carla Van El<sup>2</sup>, Stefania Boccia<sup>1</sup>, Flavia Beccia<sup>1</sup>, Roberta Pastorino<sup>1</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore, Italy, <sup>2</sup>Amsterdam University Medical Center, Netherlands

**Background and objectives:** Personalized medicine is defined as a medical model that aims to provide tailored prevention and treatment to individuals, potentially impacting healthcare systems worldwide. Nonetheless, it requires healthy citizens to share their health data to assess their health status correctly. With this survey, we investigate the attitudes of citizens in different EU countries towards personalized medicine and data sharing.

**Methods:** Through the YouGov platform, we distributed an online 30-question survey to citizens from 8 EU countries (Italy, the Netherlands, France, Germany, Spain, Hungary, Romania, and Poland). Inclusion criteria were 18 years of age or above, citizenship in an EU country, and living in an EU country. Participants not satisfying any of these criteria were excluded.

Participation was voluntary and unpaid. The survey was divided into four sections: Knowledge and opinions on personalized medicine and genetic tests, Data use and sharing, Personalized medicine governance, and Citizens' needs. The performed statistical analysis is descriptive and comparative, including univariate tests (T-Test, Mann-Whitney test, chi-squared test). The STATA 16 software is used to perform statistical analysis. P significance threshold was set at < 0.05.

**Results:** 6500 citizens from 8 EU countries participated: 1000 from Italy, 1000 from Germany, 1000 from France, 1000 from Spain, 1000 from the Netherlands, 500 from Hungary, 500 from Romania, and 500 from Poland. Participants were spread evenly among the age range 18-99. Detailed statistical analysis is still ongoing, but preliminary results show attitudes to be more favorable in younger generations. In contrast, older people are generally more hesitant to share data for health purposes.

**Conclusion:** Personalized medicine can potentially change the classical medical paradigm of diagnosis-treatment towards a prevention-oriented system. Notably, an approach that considers people's opinions is needed. Our work addresses this issue in detail with a multi-country approach.

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### Feasibility of telemedicine in anaesthetic preoperative evaluation: the organisational management experience of a teaching hospital in Italy

Martino Godoy<sup>1</sup>, Daria Bucci<sup>1</sup>, Manuel Stocchi<sup>1</sup>, Giorgio Marra<sup>2</sup>, Federico Esposti<sup>2</sup>, Carlo Signorelli<sup>3</sup>

<sup>1</sup>Università Vita-Salute San Raffaele Italy, <sup>2</sup>San Raffaele Hospital Italy,

<sup>3</sup>Università Vita-Salute San Raffaele, San Raffaele Hospital Italy

The COVID-19 pandemic highlighted the essential role of remote healthcare solutions, following the isolation rules forcing the loss of follow-ups, thus implying a worldwide growth of disease burden and costs for health systems. This need turned into an opportunity as telemedicine is now - post-pandemic - an essential tool to lighten the pressure on hospitals and healthcare facilities, to ease health-related processes for both patients and physicians, to reduce possible complications implied by people aggregations in these structures, without reducing the overall quality of healthcare. San Raffaele Hospital was the first Italian hospital to provide a free telemedicine platform in 2020. We aimed to report the advantage of digitalisation, extend telemedicine to the preoperative anesthesiological evaluation in minor surgeries, and assess patient and hospital-related outcomes to create a framework pattern. A literature review was performed to retrieve the state of knowledge, but Italy lacked real-life applications. This framework aimed to be faster and more patient-friendly, avoiding wasted resources and the overloading of surgical waiting lists. Our pilot was meant to raise awareness on the topic and, as future perspectives, extend the pool of pre-surgical evaluations accessible by telemedicine. From the end of 2021, we started reconstructing the hospital's clinical and administrative preoperative pathways. We recruited an anaesthesiologists team and started screening surgeries where preoperative evaluation could be led through remote consultation, therefore creating a framework proposal. Piloting this new process, surgeons freely enrolled patients, explaining the role of telemedicine in the preoperative procedure. A hospital administrative team accomplished the patients' chart creation on the platform and followed-up the steps completeness. Patients were requested to upload previous medical records and fill out an anesthesiological survey. Surgery-specific routine screening exams were provided before the video-visit evaluation; further investigations were eventually requested. When anesthesiological fitness was reached, patients could be hospitalised for surgery.

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### Identification and classification of tobacco-promoting social media content at scale using deep learning: a mixed-methods study

Hüseyin Küçükali<sup>1,2</sup>, Mehmet Sarper Erdoğan<sup>1</sup>

<sup>1</sup>Department of Public Health, Istanbul University - Cerrahpaşa, Istanbul,

<sup>2</sup>Türkiye, <sup>3</sup>Centre for Public Health, Queen's University Belfast, Belfast, United Kingdom

**Background and Aim:** Marketing activities of the tobacco industry on social media as an escape area have become salient in recent years. Whether its commercially motivated or not, exposure to tobacco-promoting content on social media is shown to influence subsequent tobacco use. Artificial intelligence technologies may help tackle this problem where existing policies and tools are insufficient for timely primary prevention. This study aims to develop an artificial intelligence powered tool that can automatically identify and classify tobacco-promoting content on social media.

**Methods:** This study is designed as a sequential mixed-methods study where qualitative analysis preceded quantitative one. A probabilistic sample (n=5000) from tobacco-related tweets that are published on Twitter in October 2020 (n=177,684) is selected. Four major tobacco-promotion mechanisms were identified inductively by qualitative content analysis. 27 trained volunteers deductively coded tweets into four mechanisms. The labelled dataset was used in supervised machine learning to finetune a pre-trained transformer-based language model (BERT) in multiple scenarios. The performance of predictions was compared with human coders. High-performing models predicted the tobacco promotion status for all tobacco-related tweets collected.

**Results:** Tobacco promotion in social media content was predicted with a recall of up to 87.8% and precision of up to 81.1%. The mean number of tobacco-promoting tweets per day was 2360.1 ± 599.4 and they constituted 39.8% of all tobacco-related tweets. Tobacco promotion was more frequent among tweets that are original, mentioned by another user, published at the night, and from a mobile device.

**Conclusion:** We developed an "invoveillance" tool that makes it possible to monitor tobacco-promoting social media content near real time. This tool may strengthen tobacco control policies and create new opportunities for health promotion practice.

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### A Scoping Review of the Existing Telemedicine Applications in India: Learnings for the Future

Vanita Singh<sup>1</sup>, Vanita Singh<sup>1</sup>

<sup>1</sup>Management Development Institute, Gurgaon, India

**Background:** Countries, including India, were quick to adopt telemedicine for delivering primary care in response to the widespread disruptions in routine healthcare delivery due to COVID-19 pandemic. This expeditious adoption was critical and the challenges faced during this exigency could guide the design and delivery of future telemedicine applications for primary care delivery.

**Methods:** With an aim to identify challenges in delivering primary care via telemedicine technology in Indian context a scoping review was conducted using popular medical database (PUBMED) and largest database of peer-reviewed literature (SCOPUS). Drawing from the systems approach in healthcare delivery, the review findings challenges are summarized at four levels, patient, provider, healthcare organizations, and, policy.

**Results:** Out of the 247 search results, 13 articles met our inclusion criteria. This review highlighted that telemedicine facilitated continuity of care during COVID-19 but not without challenges. Low levels of education and computer literacy along with language barrier posed challenges at patient level. Providers were challenged due to limited skills in using systems, and had concerns related to efficiency and effectiveness of remote consultations, legal liabilities, and unethical behavior of patients. The healthcare delivery system faced challenges in ensuring an integrated care as there was lack of integration with diagnostics, pharmacies, and other departments. The current policy landscape falls short in addressing data privacy and security concerns, unethical behavior by patient, or provider, and regulating prescriptions of psychotropic drugs.

**Conclusion:** Telemedicine has the potential to improve primary healthcare delivery and address health system challenges even beyond COVID-19. The reviewed telemedicine applications in India mirrors the existing fragmented healthcare delivery system. There is a need to acknowledge and factor-in the interconnectedness of health system elements and organize health system elements

facilitating an integrated care approach via telemedicine thereby ensuring an effective and efficient healthcare delivery via telemedicine.

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### Artificial Intelligence for social media monitoring of attitudes towards COVID-19 vaccination: a scoping review

David Rocchi<sup>1</sup>, Alessandro Berionni<sup>2</sup>, Luigi Angelis<sup>1</sup>, Francesco Baglivo<sup>1</sup>, Andrea Causio<sup>3</sup>, Angela Ancona<sup>4</sup>, Valerio Corona<sup>3</sup>, Virginia Casigliani<sup>1</sup>, Marta Caminiti<sup>5</sup>, Caterina Rizzo<sup>1</sup>

<sup>1</sup>University of Pisa Italy, <sup>2</sup>Università Vita Salute San Raffaele Italy, <sup>3</sup>Università Cattolica Sacro Cuore Roma Italy, <sup>4</sup>Università Vita Salute San Raffaele, <sup>5</sup>University of Perugia Italy

**Background and Objective:** Social media were crucial in spreading vaccine hesitancy during the COVID-19 Pandemic. Social media monitoring of vaccine stances can be extremely useful to identify trending topics and adapt communication strategies. The objective of this scoping review is to explore the use of Artificial Intelligence (AI), Such as Natural Language Processing (NLP), in social media monitoring, on the topic of vaccine stance and intent related to COVID-19 vaccination campaigns. **Methods:** The study was conducted in november 2022 on multiple databases, using the pico framework. A search query identifying mesh terms for pubmed was developed and adapted for scopus and web of science databases. The study included only english papers, published during the last 3 years, that specifically addressed ai methodologies, social media and vaccine stance. Search results were uploaded to rayyan, a collaborative web application for systematic reviews, to automatically identify duplicates. All studies identified were screened by five authors using article titles and abstracts. Further steps are ongoing.

**Results:** A total of 2,722 results were found on pubmed, 5,230 results on scopus, 3,304 results on web of science. After clearing out the duplicates, 5,674 articles were included for title and abstract screening. Among identified ai methodologies, nlp solutions extracting information from tweets were the most frequently identified. Sentiments identified among different studies were discouraging towards vaccination in 20% of the tweets. Further results will be available after the initial and full-text screening to reach a total of a few tens of articles.

**Conclusion:** This review shows the opportunity to apply AI methodologies to social media monitoring regarding COVID19 vaccine stance. Despite the frequent use of NLP, many different machine learning methodologies are reported in the screened articles, which combined with the growing amount of existing social-media, leads to a great heterogeneity in AI-based social media monitoring.

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### Algorithm for automatic diagnosis of COVID case

Veronica Ciorba<sup>1</sup>, Marco Albini<sup>2</sup>, Michele Capraro<sup>2</sup>, Michele Lagioia<sup>2</sup>

<sup>1</sup>IRCCS Istituto Clinico Humanitas Via Alessandro Manzoni, 56, 20089

Rozzano MI Italy, <sup>2</sup>IRCCS Istituto Clinico Humanitas Italy

**Background and Objective:** The COVID outbreak has required many person-hours of infection control and occupational health personnel within hospitals to identify the community or nosocomial origin of the infection, as well as case contacts between patients and healthcare professionals. Furthermore, nosocomial COVID represents a care-related infection and, as such, it can be one of the causes of complaints and/or requests for compensation by patients and caregivers.

Having a rapid and reliable system for identifying the origin of COVID cases has the following advantages: The reduction of the commitment of dedicated healthcare personnel; Early identification of cases with possible medico-legal implications; The definition of an internal and external benchmark.

We tried to develop an algorithm that distinguished community, probably community, probably nosocomial, and nosocomial COVID cases, adapting the case definitions by the source of infection published by ECDC.

**Methods:** The following information was extracted from the electronic health records: Type of hospitalization: urgency, elective; Date of admission; Positivity date for 1st positive test for COVID;

Based on that, the algorithm has assigned the different COVID+ cases to one of the 4 categories. The algorithm, validated by infection control personnel, was then implemented.

**Results:** The validation of the algorithm carried out on a n. 65 of COVID+ cases showed an initial per cent agreement of 56.9 %. The different attribution of the category was initially found for probably community cases, whose correct identification was facilitated by the graphical interface of the application.

**Conclusion:** automatic methods for defining cases on parameters that are easily identifiable in the electronic health records can be an effective low-cost analysis tool with a high impact on the organization of the hospital staffs time

commitment, as well as a tool to support daily clinical activity and medium-long term business planning.

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### Fostering exchange of genomic data between European countries for clinical and research purposes: the genomic data infrastructure (gdi) project

Stefania Boccia<sup>1</sup>, Flavia Beccia<sup>1</sup>, Giovanna Calabrò<sup>1</sup>, Roberta Pastorino<sup>1</sup>, Giovanni Comandè<sup>2</sup>, Domenico Coviello<sup>3</sup>, Marco Morelli<sup>1</sup>, Graziano Pesole<sup>1</sup>, Giovanni Tonon<sup>1</sup>, Francesco Causio<sup>1</sup>, Sara Farina<sup>1</sup>, Luigi Russo<sup>1</sup>, Andriy Melnyk<sup>1</sup>, Serena Scollen<sup>4</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore Italy, <sup>2</sup>Scuola Superiore S. Anna Pisa Italy, <sup>3</sup>Istituto Gianna Gaslini IRCCS Italy, <sup>4</sup>Elixir United Kingdom

**Background and Objectives:** Since 2018, 24 EU countries, the UK, and Norway joined the One+ Million Genomes initiative (1+MG) to step up efforts towards creating a European data infrastructure for genomic data and implementing common national rules enabling federated data access. The goal is to ensure appropriate technical infrastructure is available to allow for secure, federated, and ethically sound access to genomic data. In the first phase, the "Beyond 1 Million Genomes" (B1MG) project dealt with infrastructure set-up, legal and technical guidance, data standards, and best practices to enable data access.

**Methods:** The Genomic Data Infrastructure (GDI) project was launched in November 2022 to start the scale-up and sustainability phase of the 1+MG initiative. It includes 44 partners from 20 countries, divided into 8 Work Packages across three pillars (Long-term sustainability, 1+MG infrastructure, and Application and innovation solution).

**Results:** Over 4 years, the GDI project will establish a federated data infrastructure across Europe for genomic and clinical data. It will also design and implement a communication strategy to inform citizens and policymakers and ensure their trust.

**Conclusion:** The GDI project will provide data access and governance to genomic and clinical data across adhering countries, integrating them and making them available for clinicians and researchers safely and sustainably.

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### Improving the effectiveness of telemedicine in rural communities: reflecting on client and provider experience of esanjevani jharkhand

Aditya Naskar<sup>1</sup>, Shilpa Bhatte<sup>1</sup>, Neha Verma<sup>1</sup>, Amit Parab<sup>1</sup>, Rajeev Kumar<sup>1</sup>, Shivshankar Kumar<sup>1</sup>, Ashok Tigga<sup>1</sup>, Praveer Mahto<sup>1</sup>, Sanjay Kumar<sup>2</sup>, Shyamal Santra<sup>1</sup>, Lalit Pathak<sup>3</sup>

<sup>1</sup>Intelehealth India, <sup>2</sup>Transforming Rural India Foundation India, <sup>3</sup>National Health Mission, Jharkhand India

**Background:** Recently, the government of jharkhand has adopted a web-based comprehensive telemedicine platform – named esanjevani– to provide specialist healthcare consultations in rural areas. Under this program, rural health and wellness centers (hwcs) are upgraded to enable teleconsultations by connecting patients to remote doctors through audio or video calls.

**Objective:** To identify processes and enablers of improving outcomes of telemedicine services under esanjevani with respect to patient-reported outcomes, acceptability of telemedicine among providers and clients, and their perceptions on service delivery.

**Methods:** A mixed method approach was used combining cross-sectional surveys and qualitative interviews with clients and providers. 500 clients and 119 health providers across five districts were surveyed, and in-depth qualitative interviews were conducted with 10 health providers and 20 clients. The analysis is guided by the implementation research framework suggested by the medical research council to identify processes and facilitators integral to shaping outcomes.

**Findings**

The findings indicate that esanjevani is perceived as an affordable and easily accessible health service delivery platform – with clients emphasizing a reduction in health expenditure and improved provider availability. Overall, we estimate that telemedicine saved 21.59 km in distance traveled and inr 941.51 per health visit. Community health officers and frontline workers were identified as the primary drivers of the intervention. providers also reported a high level of acceptability in terms of perceived usefulness and ease of use and highlighted the need for continued capacity building and behavior change to increase the adoption of the platform.

**Conclusion:** The esanjevani program has been effective in providing affordable quality specialist consultation to patients in rural communities, especially women.

However, there are a few challenges such as the need for improvement in reducing over-referrals, creating community demand, capacity building of the telemedicine workforce, and challenges related to deficits in digital infrastructure in rural contexts.

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### An exploration of mothers' and fathers' perspectives on a mhealth application to support parents in the first 1,000 days of life

Laura Brunelli<sup>1</sup>, Sofia Bussolaro<sup>1</sup>, Raffaella Dobrina<sup>2</sup>, Chiara Vita<sup>1</sup>, Elena Mazzolini<sup>1</sup>, Giuseppa Verardi<sup>2</sup>, Maura Degrassi<sup>2</sup>, Maria Piazza<sup>2</sup>, Andrea Cassone<sup>2</sup>, Anja Starec<sup>3</sup>, Giuseppe Ricci<sup>4</sup>, Sara Zanchiello<sup>3</sup>, Tamara Stampalija<sup>4</sup>

<sup>1</sup>Department of Medical, Surgical and Health Sciences, University of Trieste, Trieste, Italy, <sup>2</sup>Healthcare Professions Department, Institute for Maternal and Child Health - IRCCS "Burlo Garofolo" - Trieste, Italy, <sup>3</sup>Area Science Park, Trieste, Italy, <sup>4</sup>Department of Medical, Surgical and Health Sciences, University of Trieste, Trieste, Italy; Obstetrics and Gynecology Clinic, Institute for Maternal and Child Health - IRCCS "Burlo Garofolo" - Trieste, Italy

**Background and objective:** The first 1,000 days of life play a crucial role in the child's health and development. However, existing mHealth solutions often provide unreliable information about this critical period, without considering the real needs of parents and, worse still, usually neglecting fathers. We explored the information needs of both parents for a hypothetical mobile application to support the first 1,000 days.

**Methods:** Between May and August 2022, we enrolled new and expectant parents attending an Institute for Maternal and Child Health in north-eastern Italy in a cross-sectional study. We administered a 39-item questionnaire on a 5-point Likert scale (0-not important at all; 4-absolutely essential) to assess the importance of a set of content about pregnancy and postpartum provided by the proposed application. Based on mean scores (M±SD), items with ratings greater than or equal to 3.5 were identified as top ranked items related to priority content.

**Results:** Priorities differed between mothers (n=94) and fathers (n=69). Five of the six top ranked items for fathers were related to "pregnancy", including general information about pregnancy (3.7±0.6), information about possible infections (3.6±0.7), examinations to be performed (3.5±0.7), and delivery (3.5±0.7). Conversely, six of the nine top ranked items for mothers fell into the "postpartum" domain, including information about neonatal complications and warning signs (3.7±0.9), tips for the postpartum recovery process (3.5±0.8) and newborn care (3.5±0.7), information on breastfeeding practices (3.5±0.9), neonatal screening procedures (3.5±0.8), and risk prevention measures related to the newborn (3.5±1.1).

**Conclusion:** Overall, the fact that fathers focus on pregnancy might indicate that they are more "unprepared" for this phase compared to mothers who are ready to face the postpartum period. Valuing the different perspectives of mothers and fathers is essential to develop mHealth solutions that promote gender-equitable family empowerment to deftly navigate the first 1,000 days of life.

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### Improving vaccine distribution on the "last mile" or in complex challenging situations

Coll MacDougall-Hunter<sup>1</sup>, Uwe Winnwa<sup>2</sup>

<sup>1</sup>Hunter Global Tracking Ltd, <sup>2</sup>Out Task AG

**Background and objective:** Cold chain logistics still frequently stops at the final distribution centre before embarking on the tough 'last mile/low-income settings'; more rudimentary transport takes over (human, donkey, bicycle, drone, SUV). Recent WHO/UNICEF and independent reports sounded alarms as June 2022 data show global vaccination coverage continued to decline in 2021: 25 million infants missing out on lifesaving vaccines, due in part to supply-chain unavailability/disruptions that damaged at least 25% of vaccines (some cases up to 80% potency loss, the largest sustained decline in childhood vaccinations in approximately 30 years). In places of complex challenges around delivery (infrastructure, climate, floods, civil/ military conflicts, ...), the objective is to progressively improve vaccine distribution – hence vaccine potency and overall impact by introducing innovative but inexpensive technologies, to reduce waste, inefficient deliveries, theft, fraud.

**Methods:** 2 simultaneous on-going levels:

\*equip any carrier fleet, current and future, for position tracking and content status monitoring with basic robust IoT labels/tracking systems, avoiding manual data capturing, providing transparency of current 'invisible' units.

\*introduce an active, rugged, compressor-based, self-refrigerating/autonomous,

IoT-smart Cold Box/vaccine carrier, powered by solar and battery, with IoT components/sensors; currently under development; PoC pending WHO Certification.

\* Trials/evaluation of transport 'last mile' by Health Authorities, vaccination programmes.

**Results:** expected:

\* massive increase of live data enabling analysis of deficiencies, hence remedies;

\* reverse sample logistics becomes possible;

\* overall vaccine potency increases dramatically;

\* paradigm shift from random short-term to long-term controllable mobile cooling units.

**Conclusion:** implementation of both aspects - upgrade of 'invisible' vaccine carriers and introduction of active, smart, carriers will significantly extend 'last mile' or 'broad use' vaccine logistics efficiency, facilitating coverage of Public Health Authorities' vaccination campaigns in countries with issues.

Coll MacDougall-Hunter

Hunter Global Tracking Ltd. 14, Avenue Industrielle 1227 Carouge Switzerland

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### The overcome of public health research data management chaos: exploratory study on research infrastructure implementation

Mélanie R. Maia<sup>1,2</sup>, Marília Pauloc, Mariana Peyroteoc, Luís V. Lapão<sup>1,2,3</sup>

<sup>1</sup>UNIDEMI, Department of Mechanical and Industrial Engineering, NOVA

School of Science and Technology, Universidade NOVA de Lisboa, Caparica,

Portugal, <sup>2</sup>Laboratório Associado de Sistemas Inteligentes, LASI, Guimarães,

Portugal, <sup>3</sup>Comprehensive Health Research Center, NOVA Medical School,

NOVA University of Lisbon, Lisboa, Portugal

**Background and objective:** Digital healthcare research infrastructures integrate data, global health, people, processes, and technology. Public health decision-makers face problems of access to data and the current debate focuses on ethical and data protection issues, looking for systems' interoperability constraints. The aim of this study is to understand the process of digital healthcare research infrastructures.

**Methods:** The study is a literature review on digital healthcare infrastructures integrating data supplemented with two use cases of public health research implementation focusing on data management and protection processes at different scales (centralized-national and distributed-federated).

**Results:** The use cases presented are different in scales and nature, having multiple levels of constraints in the research infrastructure pipeline.

1. National, Portugal: literature identifies the bottleneck at the implementation and interoperability levels, for research systems. Review on national data protection emphasizes official deliberations, since the European general data protection regulation (GDPR) launch, focusing on health databases protection, the need of improving communication among institutions and professionals, and less bureaucratic processes for local implementation of health information systems.

2. Europe (EU) member states: review on EU official decisions on the adequate protection of personal data in the context of international research data flows, points to the need of FAIR processes and share of data. The bottleneck seems to be at national health security level, where policy dialogue is of major importance and national affairs need to be protected. Sharing data can vulnerable, therefore is controlled, sometimes not reflecting the process.

**Conclusion:** Jurisprudence, official and unofficial institutional documents, and peer review research publications give an important documental subtract for this research. First-hand experience will contribute to the reveal and validation of main constraints and possible solutions for the research problem. A roadmap for health research data protection implementation, in Portugal following the EU context is being set-up.

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### Tooth detection and numbering in panoramic radiographs using an artificial intelligence approach

Aneesa Ayoob<sup>1</sup>, Venkatesh Vaddadi<sup>2</sup>, Phaneendra Yalavarthy<sup>2</sup>,

Chandrashekar Janakiram<sup>1</sup>

<sup>1</sup>Amrita School of Dentistry, Kochi Amrita Vishwa Vidyapeetham, Kochi

Amrita School of Dentistry, Amrita Institute of Medical Science Campus,

Ponekkara P.O-682041 India, <sup>2</sup>Indian Institute of Science, Bangalore

**Introduction:** Panoramic radiography is an imaging method for displaying maxillary and mandibular teeth together with their supporting structures. Artificial intelligence (AI) system was used to detect and number teeth on panoramic radiographs.

Methods: A data set of 600 randomly chosen panoramic radiographs of adults was used to train the system. The teeth numbering module classifies detected teeth images according to the FDI notation. It utilizes the classical VGG-16 CNN for the spatial arrangement of teeth.

Results: The total numbers of true positive, false positive, and false negative results were recorded and consequently, the estimated sensitivity, precision, and F-measure were 0.9559, 0.9652, and 0.9606, respectively.

Conclusions: The deep convolutional neural network system was successful in detecting and numbering teeth. Clinicians can use AI systems to detect and number teeth on panoramic radiographs, cephalometric landmark detection, teeth structures segmentation and teeth classification for dental recording.

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### Fighting denutrition in nursing homes

Tiba delespierre<sup>1</sup>, Priscilla Clot-Faybesse<sup>2</sup>

<sup>1</sup>Korian & Paris-Saclay 21-25 rue Balzac 75008 Paris France, <sup>2</sup>KORIAN 21-25 rue Balzac 75008 Paris France

Background and objective: Korian® group, specialized in care and support for fragile people, manages 280 French nursing homes (NH). Its datawarehouse clinical narratives (CN), daily-fed by caregivers in the transmissions' table, contain key textual data about residents' care and health. Denutrition and malnutrition are highly prevalent among elderly inside and outside NH and impact health and autonomy among this fragile population. By building a denutrition cohort, computing successive body-mass indexes (BMI), following all the residents' health events, including falls, hospitalizations and deaths, adding pathologies, risk factors and CN, we can predict residents' denutrition.

Methods: First, we selected all residents with at least one transmission, from August 29, 2022 to October 02, 2022 from all 280 NH. We will follow them for twenty weeks, starting August 29. We extracted residents' age, sex, autonomy level, comorbidities, risks, hospitalizations, deaths, exits events as well as their BMI over time. Second, we labelled four BMI classes according to HAS (High Health Authority) thresholds: emaciated = below 20, undernourished = [20 - 22], well fed = [22 - 30], heavy = above 30. We added also 30 main pathologies classes according to four medical experts using the Delphi method. Third, by assessing correlations between our features and then, using tree classifiers we will be able to predict denutrition. Finally, combining clustering and survival analysis will help us grasp the whole denutrition process.

Results: We built a 21,856 residents cohort with 15,886 (73.4%) women and 5,771 men of mean age 87.6 +/- 8.2. We found 5,418 (25%) emaciated, 4.9 times more women of mean age 90, men being five years younger. Both sexes of this group showed a 0.4 autonomy level loss.

Conclusion: The 'emaciated', being slightly older, are particularly at risk. Adding CN labelled health information will deepen our residents' profile understanding and improve survival.

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### Paths to a public oral health for indigenous peoples: the use of the performance indicators evaluation matrix

Tainá Mafrá<sup>1</sup>, Lucas Santos<sup>2</sup>, Herika Mauricio<sup>3</sup>, Rafael Moreira<sup>3</sup>

<sup>1</sup>Fiocruz Pernambuco MSc Student Brazil, <sup>2</sup>Fiocruz Pernambuco PhD Student Brazil, <sup>3</sup>Fiocruz Pernambuco Brazil

Background/objective

The management of indigenous oral health makes use of the indigenous health care information system (siasi in portuguese), among other functions, to monitor the impact of the actions performed by monitoring health indicators. In the context of oral health, although there are performance indicators dedicated to dental practice, these are not specifically dedicated to the context of indigenous oral health. Thus, especially since the coordination of the special secretariat for indigenous health (sesai in portuguese) in 2010, several operational challenges have arisen, among them, the effectiveness of the siasi, with oral health data and indicators that can support the decision-making process of indigenous health planning, allowing the action impact, epidemiological situation and access to oral health services follow-up.

Methods: This study presents the construction of an evaluative instrument capable of generating parameters for the production of performance indicators appropriate to the context of indigenous oral health in Brazil. The application of the indigenous oral health performance indicators evaluation matrix (ioh-piem) aims to assess the suitability of performance indicators used in the siasi to the context of indigenous oral health in Brazil.

Results: The instrument is elaborated by the researchers and validated by a field

expert workgroup. The ioh-piem is applied in questionnaire format using the delphi method, which seeks consensus from the participants, in successive rounds, and interspersed with controlled feedback. The participants are indigenous oral health managers, dentists and indigenous healthcare users, selected from the 34 special indigenous health districts (dsei in portuguese).

Conclusion: The answers are compiled and the results identify the criteria and indicators defined by the participants as appropriate to the context of indigenous oral health.

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### Implementing a Pregnant Women And Birth Registry in Karachi, Pakistan to provide digital identity to newborns and administer birth dose vaccinations

Vijay Dharma<sup>1</sup>, Mubarak Shah<sup>2</sup>, Nida Aslam<sup>1</sup>, Danya Siddiqi<sup>3</sup>, Subhash Chandir<sup>4</sup>

<sup>1</sup>IRD Pakistan Pakistan, <sup>2</sup>IRD Global Canada, <sup>3</sup>IRD Global United Kingdom, <sup>4</sup>IRD Global United States

Background and objective: Despite concerted efforts to achieve universal and equitable immunization coverage, many children are still missed since they have no formal record of existence, making it difficult to track these 'invisible' children. We developed an electronic pregnant women and birth registry (pwbr) module that enrolls pregnant women and newborns visiting birthing facilities into a centralized database connected to the provincial electronic immunization registry (zindagi mehfooz; zm eir) in sindh province, pakistan.

Methods: We implemented the pwbr module at 15 birthing facilities in 8 'super high-risk union councils' (shruc) in karachi, based on the prevalence and circulation of poliovirus and low routine immunization coverage. Pregnant women and their newborns were enrolled into the pwbr at the birthing facility through assigning them a unique qr-code based identifier that linked them to the provincial eir. We evaluated the impact of the pwbr on birth dose immunization coverage and timeliness among enrolled newborns.

Results: Between november 10, 2020, and december 31, 2021, we enrolled 33,335 pregnant women and 99.5% (17,942/18,021) of the children born at the birthing facilities. 88% (15,712/17,945) of the newborns were administered the birth dose of the polio vaccine at the facility, of which 99% (15,666/15,712) were vaccinated within 24-hours of birth. We observed that coverage rate for birth dose polio vaccine (93%) was higher among children enrolled in the eir through pwbr compared to those enrolled through other modalities (immunization centers, outreach, etc.) (43%). Timeliness of subsequent vaccines was also higher for children enrolled through pwbr compared to those enrolled through other modalities.

Conclusion: A birth registry module integrated in existing lmic health systems can effectively provide newborns with a digital identity and link them to the health system for effectively tracking their immunization status till completion.

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### Designing and developing a telehealth services implementation model for tribal areas in nashik district, maharashtra

Vibha Bhirud<sup>1</sup>, Dhanashree Apsinghekar<sup>1</sup>, Shilpa Bhatte<sup>1</sup>, Priyanka Vichare<sup>1</sup>, Yogesh Lahinge<sup>1</sup>

<sup>1</sup>Intelehealth India

Introduction: Telemedicine canvas was developed to be used as a template to design and develop telehealth interventions in a given geographical or cultural context. Villages in the tribal area of nashik district, maharashtra in India, have little to no access to primary health care services. The areas are poorly connected to the main city of nashik and at times completely cut off during the monsoon season. Telemedicine will enable the villages to access good quality primary healthcare without the need to travel long distances.

Aim: To design and develop telehealth services for tribal communities materials and methods: a community needs assessment was conducted to identify the scope of work, context, challenges, and opportunities through in-depth interviews with community members, health workers, and local health providers. The implementation team, doctors, and internal evaluation team conducted a workshop to map priorities, opinions, and perceptions using the telemedicine canvas. The workshop was followed by a baseline survey to gather data for socio-demographic, gestational, wash, health access, and expenditure data from the community.

Findings: The community needs assessment helped focus the discussions during the workshop and helped define the goals and scope of work of the program. Discussions guided by the telemedicine canvas helped develop a theory of change, requirements for the software application, and baseline survey. The

implementation model designed for the tribal areas was to implement the digital solution with health workers as intermediaries in-field. The model consists of both telehealth (education and awareness) as well as telemedicine (consultation by qualified doctors).

Conclusion: The canvas provides a framework to map out internal and external challenges of the ecosystem, opportunities, and perceived end-user needs. It provides a useful framework to develop user needs for the technology solution, identify and plan for potential barriers to implementation, and training modules for health workers.

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### Creating a clinical decision-making algorithm in order to build a one health knowledge repository to help support and improve the public health surveillance system

Plácida Maholela<sup>1</sup>, Osvaldo Frederico<sup>2</sup>, Inocência Chongo<sup>1</sup>, Júlio Rafael<sup>3</sup>

<sup>1</sup>Instituto Nacional de Saúde (Mozambican National Health Institute)

Mozambique, <sup>2</sup>Inlamea Instituto Nacional de Saúde (Mozambican National Health Institute), <sup>3</sup>Instituto Nacional de Saúde (Mozambican National Health Institute) Mozambique Mpoki Mwabukusi Sokoine University

Recording and reporting diseases within the community is still a high burden and in a country such as Mozambique, with low capacity for risk management of emerging and re-emerging diseases specially in remote areas, early detection or capture has been considered crucial. Using mobile devices to capture disease cases have enhanced timely reporting and prompt response of disease events, particularly those cases that do not report to the health facilities, preventing the health surveillance system from being able to assemble and include the information in their database for future decision-making purposes. Nevertheless, these same captured events can be used as a tool to promote early detection of cases, through the prediction of likely disease conditions based on the signs and symptoms reported, thus contributing for the reduction of disease spread and the occurrence of pandemics and at the same time promoting and enhancing local capacity for case management.

Health technicians from health facilities will be traced and asked to participate in a questionnaire-based interview, where data on their experience with clinical manifestations of emerging and re-emerging disease, as well as endemic disease cases will be compiled. This data will then be compared to a preset clinical manifestation scores map, which will then be weighed and associated with a particular disease through a logistic regression model which is able to obtain the probability of occurrence of a particular event, as well as the influence of each independent variable on the event studied. By the end of this study, a combined set of clinical manifestations will be used to capture and determine the probability of the occurrence of a correspondent set of diseases in a determined place, in order to enhance the local capacity to address health related issues, whilst also timely reporting to the national and subnational level.

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### Assessment of quality attributes impacting end-users' experience with mobile health applications in Saudi Arabia: A systematic review

Mohammed Senitan<sup>1</sup>, Abdullah Alotaibi<sup>1</sup>

<sup>1</sup>Saudi Electronic University Riyadh Saudi Arabia

While a number of mobile health apps are available for managing prescriptions, managing chronic care, managing women's health, managing personal health data, managing healthcare and fitness, and managing nutrition and diet. The usability of the apps is what determines their success. The purpose of this systematic research was to evaluate the quality factors influencing end-user satisfaction with mobile health applications in Saudi Arabia. For this systematic review, which included the most recent literature (2017–2022) on end-user experiences with mobile health applications in Saudi Arabia, we searched Pubmed, Medline, CINAHL, EmBase, Google Scholar, Springer Link, Saudi digital library (SDL), Association of computing machinery (ACM) digital library, and IEEE Xplore databases. The identified papers calibre and consistency were checked using PRISMA criteria and critical appraisal methods. 5008 duplicate articles were removed from all databases that had been searched after the original search. Furthermore, after looking at their titles and abstracts, 1941 papers were taken out of the study. Based on the aforementioned standards, the main author and co-author reviewed and chose the remaining 102 articles. There were 21 publications total in this study that were deemed to be acceptable. All of the chosen studies interviewed 15727 people in total. The most popular mobile health apps among the chosen studies were reported to be Tawakkalna, Tabaud, Seha, Mawid, Tataman, Ana Alsukary, and Sehhaty. In the

selected studies for this systematic review, satisfaction (n=9) was the feature that was most frequently employed, followed by usefulness (n=4), awareness (n=4), acceptability (n=2), learnability (n=2), efficiency (n=2), flexibility (n=1), and errors/technical concerns (n=1). Unexpectedly, privacy and security-other crucial usability factors for mobile health apps-were not on the list of the most often mentioned factors. The meta-analysis of three chosen research revealed that younger age groups and men were more satisfied with using mobile health apps.

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### Infectious disease tracker-mysejahtera mobile apps

Husni Hadi<sup>1</sup>

<sup>1</sup>Ministry Of Health Malaysia malaysia

Background and objective: Infectious disease tracker is a feature in MySejahtera mobile health apps that provides real time number of active infectious disease cases location namely dengue fever, human and animal rabies, measles, hand-foot-mouth disease (HFMD), and tuberculosis. The locations of reported cases are mapped to display the numbers of active cases around any selected search point. Hence, public will be able to see the number of active cases for each disease reported from their point of search.

Methods: Verified reports of each diseases were analyze and geocoded by Malaysian health authority. Mapping of the geocoded data from each infectious diseases are used to enable the tracker function. The number of infectious disease cases shown does not include the name, address, latitude, or longitude or any means of disclosing the patients' exact coordinates. The duration of active cases are varies from one disease to another while the distance depends on the type of infectious disease. It ranges from a radius of 200 metres for dengue cases and up to a radius of 5 km for hand-foot-and-mouth disease.

Conclusion: This feature is mainly to create awareness among the public regarding the risk of infectious diseases that may exist around their area. High-risk individuals (children, elderly, immunocompromised) can avoid from going into areas with high number of active cases. The community can arrange for cleaning campaign and conveying the information via social circle (e.g. WhatsApp group, Telegram channel, Facebook) especially during gatherings. This approach advocates the shift from a disease-oriented model to a person-centred wellness approach. The health authority and society work together in more effective ways of communicating about the virus, and how public able to keep themselves safe. This initiative indirectly empowering the public with health information towards putting a stop to an outbreak and improves population health.

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### Human factor on data safety: Resident doctors attitude towards cybersecurity on the workplace

Gerardo Altamura<sup>1</sup>, Valeria Puleo<sup>1</sup>, Mario Nurchis<sup>1</sup>, Gianfranco Damiani<sup>1</sup>,

Fidelia Cascini<sup>1</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore Italy

New health technologies bring hope for a better and more efficient process of care. However, the use of new instruments entails new doubts on efficacy and safety. Verizons 2018 Data Breach Investigation Report found out that the healthcare sector was the most affected one by personal data breaches, accounting for 24% of all found breaches. Researchers at Stanford University calculated that about 88% of all data breaches are caused by human error. This study aimed to investigate this topic by collecting results of a survey on cyber security in the workplace among resident doctors of the IRCCS Policlinico Gemelli. Based on previously published and verified works, this survey followed a cross-sectional study approach. Sixty-three correct statements related to knowledge, behavior, and attitudes of resident doctors were submitted. Doctors were invited to answer whether they didn't know, agreed, or disagreed with the stated sentence. Zohosurvey®, an online service, was used to deliver the file link, and to take attendance and collect data. Fifty resident doctors answered to the invitation. All responders gave feedbacks to all 63 questions. The behavior section saw the highest number of shared "agree" answers, especially regarding the need not to post content related to work on social media(88.46%) and to use different passwords for different accounts(88.46%). Similarly, the attitude section registered a high number of "agree" answers, especially regarding social networks, in particular referring to avoiding to post sensitive material(88.46%) and the importance not to use the same password for social networks and work mails(88.46%). A high number of "disagree" answers related to the knowledge section. This survey highlighted how, although good behaviors and attitudes towards cyber security already exist among responders, there is the need to focus on knowledge, with lessons and educative material to fill the gap which brought

to such unsuitable answers among responders.

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### Telehealth as a tool to optimize the pre-hospital pathway: An extreme case study in southern Italy

Anna Gagliardi<sup>1</sup>, Francesca Troiano<sup>2</sup>, Carmela Puleo<sup>3</sup>, Giuseppe Furia<sup>4</sup>, Patrizia Chierchini<sup>5</sup>, Maddalena Quintili<sup>6</sup>

<sup>1</sup>University of Foggia Department of Economics Via Romolo Caggese, 1, 71121 Foggia FG Italy, <sup>2</sup>Local Health Authority Roma 1, <sup>3</sup>Local Health Authority Roma 1 Risk Management Area Borgo Santo Spirito, 300193 Roma RM Italy, <sup>4</sup>Local Health Authority Roma 1 Hospital Management Area Borgo Santo Spirito, 300193 Roma RM Italy, <sup>5</sup>Local Health Authority Roma 1, <sup>6</sup>Local Health Authority Roma 1 Risk Management Area Borgo Santo Spirito, 300193 Roma RM Italy

**Background and Objective:** The COVID-19 pandemic has had a significant impact on health systems around the world. In particular, the suspension of scheduled surgical activities, guaranteeing only urgent surgeries, has inevitably lengthened the waiting time for treatment of patients with a diagnosis other than COVID-19, resulting in inefficient management of the operating rooms. This study aims to describe the advantages of telehealth services for managing patient operations and care. **METHODS** This study, focusing on a dataset including 166 major surgery interventions from the data warehouse of the "Casa Sollievo della Sofferenza Research Hospital" (Italy) from January 2021 to November 2022, examined, in particular, the Pre-hospital Pathway. The research, analyzing the leading Key Performance Indicators and comparing them between the two years of investigation (2021 in the absence and 2022 in the presence of the telehealth service), highlighted potential changes in organizational and operational dynamics. **RESULTS** The main results indicate a better efficiency of the Time Management of the operating room. The data show a significant reduction "of the index of re-planning of surgical operations" from 16.27% in 2021 to 7.5% in 2022. In addition, the number of surgeries performed in the operating room has been optimized from 71.4% in 2021 to 90% in 2022. **CONCLUSION** Introducing the telehealth service in the Pre-hospital Pathway is a valuable tool to spread the culture of Change Management within the health organization. Enhanced operations management and improved patient experience are the tangible results of this study.

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### The use of social media-communities by diabetes patients - a scoping review

Hocke-Bolte Zora<sup>1</sup>

<sup>1</sup>University of Education Schwäbisch Gmünd Germany

**Background and objective:** There are over 420 million people with diabetes worldwide. The World Health Organization (WHO) estimates that the number of diabetes-related deaths will double by 2030. Living with diabetes requires the ability to seek and apply health information. The aim of the scoping review is to find out what evidence is available for social media usage by diabetes patients and whether it is being used to search for health information or to obtain emotional support.

**Methods:** A scoping review was conducted to report relevant literature published prior to 2022. Attention was paid to the emphasis of digital health literacy, emotional support and variations within the different studies.

**Results:** There are a lot of new methodological approaches, which are published frequently as pioneering work. Emotional support often plays a more important role in the use of social media than seeking health information, but in-depth understanding and explanatory patterns are lacking.

**Conclusion:** Future studies should investigate what explanatory patterns can be used to understand social media use by diabetes patients. Those would allow improved targeted health promotion and prevention measures.

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### Telemedicine and chronic patient: perceived effectiveness of asthmatic children's caregivers

Elisabetta Ceretti<sup>1</sup>, Caterina Antonelli<sup>2</sup>, Cristina Quecchia<sup>3</sup>, Valeria Gretter<sup>3</sup>, Raffaele Badolato<sup>4</sup>

<sup>1</sup>University of Brescia Department of Medical and Surgical Specialties, Radiological Sciences and Public Health, University of Brescia Italy,

<sup>2</sup>University of Padova Master Degree Course in Health Assistance, University of Padova Italy, <sup>3</sup>ASST Spedali Civili, Brescia Paediatric Allergology Clinic, Child Hospital, ASST Spedali Civili, Brescia, Italy, <sup>4</sup>University of Brescia

Department of Clinical and Experimental Sciences, University of Brescia Italy

**Introduction:** The outbreak of the Coronavirus pandemic and the restrictions imposed to limit Sars-CoV-2 circulation have prompted the use of telemedicine as an alternative method of assistance, especially for chronic patients. The aim of the study was to evaluate the perceived effectiveness of introducing telemedicine into the diagnostic therapeutic-educational pathway (DTEP) of asthmatic children treated at the "Io e l'Asma" Centre of the Children Hospital, ASST Spedali Civili in Brescia, Italy.

**Methods:** From July to September 2022, a questionnaire was administered to a sample of caregivers of asthmatic children who made at least one telemedicine visit in the period between March 2020 and September 2022. The 28-questions questionnaire was divided into three macro-areas concerning subject personal data, number and type of visits and perception about the visits, respectively.

**Results:** We collected 108 questionnaires. Most of the subjects were parents, female and Italian, and participated in more than one telemedicine visits: 58% of the subjects were satisfied of the organization of the telemedicine visits, stating they were willing to continue them even after the pandemic had ended. Furthermore, 75% of subjects experienced empathy with the doctor despite the distance, in contrast with the belief about telemedicine which claims that the absence of direct contact between doctor and patient negatively affects the conduction of the visit.

**Conclusions:** Telemedicine at the Io e l'Asma Centre was introduced for necessity in 2020, during the pandemic; but, its sudden introduction did not allow the planning of a gradual integration strategy between traditional and telemedicine visits, and better preparation and training of patients and practitioners. However, the results of the study showed that the caregivers of asthmatic children appreciated use of telemedicine for assistance of asthma which could integrate the traditional approach for treating the disease.

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### Methodological approaches based on machine learning in the use of big data in public health: a systematic review

Giuseppe Migliara<sup>1</sup>, Antonio Sciurti<sup>1</sup>, Maria De Blasiis<sup>1</sup>, Valentina De Nicolò<sup>1</sup>, Daniela Mercuri<sup>1</sup>, Valentina Baccolini<sup>1</sup>, Carolina Marzuillo<sup>1</sup>, Paolo Villari<sup>1</sup>, Corrado Vito<sup>1</sup>

<sup>1</sup>Sapienza University of Rome Department of Public Health and Infectious Diseases Piazzale Aldo Moro 5, 00168, Rome Italy

**Background and objective:** Since the past few years, there has been a growing interest for the use of massive amounts of data - i.e., the Big Data - in medical research, for their potential role in changing the approach to personal care, medical care and public health. However, part of the difficulties in introducing Big Data in Public Health is constituted by the problem of abandoning the classical statistical methodology in favour of the methodologies mainly based on machine learning (ML). We performed a systematic review to investigate the ML methodologies used in studies of interest for public health, with particular attention to their development and validation.

**Methods:** The research was performed in PubMed, Scopus, and Web of Science databases. Studies investigating risk prediction reporting use of ML methodologies in public health fields of interest were included. The following data were extracted: study design, target population, data source, type of machine learning algorithm used, study objective, methodological approaches used in the development of the ML algorithms.

**Results:** The search retrieved 26340 records. 26 studies were included. 15 studies used Random Forest models, while the use of other types of models was more sporadic. The risk of overfitting of the models developed in the 24 studies that used supervised algorithms, based on tuning methods, internal validation methods and external validation methods, was found to be high in 6 studies, low in 15 studies and minimal in 3 studies.

**Conclusions:** Almost a third of the studies used approaches inadequate for the tuning, training, and validation of machine learning algorithms. Only three studies applied appropriate external validation techniques. These methodologies will have to be carefully guided, both in the standardization of their development, and in the assessment of their effectiveness, to ensure that their potential can bring real benefits to the entire population.

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### Exploring data visualizations as a tool to make ai more accessible for qualitative researchers in the healthcare field

Luka Mazza<sup>1</sup>, Luka Mazza<sup>1</sup>, Jim Wallace<sup>1</sup>, Plinio Morita<sup>1</sup>

**<sup>1</sup>University of Waterloo Canada**

**Background and objective:** Qualitative data analysis allows healthcare researchers to understand lived-in experiences of patients and practitioners. However, it requires time and effort, which is not always available. A potential way to assist is to use artificial intelligence as a tool to help researchers with data exploration. However, many qualitative researchers do not have programming skills to use AI and are reluctant to lose their sense of agency and serendipity when conducting research. As a potential way to bridge this gap, we explored the use of data visualizations to foster researcher agency and make AI more accessible.

**Methods:** We used Design Science Research to develop a series of prototypes. First qualitative semi-structured interviews were conducted with 5 qualitative researchers to gauge how they interacted with their data and what they expected of data visualization for working with AI. The interviews were guided by the concept of agency and how it can be fostered through media interaction. Then, the results were compiled into guidelines for the development of 4 datavis prototypes, each focusing on fostering agency through a different channel.

**Results:** Researchers reported needing freedom to move within a visualization the most. High levels of tactile interactivity increased the trust in the AI and made participants feel like they were working as a partnership. Additionally, freedom to co-create the visualization instead of being presented with a finished product was cited as satisfying. Both elements made participants feel ownerships over their own research and a sense of camaraderie with the AI.

**Conclusion:** For qualitative researchers, agency in data analysis is heavily correlated with freedom of choice and movement. Those elements directly impact their sense of ownership of data and trust in AI. Overall, data visualizations seem to show promise in making AI more accessible for people with no programming experience.

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**Impact of digital health interventions for adolescents with type 1 diabetes mellitus on health literacy: a systematic review**

Aurélia Naef<sup>1</sup>

<sup>1</sup>MHH, Germany

This systematic review provides an overview on the impact of digital health interventions for adolescents with type 1 diabetes on health literacy and derive recommendations for further research.

**Background:** Evidence shows that living with diabetes mellitus type 1 (T1DM) in adolescent age is particularly challenging and difficult to manage. A high level of health literacy is important to prevent and avoid debilitating complications. Despite the increasing prevalence and incidence of T1DM and the large use of digital health interventions, little is known about the association between this use and health literacy.

**Methods:** Electronic searches were performed in five databases: PubMed, The Cochrane Library, EMBASE (via Ovid), Web of Science and PsycINFO from 2011 to 2021. In addition, grey literature searches were conducted. Relevant studies that have been missed by electronic and hand-searching strategies were searched in the reference lists of all included studies. The review followed PRISMA guidelines. Two researchers screened abstracts for initial eligibility and applied the inclusion and exclusion criteria to the relevant full-text articles. Quality was assessed.

**Results:** Out of 981 studies, 22 were included in the final review. Most primary studies included in this review were judged as moderate overall risk of bias or with some concerns and most of the secondary studies as critically low quality reviews. Our Findings suggest that the interplay of health care providers (HCP) and patients through social media helps the management of the disease. This corroborates Bröder et al.' (2017) dimension of 'communication and interactions' in their concept of health literacy.

**Conclusions:** For adolescents with T1DM, social media may be a specific and beneficial intervention for an improved communication and interaction with their HCP. Further research should investigate what specific form of social media suits best for which adolescents.

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**A pilot randomized trial for smoking cessation app in Arabic language: a study protocol**

Ola Soudah<sup>1</sup>, Alameen Alsabbah<sup>1</sup>, Mo'men Dalalal'ah<sup>1</sup>, Carmen Svanes<sup>2</sup>

<sup>1</sup>Faculty of Medicine, Yarmouk University, Jordan, <sup>2</sup>Faculty of Medicine, The University of Bergen, Norway

Tobacco consumption in the middle-east region is very high. Many smoking cessation apps show to be effective in reducing smoking rates. To date, smoking cessation apps in Arabic mostly are translated from English. No study tested the

apps efficacy of the Arabic version in our region. Moreover, the cultural context is not addressed. The purpose of this study is to develop a smoking cessation app in Arabic (iEndSmokin, [www.iendsmokin.com](#)) and to examine its efficacy. The app will be based on clinically proven behavioral therapy as Cognitive-Behavioral Therapy (CBT) and Acceptance Commitment Therapy (ACT). In this pilot randomized clinical trial, smokers will be randomized and allocated in a 1:1 ratio to app intervention or to the control group. Participants in the control arm will attend educational and motivational sessions. The intervention will last for 6 months and participants will be followed for 12 months. The primary outcome is a 30-point prevalence of smoking abstinence and normal saliva cotinine level at the end of the study. A 50% reduction in the smoking rate will be the secondary outcome. Long-term abstinence will be measured after 12 months. The sample size will be around 200 smokers who are willing to quit. Recruitment will be between April 2023 to May 2023 or until the process is completed. The study will start from June 2023 to December 2023 with 4 follow-up points: 1) baseline, 2) 3 months, 3) 6 months, and 4) 12 months. Data will be analyzed based on intention-to-treat. Our main hypothesis, the iEndSmokin app will be an effective, accessible, and feasible smoking cessation app targeting all Arabic speaking countries. All ethical approval will be obtained from Yarmouk University Institutional Review Board (IRB) prior to app development and recruitment. The study Results will be disseminated via peer-reviewed publication.

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**Study on effectiveness of online learning among medical students of Bpkis during COVID-19**

Laxmi Subedi<sup>1</sup>

<sup>1</sup>School of Public Health and Community Medicine, Koirala Institute of Health Sciences, Nepal

**Background and objectives:** Responses to the COVID-19 pandemic in medical education have varied from country to country, from closures of medical schools to online learning approaches to abiding by country-specific measures such as social distancing. The sudden transition from on-campus learning to exclusively online learning is challenging for both faculty and students and has required a lot of preparation in a short time. This study focuses on assessing the effectiveness of online teaching among medical students of BPKIHS during COVID-19.

**Methods:** A cross sectional study was done among the 100 undergraduate medical students of BPKIHS. Convenient sampling method was used to select study participant. Almost equal number of students from each batch were selected randomly. Mixed method was used for the study. Stratified random selection was done in equal proportion of 1:1. Self-Administered, Semi-structured questionnaire among the Medical students was administered using Google form and open-ended questionnaire was used for qualitative study.

**Results:** In our online survey 62.0% of the students agreed that the sessions were up to their expectation, 48.0% reported that session/course were well structured, for 55.0% the relevant questions asked motivated learning during online sessions. The pace of the sessions was very fast for 62.0% of the students, 35.0% of the students wanted more visual aids, 41.0% of respondents said voice quality was not good during the session, 59.0% of the students reported online classes were interactive whereas 83.0% of students missed direct, in-person interaction. Adequate Visual aids, good communication and time management skills, good internet strength and quizzing during the sessions were suggestions for improvement of online teaching.

**Conclusions:** According to our Findings most of the students found online sessions effective however improvement in technical issues (audio visual aid, internet connection etc.) would make the online session more effective.

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**Please mind the gap between guidelines & behavior change: a systematic review and a consideration on effectiveness in healthcare**

Nicola Bellé<sup>1</sup>, Stefano Gandolfi<sup>2</sup>

<sup>1</sup>Laboratorio MeS, Management e Sanità, Sant'Anna School of Advanced Studies, Pisa, Italy, <sup>2</sup>Sant'Anna School of Advanced Studies, Pisa, Italy

**Background and Objectives:** This study is a systematic review, following the PRISMA Methodology, to explore and take stock of extant scholarship on the relationship between practice guidelines and behavior change in the context of healthcare provision.

**Methods:** Scopus and Web of Science were researched according to our PICO(T) Keywords. The initial search yielded 624 Results, which were then reevaluated based on inclusion criteria to remove duplicates, items besides research articles,

and items outside the scope of the review. A total of 67 articles were analyzed in depth.

Results: The 67 studies in our final sample come from 25 countries, with the UK, Australia, Canada, and the US being the most represented. In terms of populations of interest, about 45% of the studies in our sample specifically focus on medical doctors, and some 37% generically target healthcare workers. Prescription is the most frequently investigated behavior, followed by hand hygiene. Guidelines significantly influence behavior in the intended direction in less than half of the studies; Results are mixed in more than one-fifth of the cases and significant but contrary to expectations in 18% of reviewed articles. In terms of research design, most studies are based on quantitative methodologies, followed by qualitative work, literature reviews, and theoretical contributions. Conclusions: The study speaks to academics and healthcare professionals alike, aiming to improve the effectiveness of guidelines as a tool for positively changing behavior in the healthcare context. It provides an exhaustive mapping of the relationship between guidelines and behavioral changes in health professionals, including the factors that mediate or moderate this relationship and the methodologies adopted in this research area.

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### Implementation and evaluation of an interprofessional Tele-Care approach in home care in Germany

Andrea Chmitorz<sup>1</sup>, Theresa Zürrn<sup>2</sup>, Hannah Haumann<sup>3</sup>, Stefanie Joos<sup>3</sup>, Isabel Kächele<sup>4</sup>, Peter König<sup>4</sup>, Cornelia Mahler<sup>3</sup>

<sup>1</sup>Institute for Collective Health, Esslingen University of Applied Sciences, Germany, <sup>2</sup>Esslingen University of Applied Sciences, Germany, <sup>3</sup>University Hospital Tübingen, Germany, <sup>4</sup>Furtwangen University of Applied Sciences, Germany

Tele-Care is increasingly considered as a cost and time-effective approach to deliver health services in remote or rural areas. Although remote medical consultations have become more common in Germany in recent years, interprofessional approaches including nursing and medical professions as well as patients and caregiving relatives have not been implemented to date. Our aim is to implement and evaluate an interprofessional online home care visit including nursing service and general practitioner, patient and caregiving relative in-home care to increase and ensure patient safety and the quality of care. The project will be conducted in the SouthWestern part of Germany. The development and subsequent implementation of the online interprofessional visit will be carried out together with ambulatory nursing service and general practitioners. Current status and anticipated requirement of the partners will be analyzed, visions developed, structures for interprofessional cooperation defined and technical infrastructure created. Data from home care nurses, general practitioners, patients and their relatives will be analyzed during the entire process. Qualitative data will be collected to assess potential obstacles in the implementation process; quantitative data to evaluate medical and nursing-related outcomes, patient-related outcomes and caregiver burden using standardized and validated questionnaires. The results will shed light on interprofessional aspects relevant for successful implementation of online-based visits and interprofessional collaboration in the German primary health care system. The project is funded by the Ministry of Social Affairs, Health and Integration of Baden-Wuerttemberg, Germany.

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### Preventing public health crises: an expert system using Big Data and AI in combating the spread of health misinformation

Jasleen Kaur<sup>1</sup>, Irfhana Hussain<sup>1</sup>, Matheus Lotto<sup>1</sup>, Zahid Butt<sup>1</sup>, Plinio Morita<sup>1</sup>

<sup>1</sup>University of Waterloo, Canada

Background and Objective: Health misinformation disseminated on social media has detrimentally affected the general population's attitudes toward public health measures, leading to costly and harmful public health crises around the world. Currently, public health officials cannot mitigate these health misinformation trends due to a lack of a comprehensive expert system capable of collecting and analyzing large amounts of social media data. The objective of this study is to design and develop a big data pipeline and ecosystem for the identification and analysis of health misinformation on social media named the Misinformation Analysis System (MAS).

Methods: Python, the Twitter V2 API, and the Elastic Stack are the main technologies used in developing the MAS system. The MAS system extracts social media data from the Twitter V2 API using its Data Extraction Framework and applies automatic health misinformation analysis using a pre-trained Latent Dirichlet Allocation (LDA) Topic Model, Sentiment Analyzer, and Information Disorder Identification

machine learning model. The analyzed data is then visualized through dashboards and analytics after being loaded into the Elastic Cloud deployment.

Results: The system is performing efficiently and accurately. Independent investigators have successfully utilized the system to extract significant insights for a fluoride-related health misinformation use case, spanning a period of 6 years, from 2015 to 2021. The system is currently being used for a vaccine hesitancy use case, spanning a period of 15 years, from 2007 to 2022, and a heat-related illnesses use case (2011 to 2022), respectively.

Conclusions: The novel MAS expert system has the potential to help public health officials globally to detect and analyze misleading health information. Moreover, this system can grow to integrate social media data from multiple sources into dashboards for a multiplatform analysis and to support social media data written in non-Western languages.

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### Use of telehealth resources in primary care and its association with facing the COVID-19 pandemic in Minas Gerais, Brazil

Alaneir Santos<sup>1</sup>, Liliana Dramos<sup>1</sup>, Delba Santos<sup>2</sup>, Raphael Aguiar<sup>1</sup>, Solange Godoy<sup>3</sup>, Maria Senna<sup>4</sup>, Mariana Freitas<sup>1</sup>, Elis Borde<sup>1</sup>, Rosângela Perillo<sup>5</sup>, Rogéli Peixoto<sup>4</sup>, Rafaela Pinto<sup>4</sup>, Antônio Matta-Machado<sup>1</sup>, Veneza Oliveira<sup>1</sup>

<sup>1</sup>Faculty of Medicine, Universidade Federal de Minas Gerais, Brazil, <sup>2</sup>Universidade Federal dos Vales do Jequitinhonha e Mucuri, Brazil, <sup>3</sup>Nursing School, Universidade Federal de Minas Gerais, Brazil, <sup>4</sup>Faculty of Dentistry, Universidade Federal de Minas Gerais, Brazil, <sup>5</sup>Universidade Federal de Minas Gerais - Faculty of Medicine, Brazil

Background and Objective: Use of telehealth resources increased dramatically during the COVID-19 pandemic. This study set out to examine associations between the level of incorporation of telehealth resources and the level of Primary Health Care structuring to deal with the COVID-19 pandemic in the State of Minas Gerais, Brazil. Methods: A cross-sectional study carried out at the end of 2020, with a sample of 260 Primary Health Care working in the State of Minas Gerais, Brazil. Two variables were created - Level of the Primary Health Care structuring to deal with the COVID-19 pandemic and Level of telehealth structuring, involving: Telehealth-based training targeting the community, Telehealth-based medication strategies, number of computers and electronic devices, consultations and monitoring of COVID-19 patients using Telehealth resources, Information and Communication Technologies - and Telehealth-based monitoring of chronic patients, internet availability and teleactivities. Associations between variables were examined using the Tukey's test for multiple comparisons and the Spearman correlation. Variables associated with socioeconomic dimensions and healthcare were also analyzed.

Results: Levels of telehealth structuring in Primary Health Care ranged from poor (43%) to regular (40%) in most cases. Most Primary Health Care teams had regular (56%) or good (37%) levels of Primary Health Care structuring to deal with the pandemic. Telehealth use and COVID-19 tackling ability were significantly correlated ( $p < 0.050$ ). The higher the level of telehealth use, the better the ability to deal with COVID-19 ( $0.45$ ;  $p < 0.001$ ). No correlations with human development index, number of hospital beds and percentage of health insurance plans were detected. Primary Health Care was structured to tackle the pandemic. However, there is a lot to be done before telehealth resources are effectively incorporated into Primary Health Care. Conclusions: Whenever incorporated, telehealth resources contributed a more robust primary care structuring to deal the COVID-19 pandemic.

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### Mental health topics in social media during the COVID-19 pandemic - a literature review

Virve Pekurinen<sup>1</sup>, Tia Koivu<sup>1</sup>, Pirjo Lindfors<sup>2</sup>, Katja Joronen<sup>1</sup>

<sup>1</sup>University of Turku, Finland, <sup>2</sup>Tampere University, Finland

Background and Objective: The COVID-19 pandemic has increased psychological distress and the use of social media, especially in young people. The continual use of social media can undermine people's mental well-being. However, social media can provide peer support by enabling people to share their mental health experiences. Still, little is known about mental health communication on social media during the pandemic. The aim of this review is to describe the existing research related to mental health communication on social media during the COVID-19 pandemic.

Methods: The peer-reviewed literature was reviewed using the search terms, such as social media, mental health, and COVID-19. The databases used were APA PsycINFO, CINAHL, Pubmed, and Web of Science. A manual search was also

conducted. Studies were excluded if the study population consisted of the elderly or social-/healthcare professionals, or if the mental health conversations were related to specific health problems or specific peer-support groups and networks. The search resulted in 1970 references, of which 19 studies were selected.

Results: The studies (N=19) were conducted in North America (63%), in Asia (32%), and in Australia (5%). Machine learning was used in the majority of the studies. The studies examined communication on Twitter (58%), Reddit (26%), Sina Weibo (11%), and YouTube (5%). The communicated mental health topics included depression, suicidal thoughts, anxiety, fatigue, poor sleep quality, stress, and feelings of loneliness and fear. Peer support and advice were also communicated.

Conclusions: Mental health topics are communicated via social media, suggesting that social media platforms are a useful method to identify ongoing prevalent, and even potentially emerging, mental health topics. The existing research focuses mainly on Twitter; therefore, research is needed on other commonly used social media platforms among adolescents, such as YouTube. Research regarding users' experiences with peer support on social media is also needed.

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### Use of social media associated with health promotion: a new reality in Dentistry

Bárbara Fernandes<sup>1</sup>, Caroline Santos<sup>2</sup>, Cláudia Coscarelli<sup>3</sup>, Juliana Araujo<sup>3</sup>, Marcus Bezerra<sup>3</sup>, Olívia Gonçalves<sup>3</sup>

<sup>1</sup>Serviço Social do Comércio - Rio de Janeiro (SESC-RJ), Brazil, <sup>2</sup>Serviço Social do Comércio, Rio de Janeiro, Brazil, <sup>3</sup>Serviço Social do Comércio (SESC-RJ), Rio de Janeiro, Brazil

Health education, whether face-to-face or using digital tools, acts as an interdisciplinary process of knowledge construction. The Serviço Social do Comércio - Rio de Janeiro (Social Service of Commerce - Rio de Janeiro) (Sesc-RJ) has health prevention as its premise, valuing educational activities throughout the clinical care of the patient. With the COVID-19 pandemic, social media stood out as a tool to maintain these activities. This study intends to carry out a research on the dissemination of health promotion information by Sesc RJ Dentistry, through the Instagram profiles @sescrj and @sescsantaluziarj in publications in the format of reels, and to evaluate the importance of this practice even after the return of face-to-face activities. A metric evaluation regarding the number of posts in the format of reels and their views was performed from May 2021 to October 2022; in addition to a survey regarding the monthly average of face-to-face attendances in health education promoted by dental clinic of Sesc Santa Luzia in 2019 and 2022. All these data were extracted from the Sesc statistical system, which are accounted for in the month following production, based Public Domain information and available in aggregate form, without individual identification. Sesc RJ has an amount of 78 publications and a monthly average of 45623 views. And the number of publications regarding Sesc Santa Luzia is 68 and 5138, respectively. The monthly average of face-to-face dental appointment at Sesc Santa Luzia in 2019 was 2557 while from March to October 2022, the number of patients was 2583. According to the results obtained, it was ascertain that the alternative of expanding knowledge in health through the technological approach was successful and that it should be maintained even after the end of social isolation. Thus, social media reinforced health education in the dissemination of knowledge.

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### The "Octopus" project: a digital health model for suppling glaucoma care in Italy

Carmela Carnevale<sup>1</sup>, Francesco Oddone<sup>1</sup>, Angela Mastromatteo<sup>1</sup>

<sup>1</sup>IRCCS Fondazione G.B. Bietti Italy

Background: The current guidelines for glaucoma management suggest that patients perform a mean of three eye examinations per year associated with functional/structural exams. However, most of the primary territorial centers (ASL) are not equipped with the instruments for glaucoma diagnosis/follow-up. Therefore, these tests are carried out exclusively at the secondary specialized referral centers leading to a progressive overcrowding of the structure, increasing in waiting times and difficulties in ensuring an adequate continuity of care for glaucoma patients.

Methods: we analyzed the current territorial and hospital outpatient activity in order to find critical areas, specific problems and needs. The project will embrace two phases: definition of the network and digital platform and creation of a "point of care (POC)" physically located within the ASL and managed by the secondary referral center. The POC will be equipped with all the instruments required for the complete follow-up of the stable glaucoma patients.

Results: The digital platform provides a strong connection between the healthcare infrastructures both on the administrative, technical and clinical level allowing to share clinical patients' data including the exams' results. The actors involved will provide, through the platform, all the clinical patients' data necessary to send stable patients from the secondary referral center to the POC or to send cases that require para-surgical/surgical management or specialistic evaluation from the ASL to the secondary referral center. The visit or further diagnostic tests will be scheduled online, through a shared agenda, with a significant reduction of the waiting list allowing to schedule the periodic follow-up based on the individual risk level.

Conclusion: The integrated digital network could improve the patient management, the effectiveness and efficiency of the healthcare system ensuring the continuity of care for the management of chronic-degenerative disease.

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### The evaluation of the use of digital media as a tool in oral health education strategy at the odontosc mobile unit

Katia Andrade<sup>1</sup>, Claudia Pereira<sup>2</sup>, Katia Andrade<sup>1</sup>, Claudia Pereira<sup>3</sup>, Julia Mayer<sup>4</sup>, Rafaela Souza<sup>5</sup>, Taís Feris<sup>6</sup>

<sup>1</sup>SESC - Social Service of Commerce in Rio de Janeiro, Health Management, 261 Conde de Bonfim, Tijuca, apt 802, Rio de Janeiro, RJ 20520-051, Brazil,

<sup>2</sup>Department of Health Management, Social Service of Commerce in Rio de Janeiro, Niterói, Brazil, <sup>3</sup>SESC - Social Service of Commerce in Rio de Janeiro, <sup>4</sup>SESC - Social Service of Commerce in Rio de Janeiro, Health Management, 104 Benjamin Constant, APT802, Glória, RJ 20241150, Brazil,

<sup>5</sup>SESC - Social of Commerce in Rio de Janeiro, Health Management, 55 Av jornalista Alberto Francisco Torres, Icaraí apt 708-1, RJ 24230-000, Brazil,

<sup>6</sup>SESC - Social of Commerce in Rio de Janeiro

Introduction: Inserted in a broad concept of health, the promotion of oral health transcends the technical dimension of dental practice. Therefore, the need and efforts through Oral Health Education increase, with the purpose of enlightening the population about oral diseases and encouraging changes in general habits. During the COVID-19 pandemic, face-to-face activities were restricted, so digital media (YouTube, facebook and Instagram) emerged as an alternative for sharing content, aiming to promote health, prevent disease and continue the dissemination of knowledge, provide people with simple and low-cost alternatives for their well-being and better quality of life.

Aim: Quantitative evaluation of the use of digital media as a tool in the Oral Health Education strategy by the dental team of the Mobile Unit OdontoSesc, which belongs to the Social Service of Commerce in Rio de Janeiro.

Methodology: A quantitative exploratory study, based on an institutional database system (Planning and Execution System - SPE), which presents the number of views collected in posts on digital media, from January to December 2022. The posts were weekly or fortnightly, with content related to the main complaints and demands previously observed with face-to-face consultations. The contents were produced in short forms (videos and reels).

Results: The content shared on digital media had a reach of 71683 views/year, which represented an additional 66% in face-to-face educational activities.

Conclusion: The success presented by the new implementation strategy in the activity restriction period led the tool to be used, concomitantly, with face-to-face health education actions, aiming at a greater population reach and dissemination of knowledge, to foster utonomy and collaborate for a better quality of life for the population.

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### Dashboard as a public transparency tool for management and planning data in Brazilian healthcare system

Marília Coser Mansur<sup>1</sup>, Cristina Hamester<sup>1</sup>, Georgea Riff<sup>1</sup>, Nathalia Derengowski<sup>1</sup>, Wania Ferreira<sup>1</sup>, Davllyn dos Anjos<sup>1</sup>, Tania Barbosa<sup>1</sup>, Ligia Braun<sup>1</sup>

<sup>1</sup>Ministry of Health - Brazil

Background and Objective: Brazil has a public unified healthcare system named sistema Unico de Saúde (SUS). Healthcare management, financing and delivery are responsibilities of the three levels of government, the union, states, and municipalities. For monitoring and control, managers must fill in data in several planning tools, such as the current manager planning system called Digisus Gestor Modulo Planejamento (DGMP), in order to guarantee transparency about the status of the health planning and management mandatory documents. Those documents might go under further evaluation by the health council, which is the collegiate that acts in the formulation of strategies and as a society control

of health policies implementation in the corresponding government level. The objective of our project is to present the newly developed dashboard as a tool offering public transparency and enabling comparative analyses of sus planning instruments status.

**Methods:** A team of ministry of health professionals developed the dashboard between July 2021 and June 2022, in weekly meetings under constant cooperation and collective effort, using microsoft power BI as supporting technology.

**Results:** Maps, graphs and tables illustrate the situation of sus planning and management instruments in the dashboard, providing a public, friendly interface that is easily available. This technological innovation makes it possible to display the status of sus planning instruments in government levels and health regions. Furthermore, the application of a spatial clipping frame provides the basis to elaborate technical reports and qualitative analyses of those instruments.

Dashboard available at website : <https://liasaude.com.br/paineldgmp/>

**Conclusion:** The dashboard innovates by providing transparency of Brazilian unified health system planning data, thus supporting government decision making and social control policies.

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### Philippines's Family Planning Health Information System: From the Implementers' Lens

Blanca Rellosa<sup>1</sup>, Alethea De Guzman<sup>1</sup>, Ma. de Pedro<sup>1</sup>, Cecilou Bilbao<sup>1</sup>, Honeylin Todavia<sup>1</sup>

<sup>1</sup>RTI, Philippines

**Background:** Availability of quality and timely data is crucial to effective health program management. In the case of the Philippines's national health information system, Field Health Services Information System (FHSIS), anecdotes abound on challenges to its implementation. However, there's been no purposive documentation of its nature from the users' perspective.

**Methods:** To build data on this, the study conducted interviews, partnered with records review, with select public health facilities, provincial and city health offices, and regional and national Department of Health (DOH). Topics discussed focused on Family Planning (FP) since availability of quality FP data is paramount to addressing increasing unmet need for FP and teenage pregnancies and for appropriate resource allocation given the upcoming devolution of procurement of select FP logistics to Local Government Units (LGUs).

**Results:** Results showed that despite the strain COVID-19 put on the limited health workforce, compliance to recording and reporting processes were maintained although problems on timeliness were aggravated. Integration of hospital reports to FHSIS is a challenge due primarily to absence of standard consolidation tools and reporting guidelines. This is also why extent of issues on accuracy and reliability of hospital reports cannot be fully determined. Difference in perception per reporting unit on where integration should happen was also observed. Lack of standard electronic FP FHSIS tools that facilitates consolidation and validation led to the development of excel-based tools with varying set-up depending on an area's data needs. Despite availability of e-tools, some continue to use paper-based tools due to unavailability of equipment, limited skill, or error in the e-tool itself.

**Conclusion:** Overall, despite these challenges, short-term solutions to address these has been implemented by the users themselves. However, long-term resolution would depend largely on support and direction from the national DOH.

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### Patient Experience of Using Telehealth Services during COVID-19 in Dubai Health Authority: A cross Sectional Electronic Survey

Wafa Alnakhi<sup>1</sup>, Amal Al Balushi<sup>2</sup>, Heba Mohammed<sup>3</sup>, Hamid Hussain<sup>1</sup>, Gamal Shaker<sup>1</sup>, Mohamed Mudawi<sup>1</sup>, Noora Almulla<sup>3</sup>, Nabil Natafagi<sup>4</sup>

<sup>1</sup>Dubai Health Authority, Mohammed Bin Rashid School of Medicine and Health Sciences, "Dubai Health Authority - Head Quarters, Sheikh Ahmed Square", United Arab Emirates, <sup>2</sup>Oman College of Health Science- Muscat, Oman, <sup>3</sup>Directorate General of Human Resources Development, Oman, Phone:+968-24568148", Oman, <sup>4</sup>Dubai Health Authority, <sup>4</sup>University of South Carolina, USA, "Department of Health Services Policy & Management, Arnold School of Public Health, University of South Carolina, 915 Greene Street, Discovery Bldg. Suite 349, Columbia, SC 29201, United States

**Background and Objective:** During the COVID-19 pandemic, many healthcare systems shifted to the utilization of telehealth to ensure the continuity of healthcare services (1,2,3). Hence, Dubai Health Authority (DHA), the government entity that oversees healthcare services in the Emirate of Dubai, United Arab Emirates (UAE), has adopted the telehealth model in outpatient settings. Therefore, this study aims

to examine patients' telehealth usability during COVID-19 in Dubai.

**Methods:** A cross-sectional study adopted Telehealth Usability Questionnaire (TUQ). A total of 64,173 participants who used telehealth services during 2020 – 2021 were recruited from the electronic medical record to participate in electronic survey from October to December 2022. The survey was administered through DHA text messaging system. The survey examined participants' characteristics and the six domains of TUQ with a Likert scale. Frequency, percentage, and weighted mean score percentages were used as descriptive statistics to analyze this data.

**Results:** A total of 1,535 participants completed the survey. The overall TUQ showed the mean age of users was 43.37 years ( $\pm 11.67$  SD). More than half of the users were females (65.21%), the majority were married (74.46%), of a UAE nationality (83.58%), had higher education (56.68%), and were currently working (57.13%). Consultations and COVID-19-related concerns (45.14%), medication refills (19.80%), and laboratory tests (18.24%) were the main reasons for telehealth visits. Weighted means of TUQ six domains were usefulness (87.11%), ease of use and learnability (86.98%), interface quality (85.73%), interaction quality (86.44%), reliability (79.48%), and satisfaction and future use (86.44%).

**Conclusion:** Our study revealed high levels of usability and willingness to use telehealth services as an alternative modality to in-person consultations among the participants of the survey. Our results support the implementation of telehealth services in DHA; however, further studies are required to understand the applicability of telehealth after COVID-19 and how to further improve satisfaction.

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### Education in type 1 diabetes mellitus through virtual method and its influence on metabolic control - a pilot study

Roberto Freire de Freitas<sup>1</sup>, Sandhara Ribeiro Rodrigues<sup>1</sup>, Marcio Araújo<sup>2</sup>

<sup>1</sup>Oswaldo Cruz Foundation Brazil, <sup>2</sup>Oswaldo Cruz Foundation Rua

Conselheiro Da Silva 708 Brazil

**Background:** Diabetes education groups exist to support self-care and can take place in many ways, including through technologies. Barriers associated with participating in face-to-face groups can be overcome with the use of digital health interventions and it is perceived that there is a knowledge breach in relation to studies that address this issue with intervention methodologies.

**Objective:** To develop a virtual type 1 diabetes education program lasting 12 weeks; to measure self-care and quality of life before and after the intervention and, to evaluate the effectiveness of the virtual program in the metabolic control.

**Method:** This is a methodological study, based on a diabetes education protocol in virtual format. This protocol consisting in sending educational messages through a WhatsApp group. Before and after the intervention, clinical and laboratory data on glycemc control were collected, and the Diabetes Quality of Life Measurement Questionnaire (DQLMQ-Brazil) and part of the Diabetes Self-Care Questionnaire (DSCQ) were applied.

**Results:** The educational material was based on the recommendations of the American Association of Diabetes Educators, and consisted of texts, images, infographics and links. The pilot project was executed with 6 people, with an average age of 31 and average time since diagnosis of 14.6 years. There was an improvement in the quality of life score and an increase in the weekly frequency of following up on healthy eating, fruit and vegetable consumption, capillary blood glucose measurement and clinical examination of the feet. There was no statistical significance in the analyzed variables.

**Conclusion:** It is concluded that the diabetes education tool built is practical to implement and has increased access capacity, and can be used by various professionals and health institutions.

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### Enabling digital health access for the vulnerable and marginalized population in India

Simran Singh<sup>1</sup>, Sana Thapa<sup>2</sup>

<sup>1</sup>Swasti health catalyst 25, 3rd Floor, Raghavendra Nilaya, 1st Main Road, AECS Layout, Ashwathnagar, near Rishi's Paratha Plaza Sanjay Nagar, Bengaluru, Karnataka 560094 India, <sup>2</sup>Swasti health catalyst

**Background and objective:** The vulnerable population and marginalized communities are prone to receive undignified care, lack of timely care and unresponsiveness from the health systems. The health inequities in low-resourced settings lead to a lack of access to healthcare services and lack of reliable health information. The telecare program was implemented to examine the feasibility and acceptability of using community led telemedicine models to solve for health inequalities and health illiteracy in vulnerable communities such as lgbtq population and slum

dwellers where digital illiteracy and digital divide is significant.

**Methods:** The program was carried out from Jul'21-Dec22 in 9 different locations across 6 Indian states. Communities belonged to LGBTQIA, indigenous communities, migrant workers, slum dwellers and rural population. A team of community health workers were recruited for last mile health access. They advocated and facilitated the program on-ground. Qualified nurses, doctors, counselors, welfare officers and triage-aid agents were connected digitally through a health-tech platform.

**Results:** Program reached over 82,000 individuals. 2,075 medical cases were treated and 508 health information calls were facilitated. There was a positive uptake of the community-lead telemedicine services among the members. Presence of community health workers on-ground earned trust among the members, changing their health seeking behavior and solved for digital illiteracy and digital divide which were the pivotal factors for failure of telemedicine models. The cost of delivering one quality medical case was estimated at INR 96, similar quality consultations are priced over INR 400 in tier 2 cities.

**Conclusion:** Telecare addresses health inequities and substantially bridges the access gap in low-resource and discriminated communities by providing personalized health information and building resilient healthy communities. The program demonstrated a new model of care that provides dignified and quality care to unheard voices and is scalable, adaptable and agile to other vulnerable health populations.

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### Health information system evaluation tools: a scoping review and tool development

Aisha Shalash<sup>1</sup>, Niveen Abu-Rmeileh<sup>1</sup>, Khalifa Elmusharaf<sup>2</sup>, Yasmeen Wahdan<sup>1</sup>

<sup>1</sup>Birzeit University Palestinian Territory, Occupied, <sup>2</sup>University of Birmingham Dubai United Arab Emirates

**Background:** The purpose of this scoping review was to collect articles or reports that describe a framework or assessment tool used to evaluate a country or program's health information system with a specific interest in the assessment of an adolescent health information system. If an assessment is not found for adolescent health, we can then assess how each was used and define the domains in each tool. We then hope to adopt a time-efficient, collective, and exclusive tool that can be used to evaluate the adolescent health information system in humanitarian settings.

**Methods:** A scoping review was performed to find tools used to assess health information systems. MEDLINE, CINAHL, EMBASE, and Web of Sciences databases were searched as well as the reference lists of included articles. The main inclusion criteria were that the article or report had to describe the tool or framework used to measure a health information system of a program or country. **Results:** Out of 2366 articles, 34 articles and reports were found describing ten assessment tools. The most popular tools were the Performance of Routine Information System Management (PRISM) tools by MEASURE Evaluation, the Center for Disease Control (CDC) surveillance system guidelines, and the Health Metrics Network assessment tool. The assessed main domains were resources, human resources, data sources, indicators, data management, data quality, data demand, use, and stakeholder engagement. Most assessments were adapted from the original to fit country and program needs and were used in humanitarian settings.

**Conclusion:** No assessment tool was found to address adolescent health information needs precisely. With the different tools found, we choose the most critical domains of each tool to adopt as an assessment tool to address the adolescent health information system. This tool will be piloted in the occupied Palestinian territories, which is currently facing a humanitarian setting.

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### Methodology for diagnosis of the current state of supply chain quality management in the maternal perinatal care route in disparate rural territories

Helena Carretero<sup>1</sup>, Lina Tafurt<sup>1</sup>, Helena Carretero<sup>2</sup>

<sup>1</sup>Universidad Icesi Colombia, <sup>2</sup>Universidad Icesi

In Colombia, the Ministry of Health and Social Protection developed the Perinatal Maternal Care Route (RAMP), which seeks to guarantee comprehensive health care for pregnant women. However, when reviewing the health indicators in Colombia in recent years, negative results are perceived, especially in people from dispersed rural territories with an alarming increase in cases of maternal and perinatal mortality. Therefore, this study focused on maternal and perinatal health in dispersed rural communities, bearing in mind that they face geographic,

economic, and social barriers. The objective of this work was to define and apply a diagnostic methodology for the state of the RAMP to carry out an exhaustive analysis of the links in the chain through the Supply Chain Quality Management (SCQM) strategy in rural areas. municipalities of Santander de Quilichao and Caloto in Colombia. Descriptive-qualitative research. It included the phases of: inquire, define and ideate. A bibliographic search on SCQM analysis techniques was carried out and social innovation methodologies were used to develop this proposal. This study confirms that the RAMP can be seen as a SCQM since it was possible to identify in a transversal way the relationships and flows that exist in this way, in addition, the development of this technique allowed to recognize in a systemic way the causes that are influencing the problem. of the route to propose control actions and alarms with greater integration between the levels of care. It was found that the main problems that affect the provision of services in the RAMP are the disconnection between actors, the fragmentation of the network of service providers, barriers to entry and user recruitment, and asymmetries in quality attributes. Developing a diagnosis adapted to dispersed rural territories made it possible to propose lines of action with a territorial approach to strengthen the RAMP.

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### How to evaluate health and medical apps in public health - what are alternatives to randomized controlled trials?

Laura Maaß<sup>1,5</sup>, Felix Holl<sup>2,3,5</sup>, Robert Hrynyschyn<sup>4,5</sup>

<sup>1</sup>SOCIUM Research Center on Inequality and Social Policy, University of Bremen, Bremen, Germany, <sup>2</sup>DigiHealth Institute, Neu-Ulm University of Applied Sciences, Neu-Ulm, Germany, <sup>3</sup>Institute for Medical Information Processing, Biometry, and Epidemiology, Ludwig Maximilian University of Munich, Munich, Germany, <sup>4</sup>Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Institute of Health and Nursing Science, Berlin, Germany, <sup>5</sup>Leibniz ScienceCampus Digital Public Health Bremen, Bremen, Germany

How people monitor their health has changed drastically during the last years since the widespread accessibility of smartphones. Since then, thousands of apps have been developed to promote health and prevent diseases. They can also improve the patient's autonomy and reduce the workload burden on health professionals. However, these apps can also have downsides, as their evidence is not always available. Instead, some studies discuss a gap in long-term evidence regarding health apps. To tackle this, many countries started to regulate medical apps (a subgroup of health apps) as mobile medical devices. In Germany, the Digital Healthcare Act has regulated the prescription and reimbursement for medical apps as digital health applications (DiGA) since October 2020. To be listed as a DiGA, medical apps must demonstrate positive medical benefits and patient-relevant structural and procedural improvements through suitable methods (e.g., randomized controlled trials (RCT)). While RCTs are considered the gold standard for evaluating causal relationships between tools and resulting health outcomes, they might not be suitable for the digital environment. Software (such as apps) is characterized by its evolving process at a rapid pace. This doesn't work well with the average 5.5 years duration of an RCT with a strict study protocol. Additionally, such extensive research is expensive and nearly impossible to finance for health technology start-ups. This workshop will argue that RCTs have limitations when evaluating health or medical apps. We will introduce the participants briefly to the three core principles (3 talks, 5 minutes each) before discussing possible alternatives. To start, Laura Maaß will present the differences between health and medical apps and why differentiation is crucial when discussing their evidence. Building on this, Felix Holl will display the regulation of medical apps in Germany as DiGA and why Germany decided to use RCTs as the primary evaluation method. Lastly, Robert Hrynyschyn will explain why RCTs have limitations in evaluating health and medical apps and what alternatives exist. Once the participants gain insights into the problem, we will divide the audience into smaller groups to collect and prioritize the challenges for assessing health and medical apps during the development, evaluation, and implementation phases. The groups will then formulate solutions and assessment designs based on this Discussion. Finally, the group's Results will be presented to the audience and discussed with the whole group. We will use the Results from the workshop for a white paper on alternative methods for assessing and evaluating health and medical apps to make the Results public to interested researchers and policy-makers outside this conference.

**Workshop Objectives:** The workshop's objective is to discuss the challenges of applying methods to digital health tools that weren't designed to evaluate the digital environment. Together with the participants, we aim to find alternatives for RCTs as the new gold standard for assessing digital public health interventions.

Workshop key questions: What public health challenges arise in using, evaluating, and regulating health and medical apps? How can those challenges be addressed to create a higher impact on healthcare systems?

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### Learning from digital public health interventions in practice: challenges we embraced

Laura Maaß<sup>1,2</sup>, Felix Holl<sup>3,4,2</sup>, Stefan Buttigieg<sup>5</sup>, Ihoghosa Iyamu<sup>6,7</sup>, Chen-Chia Pan<sup>8,9,2</sup>

<sup>1</sup>SOCIUM Research Center on Inequality and Social Policy, University of Bremen, Bremen, Germany, <sup>2</sup>Leibniz Science Campus Digital Public Health Bremen, Bremen, Germany, <sup>3</sup>University of Munich, Munich, Germany, <sup>4</sup>DigiHealth Institute, Neu-Ulm University of Applied Sciences, Neu-Ulm, Germany, <sup>5</sup>Ministry of Health Malta, Valletta, Malta, <sup>6</sup>School of Population and Public Health, University of British Columbia, Vancouver, Canada, <sup>7</sup>British Columbia Centre for Disease Control (BCCDC), Vancouver, Canada, <sup>8</sup>Leibniz Institut für Prävention und Epidemiologie - BIPS GmbH, Bremen, Germany, <sup>9</sup>Institute for Public Health and Nursing Sciences (IPP), University of Bremen, Bremen, Germany

Workshop outline: Digital healthcare technologies can facilitate core public health functions, improve efficiency, and reduce costs or the burden of the healthcare workforce. Public health decision-makers, researchers, and practitioners are increasingly required to consider such interventions. However, they must grapple with multiple challenges in operationalizing digital public health (DiPH) interventions. This workshop will address some of these challenges and provide best practice examples of projects from various jurisdictions with diverse backgrounds to highlight how DiPH interventions can excel in various settings.

1. ECRA: An interdisciplinary early career research academy for digital public health. Founded in 2020, the ECRA is an interdisciplinary exchange and research collaboration space for over 40 PhD- and postdocs researching DiPH. Members collaboratively produce publications or conference panels and organize workshops or skill-building lectures. Such centers are needed to support the future public health workforce to master skills essential for their career. Still, they can also be applied to general research projects to foster interdisciplinary collaborations. We will highlight encountered implementation and management barriers and how we overcame them. 2. GetCheckedOnline: An equity-centered approach to STI-testing. GetCheckedOnline launched as Canada's first publicly funded comprehensive internet-based sexually transmitted infection (STI) testing service in 2014. It aims to increase the uptake and frequency of STI-testing, especially among people experiencing barriers to in-clinic STI-testing. GetCheckedOnline provides free online STI-testing in eight cities in British Columbia and has significantly increased its user-base since 2020. We will describe learnings to foster equitable access to digital STI-testing through our integrated approach to implementation, operations research, and community engagement. 3. Health technology assessment for digital health interventions/initiatives for public health (hilltop): fostering cross-country collaboration and identifying research needs. The Hilltop project initiated a cross-country collaboration between Tanzania, Rwanda, South Africa, and Germany and interdisciplinary collaboration across medical informatics, nursing, mental health, and information systems. The project team overviews the state and gaps in using HTA (for DiPH interventions) in the project countries. We will share these findings and critically assess the potential of using HTA methods in DiPH. 4. Malta's digital COVID-19 strategies: breaking infection-chains through digital public health tools. COVID-19 accelerated the demand for digitalizing public health. Despite the well-needed push, the challenges facing every similar implementation will be the same, if not accentuated. We will highlight the difficulties and facilitators of Malta's digital COVID-19 strategy while focusing on the lessons learned from communicating with public health decision-makers, implementing, monitoring, and following up on Malta's national contact tracing app and Customer Relationship Management systems. Both interventions tackled the Test, Track and Trace workflows integral to Malta's COVID-19 response.

Workshop Objectives: The workshop will address obstacles and their solutions during planning, implementing, and evaluating DiPH interventions in various settings. Workshop key questions: How can we best prepare the public health workforce for the digital environment and the challenges for DiPH projects? How can we best leverage resources to develop and maintain evidence-based DiPH interventions that promote health equity? How can we effectively communicate our research results to policy-makers for a national public health impact?

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### How to achieve effective interdisciplinarity in digital public health

### practice

Laura Maaß<sup>1,2</sup>, Merle Freye<sup>3,2</sup>, Núria Pedrós Barnils<sup>4,2</sup>, Chen-Chia Pan<sup>5,4,2</sup>

<sup>1</sup>SOCIUM Research Center on Inequality and Social Policy, University of Bremen, Bremen, Germany, <sup>2</sup>Leibniz Science Campus Digital Public Health Bremen, Bremen, Germany, <sup>3</sup>Institute for Information, Health and Medical Law (IGMR), University of Bremen, Bremen, Germany, <sup>4</sup>Institute for Public Health and Nursing Sciences (IPP), University of Bremen, Bremen, Germany, <sup>5</sup>Leibniz Institut für Prävention und Epidemiologie - BIPS GmbH, Bremen, Germany

Their interdisciplinary nature characterizes health, especially public health: Some involved disciplines address an individual's health or set the framework for health practices (e.g., law, medicine, psychology, ethics, or sociology). Others measure health outcomes on a population level (e.g., epidemiology) or develop interventions to improve the population's health (e.g., health promotion, health management, or implementation science). Since health and public health are becoming increasingly digitalized, this adds new and essential disciplines to develop and improve evidence-based digital technologies and innovations (e.g., human-computer interaction, computer science, or engineering). Having various disciplines collaborating can offer new opportunities but also create new challenges if there is no mutual understanding of digital public health. Therefore, this skill-building workshop aims to foster awareness of interdisciplinary approaches in public health research and practice. Two presentations will set the workshop's frame and foster mutual understanding of the key terms: Interdisciplinarity and (digital) public health. Given its interdisciplinary field, public health scientists often claim to facilitate health-related interdisciplinary research and practice. However, little is known regarding whether it is merely a descriptive term or whether normative expectations are also associated with it. We emphasize that a mutual understanding of the term enables successful interdisciplinary research and practice. Therefore, the first presentation by Merle Freye will give an overview of the concept of interdisciplinarity. Building on the terms clarification, the talk will draw on the practical challenges of interdisciplinary research and best practice examples for promoting such competencies. During the second talk, Laura Maaß will describe traditional public health core functions and how they relate to other disciplines in the social, natural, and environmental sciences and humanities. Further, the talk will highlight how the extension to digital public health influenced the so-called system of sub-disciplines that form public health. We will illustrate the challenges and opportunities that arise from this complex view of (digital) public health and how to approach them accordingly. Building on knowledge gained in the first presentation, participants will hear about the need to combine discipline-related knowledge to tackle public health issues and achieve the goal of population health promotion. The participants will be invited to discuss the challenges and opportunities of interdisciplinary collaborations in three small groups after the introductory talks. The groups will focus on the challenges and opportunities of interdisciplinary collaborations during a mobile mental health app development, evaluation, or implementation. For this, they'll receive support from experts in law, ethics, public health, health promotion, epidemiology, psychology, and human-computer interaction. Afterward, the groups will present their results in plenary and discuss how to best approach interdisciplinary practice and research and what they deem crucial requirements.

Workshop Objectives: Our workshops' primary objective is to raise awareness regarding the opportunities for interdisciplinarity in (digital) public health. The second goal is to sensitize participants to a mindset characterized by empathy and curiosity toward other disciplines.

Workshop key questions: How can one efficiently incorporate other disciplines through interdisciplinary approaches in (digital) public health projects? How can different disciplines communicate more effectively?

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### Human-centered design approaches to develop digital tools to enhance Indigenous health

Emma Patu<sup>1</sup>, Cristina Ore<sup>2</sup>, Alec Calac<sup>3</sup>, Timothy Mackey<sup>4</sup>

<sup>1</sup>World Federation of Public Health Associations (WFPHA), New Zealand, <sup>2</sup>University of Washington, United States, <sup>3</sup>University of California San Diego, United States, <sup>4</sup>University of California San Diego, San Diego, United States

Outline of overall workshop: The focus of this workshop is to increase capacity and knowledge of delegates in leveraging different digital tools to enhance health equity and Indigenous health objectives. The workshop is a collaboration between the WFPHA Global Health Equity and Digital Technology and Indigenous Working Groups and will begin with a short Introduction into concepts regarding digital health tools, human-centered design, and specific Indigenous health challenges

that will be co-presented by working group chairs. After the Introduction to the workshop, participants will be guided through a short co-ideation and co-design session around specific Indigenous health challenges that can benefit from digital health approaches. Delegates will be provided information on different resources, software, and tools that can be used for rapid prototyping of digital health solutions and can actively participate in the workshop by helping to formulate solutions for specific Indigenous health challenge case studies. Finally, participants will have the opportunity to present their thoughts, solution ideas, and possible prototypes to all workshop attendees and have them evaluated by workshop chairs and speakers. Using this approach, we hope to generate innovative ideas that address unique and underserved areas in global health, health equity, and Indigenous health while also building capacity by enabling participants to continue to explore digital health solutions in their own communities.

**Specific Aims/Objectives:** 1. Describe how human-centered approaches in digital health design and innovation can help enhance health equity and Indigenous health objectives, 2. Identify different human-centered design resources, tools, software, and methods for purposes of rapid prototyping of solutions, 3. Provide participants the opportunity to co-design digital health tools and present them for expert and group feedback. Key questions workshop will address: The key questions that will be addressed in this workshop include: (1) what type of digital health tools and human-centered design approaches have been used to address health equity?; (2) how do we ensure that the next generation of digital tools are designed purposefully for the needs of distinct communities, including specifically Indigenous peoples?; and (3) how do we incorporate concepts such as Indigenous Data Sovereignty into digital health design and commercialization in a sustainable manner.

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### Dealing with infodemic and health mis/dis-information: new public health organizations' proposals

Ruediger Krech<sup>1</sup>, Fidelia Cascini<sup>2</sup>, Iveta Nagyova<sup>3</sup>, Melissa Sweet<sup>4</sup>

<sup>1</sup>World Health Organization, Switzerland, <sup>2</sup>Università Cattolica S. Cuore, Italy, <sup>3</sup>Pavol Jozef Safarik University, Slovak Republic, <sup>4</sup>Croakey Health Media, Australia

In the last years and mostly during the pandemic, the proliferation of digital channels and news sources including social media has caused an overabundance of information referred to as an infodemic. It involves misinformation (information which is essentially wrong or untrue), and disinformation (information that is created to be misleading or harming). These are harmful as it can undermine compliance with public health measures, and effective mobilisation for the health risks prevention and the management of emergencies contributing to people polarisation on dangerous behaviours and social divisions. The complex problem of health mis/dis-information would require coordinated actions of all concerned stakeholders as citizens, governments, and information platforms, under the expected leadership of Public Health Organizations cooperating at a global level. A joint statement from September 2020 by the WHO, UN agencies and the International Federation of Red Cross calls for action on the infodemic by national governments and social media organisations.[1] [1] The UN describes multiple approaches taken to fight misinformation: dissemination of accurate information, partnering with businesses, working with media and journalists, mobilising civil society as well as supporting free speech.[2] [2] More recently, the WHO also published a policy brief on COVID-19 infodemic management[3] [3]. Further, WFPHA Leadership Coalition is addressing the issue of health misinformation/disinformation developing new strategic approach and tools that are going to be presented in the workshop.

**Workshop description:** This one-hour workshop provides an overview of new Public Health Organizations' proposals to address the infodemic and health mis/dis-information challenges. The workshop embraces the WHO policy recommendations to train health workers on these issues, to tailor digital literacy initiatives and to develop high-quality, accessible health information. Furthermore, a new toolkit designed by the WFPHA LC is presented in combination with a plan for its dissemination to the WFPH Associations and its implementability appraisal at a global level. The different perspectives of the High- and Middle-Low-Income countries are examined. In addition, the scientific community approaches to the infodemic are shown by EUPHA and its contribution to the field as well. Finally, the strategies and reactions of the digital channels and social media are reported directly by the stakeholders' experience. The audience can benefit of an inspiring Discussion with the panel of experts. [1] [4] WHO. Managing the COVID-19 infodemic: Promoting healthy behaviours and mitigating the harm from misinformation and disinformation. 2020. <https://www.who.int/news/item/23-09-2020-managing-the-covid-19-infodemic-promoting-healthy-behaviours-and-mitigating-the-harm-from-misinformation-and-disinformation>.

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### Addressing the Infodemic from a Health Information Equity Lens

Timothy K. Mackey<sup>1</sup>, Elena Petelos<sup>2</sup>, Tina Purnat<sup>3</sup>, Iveta Nagyova<sup>4</sup>, Dimitra Lingri<sup>5</sup>

<sup>1</sup>Global Health Program, Department of Anthropology, University of California, San Diego, United States, <sup>2</sup>Department of Health Services Research Care and Public Health, Research Institute Maastricht University, Maastricht, The Netherlands, <sup>3</sup>Department of Epidemic and Pandemic Preparedness and Prevention, World Health Organization, Geneva, Switzerland, <sup>4</sup>Institute for Collective Health, European Public Health Association, Slovak Republic, <sup>5</sup>European Healthcare Fraud and Corruption Network, Greece

**Outline of overall workshop:** The focus of this workshop is to increase capacity and knowledge of delegates by providing them with the evidence, resources, tools, and support to combat health Infodemics through the lens of health information equity. The workshop is a collaboration between the WFPHA Global Health Equity and Digital Technology, the Health Technology Assessment Section of the European Public Health Association, and the World Health Organization. We will start with a short Introduction into key concepts, i.e., the infodemic, misinformation, disinformation, evidence generation and health knowledge dissemination, digital health literacy, health information equity, and then transition to a discussion of specific case studies illustrating how misinformation impacts underrepresented global communities and populations in low-and middle-income countries. After the Introduction, participants will be guided through key strategies on how to improve health information accessibility, identify specific misinformation-induced health inequalities that may target certain groups, and explore different approaches to retrieve and appraise evidence. These strategies will be used to formulate and develop effective and timely messaging and communication approaches to debunk or correct misinformation, as it occurs, in online and physical spaces alike. Delegates will be specifically provided with information on different resources, training, and community-outreach developed by the WHO, and will be given the opportunity to ideate on how to tailor these tools to interventions in their own communities. The workshop will close with a collaborative exercise among all participants to crowd-source ideas around definitions, shared objectives, priorities, unique measurements, and activities needed to specifically address the Infodemic from a health information equity lens. Using this approach, we hope to generate needed dialogue among the global health community about the need to infuse health equity into conversations about misinformation, improve access to evidence and tools to strengthen shared goals of improving information equity and management of infodemics, and contribute ideas that can improve adherence to public health measures and confidence and trust in science.

**Specific Aims/Objectives:** 1. Describe how addressing health information equity is critical to combatting health misinformation, 2. Identify and improve access to evidence, resources, tools, and strategies to ensure community resilience against the infodemic while also strengthening trust in science, 3. Generate shared objectives, priorities, and activities needed to specifically address the infodemic from a health information equity approach. Key questions workshop will address: The key questions that will be addressed in this workshop include: (1) how do challenges associated with the Infodemic originate from fundamental issues related to health information equity?; (2) what are some key strategies needed to concurrently address health information equity and to combat health misinformation and what is the role emerging and exponential technologies can play in these?; and (3) what do WFPHA delegates think are the key priorities in advancing this area of study and engagement to enhance health information equity and community reliance against Infodemics?

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### Digital Public Health Governance - navigating complex structures

Sarah Forberger<sup>1,2</sup>, Merle Freye<sup>3,2</sup>, Stefan Buttigieg<sup>4</sup>, Laura Maaß<sup>5,2</sup>

<sup>1</sup>Leibniz Institut für Prävention Research and Epidemiology - BIPS GmbH,

Bremen, Germany, <sup>2</sup>Leibniz ScienceCampus Digital Public Health Bremen, Bremen, Germany, <sup>3</sup>Institute for Information, Health and Medical Law (IGMR), University of Bremen, Bremen, Germany, <sup>4</sup>Ministry of Health Malta, Valletta, Malta, <sup>5</sup>SOCIUM Research Center on Inequality and Social Policy, University of Bremen, Bremen, Germany

The COVID-19 pandemic is among society's most severe crises this century. The rapid transmission speed has forced countries to adapt their national healthcare systems at an unprecedented rate, with digital health playing a crucial role in universal health coverage. However, to develop its full potential, appropriate governance structures should go along with mechanisms for egalitarian, sustainable, and high-quality systems and data to tap into their full potential for population health. Therefore, this workshop addresses the following objectives: Navigation complex structures – how could digital public health governance look? Digital public health encompasses, e.g., disease surveillance systems, electronic medical records, and social health insurance payment processes. An overview of the complex building blocks of the system and the coordination of stakeholders and policies to develop, implement, and maintain a well-functioning and comprehensive health system is needed. The workshop will show how complex the system is and what it entails and discuss the role of transparency, accountability, participation, and integrity in building such a system. Nothing without data – creating robust and scalable data pipelines and platforms: Developing robust and scalable “infrastructures” requires backing robust data platforms designed to empower automated reporting and, better yet, federated analysis. Moving away from existing standard tools for static analysis, e.g., Microsoft Excel, to well-designed data pipelines and platforms requires basic understanding and advanced planning. This session will outline the available technology, a basic methodology that goes into understanding your current data sources, data pipeline planning, implementation techniques supported by a data strategy and understanding what an ideal data science team looks like. No data without proper informed consent – data protection in the digital age: Digital health systems and data pipelines are inseparably associated with data. Health data processing can serve public interests and benefit individuals and society significantly. Contrarily, data protection aims to protect personal data and is often identified as one of the main culprits for innovation. Undoubtedly, the philosophy of Open Data contradicts the basic principles of data protection – especially when the pandemic unveils a structural data problem in several countries. Nevertheless, the European Data Protection Law is not as insufficient as thought. Although the solution is often reduced to the so-called informed consent, the law is more flexible as perceived in practice. The session sheds light on new solutions and challenges, showing that harmonising data flow and data protection is not a mission impossible. Helping countries to learn - comparing digital public health systems: COVID-19 worked as a catalyst to further develop digital tools to support healthcare systems. Benchmarking strategies are crucial to save resources and progress faster during the transition. This talk will present the Digital Public Health Maturity Index, a tool to assess ones digital (public) healthcare system and compare it with another country. The index encompasses the technological and legal requirements, the society's attitude towards using the applications, and the degree of implementation. The index displays the results as a score, allowing for country comparisons and thus encouraging improving their public health system and digital public health.

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### Precision medicine as the future of public health

Budi Sadikin<sup>1</sup>, Jorge Guzman<sup>2</sup>, Kausik Ray<sup>3</sup>, Mega Febrianora<sup>4</sup>

<sup>1</sup>Institute for Collective Health, Ministry of Health of the Republic of Indonesia, Indonesia, <sup>2</sup>Cleveland Clinic Abu Dhabi, United Arab Emirates, <sup>3</sup>Imperial College London, United Kingdom, <sup>4</sup>Indonesian Heart Association, Indonesia

Background: Precision (or personalized) medicine is defined as the application of emergent technologies to better manage patients' health and to target therapies to achieve the best outcomes in the management of a patient's disease or predisposition to disease. Used properly, precision medicine should both improve patient outcomes and deliver benefits to the health service - including reducing the cost of ineffective treatment and multiple tests. To bring precision medicine into reality, we need to understand the relevant regulatory issues within precision medicine, exploring opportunities that could further improve patient safety and outcomes, identifying issues for the state to monitor, and putting forward recommendations that would continue to support innovation. How we move from our current healthcare system to a precision medicine system is the challenge we face. We can chase how others in the world develop and implement precision medicine, primarily as a race to be first in biomedical and genomic discovery; or we can lead the world in demonstrating how precision medicine should be

responsibly and sustainably delivered. Given the tools and increased insight into health and disease, precision medicine offers tremendous opportunity to help address many of the barriers and challenges in patient's management. Precision medicine offers the ability to understand and reduce individual risk for developing various health concerns. This can support better decision-making about where to focus prevention efforts. It is well recognized that behavior change is an important aspect of many treatment plans, and also one of the most difficult. Through increased data and real time feedback, there is the potential to support more individualized behavior change that is more suited to the individual rather than a generic education program. Additionally, rather than the trial and error of therapies that are often experienced, precision medicine approaches, based on biological drivers, should be able to provide earlier diagnosis, preventing months or years of provider visits and tests, and can lead to earlier treatment and prevention of complications. Not only is there a potential to provide an earlier diagnosis, there is great potential to predict, based on use of large data sets, which intervention is most likely to achieve the desired outcomes with the fewest side effects. This has the potential to save treatment costs as well as reduce suffering and complications. The workshop session will bring comprehensive perspectives from government, hospital leader, and clinician to apply the precision medicine from theory in to practice. Workshop participants will identify how to implement precision medicine as what best fit to their field of expertise.

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### Insights into challenges of health interventions going digital - a perspective from human-computer interaction, law and sociology

Núria Pedrós Barnils<sup>1,2</sup>, Chen-Chia Pan<sup>1,3</sup>, Anke V. Reinschluessel<sup>1,4</sup>, Merle Freye<sup>1,5</sup>, Saskia Muellmann<sup>1,3</sup>

<sup>1</sup>Leibniz ScienceCampus Digital Public Health Bremen, Bremen, Germany <sup>2</sup>Institute for Public Health and Nursing Research, University of Bremen, Bremen, Germany, <sup>3</sup>Leibniz Institute for Prevention Research and Epidemiology - BIPS, Bremen, Germany, <sup>4</sup>Digital Media Lab, TZI, University of Bremen, Bremen, Germany, <sup>5</sup>Institute for Information, Health and Medical Law (IGMR), University of Bremen, Bremen, Germany

Brief outline of the overall workshop: In recent years, digital technologies aiming to promote and enhance the health status of individuals and communities have emerged. Given the novelty of this junction, the traditional approaches to health interventions no longer suit the development and evaluation of digital public health interventions. With the rise of technology, public health professionals need input from related disciplines (e.g., computer science, law, sociology) to ensure the quality and impact of digital public health interventions. To support the transition to digital public health, the Leibniz ScienceCampus Digital Public Health (LSC DiPH) developed a comprehensive framework that is informed by interdisciplinary research. In the workshop, we will present how it can be used to develop and evaluate digital public health interventions, thereby highlighting the importance of the aspects that originate from related disciplines.

Specific Objectives and Component Parts: The presented workshop aims to 1) introduce the newly developed LSC DiPH Interventions Framework; 2) shed light on potential challenges public health practitioners might face when developing and evaluating digital public health interventions; 3) provide insights on how to address these challenges from an interdisciplinary perspective; and 4) demonstrate how to apply the framework on specific case studies through an interactive group activity. Key questions that the workshop will address: 1. What are the common blind spots public health professionals encounter in developing and assessing digital public health interventions? 2. Why are Human-Computer Interaction, Law and Sociology essential in developing and assessing digital public health interventions? 3. How can the LSC DiPH Interventions Framework help overcome the common blind spots public health professionals encounter in developing and assessing digital public health interventions? 4. Which specific challenges arise when applying the LSC DiPH Interventions Framework on digital public health interventions?

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### Key considerations in digital population health interventions

Robyn Whittaker<sup>1,2</sup>, Jude McCool<sup>3</sup>, Chris Paton<sup>4</sup>, Lorien Abrams<sup>5</sup>, Dale Bramley<sup>6</sup>, Rosie Dobson<sup>3</sup>

<sup>1</sup>Te Whatu Ora Waitemata, New Zealand, <sup>2</sup>University of Auckland, Auckland, New Zealand, <sup>3</sup>University of Auckland, New Zealand, <sup>4</sup>University of Otago, New Zealand, <sup>5</sup>George Washington University, United States, <sup>6</sup>Te Whatu Ora, New Zealand

Digital health technologies (DHTs) have become an integral part of global public health initiatives from encouraging and monitoring vaccine uptake to

supporting self-management of long-term conditions. As these technologies have matured, significant challenges have become apparent that threaten to undermine global efforts to ensure public health interventions that use DHTs are equitable and effective. Top-down large-scale deployments of DHTs designed by and for high-income contexts risk wasting efforts and resources if rejected by the local communities who are expected to use them. Regulations, standards, and guidelines developed to support evidence-based healthcare have not yet been updated to include DHTs resulting in a largely unregulated market - a problem particularly acute in low-income settings. Our international team has diverse global experience at designing, evaluating and implementing DHTs for public health and population health benefits. It is not often that we get the opportunity to come together and discuss using these tools from a public health perspective. The purpose of this workshop is to describe and discuss current trends and future considerations for designing equitable and effective digital technologies for population health. Each presenter will provide a case study of how they have used DHTs for public health programmes in Aotearoa NZ, Pacific Islands, UK, USA, Kenya, Vietnam, Israel, and India. They will outline the current evidence base in their areas of expertise and share learnings from implementing programmes in a diverse range of contexts. The workshop will focus on how DHTs can be designed to improve health equity, particularly for indigenous populations such as New Zealand Māori, and how different contexts and countries should influence how technologies should be designed and implemented. We will address the challenge of international DHT providers entering low-income settings with monolithic applications and how governments and international regulators are moving to meet the challenge of ensuring DHTs such as wearable sensors and AI-based diagnostics are evidence-based, effective and safe. Our overall theme is that although DHTs may provide value through enhanced capacity and the ability to meet increasing consumer demand for real-time, accessible, convenient, and choice-driven health care, there remain challenges with the implementation of DHTs with respect to equity, scalability and sustainability. We also question whether transparency, local ownership, equity and safety are likely to be upheld with models of social and health entrepreneurship. We will then have a live Q&A time with our panel. There will be time for open group discussion, and we would also hope to gain further insights from participants in the workshop. Objectives: To share learnings and broaden our collaborative understanding of the challenges of designing and implementing digital health technologies for population health benefits in different contexts. In particular, we are interested in further developing the focus on equity via DHTs.

Key Questions: What have we learned about designing DHTs for equity? What are models of integration of DHTs in health systems? What are the next steps for research in this area?

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### Exploring the Use of Digital Health Innovations to Improve Health Equity: An International Perspective

Timothy Mackey<sup>1</sup>, Marcelo Fornazin<sup>2</sup>, Marcelo Fornazin<sup>3</sup>

<sup>1</sup>University of California San Diego, Global Health Policy and Data Institute, 9500 Gilman Drive, MC: 0505, La Jolla, CA 92037, United States, <sup>2</sup>National School of Public Health, Oswaldo Cruz Foundation, Brazil, Yara, Aboelwaffa, Health 2.0 Egypt, Egypt, <sup>3</sup>Oswaldo Cruz Foundation, National School of Public Health, Av. Leopoldo Bulhões, 1480, Room 319, Brazil

Digital health innovations are dramatically impacting practices, services, and national health systems. Digital health can potentially expand access to health services, but it can also bring risks to users. This session will therefore discuss the multisectoral understanding of the digital health ecosystem, considering equity as a tenet of modern health systems and a crucial design consideration that needs to be contextualized to local, community, and regional health needs.

The workshop's focus is to increase delegates' capacity and knowledge in leveraging different digital tools to enhance health equity while also exploring how they align with Sustainable Health Equity goals of the SDGs and local community needs. The workshop will also offer the opportunity to dialogue with the audience about their perspectives and experiences, providing opportunities for connections that can formulate a shared research agenda on digital health innovations and health equity that can be used for capacity building in different communities.

After a brief introduction, the workshop will have three moments: (i) provocations through previously elaborated questions from a group of speakers from diverse regional representation (Latin America, the United States, and the Middle East), (ii) questions and answers from the audience to promote shared dialogue and priority setting, and (iii) final considerations of a preliminary action plan for digital health and health equity. At first, each panelist will focus on answering a leading question without prejudice to dialogue with previous presentations. In the second moment,

questions will be collected from the audience to be answered in one or two blocks with each speaker and with active collaboration and problem exploration with the audience. Finally, the speakers will weave their final considerations with provocations of future agendas on the subject, including alignment with governance, policy, and the SDGs, and seek consensus from participants using digital learning tools, e.g., online polls.

Using this approach, we hope to generate innovative ideas that address unique and underserved areas in global health, health equity, and digital health while also building capacity by enabling participants to continue exploring digital health solutions in their communities.

Specific Aims/Objectives: - Describe how digital health system design and digital health tools can enhance health equity and potential risks - Identify different approaches to evaluate technology appropriateness using an equity lens - Provide participants the opportunity to discuss digital health innovation potentials and risks specific to their own communities

The key questions that will be addressed in this workshop include the following: - How to design National Digital Health Systems with a health equity lens? What are examples of digital tools that can promote equity? - How to design D2C tools that incorporate equity in the design and approach? How can we evaluate technology appropriateness with an equity lens? - How can we use open innovation to design a more equitable health future?

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### 100 million Brazilian cohort and the cidacs birth cohort: Record linkage national data resources

Enny Cruz<sup>1</sup>, Julia Pescarini<sup>2</sup>, Aline Rocha<sup>3</sup>, Andrea Ferreira<sup>3</sup>, Mauricio Barreto<sup>3</sup>, Enny Cruz<sup>1</sup>, Mauricio Barreto<sup>3</sup>

<sup>1</sup>London School of Hygiene and Tropical Medicine CIDACS keppel st United Kingdom, <sup>2</sup>London School of Hygiene and Tropical Medicine, United Kingdom, <sup>3</sup>CIDACS, Brazil

Brief Outline Of Overall Workshop

In this workshop, we will present the process of creating two cohorts from the linkage of routinely collected health and social data from a middle-income country. We will explain the methodology and linkage strategies to develop the 100 Million Brazilian Cohort and the Cidacs Birth Cohort, their characteristics and some applications of their use. SPECIFIC AIMS/OBJECTIVES AND COMPONENT PARTS: We aim to present the two Brazilian data resources developed at the Center of Data and Knowledge Integration for Health (Centro de Integração de Dados e Conhecimentos para Saúde, CIDACS/Fiocruz) using linked administrative dataset.

\* In the first part of the workshop, we will describe operational protocols for the acquisition, management, and linkage of large-scale, nationwide, administratively collected electronic health and social records in Brazil.

\* Then we will describe the 100 Million Brazilian Cohort (N=131,697,800 low-income individuals, 2001- 2018), which was initially developed to investigate the social determinants and the impact of social policies on the health of the low-income population across the whole of Brazil who apply for social benefits through the Unified Registry of Social Programs (Cadastro Único). The dynamic cohort links (i) individual-level health records, including information on birth, death, notifiable infectious diseases (e.g., dengue, Zika, chikungunya, leprosy, and tuberculosis) and their treatments, ICD-10-coded hospital admissions from both communicable and non-communicable conditions (e.g., mental health, cardiovascular disease, and cancer), and deaths coded with specific causes, (ii) community-level (e.g., local deprivation), household-level (e.g., housing quality), and individual-level (e.g., educational attainment) socioeconomic data, and (iii) intervention-related data on social policies (e.g., the Bolsa Família conditional cash transfer, social housing programme Minha Casa Minha Vida, and the improvement of access to water, the Cisternas (Wells) programs). After describing this resource, we will present the main findings of published studies.

\* The second data resource that we will present is the CIDACS Birth Cohort (N=28,631,394 liveborn children and mothers, 2001-2018), which was initially developed to investigate the impact of prenatal and early life events on health-related outcomes for infants, children, adolescents, and pregnant persons in the context of social inequalities. The dynamic cohort links (i) birth records, including information on antenatal care and perinatal outcomes from the Information System of Live Births (SINASC, Sistema de Informação sobre Nascidos Vivos) with (ii) socioeconomic and (iii) health outcome-related data from the 100 Million Brazilian Cohort. This dataset has been used to produce important scientific knowledge, and a study's findings will be presented.

The Key Questions That The Workshop Will Address

By the end of this workshop, the participants will be able to understand the strengths and weaknesses of these cohorts, as well as discuss the importance

of these and other routinely linked data resources to knowledge generation and informed policymaking. We will also discuss the future perspectives involving the use of routinely collected data for research.

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### Analysis of reasons for rejection of biological specimens at national health laboratory service - Dr George Mukhari Tertiary Laboratory

Scelo Khumalo<sup>1</sup>

<sup>1</sup>Sefako Makgatho Health Sciences University, South Africa

**Background and objectives:** Clinical laboratories play an enormous role in appropriate and reliable medical decision making, given that a large proportion (70-80%) of diagnoses are based on laboratory tests. To ensure reliability of patient Results and avoid reporting of erroneous Results, quality indicators detecting laboratory errors are required. "Laboratory error" is defined as any defect in the testing process, with a reported frequency of 0.012-0.6%. Total testing process in the laboratory comprises of three phases: the pre-analytical phase, analytical and post-analytical phase. This study aimed to identify reasons for rejection of biological specimens at Dr George Mukhari tertiary laboratory. Objectives was to identify and classify the causes of biological specimen rejection, to identify areas where improvement is necessary, as well as to advise on preventative strategies. **Methods:** This was a retrospective study conducted in the department of Chemical Pathology at Dr George Mukhari Academic Hospital, Pretoria, South Africa. Data regarding specimen rejection were extracted from the laboratory information system from January to December 2019.

**Results:** From a total of 2463572 specimens received during the study period, 81687 were rejected, Resulting in a rejection rate of 3.3%. The rejection rate per laboratory was as follows: chemistry, 54%, haematology, 25%, virology, 13%, microbiology, 8%, and cytology, 0.15%. The main reasons for rejection were old specimens, wrong specimens, and haemolysis, accounting for 30%, 15% and 13% respectively. Community health centres showed the highest number of rejected specimens (30%), with the least (2%) from the paediatric outpatients department. **Conclusions:** Sample integrity was found to be the major reason for samples being rejected; this included old samples, haemolysed samples, followed by incorrect samples and insufficient samples received by the laboratory. The highest number of rejected samples was from the community health centres, suggesting a need for improvement in specimen handling and transportation from these sites.

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### Modern doctoral program in public health and social science in Georgian universities

Natia Skhvitaridze<sup>1</sup>, Tamar Lobjanidze<sup>2</sup>, Mariam Lobjanidze<sup>3</sup>, Nino Chikhladze<sup>4</sup>

<sup>1</sup>National Center for Disease Control and Public Health, The University of Georgia, Georgia, <sup>2</sup>School of Health Sciences, The University of Georgia, Georgia, <sup>3</sup>School of Health Sciences, University of Georgia, Georgia, <sup>4</sup>Faculty of Medicine, Tbilisi State University, Georgia

**Main challenge for academic programs** is to respond to the needs of the healthcare sector faced during pandemic. Social determinants constitute about 50% of known risk factors and behavior strongly influence a burden of disease. To improve population health and to mitigation potential threats it is necessary to know health risks that are shifted from social and behavioral spheres. Modern models of public health study are more social driven and meets demand of healthcare system to improve response to potential threats. These lead academic programs to change teaching approach, include multidisciplinary and intersectoral collaboration and tackle social determinants of health. Thus, project "Doctoral Programmes in Public Health and Social Science" (DPPHSS) was initiated in the frame of Erasmus+ programme. Georgian High Education Institutions (HEIs) were participant of this project. The aim was to create modern doctoral program in public health and social science to prepare workforce equipped with knowledge and skills of the proper understanding of social component. It was initiated a cross-sectional, quantitative survey. The study was conducted among stakeholders: faculty, respective doctoral and master students, in total 60. Data were taken in one shot measurement during the dissemination event of the DPPHSS in 2021, using questionnaire. According Results several courses, most important for the public health doctoral programme are Social and behavioral aspects of public health (35%), Health promotion (35%), and Advanced epidemiology and statistics (30%). 75% of respondents advice to upgrade PhD programme according to the current pandemic needs to avoid health services disruption. Hence, in late 2021 was created modern doctoral programmes in public health and social science at the Georgian HEIs (The University of Georgia,

Tbilisi State University). Consequently, integration of social science in the public health programme contributed to better health care and social services provision and mitigate negative impact of pandemic.

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### Strengthening ethics in Ebola research: a toolbox developed with and for limited literacy adults in Ebola-affected countries

Elysee Nouvet<sup>1</sup>

<sup>1</sup>Western University, Canada

**Introduction:** Clinical research in West Africa routinely enrolls adults with a low level of literacy, and with no previous research experience. Such research expanded substantially in Ebola-affected countries, following the 2013-2016 Ebola outbreak (Sierra Leone, Liberia, Guinea). The purpose of this study was to develop for and with potential participants with low levels of education, means and tools to support their informed consent (or refusal) to engage in clinical research. **Methodology:** The study involved intersectoral, multi-country collaboration, notably with Ebola survivor associations and National Research Ethics Committees, to plan, develop and pilot an open access toolkit to support ethical clinical research in public health emergencies. A pilot test of the toolbox was done in Guinea using local languages (Sussu and Dioula).

**Results:** Participatory design of the toolbox Resulted in more audio-visual materials than initially intended, and successful piloting of the toolbox in collaboration with the Ebola Survivors Association of Guinea (May 2021). Pilot workshop participants, including women and men, and individuals aged 18 to over 70 years of age, appreciated having the opportunity to reflect collectively on benefits and risks of participating in EVD research. The use of recognizably African cultural dynamics and values in visually engaging video and poster tools was effective in instigating animated Discussion and building trust in research, but requires a facilitator guide to support effective use.

**Conclusions:** This toolbox will be important to disseminate among health researchers, anthropologists, members of Associations of Ebola survivors and communicators, researchers, ethics board members, civil society leaders who wish to support potential participants to better understand, discuss, prepare for, and manage their participation in clinical research projects with a particular focus on EVD-affected countries. Skilled facilitation of workshops using the tools as a point of departure for discussions is recommended.

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### Educational achievement of children with selected major congenital anomalies and associated factors: a Finnish registry-study

Zahra Roustaei<sup>1</sup>, Anna Heino<sup>2</sup>, Sonja Kiuru-Kuhlefelt<sup>3</sup>, Joan Morris<sup>4</sup>, Svetlana Glinianaia<sup>5</sup>, Ester Garne<sup>6</sup>, Maria Loane<sup>7</sup>, Judith Rankin<sup>8</sup>, Mika Gissler<sup>3,9,10</sup>

<sup>1</sup>Department of Health Sciences, Faculty of Medicine, University of Helsinki, Helsinki, Finland, <sup>2</sup>Department of Knowledge Brokers, National Institute for Health and Welfare (THL), Helsinki, Finland, <sup>3</sup>Department of Knowledge Brokers, THL Finnish Institute for Health and Welfare, Helsinki, Finland, <sup>4</sup>Population Health Research Institute, St George's, University of London, London, United Kingdom, <sup>5</sup>Population Health Sciences Institute, Newcastle University, Newcastle upon Tyne, United Kingdom, <sup>6</sup>Paediatric Department, Hospital Lillebaelt, Kolding, Denmark, <sup>7</sup>Faculty of Life and Health Sciences, Ulster University, Coleraine, United Kingdom, <sup>8</sup>Population Health Sciences Institute, Newcastle University, Newcastle, United Kingdom, <sup>9</sup>Academic Primary Health Care Centre, Region Stockholm, Stockholm, Sweden, <sup>10</sup>Department of Molecular Medicine and Surgery, Karolinska Institute, Stockholm, Sweden

**Background and Objectives:** There are few population-based studies on the academic achievement of children with specific congenital anomalies. In this study, we aimed to evaluate the academic achievements of children born with major congenital anomalies compared to children without major congenital anomalies and whether educational achievements are associated with sociodemographic factors.

**Methods:** We performed a population-based study including 401544 children in Finland, graduates of the compulsory school who applied to secondary education. We used health data from the Finnish Register of Congenital Malformations for children born from 1995 to 2002 who had a recorded major congenital anomaly linked with education data from the Finnish Ministry of Education and Culture. We used a generalised linear regression to compare the mean grade differences of children with major congenital anomalies and 'All anomalies' subgroup, included children with major congenital anomalies, chromosomal syndromes, and multiple

anomalies, with reference children.

Results: Children with major congenital anomalies were significantly less likely to apply for further education than reference children (OR, 4.13; 95% CI, 3.92-4.36). For most congenital anomalies studied, children born with congenital anomalies had academic achievements similar to the reference children. For all anomalies subgroup, children with congenital anomalies were at a higher risk of academic underachievement than reference children. Among children with congenital anomalies, male sex, lower maternal educational levels and younger maternal age were associated with significantly lower academic achievement.

Conclusions: Most studied congenital anomalies were not associated with lower educational achievements for children who applied for further education. Nevertheless, the grade means were significantly lower in all children with major congenital anomalies that included non-isolated anomalies and for children with selected isolated anomalies. A continuous need for efforts to improve educational outcomes in children with major congenital anomalies while considering sociodemographic background is apparent.

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### Inter Professional Education (IPE) and team-based practice in Africa: the missing link

Godwin Aja<sup>1</sup>

<sup>1</sup>Association of Schools of Public Health in Africa, Philippines

Background and Objectives: Interprofessional education (IPE) is a unique model of educating students for careers in the health sector, where collaboration and teamwork are critical skills required to maximally address the health needs of society. However, it seems that the words, "collaboration" and "teamwork" in the IPE concept is often preferentially (mis)applied, to suggest collaboration and teamwork with mostly professionals within the clinical/institutional setting and does not usually include other "professionals" associated with the health system. This paper highlights the need to broaden and diversify the operational definition and application of IPE to emphasize collaboration and teamwork with extra-professionals, super-professionals and the supra-professional to optimally and holistically address the health needs of the community to ensure universal health coverage.

Methods: This is a conceptual paper.

Results: The health system is bigger than the healthcare subsystem. Therefore, interprofessional education should not only be about the professionals in the field of medicine or nursing or medical laboratory science but also other professionals involved in "addressing the priority health concerns of the community, region, and/or nation they have a mandate to serve." Collaboration and teamwork with extra-professionals, super-professionals and the supra-professional are key to addressing human health needs at both the institutional, clinical and community levels.

Conclusions: There is a missing link in the definition and operationalization of the concept of interprofessional education. The health sector is complex, diverse and encompasses other professionals, thus, requiring health professionals to work together with other stakeholders (particularly communities and policy makers) to effectively and efficiently provide need-based health to Africans. There is the need to broaden and diversify the operational definition and application of interprofessional education of students to emphasize collaboration and teamwork with extra-professionals, super-professionals and the supra-professional to optimally and holistically address the health needs of the community and to ensure universal health coverage.

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### Training of health professionals to implement the overweight and obesity reduction policy

Sheila Lindner<sup>1</sup>, Dalvan Campos<sup>2</sup>, Deise Warmling<sup>3</sup>, Carolina Henn<sup>4</sup>, Elza Coelho<sup>3</sup>

<sup>1</sup>Universidade Federal de Santa Catarina (UFSC), Brazil, <sup>2</sup>Universidade do Planalto Catarinense (Uniplac), Brazil, <sup>3</sup>UFSC, Brazil, <sup>4</sup>UFSC, Brazil

Excess weight reflects a relevant public health problem in Brazil. Between 2003 and 2019, the proportion of overweight adults rose from 43.3% to 61.7%, with the prevalence of obesity rising from 12.2% to 26.8% (BRASIL, 2019). Primary Care has the role of developing prevention and care actions for overweight and obese users, in addition to promoting adequate and healthy eating. Objectives: To present the experience of designing and offering a specialization course in the distance modality, aimed at health professionals in Primary Health Care. Methodology: This is an experience report on the specialization course "Health Care for People with Overweight and Obesity".

Results: The course was structured around three axes: I. Recognition of Overweight and Obesity in the Context of Primary Health Care; II. Actions to Approach Overweight and Obesity in Primary Health Care; III. Attention to people with overweight and obesity in the cycles of life. As a pedagogical proposal, the constructivist and problematizing methodology was adopted, with evaluative activities established from challenges linked to the professionals reality. There were 713 professionals who completed the course so far, with an average age of 39.7 years and most of them female (81.9%). Regarding race/ethnicity, 48.9% were white, 48.8% black and brown. Graduates came from the five regions of the country, 38.8% from the Northeast, 30.6% from the Southeast, 14.5% from the South, 8.5% from the North and 7.6% from the Midwest. As for the professional category, nutritionists predominated (41.5%), followed by nurses (24.6%), physical education professionals (12.8%), physicians (6.3%), psychologists (4.7%), PHC managers (4.0%) and other health professionals (6.1%). Professionals reported that the course contributed to the qualification of prevention and care practices for overweight people in primary care.

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### A capacity development framework for research ethics committee administrators

Mutshidzi Mulondo<sup>1</sup>, Joyce Tsoka-Gwegweni<sup>1</sup>, Perpetual Chikobvu<sup>1</sup>

<sup>1</sup>University of the Free State, South Africa

Background and Objectives: Little research has been done on research ethics committee administrators' capacity development, leading to a lack of uniform requirements for this role, and few training opportunities. The role may be related to administration, but it is integral to the smooth running of research ethics committees that oversee global health and scientific research studies. This study proposed and validated a capacity development framework for research ethics administrators in South Africa using a Delphi survey on ethics experts to reach a consensus.

Methods: The Delphi method was applied among research ethics experts from South Africa and abroad through an anonymous online questionnaire.

Results: In total, 23 experts were approached to participate in the study, with 12 and 13 experts responding and participating in the two Delphi Survey rounds, respectively. The results of the second round showed that 67% of the experts confirmed that administrators require basic, entry-level training at the level of a Bachelor's degree to be able to fulfill their duties. Nearly 83% of the experts confirmed 'REC administrator' as the appropriate title for this profession. Conclusions: A capacity development framework was designed focusing on the following aspects: training, standard operating procedures, infrastructural upgrades, administrative systems, harmonising procedures, and improving information sharing in order to better capacitate administrators. Research ethics administrators need to be capacitated in various ways, comparable to the training received by committee members who review studies so that they are better placed to operate in and respond to the rapidly developing world of global health, research, and research ethics review.

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### Serious game: educational technology for nurses of Primary Health Care

Lucimare Ferraz<sup>1</sup>, Paola Silva<sup>2</sup>

<sup>1</sup>Santa Catarina State University (UDESC), Brazil, <sup>2</sup>Universidade do Estado de Santa Catarina (UDESC), Brazil

Background and Objectives: Educational games are technologies that seek to ensure the engagement and involvement of their players, in a teaching-learning process through the game in a differentiated and dynamic way. The objective of this study was to develop a serious game on the prevention of neonatal mortality, as an educational technology for Primary Health Care nurses. Methods: Methodological research, developed in two stages: 1 - search, selection and definition of game content; 2 - development of the serious game, in the stages: Concept, Pre-production or Planning, Prototype, Production, Alpha, Beta and Gold Phase.

Results: the content of the game are real cases of neonatal death, classified as preventable, and which have already been investigated by the Municipal Committee for the Prevention of Maternal, Child and Fetal Mortality. For the selection of cases, an e-Delphi consensus panel was developed, with five members of the committee, who after analysis answered a Likert Scale: (0 - nothing relevant, I don't see the need to include; 1 - slightly relevant, but can be included; 2 - relevant, this could be it; 3 - very relevant, it would be very good to include; 4 - essential, must be included). The three cases selected to compose the content of the game

were: newborn affected by maternal hypertensive disorders, newborn affected by maternal infection in the genital tract and newborn affected by isthmus-cervical incompetence. Thus, in the serious game, the player creates his Avatar (a nurse), who is faced with the cases, being instigated to choose the best conduct of care for the pregnant woman. Considerations: we believe that it is necessary to innovate in teaching strategies, through attractive and interactive processes, based on real situations that allow active learning, reverberating in a qualification of the Primary Health Care professional for adequate prenatal care.

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### Assessment of knowledge gaps about ionizing radiation among public health specialists in Lithuania

Donatas Austys<sup>1</sup>, Karolina Ščeliokienė<sup>2</sup>, Rokas Arlauskas<sup>2</sup>, Rimantas Stukas<sup>2</sup>

<sup>1</sup>Department of Public Health, Institute of Health Sciences, Faculty of Medicine, Vilnius University, <sup>2</sup>Department of Public Health, Institute of Health Sciences, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

**Background and Objective:** Ionizing radiation is widely used in various areas of human life. Despite its benefits, it is an important risk factor to health. Taking into account the recent nuclear threats in Europe, the aim of this study was to assess the knowledge of Lithuanian public health specialists about ionizing radiation. **Methods:** This study included 300 public health specialists working in municipal public health offices of Lithuania. In 2020, an anonymous survey was conducted. Levels of knowledge about ionizing radiation were calculated. Respondents who could answer less than 5 questions of 13 correctly were assigned to "insufficient knowledge" group. Distribution of the respondents by the level of knowledge about ionizing radiation and sociodemographic groups was assessed.

**Results:** The level of knowledge about ionizing radiation was insufficient among the 94.0% of the respondents. Distribution of the respondents by the level of knowledge was similar among the respondents with different gender, age, type of place of residence, marital status, level of education, income ( $p>0.05$ ). There were no respondents who could correctly indicate the most effective personal protection measures against penetrating ionizing radiation, internal exposure to ionizing radiation, there were no respondents who could correctly indicate medical procedures which cause the highest doses of ionizing radiation, also what happenings are accounted as nuclear and radiation accidents and incidents. Most of the respondents stated that they lacked information about radiation induced by various medical procedures, protective equipment, actions that have to be proceeded in case of accidents, accident prevention and consequences elimination plan, and information spreading in case of an accident.

**Conclusions:** 9 out of 10 public health professionals have an insufficient level of knowledge about ionizing radiation. This emphasizes the possible threat to the public health which should be assessed across the Europe.

**Keywords:** ionizing radiation, public health, knowledge, awareness

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### Implementing Health-Promoting Schools - Focus on ergonomics: are we verifying the effectiveness of awareness educational programs? A pilot study on the experience with middle-school children

Sara Pani<sup>1</sup>, Fabrizio Gaccetta<sup>2</sup>, Federica Cadoni<sup>3</sup>, Andrea Salda<sup>3</sup>, Arianna Liori<sup>3</sup>, Paolo Contu<sup>4</sup>

<sup>1</sup>Department of Medical Sciences and Public Health, University of Cagliari, Monserrato, Italy, <sup>2</sup>Bachelor Program in Health Care, University of Cagliari, Monserrato, Italy, <sup>3</sup>Department of Medical Sciences and Public Health, Specialization School for Hygiene and Preventive Medicine, University of Cagliari, AOU Cagliari, Italy, <sup>4</sup>Department of Medical Sciences and Public Health, University of Cagliari, Italy

**Background and Objective:** Ergonomics programs addressed to children and school-community fit the Health Promoting Schools (HPS) framework. Beyond the integration of ergonomics in curricula, important aspects regard the evaluation of the appropriateness and effectiveness of the programs. A correct evaluation of effectiveness is crucial to guide resource allocation, an essential step to implement and sustain the HPS approach. With the present pilot study, we aimed to evaluate the effectiveness of the program proposed to a sample of school children in the metropolitan area of Cagliari. **Methods:** The awareness educational program was designed along the lines of the National Institute of Work Accident Insurance (Italy) scheme and proposed to 260 middle-school children. The program is divided into three phases: i) assessment of students' background, ii) displaying of the training modules, iii) evaluation of conceptual understanding. For this purpose, we used pre- and post-intervention questionnaires.

**Results:** The results show a substantial improvement in the percentage of correct responses in the post-intervention, confirmed by the chi-square test, for questions regarding general concepts about ergonomics, backpack weight, and handling. On the other hand, some questions show a pre- and post-intervention continuity in terms of percentage of correct answers. We can divide them into two categories: a) questions to which the students already answered well (basic rules of polite postures); b) questions to which students often answered incorrectly, both before and after the intervention (illustrations; sequences). **Conclusions:** Effectiveness evaluation led us to a necessary re-evaluation of topics, form, and clearness of the questions posed, as well as of the teaching style. Adapting the program to the educational, environmental, and cultural context seems to be crucial for maximizing effectiveness. This pilot study demonstrates that the cultural gap relating to health and safety at school might be reduced with dedicated and tailored programs for school children and community.

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### Exploring doctors' trade-offs between management, research, and clinical training in the medical curriculum: a discrete choice experiment in southern Africa

Jacqueline Wolvaardt<sup>1</sup>, Astrid Turner<sup>1</sup>, Mandy Ryan<sup>2</sup>

<sup>1</sup>School of Health Systems and Public Health, University of Pretoria, South Africa, <sup>2</sup>Health Economics Research Unit, University of Aberdeen, United Kingdom

**Background and Objective:** Public health requires doctors to fulfil roles that extend beyond that of a clinician. There is consensus that management and research training in medical curricula will reinforce evidence-based practices. The study aimed to establish how much clinical activity training time doctors in southern Africa would give up for time spent on research and management training, as well as possible teaching methods. **Methods:** A discrete choice experiment (DCE) was used. Five attributes were included: i) management content; ii) research content; iii) teaching method iv) placement; and v) clinical training hours in a week. Respondents were presented with 10 choice tasks generated from a D-efficient design. A resistance to change-beliefs scale assessed respondents' preference for tradition or change. Demographic information was collected to assess observed preference heterogeneity. Analysis of the DCE data was based on the Random Utility Maximization framework using variants of the multinomial logit model. Willingness to Give Up Time (WTGUT) was estimated for all attributes i.e., how many hours respondents would be willing to give up from the current 40 hours clinical training to be used for management and/or research training instead. The online pilot DCE survey was sent to 50 medical doctors in September 2022.

**Results:** Parameter estimates suggested face validity in terms of direction of preference. Relative to no management training, respondents preferred all other levels of content. There was a preference for students to learn how to use, not do, research. Relative to face-to-face teaching at the beginning of the curriculum, respondents preferred the hybrid method throughout all years. However, WTGUT estimates lacked face validity and respondents did not distinguish between clinical training levels.

**Conclusions:** Pilot study findings suggest the clinical training levels did not push individuals to their maximum. Revised levels will have to be included in the main study in 2023.

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### The discrepancy of premortem clinical and post-mortem autopsy of lung pathologies in under-five deaths and the reasons of discrepancy among cases included in CHAMPS research, a case series study

Haleluya Leulseged<sup>1</sup>, Nega Assefa<sup>2</sup>, Merga Dheressa<sup>3</sup>, Addissu Alemu<sup>4</sup>

<sup>1</sup>Haramaya University, Ethiopia, <sup>2</sup>Haramaya University, Harar City, Ethiopia,

<sup>3</sup>Haramaya University, Harar city, Ethiopia, <sup>4</sup>Haramaya University, Harar, Ethiopia

**Background:** In Ethiopia, modern medicine was started in 1886 G.C and health professionals have been treating patients using different diagnostics algorithms, but there is a limited practice of examining post-mortem autopsy results and thinking back on the certainty of the diagnosis made for the patients before death. Conducting diagnostic discrepancy studies is important to understand the gap that exists in the clinical diagnosis and modify the diagnostic algorithms to give better and appropriate treatment.

**Methods:** In this research, a formal, non-consecutive clinical case series study of under-five deaths included in the autopsy study between October 2019 and April 2022 was conducted. The premortem clinical diagnosis and post-mortem

pathological diagnosis of the lung was compared for each case, and 02 physicians evaluated the results separately for concordance and discordance of diagnosis. McNemar test was used to see if there is a statistically significant difference between the pre-mortem clinical diagnosis and post-mortem pathologic diagnosis of each case. P-value < 0.05 was considered statistically significant. Cohen's kappa was also calculated to see the inter-rater variability. The reason for concordance and discordance in diagnosis was analyzed case by case for all under-five deaths included in this research by 02 separate senior physicians.

Results: The magnitude of diagnostic discrepancy was 34% (95% CI: 20%-47%) and Cohen's kappa Results was: 0.079. Reasons contributing to diagnostics discrepancy were: Case analysis problem (knowledge gap or compression problem) in 35.5%, Problem in consultation and teamwork in 35.5%, Documentation problem in 10%, Unavailability of diagnostic investigations in 8%, Communication gap between health facilities in 6%, Access to health facility in 3% and Work culture in 1%.

Conclusions: The magnitude of misdiagnosis of cases is very high, and interventions should be implemented on the most common causes of diagnostics discrepancy to yield a better diagnosis of diseases by clinicians.

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### The terrible "C word": Dismantling coloniality and hegemonic structures in health education

Danielle Fernandes<sup>1</sup>

<sup>1</sup>University of Ghent, Belgium

Background: There is increasing recognition of hegemonic structures in global (public) health, from its colonial legacy to contemporary decision-making and governance. Power structures are often perpetuated through health education that instils Eurocentric perspectives and methodologies. While public health academics have long called for the decolonization of health education, there is limited evidence of such initiatives in European higher education institutions. With this gap in mind, a student-led project was launched within the University of Ghent to examine and address hegemonic structures in health education. The aims of the project were to (I) co-develop recommendations to dismantle power structures within the university, and (II) assess the implementation of these recommendations. Methods: An exploratory study was conducted consisting of a series of interviews and workshops with students and staff of the University of Ghent's Medical Faculty from February - August 2022. A co-creation approach was used to co-develop a set of actionable recommendations. These recommendations were tested, and a qualitative inquiry was conducted to explore the perspectives of students and staff regarding the acceptability and feasibility of these initiatives. Results: The project highlighted three focal areas for change; (I) diversification of teaching staff, (II) decolonisation of curriculum, and (III) North-South equity. A set of targeted policy recommendations were formulated, with a select few being tested, such as digital learning to include foreign guest lecturers, sensitisation courses, buddy programmes for North-South knowledge exchange, and sensitisation for students going abroad. Implementation barriers and facilitators were highlighted, including the importance of student engagement and the need for systemic changes.

Conclusions: This project effectively moves the decoloniality discourse in academia from rhetoric to action. The findings can inform efforts to train a new generation of health professionals that are better equipped to address power dynamics and achieve equity in public health.

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### Movement from knowledge-based to competency-based MPH curriculum in the United States

Laura King<sup>1</sup>

<sup>1</sup>Council on Education for Public Health

Background and Objective: In 2016, the Council on Education for Public Health (CEPH), the accrediting body for schools and program of public health in the United States and worldwide, adopted a competency-based approach as the foundation for the MPH curriculum, replacing a disciplinary-based, five core knowledge area (i.e., biostatistics, epidemiology, health services administration, social/behavioral sciences, and environmental health) approach. Prior to 2016, accreditation criteria required students to "complete sufficient coursework to attain depth and breadth in the five core areas of public health knowledge." In practice, all programs addressed this expectation by requiring at least one distinct class in each of the five knowledge areas. These five classes comprised the "core curriculum." The 2016 accreditation criteria define a set of 12 foundational learning objectives and 22 foundational competencies for the MPH, with no

specific references to core areas or disciplines. This presentation will focus on the evolution of the core curriculum completed by all MPH students five years after these changes were adopted.

Methods: Accreditation self-evaluation documents, appendices, and university websites accessed between March and May 2020 were reviewed and curricula were coded as A) Retained five core course structure, B) Added/changed courses, or C) Integrated courses.

Results: Results indicate that only 10% of programs have retained the pre-2016 model of curricula, and 11% of programs have pursued complete integration of the core curriculum. Nearly 80% have modified the core curriculum by retaining some discipline-specific classes and adding new non-discipline specific core classes. The most frequently added classes are those in program planning, implementation, and evaluation; research methods; and general Introduction to public health. The median number of required classes went from five in 2016 to seven in 2021.

Conclusions: A discipline-based curricular approach is not the preferred method in a competency-based learning model.

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### Development of innovative strategies to evaluate teaching-learning processes in public health

Edlaine Villela<sup>1</sup>, Regiane Paula<sup>1</sup>

<sup>1</sup>São Paulo State Health Department, Brazil

Background and Objective: Education and communication in health surveillance have been taught in a very conceptual way in postgraduate programs, without reflection on health practice and return to society. The objective is to transform the way of evaluating a postgraduate course, allowing the use of technological resources to innovate in the area of public health and disseminate the materials prepared to health professionals and the community in general. Methods: The elaboration of the audiovisual materials was carried out by 27 students in 2021 from the Postgraduate Program in Sciences of the Disease Control Coordination/ So Paulo State Health Department to approach content of public health during the discipline of Education and Communication in Health Surveillance. As a way of applying active Methodology in the evaluation process, the elaboration of audiovisual materials was proposed. The theme was chosen by students, covering concepts and fundamentals of health education and communication.

Results: The group addressed the themes: Patient safety; COVID-19 in schools; Vaccination; One health; and HIV prevention, due to the relevance of the theme and its applicability in the practice of health surveillance. Therefore, it is extremely important to understand the subject in the work routine, aiming at improving health services. The produced videos were based on different methods, popular on YouTube. Audiovisual recordings were presented in the classroom along with an explanatory report of the activities carried out. In addition, the materials produced were posted on the YouTube channel of the Coordination of Disease Control, which allow the dissemination the of knowledge in public health. Conclusions: The use of digital technologies facilitated the learning process and effective communication. It provided innovative views on the same subject, presenting specific contents in a didactic way. The partnership between innovation and creativity made possible to assimilate the application of health surveillance content.

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### Student experiences and perceptions of content and learning processes during the fully online Postgraduate Diploma in Public Health

Tiaan Eksteen<sup>1</sup>, Sean Patrick<sup>1</sup>, Liz Wolvaardt<sup>1</sup>

<sup>1</sup>University of Pretoria, South Africa

Objectives: Describe enrolled students' experiences regarding learning about public health online and perceptions about content and the learning process. Study design: A descriptive cross-sectional design.

Methods: A 52-item closed-ended online questionnaire was sent to Postgraduate Diploma in Public Health (PGDipPH) students enrolled from May 2020 to March 2021 (N=775), and who had completed at least two modules. Mean Student Experience Scores (SES) and an Overall Student Experience Score (OSSES) were calculated. Logistic regression was used to determine associations between demographic variables and SES for each variable.

Results: The response rate was 31% with majority (74%) being female aged 35-40 years. Most (97%) respondents agreed that modules provide multiple activities to enhance learning. Similarly, 92% agreed that multiple assessment strategies and innovative technology actively engages them in the learning processes. The 31-34-year age group was more likely to have a lower SES for opportunities for

interaction and communication compared to the 20–30-year age group (OR 0.26, 95%CI 0.07-0.90,  $p=0.028$ ). Respondents aged 31-34 years were more likely to have a lower SES on regular feedback regarding their performance throughout the modules compared to those aged 20-30 year (OR 0.32, 95%CI 0.11-0.88,  $p=0.028$ ). Respondents agreed that their overall experiences of the PGDipPH were positive, OSES=37.66 (SD=3.70).

Conclusions: Results shows that the online PGDipPH provides multiple activities to strengthen student learning and that multiple assessment strategies engages students in learning processes. The overall experience of the programme is positive; however, strategies of feedback for learning and feedback of learning need further study.

Keywords: post graduate diploma, public health, online learning e-learning, student experience

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### New competences in MBA for healthcare programmes on the example of digitization

Piotr Szykiewicz<sup>1</sup>, Janusz Strużyna<sup>2</sup>

<sup>1</sup>Collegium Prometricum - The Business School for Healthcare, Poland,

<sup>2</sup>University of Economics in Katowice, Poland

Relevance: Digital competences significantly affect the ability to use the opportunities offered by digitization [Topol, 2019]. The implementation of integrated care [Goodwin, 2016]. The efficiency of using digital means of communication turned out to be particularly important during the pandemic (Clement et al., 2021). Context and Aims: Competencies can be defined as characteristic employees attributes, that helpful for understanding the current and future performance, attitudes and behaviours of employees [Grant and Baden-Fuller, 2018]. Digital competences are the attributes of the employee that allow the use of digital devices and software in a manner consistent with their capabilities, but subordinated to the users needs. Digital competences of employees are shaped in two ways. The first concerns the competence to operate digital devices for the needs of everyday life. The second way of increasing the digital competences level Results from employee improvement processes as part of professional requirements. The overlapping of digital life and professional competences is a fact and has positive and negative consequences.

Findings: Researchers analyzing digital competences have distinguished many possible ways to indicate their comprehensiveness and complexity. In the development of the tool for assessing digital competences of medical workers, an appropriately adapted model indicated in the work of Laar [Laar 2018] was used. The next stage of work on the development of digital competences of medical workers should be the development of appropriate training programs. Innovative Contribution to Policy, Practice and/or Research: The current state of knowledge shows that digital competences are not a simple sum of their components. Both the importance and complexity of the phenomenon of digital competences mean that they should find their place in the MBA in Healthcare curriculum.

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### Field epidemiology training program in West African Portuguese speaking countries: building capacity while strengthening health systems for health surveillance and outbreak response

Mohsin Sidat<sup>1</sup>, Inês Gonçalves<sup>2</sup>, Isabel Araújo<sup>3</sup>, António Delgado<sup>3</sup>, Maria Mendonça<sup>4</sup>, Paulo Ferrinho<sup>5,6</sup>

<sup>1</sup>Faculty of Medicine, University Eduardo Mondlane, Mozambique, <sup>2</sup>Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Portugal,

<sup>3</sup>Universidade de Cabo Verde, Cape Verde, <sup>4</sup>Instituto Nacional de Saúde Pública, Cape Verde, <sup>5</sup>Instituto de Higiene e Medicina Tropical, Portugal,

<sup>6</sup>Universidade Nova de Lisboa, Portugal

Introduction: In 2020, the European and Developing Countries Clinical Trials Partnership and Africa CDC announced funds for Training of epidemiologists in sub-Saharan Africa. In response, a consortium was established which included African and European Universities, National Institutes of Public Health and Research Centers. This consortium proposed a project to implement a Masters in Field Epidemiology offered via blended-learning platforms by the University of Cape Verde. Thus, this presentation is to share experiences of a first ever in the world offer a blended-learning advanced field epidemiology training, integrated into the National Field Epidemiology Training Program (FETP) coordinated by the National Institute of Public Health of Cape Verde.

Methods: The overall project will be described as well as processes in developing the curriculum and its accreditation at different levels (including Higher Education Accreditation Authorities in Cape Verde), students recruitment strategies,

establishment of International Steering Committee among others. The field training sites accreditation, processes to identifying teachers and tutors among other key aspects of advanced FETP delivery will be presented.

Results: A total of 55 candidatures were received and 15 were selected (6 from Cape Verde, 6 from Guinea-Bissau and 3 from São Tomé and Príncipe). Through a consultative process and field visits, tutors were identified for each student in their country of origin. Field training sites to enhance experiences and capacity of trainees in health surveillance and outbreak response were chosen. The expected outputs from field training were defined.

Conclusions: The practical training in the countries of origin complemented with theoretical training offered online will allow better retention of the trained cadres in their countries of origin and contribute for health system strengthening. The program will contribute with learning and teaching materials in Portuguese and enhance a cohort of Portuguese speaking African epidemiologists.

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### Measuring student engagement in a fully online programme in public health

Jacqueline Wolvaardt<sup>1</sup>, Mari Wyk<sup>2</sup>

<sup>1</sup>School of Health Systems and Public Health, University of Pretoria, South Africa, South Africa, <sup>2</sup>University of Pretoria, Pretoria, South Africa

Background and Objective: The maximum period of study for a Master of Public Health degree at our university is two years (part-time). The majority of students works full time and the compulsory attendance of modules usually far exceeds the number of leave weeks that our students routinely have. The entry requirement is broad and does not require a previous degree in public health. The decision was therefore made to include all the foundational modules in a fully online postgraduate diploma in public health and make this programme an entry requirement for the Master programme. One concern was whether fully employed mature students would engage in online learning.

Methods: A document review was done of the all offerings of the first module in the curriculum in 2022. The number of academic discussion posts (excluding group submissions), academic emergency posts and social posts were calculated as a percentage of enrolments. Similarly, the completion of the three possible achievement badges was calculated. A Welcome Badge was for all those who introduced themselves; A Corona Badge was awarded to those who achieved at least 50% for in-video assessments, and a Calculus Badge was for those who achieved 75% for statistics-related quizzes.

Results: A total of 970 students were enrolled in one of the six modules that met the inclusion criteria. The engagement rate in academic discussions was 2 115% (or a total of 20 522 posts). The engagement rate of students who posted in the Emergency Room (a discussion board to post problems and receive help) was 250%. There was less engagement in the social space/coffee chat room (110%). The success rate for one or more of the three possible badges was 71% (average). Conclusions: A fully-online programme in public health that is designed (and rewards) online engagement can ensure student engagement.

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### Evaluation of an online-learning course in Primary Health Care for all Italian Public Health Residents

Elena Sciarpa<sup>1</sup>, Alessandro Cornio<sup>1</sup>, Giorgio Sessa<sup>2</sup>, Irene Schenone<sup>3</sup>, Elisa Gabrielli<sup>4</sup>, Ambrogio Cerri<sup>5</sup>, Marcello Pumo<sup>2</sup>, Davide Graci<sup>6</sup>, Walter Priano<sup>6</sup>, Dario Genovese<sup>7</sup>, Fabrizio Bert<sup>1</sup>

<sup>1</sup>Department of Public Health Sciences and Pediatrics, Torino University, Italy, <sup>2</sup>Department of Life Sciences and Public Health, Rome Catholic

University, Italy, <sup>3</sup>Department of Health Sciences, University of Genoa, Italy,

<sup>4</sup>Department of Biomedical and Neuromotor Sciences, University of Bologna, Italy, <sup>5</sup>Department of Public Health and Infectious Diseases, "Sapienza"

University of Rome, Italy, <sup>6</sup>Department of Health Promotion, Mother and

Child Care, Internal Medicine and Medical Specialties, University of Palermo, Italy, <sup>7</sup>Department of Health Promotion, Maternal-Child, Internal and

Specialist Medicine, University of Palermo, Italy

Primary Health Care (PHC) service management is one of the most important job opportunities for Public Health (PH) specialists. Despite this, according to a previous needs assessment survey, the topic of PHC is not included in the educational programs of 70% of specialization schools in PH in Italy and more than 80% of PH residents declare to have very little acquaintance with PHC. In march 2022, an online series of eight lectures was organized to standardize the level of knowledge and increase awareness of this field. This study aimed to evaluate the impact of these lectures. More than 900 PH residents attended the

lessons. After the lectures, a questionnaire was administered. It consisted of 4 sections: general organization, speakers' competence, acquired knowledge and overall opinion. In each question participants had to indicate a score from 1 to 5 (likert scale) based on their satisfaction. Chi-square tests were performed to compare results from different groups. A total of 410 PH residents from each Italian region (north 51%, center 21%, south 28%) answered the questionnaire. 92% of participants assigned a high global score ( $\geq 4$ ), 68% assigned a score  $\geq 4$  to the acquired knowledge. Residents in their iii or iv years of school, compared with those in their i or ii, considered the competencies acquired transferrable in their working context ( $p=0.040$ ). Residents in their i and ii years were more interested in additional lessons ( $p=0.041$ ). Overall opinion was not different between those who followed the lessons voluntarily or mandatorily ( $p>0.05$ ). This series of conferences has increased perceived knowledge and awareness of PHC issues. These results suggest that it is possible to think of homogeneous and standardized training courses that PH residents can attend in synchrony from all over the country.

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### Students learn better when we design public health curricula using systems thinking principles

Simon Reid<sup>1</sup>, Nicholas Osborne<sup>2</sup>, Sheleigh Lawler<sup>3</sup>, Angela Willemsen<sup>4</sup>, Karen Shelley<sup>5</sup>

<sup>1</sup>School of Public Health, The University of Queensland, Queensland, Australia, <sup>2</sup>School of Public Health, The University of Queensland, Queensland, Australia, <sup>3</sup>School of Public Health, University of Queensland, Queensland, Australia, <sup>4</sup>School of Public Health, The University of Queensland, Herston Road, Queensland, Australia, <sup>5</sup>School of Public Health, The University of Queensland, Queensland, Australia

**Background and Objective:** The complexity and uncertainty of the COVID-19 pandemic highlights the need to change training of public health professionals in higher education by shifting from siloed specialisations to interdisciplinary collaboration. At the end of 2020 and 2021, public health professionals collaboratively designed and delivered, a week-long intensive course—Public Health in Pandemics. The aim of this research study was to understand whether the use of systems thinking in the design and delivery of the course enabled students to grasp the interdisciplinary nature of contemporary health promotion and public health practice.

**Methods:** Two focus group interviews ( $n = 5$  and  $3/47$ ) and a course opinion survey ( $n = 11/47$ ) were utilised to gather information from students regarding experiences and perceptions of course design and delivery, and to determine if students felt better able to understand the complex nature of pandemics and pandemic responses.

**Results:** Students provided positive feedback on the course and believed that the course design and delivery assisted in understanding the complex nature of health problems and the ways in which health promotion and public health practitioners need to work across sectors with diverse disciplines for pandemic responses.

**Conclusions:** The use of an integrated interdisciplinary approach to course design and delivery enabled students used systems thinking to understand the complexity in preparing for and responding to a pandemic. This approach may have utility in preparing an agile, iterative and adaptive health promotion and public health workforce more capable of facing the challenges and complexity in public health.

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### Investigating the international immigration tendency of intern doctors in Türkiye and related factors

Berna Sert<sup>1</sup>, Ahmet Uzun<sup>2</sup>, Süleyman Konuş<sup>1</sup>, Coşkun Bakar<sup>1</sup>, Gamze Çan<sup>1</sup>  
<sup>1</sup>Public Health Department, Faculty of Medicine, Canakkale Onsekiz Mart University, Türkiye, <sup>2</sup>Canakkale Yenice State Hospital, Türkiye

**Background and Objective:** In the last decade, immigrating to developed countries has been a popular topic among young doctors in Türkiye. In the beginning of 2022, the Discussions about doctors' immigration were in the focus of national media. However, there was a clear lack of scientific data. This study aimed to investigate the tendencies of intern doctors towards international immigration, and to determine the factors that may induce a desire to immigrate.

**Methods:** 206 intern doctors that were reached through social media, participated in the study by filling the online form between March 1 - 21, 2022. The form included questions about descriptive features, Attitude Towards Brain Drain Scale(ATBDS) and the Beck Hopelessness Scale(BHS).

**Results:** 82.0% of participants were exposed to verbal violence while working, 6.3% were exposed to both verbal and physical violence. 85.9% wanted to work abroad,

74.5% of these participants made this decision during their clinical training. 64.6% of the participants were planning to take board exams abroad. Most of the participants wanted to take board exams of United Kingdom (64.6%), followed by United States (37.6%), Germany (15.8%) and Canada (12.78%). The mean of BHS scores was found to be  $9,13(SD=4,31)$ . ATBDS scores were found to be higher in the intern doctors who have been exposed to physical violence, who have a history of being abroad, who are currently taking or have plans to take a foreign language course, who want to work abroad, who have plans to take foreign residency exams and who do not plan to take residency entrance exam in Türkiye ( $p<0.05$ ).

**Recommendations:** Brain drain tendencies may indicate an increase in the need of general practitioners and specialists. New researches should examine the push and pull factors that lead young doctors to migrate, and guide policymakers to solve the push factors.

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### Changes in cultural competency among emergency department staff in a large urban hospital following the implementation of an Indigenous Cultural Safety education program

Chenoa Cassidy-Matthews<sup>1,2</sup>, Leslie Bonshor<sup>2</sup>, Andreas Pilarinos<sup>1,2</sup>, Sandra Fox<sup>3</sup>, Lori Quinn<sup>3</sup>, Krisztina Vasarhelyi<sup>4,3</sup>, Brittany Bingham<sup>1,5,2</sup>  
<sup>1</sup>University of British Columbia, Canada, <sup>2</sup>Vancouver Coastal Health, Canada, <sup>3</sup>Vancouver Coastal Health Authority, Canada, <sup>4</sup>Simon Fraser University, Canada, <sup>5</sup>Centre for Gender and Sexual Health Equity, Canada

**Introduction:** Anti-Indigenous racism within healthcare has been well-documented globally. In response, there have been calls for the expansion of Indigenous cultural safety (ICS) education to all healthcare staff. Given limited evidence on the impacts of ICS education within acute healthcare settings, this study sought to evaluate changes in Emergency Department (ED) staff's understanding and application of ICS within their health care practice. **Methods:** Employing a one-group, pre- and post-test study design, the Cultural Capability Measurement Tool (CCMT), and other standalone questions on cultural competence, were administered to ED staff at a large urban hospital in Vancouver, Canada both before and after the completion of a new, introductory, and in-person ICS education program. Paired t-tests examined changes in CCMT scores, and Wilcoxon rank sign test was used to assess changes in standalone questions.

**Results:** A total 66 ED staff complete a pre- and post-test survey. Statistically significant improvements were seen in three of four of the domains of the CCMT, including in respect ( $p=0.015$ ), communication ( $p<0.001$ ), and safety and quality ( $p=0.005$ ), though no statistically significant improvements were observed in the reflection and advocacy domain ( $p=0.189$ ). Similarly, statistically significant improvements were observed across other measures of cultural competency in relation to general knowledge, workplace applications of ICS, and how to meaningfully engage with Indigenous patients (all  $p<0.05$ ). **Conclusions:** Findings indicate that expanding ICS education in healthcare is critical to reducing anti-Indigenous racism and improving Indigenous Peoples' trust in the healthcare system. This may include providing regular, routine ICS education opportunities for healthcare staff and incorporating ICS teachings into medical education curriculum. Future research comparing changes in cultural competency between an intervention and control group of healthcare staff is recommended and would be valuable, as well as research into Indigenous Peoples' experiences before and after the implementation of a healthcare-specific ICS education program.

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### Perceptions towards an e-learning approach Public Health students at a South African University

Kavitha Naicker<sup>1</sup>  
<sup>1</sup>University of Pretoria, South Africa

**Background and Objective:** Technological advancements have been making its way into many aspects of our homes and livelihood. And our educational system is no exception to this technological advancement, since its Introduction into the system in the 1990's. This is in addition to meeting the demands of globalisation and the need for information accessibility and technological advancements. However, these advancements have shown to be not well received and perceived by students. And therefore, the objective of the current study is to determine the perceptions and experiences of e-learning amongst Postgraduate Public Health students in South Africa in order to optimise learning strategies whilst improving the learning environment for studying to be more enjoyable. This in turn would Results in a two-way benefit, in that more students would uptake e-learning studies, whilst higher educational institutions would run successful programs. The need for this study was highlighted by several research findings that suggest that there

are several perceptions of students towards e-learning that needs investigation. Methods: The sample will consist of two cohorts from the Postgraduate Diploma in Public Health at a South African University. All students in these cohorts will be provided with a link that provides information on the study, in addition to the Perceptions towards an e-learning approach Questionnaire.

Results and Conclusions: Preliminary results indicate that students in general experience e-learning as positive. They are a bit lost in the beginning, but eventually find their way in the learning journey. They struggle with time-management, workload management, balancing work, family and study life. They complain about instructions, and they procrastinate. Since data will still need to be collected, analysis might confirm, deny or add to these findings.

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### **Piloting the Informed Health Choices resources in Barcelona primary schools: a mixed method study**

Laura Jofra<sup>1</sup>, Laura Jofra<sup>1</sup>, Esther Martínez<sup>2</sup>, Pablo Alonso-Coello<sup>2</sup>, Sarah Rosenbaum<sup>3</sup>, Laura García<sup>2</sup>

<sup>1</sup>Hospital de la Santa Creu i Sant Pau, Spain, <sup>2</sup>Centro Cochrane Iberoamericano, Instituto de Investigación Biomédica Sant Pau (IIB-Sant Pau), Spain, <sup>3</sup>Centre for Informed Health Choices, Norwegian Institute of Public Health, Norway

Introduction: The main Objective of the Informed Health Choices (IHC) project is to teach people to assess treatment claims and make informed health choices. For this purpose, the IHC learning resources were developed for primary school children. The aim of this study is to explore students' and teachers' experiences when using the IHC resources in Barcelona (Spain) primary schools.

Methods: We conducted a mixed method study for piloting the IHC resources in Barcelona (Spain) primary schools. The intervention included a workshop with teachers and family members, and nine lessons with the students. We collected data using multiple approaches, including ad hoc questionnaires, non-participatory observations, and semi-structured interviews. We performed quantitative and qualitative thematic analyses to explore understandability, desirability, suitability, usefulness, and facilitators and barriers for using the IHC resources.

Results: Two schools with a total of 143 students in 4th and 5th grade (9 to 11-year-olds) and six teachers participated in the study. One school completed all the lessons and followed the suggested IHC teaching plan. The other school did not complete all the lessons and changed the teaching plan substantially. Overall, students and teachers understood, were interested, and were able to apply the content of the lessons. During the lessons, students used the IHC resources (mainly the textbook), but teachers used them in a variable way. Teachers adapted the IHC resources to promote increased student participation and used Information and Communications Technologies to support their teaching. We observed more facilitators than barriers to teach the lessons. Teachers suggested some ideas to improve the lessons based on the activities they developed and implemented.

Conclusions: It is feasible to use the IHC resources in Barcelona primary schools. However, the IHC resources should be adapted for this setting to increase students' participation in classroom.

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### **How do young women perceive and shape the culture of postsecondary education in rural Canada?**

Alexa Ferdinands<sup>1</sup>, Dana Wagner<sup>1</sup>, Maria Mayan<sup>1</sup>

<sup>1</sup>University of Alberta, Canada

Background and Objective: Postsecondary educational attainment, one of the most compelling social determinants of health, is lower (45%) than the national average (65%) for women in Drayton Valley, a rural oil and gas town in Canada. Traditional gender roles are entrenched in Drayton Valley, including social norms surrounding education. Men are encouraged to enter well-paid oil field work straight from high school, making it possible to have one income-earner families where women can be at home with children. However, undertaking postsecondary education may help mitigate health consequences (e.g., increased stress, anxiety) for young women growing up in an unstable boom-and-bust economy. To shift social norms, deep understanding of the local culture of education is needed. In this study, conducted in partnership with the Town of Drayton Valley, we aim to explore how young women perceive and shape the culture of postsecondary education in their community.

Methods: We used focused ethnography to achieve this aim. Focused ethnography focuses on culture as it pertains to discrete social phenomena and contexts. Since July 2022, we have completed 16 individual interviews with young women living in Drayton Valley aged 16-19. Questions revolve around participants' experiences of

growing up in Drayton Valley, how they plan for their futures after high school, their hopes and dreams, and perceived barriers to and opportunities for postsecondary education. Qualitative content analysis is being used to analyze findings.

Results: Findings suggest that young women are challenging gender roles and stereotypes traditionally tied to notions of femininity in rural oil and gas communities. Analyses remain underway; final themes will be presented at the Congress. Conclusions: Findings may be relevant for other rural communities around the world interested in shifting social norms, including those tied to gender, around postsecondary education, as a means of improving young women's health and social outcomes.

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### **Examining the development, implementation, and sustainability of a tuition assistance program in a rural Canadian community**

Maria Mayan<sup>1</sup>, Alexa Ferdinands<sup>1</sup>, Tina Watchman<sup>1</sup>, Matt Ormandy<sup>1</sup>, Dana Wagner<sup>1</sup>, Brooks Hanewich<sup>1</sup>

<sup>1</sup>University of Alberta, Canada

Background and Objective: Rural, oil and gas towns in Canada face several challenges (e.g., boom-and-bust cycles, low educational attainment rates) that adversely affect economic stability, and consequently, residents' physical, mental, and social health. In response to these challenges, one such town, Drayton Valley, introduced a tuition assistance program (up to \$5000 CAD per resident) in 2019 to reduce financial barriers to select postsecondary education and training programs. While the program offers opportunities to train in fields independent of oil and gas, it also may retain residents and attract new people to the town. In partnership with the Town of Drayton Valley, along with evidence that education is one of the most important determinants of health, we aimed to examine the facilitators of and barriers to developing, implementing, and sustaining this program.

Methods: This qualitative study was underpinned by principles of community-based participatory research. Between August 2021 and June 2022, we conducted 11 interviews with stakeholders (elected officials, local administration, postsecondary institution representatives) and participated in 5 group stakeholder consultations, facilitated by a community economic development consultant. Interview transcripts and fieldnotes were analyzed using qualitative content analysis.

Results: We developed five categories which speak to the facilitators and barriers of developing, implementing, and sustaining Drayton Valley's tuition assistance program: 1) lack of a unified vision and goals; 2) unique context of postsecondary education and training in Drayton Valley; 3) innovative champions of education; 4) stakeholder collaborations and multisectoral partnerships; and 5) establishing community buy-in. In this presentation, we will summarize recommendations for capitalizing on facilitators and addressing barriers as the town moves forward with this program.

Conclusions: This study contributes to the limited knowledge on tuition assistance programs in Canada. Findings may have implications for other rural communities interested in using tuition assistance programs as innovative tools for promoting health equity.

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### **Developing a framework for collaborative education and training of the next generation of global health professionals: experiences and challenges**

Iman Hakim<sup>1</sup>, Gabriella Valdez<sup>1</sup>, Roxanna Apaez<sup>2</sup>

<sup>1</sup>Mel and Enid Zuckerman College of Public Health, University of Arizona, Tucson, United States, <sup>2</sup>Mel and Enid Zuckerman College of Public Health, University of Arizona, Tucson, United States

Background and Objectives: There is a tremendous need for a global health workforce that is competent to deal with emerging global health issues. Global health education and training provide unique collaborative opportunities to address the global burden of disease by training the next generation of global health experts. The Mel and Enid Zuckerman College of Public Health (MEZCOPH) at the University of Arizona is an example of an institution that has recently invested in global health infrastructure and academic programs. MEZCOPH established the Global Health Institute (GHI) to provide innovative and transformative public health education, scholarship, research, advocacy, and leadership training for health care professionals worldwide.

Methods: The rapidly evolving convergence of the physical, digital and biological fields is reshaping and transforming higher education. This Fourth Industrial Revolution will lead to the continuous Introduction of new technologies which will mandate new and innovative ways of experiential learning. The new and emerging

digital media technologies provide feasible and cost-effective alternatives to traditional classroom instruction.

Results: The GHI implemented an innovative approach to internationalization by establishing a worldwide network of global partners and/or micro-campuses to deliver collaborative educational and training programs including unique dual degree programs overseas to local students and different summer and global engagement programs. These programs rely on the full collaboration between GHI and its worldwide partners. I will discuss our micro-campus experience and other GHI ongoing programs with our network of global partners. I will highlight the successes, challenges, and lessons learned

Conclusions: Collaborations in global health education and training, while tremendously advantageous, can be demanding and challenging.

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### Are students and teachers of Slovak medical university motivated for physical activity?

Katarina Dostalova<sup>1</sup>, Eva Palugova<sup>1</sup>, Peter Simko<sup>1</sup>, Sona Wimmerova<sup>1</sup>, Eva Horvathova<sup>1</sup>, Stefania Moricova<sup>1</sup>

<sup>1</sup>Slovak Medical University, Bratislava, Slovak Republic

The importance of physical activity (PA) for the human body is very well known. The physical inactivity significantly contributes to the development of chronic diseases and premature mortality. The Slovak Medical University (SMU) in Bratislava is a higher education institution keeping the tradition of education of health care workers in specialised studies and continuous lifelong education in Slovakia. It is assumed that students and teachers of SMU with mission to educate for prevention and a healthy lifestyle, follow the principles of a healthy lifestyle in their personal lives. According to WHO adults aged 18–64 years should do at least 150–300 minutes of moderate-intensity aerobic PA.

Methods: We analyzed and compared the physical activity of teachers and students of SMU. The group consisted of 101 teachers and 242 students. Data collection was performed through an anonymous electronic questionnaire.

Results: 44 teachers (43.56%) and 60 students (24.79%) engage in PA for more than 150 minutes per week. We analyzed the motivation of respondents to PA. 144 respondents are motivated to perform PA by friends (18.81% of teachers and 51.65% of students). 137 respondents chose the family as the main motivation (66.34% of teachers and 28.93% of students). Social networks, the internet, television and advertising motivate only 3 students (1.24%).

Conclusions: It is astonishing that only a quarter of SMU students meet the WHO recommendations for PA. It is a challenge for SMU teachers to pass on to their students' knowledge about a healthy lifestyle not only in theoretical form, but also their personal experiences from everyday life. We explain the low share of motivation through social networks and the internet to PA and, on the contrary, motivation mainly by close people (family in teachers and friends in students) in the current pandemic situation, when personal contact becomes highly valued.

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### Defining the elements of a regional accreditation system for academic institutions of public health in Africa: methodological processes

Neo Ledibane<sup>1</sup>, Liz Wolvaardt<sup>1</sup>, Kuku Voyi<sup>1</sup>

<sup>1</sup>School of Health Systems and Public Health, Faculty of Health Sciences, University of Pretoria, Pretoria, South Africa

Background: Health systems in Africa require an overhaul to align with the universal health coverage (UHC) mandate and a parallel review of public health training and development of the health workforce is warranted. One of the integral components that inform the relevance of public health education in the setting of UHC is the capacities of the academic institutions of public health. The aims of the study are to define the elements that comprise the public health education capacity within academic institutions and to develop an accreditation system for the African region. Methods: Study design: quantitative analytical cross-sectional design with a qualitative component. Study setting: ASPHA (Association of Schools of Public Health in Africa)-affiliated academic institutions of public health at Anglophone, Lusophone, Francophone countries in Africa. Study population: Heads/Deans of Departments/Schools of Public Health. Phase 1: A secure, electronic self-administered questionnaire measuring the institutional baseline characteristics (academics' demographic, curriculum and institution characteristics) underwent five iterations, was piloted and translated into French and Portuguese. The survey launched in November 2022. Quantitative data analysis will be performed using STATA version 17; thematic analysis will be applied to the qualitative data using the ATLAS.ti software.

Results: The preliminary Results will be presented at the conference. These results will form the basis of the elements of a Delphi panel in Phase 2 of the study. The planned outcome of Phase 2 is a self- and peer-assessment tool that can be tested (in Phase 3) as a first step towards accreditation. Conclusions: The study findings are envisaged to inform the development of an accreditation system for the association so that the academic institutions of public health can align their workforce training and development to the changing health and health system needs of Africa.

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### Current problems in nursing and midwifery research in Bulgaria (2020-2022)

Milena Saleva<sup>1,2</sup>, Gena Grancharova<sup>2</sup>, Silviya Yankulovska<sup>2,1</sup>, Makreta Draganova<sup>2,1</sup>

<sup>1</sup>Faculty of Public Health, Medical University of Pleven, Pleven, Bulgaria,

<sup>2</sup>Bulgarian Public Health Association, Bulgaria

Background and Objectives: The research in nursing and midwifery in developed countries has a long tradition and is very well positioned. In Bulgaria, this activity is promoted during the last decades with the introduction of Bachelor degree in basic training of nurses and midwives and Master degree for educators and managerial positions in health care. We aimed to reveal the main problems hindering the development of research in Bulgarian nursing and midwifery. Methods: A total of 1097 anonymous self-administered questionnaires (with closed, semi-closed and open questions) were distributed among practicing nurses and midwives in 8 hospitals and educators and fourth-year students in 6 higher schools. The response rate was 78.9%; higher for students (85.2%), followed by 79.3% for practitioners and 77.2% for educators. Data processing was performed by SPSS v.24 using descriptive statistics and comparative analysis. The accepted level of significance was  $p < 0.05$ .

Results: All the respondents pointed out the lack of time due to insufficient staffing. The situation was exacerbated by COVID-19 pandemic. Lack of motivation and underestimation of the efforts by the employers was the second factor for 36.6% of practitioners and ranked as third by 57.5% of educators and 58.9% of students ( $P < 0.01$ ). The lack of funding was indicated by 30.4% of practitioners and 28.3% of students. Insufficient knowledge and skills for conducting research were recognised as other important problems together with poor command in foreign language and lack of standardized documentation in healthcare practice. Good computer skills and knowledge were not among the main problems. Conclusions: When studying the current situation of research, it is important to look for the problems that hinder its development. The results of our study serve as important signals for concrete actions to be taken to overcome the problems and to encourage research among nurses and midwives.

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### Implementation of a comprehensive approach to health promotion at the school and community levels: preliminary findings from the Alliance for Health project

Axelle Giron<sup>1</sup>, Marine Genton<sup>2</sup>, Carine Simar<sup>3</sup>, Véronique Denois<sup>4</sup>, Julie Pironom<sup>3</sup>, Julien Masson<sup>5</sup>, Didier Jourdan<sup>6</sup>, Franck Chauvin<sup>7</sup>

<sup>1</sup>University Jean Monnet Saint-Etienne, France, <sup>2</sup>University Jean Monnet Saint-Etienne, Saint-Priest-en-Jarez, France, <sup>3</sup>University Clermont-Auvergne, UR4281 ACTé, Chamalières, France, <sup>4</sup>University Jean Monnet Saint-Etienne, UR4129 P2S, France, <sup>5</sup>University Claude Bernard Lyon 1, UR 4129 P2S, <sup>6</sup>University Clermont-Auvergne, Chamalières, France, <sup>7</sup>University Jean Monnet Saint-Etienne, France

Background and Objective: Supporting children in developing health skills goes, according to research, through a comprehensive approach to health promotion. The Alliance for health project aims to enact and assess the impact of a comprehensive approach to health promotion at the school and community levels. This intersectoral project involves regional education authorities, regional public health agency, local policy makers, researchers, and local health promotion operators.

Methods: This project involved 48 French primary schools and 47 associated municipalities in the AURA region randomly selected. From September 2019 to June 2022, the intervention was implemented. Primary school teachers were provided training, support, and resources to develop a health-promoting environment in school according to the Health-Promoting Schools framework. Meanwhile, school deputies and territorial agents involved in extracurricular activities were provided training, support, and resources in the same aim. Intersectoral working sessions were promoted. To analyze implementation outcomes, semi-structured interviews

were conducted in Spring 2022.

**Results:** This qualitative study included 11 district pedagogical advisors, 10 school principals, 9 school deputies, 2 extracurricular agents, 1 person in charge of after-school programs and 1 health promotion project manager. Schools' perspective. Identified facilitators were a constant and available referral, institutional support and dedicated time, clear aim and issues from the beginning, community support, multi-school training sessions, contextualized support. Barriers were COVID-pandemic, lack of community support, lack of time. Community perspective. Identified facilitators were health promotion perceived legitimacy, collective motivation, regular and effective working sessions. Barriers were perceived methodological incompetence, administrative burden, lack of time.

**Conclusions:** Collective work dynamics, practices' exchanges, health promotion professional identity are essential implementation components. Lack of time is perceived as a structural barrier. Communities pointed out perceived legitimacy and competences as cornerstones of their engagement.

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### The necessity of research skills training for nurses and midwives in Bulgaria

Milena Saleva<sup>1,2</sup>, Silviya Aleksandrova-Yankulovska<sup>3,1</sup>, Makreta Draganova<sup>3,1</sup>, Gena Grancharova<sup>3</sup>

<sup>1</sup>Medical University of Pleven, Pleven, Bulgaria, <sup>2</sup>Bulgarian Association of Public Health, Pleven, Bulgaria, <sup>3</sup>Bulgarian Association of Public Health, Bulgaria

**Background and Objective:** The recommendations of international organizations require to start training for research in health care from the basic training. In Bulgaria, the Ordinance on the Unified State Requirements for the acquisition of Bachelor degree in Nursing and Midwifery and Master degree in Management of Health Care (2006) do not include mandatory disciplines for acquiring specific knowledge and skills for research. The aim of the study was to find out how nurses and midwives evaluate their research preparation and their basic needs. **Methods:** Within a more complex study on research in nursing and midwifery, practitioners in 8 hospitals, educators and fourth-year students in 6 universities were surveyed through an anonymous self-administered questionnaire. Out of a total of 1 097 distributed questionnaires, 78.9% responded, with the highest rate among students (85.2%), followed by practitioners (79.3%) and educators (77.2). Data processing was performed by SPSS v.24 using descriptive statistics and comparative analysis. The accepted level of significance was  $p < 0.05$ .

**Results:** Statistically significant differences were found in all three groups regarding their self-assessment of confidence to undertake specific research activities ( $P < 0.05$ ). The proportion of practitioners who definitely do not feel prepared for research was 38.9%. Among the trainees, there was a slight predominance of those who feel confident (57.8%). The highest proportion of confidence in their preparation for research was among educators (62.0%) for which research is an obligatory element of their position. In all three groups, the largest proportion of persons supported the opinion that the acquisition of basic competencies for research should start in basic education and should be upgraded during the Bachelor and Master programs in the specialty "Health Care Management". **Conclusions:** There is a necessity to introduce research training into basic nursing and midwifery education, justified by regulatory requirements and their poor assessment of research skills.

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### Health care professionals' knowledge on chronic noncancer pain in pediatric age

Paula Oliveira<sup>1</sup>, Clara Abadeso<sup>2</sup>, Humberto Machado<sup>3</sup>, José Romão<sup>3</sup>

<sup>1</sup>Public Health Unit of Porto Ocidental, Portugal, <sup>2</sup>Pediatric Department, Prof. Dr Fernando Fonseca Hospital, Portugal, <sup>3</sup>School of Medicine and Biomedical Sciences, University of Porto, Portugal

**Background and Objectives:** The health care professionals' knowledge on chronic noncancer pain in pediatric age may have implications in clinical practice, and eventually impact on patients' health-related quality of life. However, there are no research studies in Portugal addressing that issue. Our main goals were to study health care professionals' knowledge on chronic noncancer pain in pediatric age, as well as associated variables, namely sociodemographic and professional variables, perception of knowledge, and behavioral attitudes regarding chronic noncancer pain in pediatric age. A self-report questionnaire was developed to evaluate the variables under study.

**Methods:** 66 doctors and 71 nurses (N = 137) practicing with pediatric patients completed a self-report questionnaire in order to evaluate: knowledge on chronic

noncancer pain ("definition/epidemiology/pathophysiology"; "psychosocial aspects"; "pain assessment"; "pharmacological treatment" and "non-pharmacological treatment"), sociodemographic and professional variables, perception of knowledge, and behavioral attitudes regarding chronic noncancer pain in pediatric age.

**Results:** The overall level of health professionals' knowledge on chronic noncancer pain at pediatric age is moderate (M = 65.69; SD = 11.01) [0-100]. The highest scores were in "psychosocial aspects" and "non-pharmacological treatment" subscales; the lowest scores were in "pharmacological treatment" and "definition/epidemiology/pathophysiology" subscales. In addition, our results showed that the overall level of knowledge is related to the perception of knowledge (namely, awareness of pediatric pain assessment national guidelines, and perceived ability to apply pain rating scales in pediatric age), as well as behavioral attitudes (namely systematic pain assessment and recording at an appointment with a pediatric patient, as well as performing etiological assessment in the medical approach of patients with chronic noncancer pain).

**Conclusions:** Our data support the relevance of developing training programs focused on promoting health care professionals' knowledge on chronic noncancer pain in pediatric age, pointing out areas in which such programs should be focused.

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### Pre-service teachers' experiences with students impacted by Trauma in the school setting

Ella Carton<sup>1,2</sup>, Karen Martin<sup>3</sup>, Alix Woolard<sup>4</sup>, Kate Fitzgerald<sup>2</sup>

<sup>1</sup>Telethon Kids Institute, Australia, <sup>2</sup>The University of Western Australia, Australia, <sup>3</sup>The University of Tasmania, Australia, <sup>4</sup>Telethon Kids Institut, The University of Western Australia, Australia

**Background:** Experiencing trauma can adversely impact a child's education and their lifelong social, physical and mental health. Trauma is poorly understood by those working within the education sector. Teachers play a pivotal role in recognising and helping when children display trauma-related behaviours, but risk re-traumatising children if not adequately trained. Pre-service teachers (PSTs) have limited exposure and experience in responding to the different needs experienced by children impacted by trauma. This research explored PST education and training about trauma and its impact, and their knowledge and experience in supporting children whilst on practicums.

**Methods:** Phenomenological analysis of in-depth interviews with 15 undergraduate PSTs attending three Western Australian universities explored their knowledge and experiences in working with children impacted by trauma.

**Results:** Themes emerging from the data included; PSTs' teaching preparedness, experiences and emotions on practicums, support during and after practicums and recommendations. Participants received almost no education or training about how to support children impacted by trauma, felt underprepared, lacked support from schools and their university, and noted issues with inadequate trauma-informed practices in some classrooms. A prominent finding resonating with all participants was the importance of gaining an understanding about trauma to better equip PSTs with the knowledge and confidence to support children.

**Conclusions:** This research suggests PSTs may not be receiving sufficient training at university about how to support children impacted by trauma and feel underprepared on practicums. Results highlight the importance of teacher education and training in preparing future teachers about supporting children impacted by trauma. The results demonstrate the necessity for conceptual changes around university education and support for PSTs in classrooms. These results are relevant internationally for education sectors in ensuring adequate training of our future teachers, universities in their teaching courses and for schools in how best to support their practicum and school students.

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### One Health, Multiple backgrounds

Giorgia Soldà<sup>1</sup>, Giorgia Soldà<sup>1</sup>, Angelo Capodici<sup>1</sup>, Marco Montalti<sup>1</sup>, Aurelia Salussolia<sup>1</sup>, Zeno Valerio<sup>1</sup>, Giusy Fauci<sup>1</sup>, Francesca Scognamiglio<sup>1</sup>

<sup>1</sup>University of Bologna, Italy

**Background and Objective:** One Health (OH) is considered to be a trans-disciplinary topic. In 2010, Fao, Woah, and who recognized that to address health risks, strong partnerships among players with different perspectives are required. However, in Italy, oh is only taught in a few university courses and is excluded from medicine and surgery. In October 2021, as first-year Public Health (PH) residents of the university of bologna, we decided to organize a winter school on oh open to medical residents, veterinarians, nurses, and biologists' students.

**Methods:** The course lasted 4 days dedicated to human, environmental, and

animal health. It was recognized from the beginning the core importance of having an interprofessional environment, both for the lecturers and the trainees. In particular, morning activities were led by experts of multiple backgrounds, such as PH, veterinary, chemistry, geology, agriculture, statistics, environmental engineering, health economics, psychiatry, endocrinology, and microbiology, while the afternoons by the PH residents who integrated the morning topics with soft skills such as leadership and advocacy.

Results: Frontal lessons covered different fields of expertise, and known and neglected problems and highlighted the gap between real-world issues and the academic division of knowledge. The involvement of PH residents was instrumental in implementing a peer-to-peer learning approach, involving participants in debates and encouraging them to express ideas and insights on specific issues to view them in a multi-disciplinary framework.

Conclusions: Every participant was asked to fill out an evaluation form at the end of each day. Soft-skills training sessions were widely appreciated and participants acknowledged the course's added value of facilitating the intersection between different fields of knowledge. Traditional educational approaches often underestimate the importance of a transdisciplinary approach, even though it appears fundamental in order to effectively assess real-world problems, and professionals are deeply aware of this gap in their education.

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### Study on the satisfaction of medical students with distance learning during the period of COVID-19 restrictions for the perspective of the Karaganda Medical University, Kazakhstan

Zhaniya Dauletkaliyeva<sup>1</sup>, Karina Nukeshtayeva<sup>1</sup>

<sup>1</sup>Karaganda Medical University, Kazakhstan

Background and Objectives: The current situation associated with the pandemic has led to transitional distance learning methods in higher education. The aim of the study is to determine the attitude of students towards distance learning at a medical university and to identify the problems they faced.

Methods: The design of the study is cross-sectional. An electronic questionnaire was assigned, and 1238 students were interviewed. The study was conducted after replacing traditional face-to-face education.

Results: 38.2% of students have perfectly adapted to distance learning. At the same time, 3.1% adapted to online learning poorly. 67.1% of respondents report that they were absolutely comfortable learning online, and only 6.6% of respondents report that it was very difficult. 40.5% of respondents believe that their workload has increased during the period of delayed learning, and slightly fewer respondents report that the workload has not changed. The majority of students rate the work of the teaching staff during distance learning as "excellent", however, still, 3% of students rate the work of the teacher as "bad". The main requirements that students have faced during the long period of study are the technical conditions, the poor performance of the Internet in the regions where the students are located during the distance learning period. In general, 48.1% of students are completely satisfied with the learning process during distance learning, while 4.6% of students are completely satisfied. It is noted that students of lower grades have an increased frequency of increased values of the training load during long-term training (p-value <0.001).

Conclusions: Much attention is paid to solving the problem of digital literacy among the teaching staff and students, as well as increasing the availability of digital technologies for all students, regardless of their distance from the university.

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### Virtual, augmented, immersive reality and metaverse in the medical students training: a systematic review

Alice Mannocci<sup>1</sup>, Gholamalishahi Shima<sup>2,3</sup>, Vanessa Barletta<sup>2,3</sup>, Maria Manai<sup>2,3</sup>, Federica Battisti<sup>4</sup>, Giuseppe La Torre<sup>3,4</sup>

<sup>1</sup>Universitas Mercatorum, Faculty of economics, Piazza Mattei 10, 00186 Rome, Italy, <sup>2</sup>Sapienza University of Rome, Italy, <sup>3</sup>Department of Public health and Infectious Diseases, Italy, <sup>4</sup>University of Padua, Department of Information Engineering, Italy

Background and Objective: In the last decades, several educational strategies have been identified to improve the skills of students and promote deep learning. The use of virtual reality (VR), immersive (IR) or augmented reality (AR) and metaverse (MV) technologies can be engaging and interactive learning resources and easily updated in line with the learning needs. While digital education is increasingly used in teaching, it is not very clear how effective. To address this gap a systematic review has been conducted to investigate the academic

performance, satisfaction, and acceptability of this digital education in university students of medicine.

Methods: The review was conducted according to the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses. The following databases were searched from their earliest records until October 30th, 2022: PubMed, Scopus (Elsevier), and Web of Science. The following search string was applied: (metaverse OR "immersive reality" OR "virtual reality" OR "augmented reality") AND ("Medical Students" OR "Medical Training" OR Triability OR Teaching) AND University AND (satisfaction OR Acceptance OR Performance). Only studies focused on undergraduate students of medicine/dentistry/degree courses in the health professions were considered. Only experimental studies were included.

Results: Actually, the systematic review is in progress. The preliminary results of the search through the scientific literature identified 372 citations. 32 studies were selected: 4 full texts are not available, 17 RCT, 10 quasi-experimental trials, and 1 quasi-randomized trial. Considering only the studies that measured academic performance (N=26), 13 of them indicated significantly superior performance with the equipment for the VR or analog technologies trained students.

Conclusion: VR simulation was at least as effective as traditional learning methods in training medical students while providing benefits regarding user satisfaction. VR is useful for learning both simple and complex clinical skills, according to these findings.

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### Climate crisis and planetary health in Italian medical schools' curricula: a scoping review

Doris Zjalic<sup>1</sup>, Gaia Lombardi<sup>1</sup>, Giulia Congedo<sup>1</sup>, Doris Zjalic<sup>1</sup>, Alessio Perilli<sup>1</sup>, Mattia Di Russo<sup>1</sup>, Chiara Cadeddu<sup>1</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore, Italian Institute for Planetary Health, Italy

Background and Objective: Italy is considered a hotspot for climate change in the Mediterranean region and people living in it are already affected by environmental modifications. Medical doctors have a key role in tackling with the consequences of this threat by providing direct care and correct education, preparing the population, helping in adaptation process, and advocating for public health policies. To achieve this aim, medical doctors need solid knowledge about the interconnection between human health and climate crisis, which is a cornerstone of Planetary Health. The aim of this study is to analyse whether Italian medicine schools' curricula incorporate Planetary Health and climate change topics.

Methods: A review of all medicine degree courses in Italy was conducted in December 2022 on academic websites of each course founded on the "UniversItaly.it" institutional portal. In each programme, we searched for the Italian terms for "climate change", "environmental change", "planetary health", "one health" and we synthesized the results in a database, which was used to set out the Italian situation with descriptive statistics.

Results: Forty-eight medical schools and eighty-three degree courses have been included. Preliminary data show that only 4 schools out of 48 (8.3%) offer elective courses on the subject and in 13 courses out of 83 (10.8%) there is a teaching course that includes Planetary Health topics in the programme.

Conclusion: This review shows that Italian future medical doctors are receiving an insufficient education in their degree courses on climate crisis and environmental matters, which comprise 25% of the global burden of disease. Medical doctors need to be aware of global environmental changes and to be actively involved in population health protection and support for policymaking. Planetary Health Educational framework shows the way to reach this goal, developing knowledge and skills to face the problem.

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### Impact of an infection prevention and control intervention on the management of a mdro outbreak in a medical department

Matteo Rigoni<sup>1</sup>, Chiara Dalle Carbonare<sup>2</sup>, Sofia Zanovello<sup>2</sup>, Davide Brodesco<sup>2</sup>, Maria Zanon<sup>2</sup>, Francesco De Siena<sup>1</sup>, Vinicio Manfrin<sup>3</sup>, Mario Rassu<sup>4</sup>, Sara Mondino<sup>2</sup>, Romina Cazzaro<sup>2</sup>

<sup>1</sup>University of Padua, Dept. of Cardiac, Thoracic, Vascular Sciences and Public Health, Italy, <sup>2</sup>AULSS 8 Berica, Hospital Direction, Italy, <sup>3</sup>AULSS 8 Berica, Infectious Disease Department, Italy, <sup>4</sup>AULSS 8 Berica, Microbiology and Virology Department, Italy

Background and Objective: In November 2021 there was a steady increase of Multidrug-Resistant Microorganisms (MDRO) colonized patients in a medical department of san Bortolo hospital (Vicenza, Italy): 6 Vancomycin-Resistant Enterococcus (VRE), 1 pseudomonas aeruginosa MDR. MDRO active surveillance

with rectal swabs was already performed to patients at admission and every 7 days (patients with known MDRO excluded). Therefore, targeted interventions were planned.

**Methods:** The implementation of an infection Prevention and Control (IPC) intervention was planned by the Infection Control Team (ICT) in order to analyze, contain and manage the phenomenon. Measures implemented by ICT with staff ward included a hand hygiene observation session, onsite training meetings with healthcare staff, environmental screening by performing swabs in colonized patients' rooms, analysis and revision of sanitizing protocols for electro-medical equipment and flusher disinfectors.

**Results:** The 3 inspections carried on revealed some critical issues, in particular: poor hand hygiene adherence, double gloves use, unclear dirty/clean pathways, uncorrect Personal Protective Equipment (PPE) removal sequence, presence of too much equipment in isolation rooms. Environmental swabs showed vire contamination on 1 bedside, 1 monitor, and 1 colonized patient garrison. The 3 onsite training meetings allowed the engagement of staff with focus on: proper hand hygiene, principles of antibiotic resistance, standard and contact precautions, proper use of PPE.

**Conclusions:** The IPC intervention allowed an improvement in the equipment arrangement in colonized patients rooms, a review of sanitization protocols and an improvement in PPE use procedures; staff engagement led to an increase in responsibility and knowledge, allowing the cluster to be contained and resolved within a month.

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### School based HIV education affecting girls in selected countries in Sub Saharan Africa

Ivainesu Musa<sup>1</sup>

<sup>1</sup>Thammasat University, Thailand

**Introduction:** There is a high level of hiv amongst adolescent girls and young women in sub saharan africa and this has affected progress towards achieving the 90-90-90 targets. The current strategies arent sufficient to make the goals; there is a need to revamp at different levels and one of these levels is education. The objectives of this were to review and describe school-based HIV education programmes involving girls. As well as to categorize and synthesize the key features of school-based programs, how they address known barriers to participation and how they incorporate important principles and guidelines.

**Methods:** This paper applied a documentary research design involving an analysis of school-based hiv intervention programs that affect girls in Kenya, South Africa and Zimbabwe as a representative subset of sub Saharan Africa. An analysis of school-based HIV intervention programs affecting girls. It included data sources such as peer reviewed articles, as well as articles from authoritative sources. The analysis included both qualitative and quantitative data. The documentary review analyzed all evidence from collected data that included the information needed to identify lessons learned, best practices and program performance.

**Results:** Findings revealed systemic barriers to safe participation. It exhibited the issues pertaining access to quality hiv education. Social norms and moral expectations based on culture and religion remained significant barriers to girls education.

**Conclusion:** One of the ways to achieve the 90-90-90 targets as well as the sustainable development goals, is through education strategies. The findings in this study revealed the importance and impact school-based HIV education can have in assisting girls. In order for health promotion to be enabled, collaboration is key. There is also a need for a multi-sectoral approach to achieve the set targets and reduce prevalence of HIV/AIDS among agyw.

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### Competencies of family practice for providing integrated care for people living with HIV

Gabriel Velloso<sup>1</sup>, Gisela Cardoso<sup>2</sup>, Valéria Romano<sup>3</sup>

<sup>1</sup>Secretaria Municipal de Saúde do Rio de Janeiro, Coordenadoria Geral de Atenção Primária 3.3, R. Manuel Martins, 53 - Madureira, Rio de Janeiro, CEP 21310-240, Brazil, <sup>2</sup>Fundação Oswaldo Cruz, <sup>3</sup>Universidade Federal do Rio de Janeiro, Departamento de Medicina em Atenção Primária à Saúde, Av. Carlos Chagas Filho, 373, Edifício do Centro de Ciências da Saúde, Bloco K, 2° andar, Sala 49 - Cidade Universitária - Ilha do Fundão, Rio de Janeiro - Brasil - CEP: 21.941-902, Brazil

**Background and Objective:** Since the decentralization of Human Immunodeficiency Virus (HIV) treatment to Primary Healthcare, Family Practice has a growing role in providing integrated care for people living with HIV. While having medical

residency as its gold-standard for graduate education, the specialty has been structuring its curriculum with competency-based education, but there are still fragilities in the curriculum in being capable of providing integrated care for people living with HIV. Based on Philippe Perrenoud's Theory of Competencies, this study proposes the analysis of competencies of Family Practice for providing integrated care for people living with HIV through the perception of graduates from Family Practice Residency Programs in Rio de Janeiro.

**Methods:** For this purpose, the focal group technique was used, through which was collected the data, complemented by documental analysis.

**Results:** Based on Perrenoud's concept of competence, 38 competencies were identified, from which 11 were considered transversal, 10 were knowledge, 11 were practices and 6 were attitudes. The concept and application of each of these competencies were then discussed, prioritizing most neglected topics such as recognition of social markers of difference, clinical communication, medical privacy and community interventions. As a result of this study, a table was organized to present Family Practice's competencies in integrated care for people living with HIV, to be shared with education institutions related to the specialty.

**Conclusion:** This study is expected to support instruction of future family doctors, in order to orient the specialty to a wider view, to challenge the hegemonic paradigms and to truly oppose serophobia.

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### Mental health and citizenship: understanding and fighting prejudice through education

Alexandre Maia<sup>1</sup>, Pedro Zamprogno<sup>1</sup>, Daury Fabriz<sup>1</sup>, Tammy Motta<sup>2</sup>

<sup>1</sup>FDV - Faculdade de Direito de Vitória, Rua Sergipe, 247, 202, CEP: 29101-400, ES- Espírito Santo, Brazil, <sup>2</sup>CRP - Conselho Regional de Psicologia ES, Brazil

**Background and Objective:** This project aims to promote understanding, social tolerance, and mental health, as provided for in the Universal Declaration of Human Rights, articulating the fundamental right to mental health with the principles of education, as set out in the Federal Constitution and in Brazilian's Law of Guidelines and Bases of National Education (LDB). It seeks to combat prejudice and misinformation historically observed in relation to therapeutic processes, often considered as "things of unbalanced people". Such prejudice generates two problems that need to be fought: first, the lack of access to therapies capable of improving the quality of life of individuals; secondly, to ensure respect for those seeking treatment.

**Methods:** Recognition of the complexity of the problem requires an integration of fields of study, a search that goes beyond restricted research in the field of Medicine, Psychology or Law. The methodology is rhetoric, seeking convincing through reasonable discourse, based on ethical and legal principles. The proposal consists in two steps:

The first stage is the elaboration of a class plan and expository video, guided by professionals in the fields of psychology, medicine, law and pedagogy. It can be incorporated into the high school curriculum of any school in the national territory, as it is in accordance with the precepts of the Constitution and the Brazilian's Law of Guidelines and Bases of Education (LDB).

The second stage is aimed at researching interaction with students, using active methodologies as a basis.

**Results:** Both a lesson plan and the class were produced, and are available for presentation and integration into schools.

**Conclusion:** It is concluded that the material produced, according to ethical and legal sources, is effective as a way of producing greater acceptance and understanding necessary for the reality of mental health. Substantive citizenship demands education as a formative element.

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### Are trained family planning service providers competent? analyzing the results of diagnostic workshops to improve capacity building in family planning

Jaime Bonifacio Jr<sup>1</sup>, Rosario Benabaye<sup>2</sup>

<sup>1</sup>RTI International, USAID ReachHealth, Pasig City, Philippines, Philippines,

<sup>2</sup>RTI International

**Background and Objective:** Family planning (FP) service provider's competence is critical to delivering quality FP counselling and services. Hence, the necessity of continuous trainings that capacitate FP providers until they become proficient in FP service provision. However, in many parts of the Philippines, most capacity building activities end with the training itself. USAID ReachHealth found in 2019 that only 302 of 1,969 FP-trained primary care providers in 12 cities and provinces

in the Philippines have undergone a post-training evaluation. To address this gap, local governments conducted diagnostic workshops (DW) to efficiently assess, evaluate, certify, and mentor FP providers.

**Methods:** The DW for FP gathers 15 to 25 nurses and midwives to undergo knowledge assessment through written tests, and skills assessment through objective structured clinical examination. It allows program managers and trainers to identify providers' weaknesses and address them purposefully. USAID ReachHealth analyzed the results of DWs from 2018 to 2022 to identify the concepts and skills that must be emphasized or reinforced during trainings and succeeding coaching activities, and inform the strengthening of FP capacity building interventions.

**Results:** Twenty-one workshops attended by 371 participants were reviewed. Fifty-three percent were found competent and endorsed for certification while 47% either had to be coached or retrained. While most of the evaluated providers had strong interpersonal skills, they needed coaching in addressing missed contraceptive pills and providing information on lactational amenorrhea method, among others. These aspects also need to be reinforced in basic FP courses offered by the Philippine Department of Health.

**Conclusion:** Not all trained providers are competent in FP services. Hence, continuous capacity building, including mentoring that specifically targets their weaknesses, is necessary. The DW is an effective and efficient way to assess the knowledge and skills of providers. It is also a viable approach to strengthening FP capacity building interventions.

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### Midwives' self-efficacy during the COVID-19 pandemic

Elena Capitan<sup>1</sup>, Agnese Casucci<sup>2</sup>, Lucia Alaimo<sup>3</sup>, Nicola Nante<sup>1</sup>

<sup>1</sup>University of Siena, Italy, Post Graduate School of Public Health, University of Siena, Italy, <sup>2</sup>University of Siena, Italy, <sup>3</sup>University of Siena, Italy, Degree Course in Obstetrics, University of Siena, Italy

**Background and Objective:** Self-reflection skills enable us to analyse experiences and reflect on our thought processes, generating new capacities for action. The study aims to investigate the extent to which Italian midwives are able to use self-efficacy in the professional and working environment during the covid-19 pandemic.

**Methods:** A cross-sectional study was conducted on a sample of midwives enrolled through an online questionnaire from July to October 2022. The questionnaire consists of socio-demographic data and work experience data. It was used as a psychometric instrument, "Scale of perceived self-efficacy in the management of complex problems" (Farnese ML, 2007) with four dimensions investigated (emotional maturity, finality to action, relational fluency, context analysis) and scored from 6 to 30. Statistical analysis was performed by STATA 17.

**Results:** The sample consists of 835 midwives. The following mean dimensions were obtained "emotional maturity" 18.1 (CI:17.8-18.3), "finalisation of action" 20.5 (CI: 20.2-20.7), "relational fluidity" 20.8 (CI: 20.5-21.1), "context analysis" 20.7 (CI 20.4-21.0). Those who are slightly/not at all satisfied with their professional fulfilment are more likely to have a low emotional maturity score (OR:2.1;C.I:1.4-3.3). Those who are fairly/very satisfied with their professional fulfilment are more likely to score highly on action finalisation (OR:1.45; C.I:1.1-2.0). Those who feel that the covid-19 pandemic has greatly affected their emotional experience are less likely to have a high score on emotional maturity. (OR:0.6;C.I: 0.4-0.9). Those who believe that the covid-19 pandemic had little influence on their emotional experience are more likely to have a high emotional maturity score (OR:1.6; C.I:1.1-2.5)

**Conclusion:** Our study shows that personal fulfilment in the care setting strongly influences the perception of midwives self-efficacy and that the covid-19 pandemic has left an indelible scar on healthcare professionals by conditioning their perception of their self-efficacy.

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### Association of study- and health behavior-related factors with university students' health and health literacy - A monocenter cross-sectional study in Germany

Alexandra Löwe<sup>1</sup>, Martin Lange<sup>2</sup>, Andrea Schaller<sup>3</sup>

<sup>1</sup>IST University of Applied Sciences, Department of Fitness and Health, Erkrather Straße 220 a-c, 40233 Düsseldorf, Germany, <sup>2</sup>IST University of Applied Sciences, <sup>3</sup>German Sport University Cologne, Working Group Physical Activity-Related Prevention Research, Institute of Movement Therapy and Movement-oriented Prevention and Rehabilitation, Am Sportpark Müngersdorf 6, 50933 Köln, Germany

**Background and Objective:** University students (US) face challenging times characterized by home detachment, identity exploration, academic demands, and additional stressors due to the current global situation that can negatively impact health. Health behaviors (HB) and health literacy (HL) are important resources for maintaining health. The objectives are to evaluate the current health status (HS), HB, and HL of US and to identify study-related and health behavior-related factors associated with HS and HL.

**Methods:** A cross-sectional study was conducted at a University of Applied Sciences in Germany. Data were collected online between November 2020 and March 2022, using validated instruments to assess HS, HB and HL. HS, HB and HL were presented by descriptive statistics. Multiple linear regression analysis were performed to evaluate the associations between HS, HL, study-related and behavioral factors.

**Results:** N= 550 participants (♂: 74%) were included. HS was positive, stress levels were high, sleep scores, physical activity, and HL were low. A high HS ( $p < .004$ , adjusted  $R^2$ : .254;  $f^2$ : .34) was associated with male gender ( $b = .124$ ,  $p = .031$ ), higher life satisfaction ( $b = .050$ ,  $p < .001$ ), better sleep ( $b = -.044$ ,  $p < .001$ ) and nutrition ( $b = .016$ ,  $p = .005$ ). HL ( $p = .022$ , adjusted  $R^2$ : .076;  $f^2$ : .08) was positively associated with the target graduation 'master' ( $b = .082$ ,  $p = .051$ ), better sleep ( $b = -.132$ ,  $p = .004$ ), healthy nutrition ( $b = .094$ ,  $p = .031$ ), lower alcohol intake ( $b = -.099$ ,  $p = .017$ ) and higher life satisfaction ( $b = .108$ ,  $p = .022$ ).

**Conclusion:** Students perceive themselves as healthy but exhibit critical HB and low HL, revealing potential for health-promoting interventions. Universities can draw on existing resources to implement the measures efficiently.

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### Using virtual reality in a blended learning course of clinical reasoning competency in primary care: a case study in Central Vietnam

Quynh-Anh Le Ho Thi<sup>1</sup>, Quang-Tuan Duong<sup>2</sup>, Minh Huynh Van<sup>3</sup>, Chi Le Van<sup>3</sup>, Quoc-Huy Nguyen Vu<sup>4</sup>, Minh-Tam Nguyen<sup>2</sup>, Quang-Tuan Duong<sup>5</sup>, Truong-An Ho Duc<sup>4</sup>, Len-Len Che Thi<sup>6</sup>, Viet Cuc<sup>7</sup>, Martin Valcke<sup>8</sup>

<sup>1</sup>Hue University of Medicine and Pharmacy, Hue University, Vietnam Family Medicine Center, Hue University of Medicine and Pharmacy, Hue University, Vietnam; Department of Public Health and Primary Care, Faculty of Medicine and Health Sciences, Ghent University, Ghent, Belgium 06 Ngo Quyen street, Hue city, Thua Thien Hue province 49000, Vietnam Viet Nam, <sup>2</sup>Hue University of Medicine and Pharmacy, Hue University, Vietnam Family Medicine Center, Hue University of Medicine and Pharmacy, Hue University, Vietnam 06 Ngo Quyen street, Hue city, Thua Thien Hue province 49000, Vietnam Viet Nam, <sup>3</sup>Hue University of Medicine and Pharmacy, Hue University, Vietnam Internal Medicine Department, Hue University of Medicine and Pharmacy, Hue University, Vietnam; Department of Public Health and Primary Care, Faculty of Medicine and Health Sciences, Ghent University, Ghent, Belgium 06 Ngo Quyen street, Hue city, Thua Thien Hue province 49000, Vietnam Viet Nam, <sup>4</sup>Hue University of Medicine and Pharmacy, Hue University, Vietnam, <sup>5</sup>Hue University of Medicine and Pharmacy, Hue University, Vietnam Family Medicine Center, Hue University of Medicine and Pharmacy, Hue University, Vietnam 06 Ngo Quyen, Hue city, Thua Thien Hue province 49000, Vietnam Viet Nam, <sup>6</sup>Hue University of Medicine and Pharmacy, Hue University, Vietnam 06 Ngo Quyen street, Hue city, Thua Thien Hue province 49000, Vietnam, <sup>7</sup>Nguyen Thi Hue University of Medicine and Pharmacy, Hue University, Vietnam Family Medicine Center, Hue University of Medicine and Pharmacy, Hue University, Vietnam 06 Ngo Quyen street, Hue city, Thua Thien Hue province 49000, Vietnam Viet Nam, <sup>8</sup>Ghent University, Belgium Faculty of Psychology and Educational Sciences, Department of Educational Studies, Ghent University, Belgium Campus Dunant, Henri Dunantlaan 2, B-9000 Gent, Belgium

**Background:** Virtual reality (VR) has been widely used in medical education. Little research exists on the deployment of VR in clinical reasoning training. This study aimed to explore experience and perspective of medical students on the usability of VR to facilitate clinical reasoning skills in a blended learning course.

**Methods:** This is a quasi-experimental study using a pretest-posttest design with 200 fifth-year medical students. Presence Questionnaires in VR (values 1-7), Technology Acceptance Model (values 1-7), and set questions of satisfaction of blended learning using VR were used to evaluate the experience of participants in VR. The total scores of pre- and post-test OSCEs (valued 0-10) were analyzed to examine the improvement in clinical reasoning skills of participants.

**Results:** Student acceptance of the VR application for clinical reasoning training was high, with a high intention to use it in the future ( $5.27 \pm 1.15$ ). Most students

were highly satisfied with the blended course integrating VR (81.5%). Findings showed the fidelity of VR facilitating clinical reasoning, with 88.0% of students stating that working through the VR case was a worthwhile learning experience. The improvement in clinical reasoning skills after the course was statistically found, with a mean difference of performance scores between pre-and post-test of 3.14 ( $p < 0.001$ ). Some students experienced minor difficulties in navigating within the virtual cases and the limitation of time taken to complete the case. Gender, ocular conditions, and cybersickness symptoms were found statistically associated with students' acceptance and experience in VR ( $p < 0.05$ ).

Conclusions: Incorporating VR into a blended learning course is an applicable promising innovative format to facilitate the clinical competence or reasoning ability of medical students. Further efforts to develop multiple cases in VR and apply augmented reality to provide higher fidelity of simulation and complete virtual patients exhibiting expressions and disease symptoms are highly recommended.

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### Indian experience of tetanus - a study from South India

Dr V S<sup>1</sup>

<sup>1</sup> AFH India

Introduction: Tetanus is an old world disease where 2 centuries ago people had realised the link between wound leading to muscle spasm and fatality, Even today there are many cases fatalities of tetanus being reported from different parts of the country even after viability of a Tetanus toxoid and Immunoglobulin injections . This one of very few recent studies done in India on Tetanus, As there is very less data available on Tetanus so we are trying to share our experience on Tetanus, so it will help the physicians to get a better understanding.

Materials and Methods: This a retrospective study done collecting patients detail from 2017- 2019,detailed case sheet review was done and the patients clinical presentation and prognosis was noted in predesigned format. Inclusion criteria – All diagnosed case of tetanus,Exclusion criteria – patient already received treatment from local hospital,.The patient details were kept confidential during all times

Results: The total of 58 cases -35 males and 23 females, The average duration of hospital stay was 15 days .The most common occupation were farmers (bare foot workers).The site of injury was foot in 65% cases followed by injuries to the fingers or the hand in 30% and 5% cases due to injury while tooth picking with pin, splinter removal using pins. Clinical symptoms - Trismus "Lock jaw"(41), difficulty in walking(2), limb pain/stiffness(17), back muscle,pain/stiffness(12,) Dysphagia(7),72% autonomic dysfunction. Opisthotonus position and Riscus sardonius developed after 7-8days of infection. 20% cases were vaccinated still developed diseases. 18% mortality was noted most cases were unvaccinated cases .

Conclusion: Tetanus is preventable diseases; If TT vaccination and immunoglobulin are administered on time. In all primary health care levels cold chain should maintained for vaccines. The patients should be made sensitized about the consequence of the diseases process.

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### What training and competencies are required for public health practitioners to support the digital transformation of public health? A rapid review

Ihoghosa Iyamu<sup>1</sup>, Mark Gilbert<sup>1</sup>, Andre Kishniruk<sup>2</sup>, Swathi Ramachandran<sup>3</sup>, Hsiu-Ju Chang<sup>3</sup>, Francisco Ibáñez-Carrasco<sup>4</sup>, Catherine Worthington<sup>5</sup>, Hugh Davies<sup>1</sup>, Geoffrey McKee<sup>3</sup>, Adalsteinn Brown<sup>4</sup>

<sup>1</sup>School of Population and Public Health (SPPH), University of British Columbia (UBC) British Columbia Centre for Disease Control Canada, <sup>2</sup>School of Health Information Science, University of Victoria, BC, <sup>3</sup>British Columbia Centre for Disease Control Canada, <sup>4</sup>Dalla Lana School of Public Health, University of Toronto, Ontario, <sup>5</sup>School of Public Health and Social Policy, University of Victoria, BC Canada

Background: The COVID-19 pandemic highlighted the importance of digital technologies (DTs) in sustaining health systems especially in crises but emphasized gaps in the workforce's capacity to deploy DTs, while upholding ethical, social justice and health equity principles. Current practice and competency frameworks have not adequately considered prominent roles DTs play in contemporary public health. Many public health training institutions have struggled to integrate DTs in their curricula. To support updates to Canadian public health curricula, we are conducting a rapid review to identify training and practice competency recommendations to enhance public health practitioners' capacity to support the digital transformation of public health.

Methods: Following the World Health Organization's (2017) guidelines for rapid reviews, we searched OVID Medline, OVID Embase, ERIC, and Web of Science for peer-reviewed articles using search terms related to public health, digital health, and training and practice competencies. We also searched Google scholar, public health agency and public health training associations' websites. We included articles proffering training and practice competencies recommendations for DTs among population and public health practitioners, published in English between January 2010 and December 2022. We excluded articles exploring a solely medical perspective.

Results: Our search returned 1695 titles and abstracts. Screening will occur in two phases. First, we are reviewing titles and abstract based on above inclusion and exclusion criteria, before repeating the process with full texts. We will extract recommendations for training and practice competencies, and disciplinary perspectives and educational approaches required to facilitate identified recommendations.

Conclusion: This review is a first step in efforts to fill human resource capacity gaps related to DTs. Considering this review synthesizes training and practice competency recommendations worldwide, we will further conduct environmental scans and focus groups with Canadian public health practitioners and researchers to identify recommendations that can be integrated in the Canadian context.

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### Tobacco as a threat to the environment: an experimental awareness campaign targeted at youth

Martina Antinozzi<sup>1</sup>, Nicola Calcavecchia<sup>2</sup>, Maria Assunta Donato<sup>1</sup>, Caterina Ferrari<sup>1</sup>, Giulia Gatti<sup>2</sup>, Giusy La Fauci<sup>3</sup>, Francesco Mondera<sup>1</sup>, Raffaella Sibillio<sup>4</sup>, Maria Sofia Cattaruzza<sup>4</sup>

<sup>1</sup>Sapienza University of Rome Department of Public Health and Infectious Diseases Piazzale Aldo Moro, 5, 00185, Rome, Italy, <sup>2</sup>University of Genoa, <sup>3</sup>University of Bologna Unit of Hygiene, Department of Biomedical and Neuromotor Sciences Italy, <sup>4</sup>University of Genoa Department of Health Sciences Italy

Background: we wrote short informative articles on each one. Meanwhile, we developed two different 7-question surveys to be answered: before reading the ebook (t0) to analyze baseline knowledge and after reading it (t1), to assess possible improvements.

Results: The campaign is still ongoing. At the moment 579 people read the ebook in 7 different countries (EU and US area). We collected 163 answers for t0 and 149 for t1. Respondents are university students with a mean age of 20.8 (DS±1.62), 73.6% are females, 69.9% come from central Italy. Only 4% already hold a university degree and 92.6% are studying in the healthcare sector. At t0, the mean of correct answers was 2, whereas at t1 it became 4, with a median value of 5 correct out of 7 total.

Conclusion: This ebook is just a first step in digital scientific dissemination on tobacco control. As a pilot project, it underlines the importance of content sharing and brainstorming in digital science communication and paves the path to a new concept of health promotion in the digital era.

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### Integrated case management: a tool capacitating the resident trainees on the six roles of primary care provider

Anna Limpoco<sup>1</sup>, Reggiena Lachica<sup>1</sup>, Aileen Espina<sup>1</sup>

<sup>1</sup>Philippine Academy of Family Physician Philippines

Background and objective: Primary care provides the first contact, comprehensive, coordinated and continuity of care in the context of a patient centered, family focused, community oriented (PFC) lens. There is a need to capacitate health care providers on the roles of a competent health care provider, researcher, leader, educator, navigator and coordinator for a successful delivery of primary care. To present an innovation in training to capacitate residents on the roles of a primary care provider .

Method: The integrated case management is an innovation from the usual clinical case management. The resident trainee are required to present one actual patient encounter in the integrated case management session. The integrated case management is an interactive case discussion that is divided into four parts. Part I is the PFC matrix table which highlights the patient centered management using biopsychosocial approach, wellness and prevention. Family focused management are based on the analysis of family assessment tools. Community oriented care is based on the analysis of community resource awareness, access and utilization. Part II is the identification of the six roles applied to the patient, family and community management. Part III is the critical appraisal of an article that

best answers the clinical dilemma encountered by the resident during the actual patient encounter or course of management. Part IV is the overall insight of the experience using the DSAQ (discoveries, surprises, affirmations and questions) format.

Results: There is acceptability and positive feedback from the resident trainees on the utilization of the integrated case management. The competencies on the six roles of a primary care provider vis a vis in the context of a patient centered, family focused and community oriented lens is further enhanced.

Conclusion: Integrated case management is one innovation that include experiential and reflective learning via facilitated case discussion.

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### Training, qualification and title of health professional specialists in Brazil

Cristiana Carvalho<sup>1</sup>, Cristiana Carvalho<sup>2</sup>, Ana de Assis Chagas<sup>3</sup>, Ana de Sousa van Stralen<sup>4</sup>, Samuel da Silva<sup>4</sup>, Fabiana Pimenta<sup>3</sup>, Valéria Goulart<sup>5</sup>, Leda de Oliveira<sup>5</sup>, Sabado Girardi<sup>4</sup>

<sup>1</sup>Pontifical Catholic University of Minas Gerais (PUC-MINAS) and Federal University of Minas Gerais (UFMG) Brazil, <sup>2</sup>Pontifical Catholic University (PUC-MINAS) and Federal University of Minas Gerais (UFMG) Brazil, <sup>3</sup>Federal University of Minas Gerais, <sup>4</sup>Federal University of Minas Gerais Brazil, <sup>5</sup>Oswaldo Cruz Foundation Brazil

Background and objective: The growing demand for health professional qualifications and new skills for the job market has expanded the requirements and possibilities for specialist training. In this scenario, different postgraduate education modalities have emerged. This study aimed to raise the different formative, normative, and potential arrangements for specialist training for health professionals in Brazil.

Methods: We carried out documentary research in which we consulted the legislation referring to the training and qualification of health professional specialists, including norms of regulatory councils of the following professions: dentistry, medicine, nursing, pharmacy, physiotherapy, and psychology.

Results: In Brazil there are different modalities of postgraduate training, including specialization courses, residencies, masters, and doctorate degrees. These modalities are different in workload, pedagogical requirements, and credentials, which may or may not be recognized by the regulatory bodies of each profession. Title and professional registration show significant differences, without any standardization regarding the recognition of specialists, which vary from completing residency programs to proving work experience and title examination. However, professionals can freely exercise any specialty, regardless of registration by the regulatory body. There is also a significant difference in the number of specialties recognized by the respective regulatory bodies. Ranging from 13 for psychology, 55 for medicine, to 142 for nurses, defined independently of the actual need for health services.

Conclusions: In Brazil, training for specialists includes different modalities, but most health professionals practice their specialty regardless of having a course and/or specialist title recognized by their regulatory body. Health activities require adequate training of professionals with a high degree of qualification and a profile suited to meet the health needs of the population. However, the different postgraduate modalities available and the requirements of the regulatory bodies are not always in tune with each other in order to meet society's demands and train qualified professionals.

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### Lessons from India: outcomes of an overseas field trip for public health students

Ranjit Khutan<sup>1</sup>, Bhawna Solanki<sup>2</sup>, Himanshu Mittal<sup>3</sup>, Ranjit Khutan<sup>1</sup>

<sup>1</sup>University of Wolverhampton United Kingdom, <sup>2</sup>University of Wolverhampton, United Kingdom, <sup>3</sup>Stride Education, India

Background and objective: Working in partnership with education and health organisations in India, this field trip aimed to enhance public health students' knowledge and experiences of working with diverse communities.

Methods: Focussing on public health needs, students could reflect and relate these to their own needs and experiences. This experiential learning programme provided students with an opportunity to compare and contrast how public health practitioners addressed health needs in India and explore the impact of policy and funding on practice.

Results: Five groups of around 20 students have been on the field trip since 2014. Students learned about government-initiated public health approaches as well as those coordinated and delivered by NGOs and local populations. The outcomes

were assessed through reflective accounts, video diaries and interviews. These highlighted that they were able to appreciate how culture influenced health beliefs and public health practice; they were also able to understand the role the government, NGOs, faith organisations and the collective efforts of society to protect and promote health. This experience enhanced students' understanding of public health and gave them experiences and insights into practice that could not have been gained from reading alone.

Conclusions: The COVID-19 pandemic has reminded us that public health education needs to be global and not bound by national or geographical boundaries, so we are maintaining connections with our partners in India to support learning for public health students in both countries. We are providing a virtual experience through the reflective accounts that were gathered on the field trips and through online discussions with practitioners and public health students in India.

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### Education A powerful tool for combatting health effects of climate change

Laurent Chambaud<sup>1</sup>, John Middleton<sup>2</sup>, Tara Chen<sup>3</sup>, Rana Orhan<sup>4</sup>, Robert Otok<sup>5</sup>

<sup>1</sup>Association of Schools of Public Health in the European Region France, <sup>2</sup>Association of Schools of Public Health in the European Region United Kingdom, <sup>3</sup>Association of Schools of Public Health in the European Region, <sup>4</sup>Association of Schools of Public Health in the European Region Netherlands, <sup>5</sup>Association of Schools of Public Health in the European Region Belgium

Background and Objectives: There are calls for urgent climate action to combat climate change, usually focused on mitigation such as renewable energy sources, protection of coastal wetlands, and agroforestry measures. However, we often ignore one of the most important tools for climate action: education. ASPHER aims to foster learning and knowledge about the relationship between health and climate change, by training not only the future health workforce but also stakeholders to develop effective climate change responses and engage in a societal transformation for a healthier future.

Methods: ASPHER conducted an online survey to look at the implementation of climate education and climate action taken by public health institutions to provide a baseline assessment. This supported the development of ASPHER's climate-Health implementation strategy for action through partnership-building for collective impact.

Results: The survey results found a lack of a systematic approach and ad hoc actions by public health academic institutions. ASPHER has embodied the findings to deliver actions in practice by leveraging the EU Health Policy Platform; developing a joint climate-health education statement, and hereby receiving institutional support at various levels. This has triggered the formal development of a working group of ASPHER members to synergize climate-health education activities to support knowledge-sharing and lessons learned across institutions adopting climate-health education to its curricula.

Conclusions: Supporting the call for climate-health education at the workforce and trainee level can catalyze long term transformation as it fosters behavioural change in traditional operations and roles. Climate-health education is more than ensuring environmental literacy but supporting the role of public health and health professionals of the most effective ways to act on climate change and to build a climate resilient health system.

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### Training in health promotion for nurses

Manon Duay<sup>1</sup>, Nathalie Déchanet<sup>2</sup>

<sup>1</sup>HES-SO University of Applied Sciences and Arts Western Switzerland Rte des Arsenaux 16a, 1700 Fribourg, Switzerland Switzerland HES-SO University of Applied Sciences of Western Switzerland / School Nursing Fribourg Rte des Arsenaux 16a, 1700 Fribourg Switzerland, <sup>2</sup>University of Applied Sciences of Western Switzerland (HES-SO), Fribourg, Switzerland HES-SO University of Applied Sciences of Western Switzerland / School Nursing Fribourg Route des Arsenaux 6a, 1700 Fribourg Switzerland

Background and objective: Nurses have an important role to play as health promoters (Donaghy et al., 2022), however the concept of health promotion is not always well understood. In nursing practice, it is sometimes reduced to prevention, pitting health against disease, or focusing on individual determinants of health without considering socio-environmental determinants, or sometimes focusing on a health education approach where the professional already knows what is good for others.

The objective of the presentation will be to illustrate a health promotion training

course for public health professionals (PHPs) using a participative approach, considering the determinants of health as a whole and identifying opportunities for health promotion practice through community immersion.

Methods: Creation of a teaching method during an undergraduate degree of Science in Nursing at HES-SO University of Applied Sciences and Arts Western Switzerland, by a socio-constructivist approach that aims to do a community assessment with a population concerned by a health challenge. This 12 day-course over 3 weeks seeks to enhance group empowerment and participation of stakeholders based on a salutogenic approach.

Results: In this course, students are divided into groups of 4-5 and are invited to carry out a health promotion project, with a population/community. This project-based approach enables the development of their health promotion posture, which is based on the principles of empowerment, health determinants perspective and community participation, with a view to transferring it to more conventional fields of practice (hospital, home care, ...). To encourage their success, a partnership is established with actors in extra-hospital settings (schools, neighbourhoods, communities).

Conclusion: The presented course on health promotion gives the opportunity to improve community engagement and to improve partnerships between actors in the health system.

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### Framing public health education to meet the needs of professionals for war and peacebuilding

Colette Cunningham<sup>1</sup>, Lisa Wandschneider<sup>2</sup>

<sup>1</sup>School of Public Health, University College Cork ASPHER Western Gateway Building 4.31, University College Cork. Ireland, <sup>2</sup>Bielefeld University

Background and Objectives: Public health plays a crucial role in restoring, protecting, and promoting health of affected populations in times of war and armed conflict. Even though health effects of war are well explored, the development of competencies to address the public health impact has received little attention in public health curricula. Evidence shows that displacement of people and medical staff and attacks on healthcare facilities is on the increase in wars putting the provision of healthcare under pressure. Therefore, public health professionals need to adapt to new ways of working in times of war and peacebuilding.

Methods: To strengthen War and Peacebuilding specific competencies, we suggest building upon the WHO-ASPHER Competency multi-dimensional Framework. It provides an already established framework for Schools of Public Health and additional public health organizations and, at the same time, can be extended to understand and prevent the political, economic, social, and cultural determinants of war.

Findings

We explore and highlight linkage points for adapting public health curricula and defining competencies specific to war and peacebuilding in public health in the respective Framework categories. For example, international frameworks on war, peacebuilding, and healthcare as well as potential ethical dilemmas need to be addressed in law policies and ethics competencies. As for leadership and systems thinking, public health emergency management and risk communication in times of war need to be addressed.

Conclusions: To equip the public health workforce for times of war and peacebuilding, training resources and curricula need to catch up. Our proposed adapted competency framework could help as a first step with that adaptation and highlights synergistic effects with related fields such as outbreak control, disaster management and humanitarian work.

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### Community-based strategy for peer education on sexual and reproductive rights in the community of basurú istmina, chocó colombia, 2021-2022

Jhon Patiño Rueda<sup>1</sup>, Jovana Cañas<sup>1</sup>, Honoria Rengifo<sup>1</sup>

<sup>1</sup>Research Line on Health Systems, Childhood, Gender, Interculturality and Tropical Diseases, Research Group on Public Health, Medical Education and Medical Professionalism, School of Medicine, Universidad de los Andes, Bogotá DC, Colombia

Background and Objective: The Afro-Colombian community of Basurú is in the department of Chocó, Colombia. Several reports show that the Sexual and Reproductive Health (SRH) situation of women in this department is not the best. Knowledge of Sexual and Reproductive Rights (SRHR) has been associated with increased SRH. Peer Training Strategies (PTS) have been shown to be effective in improving SRHR knowledge. The objective of this study was to implement

a community-based PTS on SRHR of Basurú, Municipality of Istmina, Chocó, Colombia, 2021-2022.

Methods: A study with qualitative methodology and Participatory Action Research design was conducted. We co-worked with the women of the Basurú community. Three phases of work were carried out: research, education and design, and action. In the research phase, the work methodology was contextualized, adjusted, and adapted, community leaders were identified and SRH work topics were prioritized. In phase two, the PTS was designed through various design cycles and iconographic and thematic validation with community. A Before/After evaluation was conducted to assess the increase in knowledge given the PTS through linear regression.

Results: Five workshops, with a participation between 4 and 40 women, were held to co-construct a flip chart based on 14 topics. For each topic, introductory questions, a definition, recommendations, and questions for discussion were developed. These topics were organized along three thematic lines: cross-cutting topics, sexual rights, and reproductive rights. A facilitators guide was created with didactic and playful activities for each practice. The pilot was carried out with a group of 36 women from Istmina. It was shown that the strategy improved knowledge about DSDR by 1.85 correct answers (p=0.001).

Conclusion: The PTS co-constructed in the Basurú community could be used in other similar contexts to train in SRHR as it proved to improve knowledge on this topic.

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### Is public health education and training adequately responding (or not) to emerging priorities?

Christina Severinsen<sup>1</sup>, Geri Seeley<sup>2</sup>, Leanne Coombe<sup>3</sup>, Priscilla Robinson<sup>4</sup>

<sup>1</sup>Massey University New Zealand, <sup>2</sup>World Federation of Public Health Associations George Washington University United States, <sup>3</sup>World Federation of Public Health Associations, <sup>4</sup>World Federation of Public Health Associations La Trobe University United Kingdom

Background: Work by the World Federation of Public Health Associations' Professional Education and Training (WFPAPET) working group has identified several areas of the current public health environment in which practitioners need to have a basic understanding to prepare them for the future of the field but are not necessarily included in public health competency sets or curriculums. The emerging and important public health issues identified were OneHealth, Systems Thinking, Public Health Ethics, and Disaster and Emergency Health.

Methods: A panel was organized and moderated by John Middleton (Association of Schools of Public Health in European Region), with Laura Khan (OneHealth), Carol Stewart (Disaster and Emergency Health), Helen de Pinto (Systems Thinking), Michael Moore (Political Engagement), and Jim Thomas (Public Health Ethics) invited to discuss challenges in integrating these specialties into public health education, training, and practice.

Results: Common threads across the discussion included:

- \* The current pace of change seen in these areas of public health
- \* 'Nimble' ways of identifying emerging problems
- \* Imaginative ways of teaching
- \* The need for sophisticated communication systems
- \* Understanding current political imperatives and political realities
- \* Training 'public health practitioners who understand political thinking'.

Conclusion: To enable better capacity in public health workforce means updating course materials and finding ways to integrate new materials without losing core content. Opportunities exist for a range of imaginative and nimble teaching strategies to adapt current and future training materials, including short courses; case-based approaches; and the integration of emergent public health topics. As teachers we must be mindful of the need to teach enough of everything versus a lot of nothing, losing the ability to teach specialist topics in any depth. The SARS-CoV-2 pandemic brought us a unique experience to reflect on how we teach, and learn new teaching techniques, and not spend time teaching material which is easily available online.

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### Citizen diplomacy for incidence and advocacy in public health, a new model

Eliana Martínez-Herrera<sup>1</sup>, Gonzalez Liliana<sup>2</sup>, Liliana Escobar<sup>3</sup>, Eliana Martínez-Herrera<sup>1</sup>

<sup>1</sup>National School of Public Health UA Professor Colombia, <sup>2</sup>National School of Public Health Advisor on international affairs & diplomacy Colombia, <sup>3</sup>National School of Public Health UA Advisor on international affairs &

### diplomacy Colombia

Diplomacy is becoming a word of public domain which is usually described by an adjective to indicate its area of emphasis, generally with mere academic rigor. However, understanding diplomacy and its possibilities require the consideration of two broad categories: State diplomacy and Citizen diplomacy; but also needs to be regarded as a discipline, as a profession and, as such, it should maintain several elements inherent to its nature. State diplomacy is reserved for the heads of State and Government, as well as Ministers, who follow very specific rules to promote their national interest; whereas Citizen diplomacy is allowed to the civil society to promote the social agenda by following very specific rules while using more flexible mechanisms. In order to develop a Model of Diplomacy for a School of Public Health which allows for political incidence, sanitary and health advocacy, opinion leadership and social control, in the framework of Sustainable Development Goals, climate change, common good and peace, this literature review considered State Diplomacy, Health Diplomacy, Global Health Diplomacy, Science Diplomacy, and Citizen Diplomacy taking the most valuable elements to create a new model of Citizen Diplomacy for Public Health and Higher Education. Furthermore, the proposal intends to draw a path of action by adapting to the possibilities given to civil society, on the one hand the principles, pillars and elements of State Diplomacy, as well as the qualities of a diplomat, the ranks, and the functions of diplomacy; on the other hand, the characteristics of Health Diplomacy and the attributes of Science Diplomacy; and finally the mechanisms of Citizen Diplomacy. As a results, a methodic route for Citizen Diplomacy for Public Health and Higher Education is possible to better influence, advocate, lead, and control by means of soft power on behalf of a more mature and sensitive public health.

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### Effect of therapeutic education on the adherence to nicotine replacement therapy in a smoking cessation center

Cyrine Nasrallah<sup>1</sup>, Hela Abroug<sup>1</sup>, Amani Maatouk<sup>1</sup>, Amal Gara<sup>1</sup>, Manel Fredji<sup>1</sup>, Wafa Dhoub<sup>2</sup>, Mariem Kacem<sup>1</sup>, Imen Zemni<sup>1</sup>, Ines Bouanene<sup>1</sup>, Asma Sriha<sup>2</sup>

<sup>1</sup>Department of Preventive Medicine and Epidemiology, Fattouma Bourguiba University Hospital, University of Monastir, Monastir, Tunisia, <sup>2</sup>Department of Preventive Medicine and Department of Preventive Medicine and Epidemiology, Fattouma Bourguiba University Hospital, University of Monastir, Monastir, Tunisia

Background: Reducing the use of tobacco is currently the most important public health measure that developed countries can implement. Adherence to treatment is an important determinant of the success of smoking cessation programs. Therapeutic patient education (TPE) might play a key role to improve treatment adherence and smoking cessation rates. Our study aimed to compare the effect of intensive and minimal TPE sessions on Nicotine Replacement Therapy (NRT) adherence and smoking cessation rates. Methods: A prospective cohort study was conducted at the smoking cessation center of the University hospital of Monastir. The population study involved the attendees of the center who consulted during the period from 2009 to 2013. Two groups were defined: A group received only two TPE sessions: "Minimal intervention"; and the other benefited of 3 and more: "Intensive intervention".

Results: In total, 48.7% of included patients were adherent to NRT. The level of adherence was significantly associated with the number of TPE sessions (p-value<10-4). Patients with intensive intervention documented higher rates of treatment adherence (Adjusted Relative Risk RRs: 10.98; 95% CI: 4.42-27.02). The smoking cessation rates at one year and five years of follow-up were also associated with the number of TPE sessions with a higher probability of smoking cessation among those who received intensive intervention. Crude Relative Risks were (RRc=2.6; 95% CI :1.3 - 5.4) and (RRc = 2.8; 95% CI:1.3-6.4) at one year and five-years of follow-up, respectively. Conclusions: Intensive TPE sessions are more effective on NRT adherence and on continuous smoking cessation. TPE improves smoking cessation clinics outcomes. A continuous attendance of the counseling sessions with intensive TPE sessions should be recommended as a best practice in smoking cessation programs.

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### Changes in the food consumption of university students during the years 1992-2019

Jana Babjakova<sup>1</sup>, Zuzana Stefanikova<sup>2</sup>, Katarina Vargova<sup>3</sup>, Ivana Kachutova<sup>3</sup>, Lenka Matejakova<sup>3</sup>, Martin Samohyl<sup>2</sup>, Katarina Hirosova<sup>4</sup>, Jana Jurkovicova<sup>2</sup>, Lubica Argalasova<sup>2</sup>

<sup>1</sup>Institute of Hygiene, Faculty of Medicine, Comenius University in Bratislava,

Bratislava, Slovakia, <sup>2</sup>Institute of Hygiene, Faculty of Medicine, Comenius University in Bratislava, Slovak Republic, <sup>3</sup>Institute of Hygiene, Faculty of Medicine, Comenius University in Bratislava, Slovakia, <sup>4</sup>Institute of Hygiene, Faculty of Institute of Hygiene, Faculty of Medicine, Comenius University in Bratislava, Slovak Republic

Background and Objectives: Despite decades of dietary changes, Slovaks do not consume a balanced diet and morbidity on chronic nutrition-related diseases remains high. Our research's objective was to assess university students dietary habits over 28-year period in relation to gender and trend differences, and to compare them with Slovak RDAs (recommended dietary allowances). Methods: The group consisted of 8,184 medical university students with an average age of 22.7 years (2,723 men-33.3%, 5,461 women-66.7%). This was a quite homogeneous group of young people with potential above-average knowledge of nutritional prevention and principles of healthy eating. Using a 24-hour recall, we annually obtained information about the nutritional consumption of fourth-grade students in the period from 1992 to 2019.

Results: The students consumption of fats, potatoes, legumes, sugar, and especially fruit decreased. On the contrary, the consumption of meat, meat products, poultry, eggs, vegetable fats and vegetables increased, as did the consumption of milk and dairy products and pasta among women. Fish and grain products consumption remained mostly unchanged. In comparison to women, men consume more meat, milk, dairy products, fish, eggs, cereals, potatoes, and legumes. Women consume more fruit and fruit products. The consumption of total fats, vegetables and sugar is approximately the same for both genders. Conclusions: Among students, we observe similar trends as in the general Slovak population, with significant intersexual differences. The consumption of meat is quantitatively sufficient, but the structure is unbalanced, the consumption of milk, dairy products and especially fish is insufficient, the consumption of poultry, cheese and eggs is excessive. The consumption of potatoes, vegetables and particularly fruits is critically low, even though the structure has improved. The nutritional consumption of students was not in accordance with the RDAs and intervention is needed. This work was supported in part by the grant KEGA 015UK-4/2022.

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### Using popular education in health during the COVID-19 pandemic with women who suffered violence: an experience report

Bárbara Miranda<sup>1</sup>, Ana Ferreira<sup>1</sup>, Andressa Souza<sup>1</sup>, Alice Andrade<sup>1</sup>, Carol Luiz<sup>1</sup>

<sup>1</sup>State University of Campinas - UNICAMP, Brazil

This research reports the experience of Paulo ferries itinerary, carried out in cultural circles, in Campinas/Brazil with women who suffered violence. During the new coronavirus (COVID-19) pandemic, the number of cases of domestic violence increased and the access to support services for victims, in particular in health, social assistance and public security sectors reduced. Popular health education becomes a powerful strategy in the sense of promoting actions and proposals for educational practices. Therefore, it is a priority to design and create specialized intervention programs to prevent and reduce complications that arise from violence exposure. Objectives: to report the experience of hosting culture circles through research into implementation of care for people exposed to violence, by group interfaces, from the faculty of medical sciences at Unicamp, Brazil. Method: two cycles of groups composed of 8 meetings were carried out from June to December 2021, inspired by the Freirean perspective, with women over 18 years old exposed to violence, living in the city of Campinas, Brazil. A qualitative description of the preliminary results of the intervention performed will be presented.

Results: the impact, implications and scope of violence in the participants lives was revealed in the identification of the themes: chauvinism, racism, future, dreams, being a woman, resilience, women's health, social inequality, trust issues, rights and justice, fear and self-image. The participants showed an interest in perpetuating the circle of culture among the women of the community. Conclusions: popular health education favored the exchange and reflection on what was experienced, and it was also understood in its collective dimension. The culture circle proved to be a potential tool for the empowerment of participants, based on the democratic sharing of knowledge and experiences about violence, becoming an emancipatory space for continuous learning, freedom, resistance and affective constructions.

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### The use of social media to facilitate student-led initiatives in

## undergraduate medical education

Leonard Lim<sup>1</sup>

<sup>1</sup>College of Medicine, University of the Philippines, Manila, Philippines

**Introduction:** Despite the shift to online learning brought about by the covid-19 pandemic, existing studies on social media (some) use in medical education have primarily focused on educator-led initiatives. Our study thus described student-led some initiatives and elicited perceptions of undergraduate medical students towards such initiatives.

**Methodology:** An online survey was sent out to first- and second-year undergraduate medical students from the university of the Philippines manila college of medicine. Descriptive statistics were calculated, while qualitative data from open-ended questions were grouped into prominent themes. Results of the 258 participants of the survey, 228 (88.4%) recommended the continued use of some. The most popular some platforms for different tasks were as follows: discord for studying together (71.3%) and for conducting peer tutoring sessions (33.3%); Facebook messenger for reading reminders (55.4%); telegram for reading announcements related to academics (88.4%) and administrative requirements (72.9%), and for accessing material provided by classmates (60.1%) and professors (52.3%). The high uptake of some is due to the several advantages cited, such as accessibility and cost-efficiency. Some disadvantages were cited, such as their capacity to serve as distractions and sources of social media fatigue.

**Conclusions:** Some platforms were useful for student-led initiatives, and their use should be continued and explored further. Students use of a particular some platform was dependent on their needs and the platforms features. By analyzing the perceptions of students, medical schools will be able to better integrate these initiatives into medical curricula.

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## Training of health management students in Workplace health promotion

Stela Georgieva<sup>1</sup>, Mariela Kamburova<sup>1</sup>, Dima Tsanova<sup>1</sup>

<sup>1</sup>Medical University, Pleven, Bulgaria

**Background:** Training in health management requires analytical thinking of students, proactivity and practical skills. Health managers are responsible for strict organization and best Results of the health institutions' work. Creating safe and healthy working environment for the staff is also their priority task. Concept of Workplace Health Promotion (WHP) has been discussed as an innovative and effective approach in caring for health of working population. These facts justify the inclusion of an optional discipline "WHP" in the curriculum of the masters degree "Public Health and Health Management", in Medical University – Pleven, Bulgaria. The objectives of this paper is to analyse the exam success rate, students' interest to the subject and their opinion to the usefulness of the acquired knowledge and skills.

**Materials and Methods:** Data were collected by document review of the educational documentation and interviewing students about their motivation to study this subject.

**Results:** Although in the curriculum the subject is optional but not obligatory, students appreciate its importance and show a great interest in it. They want to extend specific knowledge on Holistic workability model and to develop competencies of health promotion practitioners. The relative share of students who choose to study this subject increases each academic year from 30% in 2017 to 72% in 2021. Training outcomes are also improving from very good (4.62) to excellent (5.50) for both theoretical and practical part of the exam. More than 90% of students assess the acquired knowledge as very useful and applicable in their future professional work, and appreciate that the accent is on practice rather than theory.

**Conclusions:** Education and training in WHP helps students to acquire competencies for their future professional performance. The wide applicability of health promotion concept and positive experience of the training make the subject relevant to the curriculum of other specialties too.

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## Educational video to guide parents and caregivers of children using a clean intermittent bladder catheter

Lorita Pagliuca<sup>1</sup>, Antonia Sampaio<sup>1</sup>, Marília Lima<sup>1</sup>, Cristiana Rebouças<sup>1</sup>

<sup>1</sup>Federal University of Ceará, Brazil

**Background and Objective:** Neurogenic lower urinary tract dysfunction has a considerable impact on the quality of life and daily activities of individuals and their families. Intermittent Urethral Catheterization (UIC) is the most used therapy in these cases. Aimed to evaluate the effectiveness of the educational

video "Intermittent Urethral Catheterization in children: How to do it?" in the performance of UIC by parents and caregivers of children with neurogenic bladder. **Methods:** Quasi-experimental study, from June to October 2021, at Pediatric Hospital in Fortaleza, Brazil. The sample consisted of 30 mothers who were starting or in continuous use of the UIC, divided into two groups: Intervention Group (IG) and Comparison Group (CG). After signing the informed consent, the sociodemographic and clinical form and the King's Health Questionnaire (KHQ) was applied to both groups, as well as the pre-test, which consists of 10 questions about the content of the educational video. CG received routine guidelines from the outpatient clinic and the IG, in addition to the service guidelines, received information through the educational video.

**Results:** Sample composed mostly of women who are married or in a stable union (83%), did not work (86.6%), income of up to R\$1100.00 (67%), lived in the countryside (80%), p value 0.017. After the intervention, post-test detected a significant difference between the values of the groups, p = 0.013, where the intervention group had higher scores of correct answers with an average of 9.67 of the 10 questions. Regarding the KHQ, in the Emotions domain, the IG participants declared level 3, meaning emotional state moderately affected by the child's problem, with a standard deviation of 0.93. **Conclusions:** Intervention with an educational video is effective and contributes to family guidance, in addition to facilitating the understanding, visualization and execution of the procedure by parents/caregivers of children with this disorder.

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## Postgraduate Education in Health: A Case Report from Cabo Verde

Isabel Araujo<sup>1</sup>, António Delgado<sup>2</sup>, Deisa Semedo<sup>3</sup>, Celeste Fortes<sup>4</sup>, Francisca Monteiro<sup>4</sup>, Elen Castanheira<sup>5</sup>, Paulo Ferrinho<sup>6</sup>

<sup>1</sup>Faculty of Science and Technology, Universidade de Cabo Verde, Cape Verde, <sup>2</sup>Faculty of Science and Technology, Universidade de Cabo Verde, Ilha de Santiago, Cape Verde, <sup>3</sup>Faculty of Science and Technology, Universidade de Cabo Verde, Palmarejo, Cape Verde, <sup>4</sup>Faculty of Social Sciences, Humanities and Arts, Universidade de Cabo Verde, Cape Verde, <sup>5</sup>Faculty of Medicine, Universidade Estadual Paulista Júlio de Mesquita, Botucatu, Brazil, <sup>6</sup>Institute of Hygiene and Tropical Medicine, Universidade NOVA de Lisboa, Lisboa, Portugal

**Background and Objective:** Cabo Verde is a small island country in West Africa, composed of 10 Islands, 9 of which are inhabited and with about 500 thousand residents. The first Public University was established in 2006, based on the pillars of training, research, and extension, to provide qualified professionals and knowledge that support good health practices and promote the health of the population. In 2009 the first post-graduate course in health was implemented - Master of Public Health aligned with the objectives of the United Nations, with the National Strategic Plan for Human Resources in Health, to expand scientific research and provide the country with a Public University with quality, qualified and internationally recognized masters and doctors. The partnership with universities from Brazil and Portugal has contributed to this process.

**Methods:** Case report based on the experience of the teachers involved, annual academic reports and consultation of other relevant documents.

**Results:** From 2010 to the present date, the Uni-CV has started 3 class of masters courses in Public Health, with a total of 84 entrants. Of these 21 (25%) have completed the course, 25 (30%) are in dissertation preparation phase, 18 (21%) are in the 1st academic year, and 20 (24%) have abandoned the program. The dissertations defended and those in preparation address different areas of knowledge, aligned with the National Agenda for Health Research 2020-2024. Of the 21 students who completed the masters degree approximately 45% are full-time or part-time faculty at Uni-CV and 52% work in the ministry of health.

**Conclusions:** The local training of a contingent of masters in Public Health, contributed to research in population health, public policies, and health services evaluation, made scientific studies available to the country, and supported the creation of research groups, as well as the qualification of professionals, lecturers, and researchers.

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## The use of multidimensional scales for the evaluation of computing students' digital health literacy

Kalinka Kaloyanova<sup>1</sup>, Eliitsa Kaloyanova<sup>2</sup>, Nikoleta Leventi<sup>3</sup>

<sup>1</sup>Faculty of Mathematics and Informatics, Sofia University, Bulgaria, <sup>2</sup>365 Company LTD, <sup>3</sup>Medical University, Sofia, Bulgaria

**Background:** The importance of digital health literacy (DHL) for people to better manage their health and well-being is undeniable and last confirmed during the

COVID-19 pandemic. The study aims to analyze the relations between the health literacy (HL) scales and the levels of digital competencies. Both are required for competent DHL.

Methods: A web-based questionnaire based on the COVID-19 HL Survey was distributed among students at the Faculty of Mathematics and Informatics (FMI) at Sofia University St. Kliment Ohridski, with the approval of its ethics committee. Data was evaluated using cross-referencing of a digital competence framework - DigComp 2.2 and a health literacy framework - Health Literacy Questionnaire (HLQ). Qualitative and quantitative analyses were provided.

Results: The answers of 221 students (13 % of 1690 asked) were received. All participated voluntarily and anonymously. Searching and filtering information are reported as the easiest tasks: easy (40 % and 31%) and very easy (52 % and 39%). Evaluation of information, based on criteria of how much information is verified, up to date, and coming from official sources is posed as very important (79%, 78%, and 69%). These results correspond to the Advanced proficiency levels of "Browsing, searching and filtering data, information and digital content", and "Evaluating data, information and digital content" DigCOMP 2.2 competence areas and upper level of HLQ areas „Ability to find good health information" and „Appraisal of health information".

Conclusions: DHL is a cross-disciplinary effort. Its evaluation requires using advanced multidimensional tools. A combination of DigCOMP 2.2 and HLQ was applied for the evaluation of computing students' DHL. The study reveals the presence of high levels of digital skills is essential for the acquisition and use of valuable health information, which is a prerequisite for well-being. Fostering digital skills should be an integral part of complex HL education.

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### Factors associated with knowledge for the prescription of exercise in patients with cardiovascular risk in health personnel at the first level of care

Luis Luis<sup>1</sup>, Sol Sanchez<sup>2</sup>, Carlos Texson<sup>1</sup>, Iant Reyes<sup>1</sup>, Carolina Pérez<sup>1</sup>, Josue Villegas-Dominguez<sup>1</sup>

<sup>1</sup>Universidad Veracruzana, Mexico, <sup>2</sup>Mexico

Background: Chronic diseases are considered a public health problem, especially those that facilitate cardiovascular diseases such as overweight, high blood pressure and alterations in glucose and lipid metabolism. Physical exercise is essential for the prevention of complications and the reduction of care costs for health institutions. Objective: To analyze the factors that are associated with the degree of knowledge of first level care personnel about the prescription of physical exercise in patients with cardiovascular risk. Methods: An observational, cross-sectional and prospective study was carried out applying the "Knowledge about Prescription of Physical Exercise" test, validated in Spanish by Ortín et al., which has a maximum of 100 points in each item and a global score, obtained from averaging the evaluation of knowledge about exercise, its prescription in general, prescription in dyslipidemia, diabetes mellitus and arterial hypertension. Primary care doctors and nurses from Veracruz, Mexico were included. The variables age, sex, profession, perception of their knowledge, number of patients to whom they indicate exercise, training on the subject and institution where they work were studied.

Results: 170 participants were included, 67. % doctors, 92.9% indicate exercise to their patients and 22.9% do not have specific training to do so. The global knowledge score of the participants was 43.9(±14.1). Being a doctor showed a difference (p<0.05) compared to nursing in the level of knowledge for the prescription of exercise in patients with hypertension (42.11±22.6 vs 34.3±19.9), diabetes (75.4±24.3 vs 58.9±29.1) and in global knowledge (46.2±13.9 vs 39.5±13.7), the rest of the factors did not show statistically significant values (p>0.05). Conclusions: The level of knowledge of the first level care personnel is below half of the score, except for diabetes, for which training is required for the prescription of exercise, since these personnel are a fundamental part of the prevention process. of cardiovascular diseases.

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### DECLIC patient education program: assessment through a population health intervention research approach (LE DECLIC EPRI)

Evelyne Renault-Tessier<sup>1,2</sup>, Aurelie Bourmaud<sup>3</sup>, Edith Nebenzahl<sup>4</sup>

<sup>1</sup>Patient Education Unit, Team Share Institut Curie, Paris, France, <sup>2</sup>Université PSL (Paris Sciences & Lettres), University Paris, France, <sup>3</sup>Clinical Epidemiology Unit, A. University Hospital Robert-Debré, Université de Paris, Paris, France, <sup>4</sup>Patient Education Unit Institut Curie, Paris, France

Background and Objective: The effect of patient education on pain has been shown to be comparable to that of certain analgesics. LE DECLIC EPRI intervention, developed according to the Behavior change wheel theory of S. Michie, aims to respond to avenues for improvement in order to increase the effectiveness and scope of these interventions with the painful population followed in cancer centers.

Methods: This is a randomized stepped wedge trial carried out in the five participating hospitals for three and a half years. Two randomized groups are compared for all outcomes: an experimental group with centers providing the LE DECLIC EPRI intervention versus a control group providing usual care. The transition from the control group to the experimental group will take place every 6 months, in order to implement the intervention gradually in the centers. 270 patients are expected, 54 per center. The achievement of the multiple objectives of this study is assessed with the corresponding analytical methods, and a mixed qualitative-quantitative method will be used.

Results: The expected results will relate to the understanding in vivo and over time of the necessary transformations, in particular through the analysis of the follow-up notebooks collating the events and experiences, filled out by each team: training in patient education, local influencer module, general practitioner module and the teams of educators in each center.

Conclusions: Concomitantly constructing interventional research makes it possible to implement care while analyzing it. The corrective measures that leave room for all the creativity of the care teams combined with the patient experience are thus captured. A toolbox and recommendations for the optimal transfer and implementation of the intervention can be produced.

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### Barriers to breast self-examination among Tunisian women

Imen Bannour<sup>1</sup>, Rania Bannour<sup>1</sup>, Badra Bannour<sup>1</sup>

<sup>1</sup>Farhat Hached Sousse, Tunisia

Introduction: Breast cancer remains the most frequent female cancer in Tunisia. The prevalence rate of breast cancer has shown a peak in recent years and represents 20-25% of malignant tumors in women with an incidence in 2017 estimated at 50.17/100000 cases with a female mortality significantly high with 14.04 deaths per 100000 women per year. Breast cancer can be diagnosable at early stage using inexpensive, accessible, and easy screening programs. Usually culture, beliefs, and opinions of women affect adoption of screening techniques. Objective: This study aims to investigate barriers to breast self-examination (BSE) among Tunisian women.

Materials and Methods: A cross-sectional descriptive study was performed among women consulting the Reproductive Health Center of Sousse spread over a period of 2 months (February, March 2018). Data was collected using self-administered questionnaires.

Results: The mean age of the participants was 34 years with extremes ranging from 18 to 64 years. 47% of surveyed women have already performed BSE at least once during the last year. The main barriers found were lack of awareness about the importance of breast examination (p = 0.03), lack of knowledge about BSE techniques (p < 0.001), and lack of training by personnel of healthcare centers (p = 0.016). The score of the practice of women surveyed was average; mostly, women have intermediate results for the technique of self-examination breast. No woman had a score of 15/15. Conclusions: A better education of the practice of self-examination is essential in order to improve the screening program for breast cancer. The role of the gynecologist, general practitioner or midwife is therefore essential in education and training.

Keywords: breast self-examination, Tunisia, barriers

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### Analysis of the professional master's degree as a stricto sensu modality of training SUS professionals: a case study of PROFSAÚDE-BRAZIL

Carla Teixeira<sup>1</sup>, Carinne Magnago<sup>2</sup>, Maria Guilam<sup>3</sup>, Tania Silva<sup>4</sup>

<sup>1</sup>Fundação Oswaldo Cruz (Fiocruz), Icarai, Brazil, <sup>2</sup>Universidade de São Paulo, Brazil, <sup>3</sup>Oswaldo Cruz Foundation (Fiocruz), Brazil, <sup>4</sup>Instituto de Medicina Social, Brazil

Professional training in health was marked by numerous inducing initiatives aimed at the process of reorienting training and qualifying health professionals with a view to meeting the principles of the SUS and promoting solutions to the population's health problems. The professional master's degree (MP) has become a field of worker specialization and the production of fundamental knowledge for health services and systems, emphasizing the Professional Master's Degree in the

National Network in Family Health (PROFSAÚDE), one of the programs created in the last decade for professional qualification for the Health Unic System. Studying the modality and bringing evidence that uniquely configures the MP in the training proposals contribute to the programs fulfilling the purpose for which the model was called to exercise: professional qualification. This work aimed to analyze the norms and guidelines that regulate the professional master's degree identifying the requirements that give identity to this modality; contextualize the background to the creation of PROFSAÚDE and present its organizational and academic management characteristics; analyze PROFSAÚDE from the perspective of the identity requirements of the MP. It was a descriptive-exploratory study with a qualitative-quantitative approach, developed in two phases: the first focused on PM, as a stricto sensu modality, and the second phase with a specific focus on PROFSAÚDE. In this study, unique characteristics were identified in this type of course, requirements such as a curricular structure consistent with the purpose of the course, pertinent methodological strategies applied to the professional field, faculty with a profile for the professional area, and final products oriented to solving problems were identified as essential for MP proposals. It is evident in the findings that articulating teaching and application in the field of professional activity is a motto for MP. The study brought evidence that makes PROFSAÚDE a proposal that supports the MPs identity.

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### Integrating health sector reform strategies in developing the national training manual for community health volunteers in the Philippines

Alberto Ong<sup>1</sup>, Eunice Mallari<sup>1</sup>, Jervey Vergara<sup>1</sup>

<sup>1</sup>Culion Foundation, Mother Ignacia Avenue, Paligsahan, Quezon City, Metro Manila, Philippines

Community health volunteers (CHVs) in the Philippines, known as barangay health workers (BHWs), are important part of health system in ensuring that the health programs and services are accessible to all Filipinos. Therefore, it is important to ensure that their knowledge and skills are not only updated but also aligned with the Philippine national health sector reform strategies. This project, supported by World Health Organization Philippines, aimed to update the 2014 BHW Reference Manual, integrating different training initiatives and policies concerning them.

Consultations were done with different bureau directors of the health ministry to solicit guidance on the policies that must be considered in the development of the training manual. Recent manual of procedures of different health programs and policy issuances were reviewed to identify tasks expected from BHWs. Key informant interviews, including BHWs in select urban and rural areas, were interviewed to determine the actual tasks expected from BHWs. Training manuals from different reputable institutions were also gathered and reviewed. An initial draft was developed, and disseminated to different health ministry program managers for comments. The second draft, translated into local language, with accompanying facilitators guide was pilot tested by 20 BHWs in two urban and two rural areas for 10 days.

The national policies on BHW roles (as indicated in a legislation), competency training standard, national reorientation on health promotion, and integration of health services were incorporated in the BHW training manual. The amount of content per topic was determined by the prescribed number of hours of training in the BHW competency training standard. Compared to the 2014 version, the new manual was well received by pilot trainees because of the use of conversational national language. The manual and the facilitators guide was released by the health ministry on October 2022 for public use.

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### Group work in a health promotion subject: the role of compassion for oneself, toward others, and from others

Lisa Buckley<sup>1</sup>, Withanage Perera<sup>1</sup>

<sup>1</sup>The University of Queensland, School of Public Health, Australia

**Background and Objective:** It is argued that health promotion knowledge is developed through active participation. A key component of group work is to promote such active and engaged thinking through shared problem-solving. Our research objective was to understand students' experiences of group work in an undergraduate health promotion subject, particularly how they were related to experience of a multi-dimensional conceptualisation of compassion.

**Method:** Two cohorts of a health promotion subject within an Australian Bachelor of Health Sciences program were surveyed (online, N=42); from Semester 1, 2020 and 2021. Measures included feelings towards group work (preference for group work, individual work, and discomfort with group work) as well as compassion

(towards oneself, others, and from others) reflecting both motivation to engage with the distress and to take action and to cope with the distress.

**Results:** Positive feelings towards group work was associated with perceiving greater compassion from others as well as primary language, English. A preference for individual work was associated with avoiding classes with group work (though discomfort with group work was not). Discomfort was associated with a desire to stay quiet in groups, though preference for either group or individual work was not associated with staying quiet. Positive feelings toward group work was associated with more self-compassion but not to provide compassion or to receive compassion.

**Conclusion:** While complicated by pivoting from online to face-to-face through the semesters (due to COVID-19 lockdowns) and a small sample, we find that it is compassion for oneself, and the motivation to sit with one's own difficult feelings, that are associated with positive perceptions of group work in a health promotion subject. Suggesting that student services and support may play a key role in engagement with tasks that encourage shared problem-solving and which might help develop skills ultimately needed in multi-disciplinary practice.

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### A literature review of recovery from different disasters for developing future trainings

Vesna Karadzic<sup>1</sup>, Dragana Jovanovic<sup>1</sup>, Milena Vasic<sup>1</sup>, Biljana Kilibarda<sup>1</sup>, Miljan Ljubicic<sup>1</sup>, Verica Jovanovic<sup>1</sup>, Svetlana Vrga<sup>1</sup>

<sup>1</sup>Institute of Public Health of Serbia, Dr Subotica 5, Serbia

**Background and Objective:** In the scope of the Joint Action on Strengthened International Health Regulations and Preparedness in the EU (SHARP JA), WP8 is focusing on trainings, local exercises and exchange of working practices. Training needs assessment pointed out that recovery management is one of the topics of great interest for training and practice exchange. The aim of this study is to explore existing practices in recovery management to set up the scope of recovery management training (RMT).

**Methods:** Methodology used to fulfil the aims of this study was a literature review of scientific articles published in leading international journals in past 20 years. Key words in searching of scientific literature were: recovery, disaster, disaster management, community. In this review, two aspects were considered: recovery process after different type of disasters and areas of recovery.

**Results:** According to the type of disaster, the majority of research articles dealt with the recovery process after earthquakes (45,79%), floods (14,95%), hurricanes (14,02%), and tsunamis (14,95%), while the most prevalent areas of recovery were: households (46,15%), business (21,15%) and critical infrastructures (including energy, transport, WASH) (13,46%). Additionally, reviewed articles also considered and pointed to the potential barriers in the recovery process, as well as challenges and outcomes.

**Conclusion:** Recovery is not extensively explored in scientific literature and currently is mostly focused on narrow areas. Lessons learned on challenges and barriers from previous recovery processes should be addressed in future trainings. In building capacities in recovery management, it is of great importance to apply holistic approach.

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### Importance of motor development in the training of young athletes

Marta Wilhelm<sup>1</sup>, Marta Wilhelm<sup>1</sup>, Ágnes Nagy<sup>2</sup>

<sup>1</sup>University of Pécs Institute of Sport Sciences and Physical Education, University of Pécs, Faculty of Sciences, Pécs Ifjúság u. 6.7624 Pécs, Hungary  
<sup>2</sup>University of Pécs

**Methods:** 120 Hungarian athletes under the age of 12 took part in this research. We have developed our own test system to measure motor development level, including 6 track tests, 3 fundamental movement tests, 5 functional movement tests, 4 movement maturity tests.

**Results:** Assessed athletes have a significant degree of motor development deficiencies affecting their performance measured with field tests. Functional movement patterns show a significant correlation with field tests ( $r=0.324$ ). Athletes who had better indicators in movement maturity tests, performed significantly better in field tests ( $p=0.020$ ).

**Conclusions:** Results support our theory that a special movement development program is necessary to incorporate into already existing young athlete trainings. Coaches need to possess knowledge of age-specific training, to be able recognizing movement literacy deficits. If those deficiencies are not recognised in time, we risk to significantly impair the effectiveness of movement learning and motor control, thus also risking the development of sport talents. Ágnes Virág Nagy is a recipient

of the PhD Student Scholarship of the Cooperative Doctoral Program supported by the National Research, Development and Innovation Fund.

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### Incorporating the Sustainable development goals into the undergraduate medical curriculum

Sinead Hurley<sup>1</sup>, Freya Molloy<sup>1</sup>, Maisoon Mairghani<sup>1</sup>, David Sklar<sup>2</sup>, Debbi Stanistreet<sup>1</sup>

<sup>1</sup>Royal College of Surgeons in Ireland Ireland, <sup>2</sup>Arizona state university United States

**Methods:** Semi structured interviews were carried out with key stakeholders at RCSI to investigate their perspectives on approaches to incorporating SDGs into the medical curriculum. A sample of 11-15 participants with diverse backgrounds across a broad range of specialities were selected, using purposive sampling. Transcripts were coded and thematically analysed by adapting Brawn and Clarke thematic analysis.

**Results:** Five main themes emerged from the analysis on stakeholder perspectives: 1. Faculty Awareness, 2. Challenges of curriculum change, 3. Recognition of sustainability as a fundamental health issue, 4. Opportunities and challenges of a multicultural University and 5. Leadership needs. Both barriers and facilitators to integrating SDGs into the curriculum were explored such as an overloaded curriculum and competing agendas. Recommendations from the study were to incorporate SDG content into the RCSI medical graduate profile, into case based learning (CBL) using a standardised socio-ecological framework, provide staff with educational resources and include SDGs in future research, publications and outputs. These results will help shape the medical curriculum to incorporate sustainability concepts which is fundamental for the future of healthcare and medical education.

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### Health Literacy with the project "Pathways to Longevity" at the Social Service of Commerce - Rio de Janeiro, SESC RIO DE JANEIRO

Denise Anjos<sup>1</sup>, Suzana dos Santos<sup>2</sup>, Denise Anjos<sup>1</sup>

<sup>1</sup>Sesc RJ Brazil, <sup>2</sup>Sesc Rio Brazil

**Background and Objectives:** The Social Service of Commerce (Sesc) is an institution founded in 1946, which started with health activities only, but over the years it has expanded to many areas such as culture, sports, among others. In the 1970s, the first instrument was developed to systematize health education activities, the "Policy of Education for Health at SESC". Later, in the 2000s, the Activity Model of "Health Education" was created, a guiding document for educational practices and Health Literacy (HL) at Sesc. HL deals with the ability to access, recognize, formal and understand information about health, considering that HL permeates formal instruction and people may not be able to understand health information. **Methods:** The "Pathways to Longevity" project emerged from the need to meet the demands of the population that is assisted by SESC Rio. Such activities seek to reflect on aging, and over the years with HL practices, we have seen that walking towards longevity must start in childhood. In November 2022, SESC promoted the launch of "Monica's Gang comic book", with a large publisher to bring the childrens audience closer to HL. The comic book was developed as a methodological instrument in health actions.

**Results:** The cartoon was distributed and discussed with 3500 children participating in the activities, through the health themes contained in the comic book. The childrens good receptivity and understanding of the presented content showed how effective this method is for HL activities with this audience.

**Conclusion:** HL is a new subject in Brazil, and these discussions, actions and studies need to be expanded. With the project and use of the comic book, we realized that we need to improve the HL instruments, so that the relationship between the understanding and the applicability of the HL can be observed.

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### Bringing comprehensive sexuality education into italian lower secondary schools' practice: A pilot study

Eleonora Torri<sup>1</sup>, Rosario Galipò<sup>2</sup>, Domenico Martinelli<sup>1</sup>, Alice Chinelli<sup>1</sup>, Paolo Meli<sup>3</sup>, Antonella Camposeragna<sup>4</sup>, Laura Rancilio<sup>5</sup>, Massimo Farinella<sup>6</sup>, Ludovica Colaprico<sup>7</sup>, Sabrina Bellini<sup>8</sup>, Maria Salfa<sup>9</sup>, Marco Ubbiali<sup>1</sup>, Barbara Suligoi<sup>9</sup>, Anna Palamara<sup>10</sup>, Lara Tavoschi<sup>1</sup>

<sup>1</sup>Università di Pisa Italy, <sup>2</sup>ANLAIDS, <sup>3</sup>CICA, <sup>4</sup>CNCA Italy, <sup>5</sup>Caritas Ambrosiana Italy, <sup>6</sup>Mario Mieli Italy, <sup>7</sup>Croce Rossa Italiana Italy, <sup>8</sup>LILA Italy, <sup>9</sup>Istituto

Superiore di Sanità Italy, <sup>10</sup>Istituto Superiore di Sanità; University di Roma La Sapienza Italy

**Background:** Theoretical and research evidence indicates that comprehensive sexuality education (cse) positively impacts on behaviour and attitudes of young people, by improving sexual and reproductive health outcomes and empowering them to make free and informed choices. This study aims to describe the creation and development of a pilot cse activity in lower secondary schools (lss) within the context of eduforist project. Eduforist is funded by the italian ministry of health and involves academics, the italian national institute of health and hiv/aids civil-society organisations (csos).

**Methods:** Evidence was collected through a desk review on regional and national normative documents, international literature and guidelines regarding sexually transmitted infections (stis), relationships and sexuality education (se). An online survey was developed to collect information on duration, content and methods used to implement school-based se (sbse) in italian secondary schools from 2016 to 2020. The results of the survey and desk review, along with focus groups and open discussions involving all partners were used to define objectives, contents, methods of delivery and evaluation of the pilot activity. Additional information was added after feedback from an expert advisory board.

**Results:** A pilot activity was designed targeting lss students, in 4 different geographical regions, for a total of 11 schools involved. The activity consisted of 5 interactive interventions per class: 4 theoretical and practical modules (each consisting of a syllabus, a theoretical slides deck and a list of activating tools) and 1 intervention focusing on evaluation and deepening topics requested by the students. The evaluation have been carried out on educators' (swot analysis, diary of the field) and students' level (pre/post-tests and satisfaction questionnaires). **Conclusions:** This pilot activity represents a first step towards the implementation of an evidence-based and integrated approach to sbse, to be promoted and implemented equally across the country.

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### Comparison of conventional cardiopulmonary resuscitation (cpr) training course versus video-based simulation on nursing students of dow university of health sciences

Dr. Abbasi<sup>1</sup>, Muhammad Hydrie<sup>2</sup>

<sup>1</sup>Dow University of Health Sciences SUPARCO Road Gulzar-e-Hijri ojha campus Pakistan, <sup>2</sup>Dow University of Health Sciences

**Background and Objectives:** Conclusion:

**Methods:** This prospective experimental study recruited 60 nursing undergraduate students and were randomly divided into two groups 30 each; one group received CPR training only and other group received both CPR video and training.

**Pretest:** Students were given CPR knowledge questionnaire before the training session which comprises of 20 knowledge based questions.

**Training:** Instructor demonstrated all the necessary steps needed to perform effective CPR on a mannequin, use of airway adjuncts and step of AED. In second group video component was added, they were shown a CPR training video.

**Post-test:** After the session post-test were taken from all the students.

**Post-training skill evaluation:** All students performed hands-on performance one by one on mannequins.

**Results:** Knowledge scores in post-test were higher than in pretest. Our findings showed no difference in knowledge scores found between two groups in pretest and post-test [p-value 0.410, p-value 0.705] respectively. Analysis of skills were done by chi-square and findings showed no significant difference in steps; scene safety, check response, call for help, initiation of CPR, breathing, open the airway, steps of AED, post resuscitation care and disposition of pt in both groups [p-value >0.05].

**Funding:** The findings of this study showed that both CPR training methods were effective in improving knowledge. However, more researches are needed to be done to assess the effectiveness of video training only.

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### Permanent education as a strategy to strengthen multidisciplinary teams to work in indigenous health in Brazil

Patrícia Silva<sup>1</sup>, Rosana Antunes<sup>2</sup>, Janete Lago<sup>1</sup>, Whitney Oliveira<sup>1</sup>, Emmanuel Junior<sup>2</sup>, Alenka Bermudez<sup>1</sup>, Sabrina Soares<sup>1</sup>, Midya Targino<sup>1</sup>, Virgília Gomes<sup>1</sup>

<sup>1</sup>Ministry of Health in Brazil Brazil, <sup>2</sup>Ministry of Health in Brazil

The National Policy for Permanent Education in Health was established as a strategy of the Unified Health System for the training and development of workers. Permanent Education in Health constitutes a fundamental strategy for the transformation of work so that it becomes a place of critical, reflective,

propositional and technically competent action. In the field of indigenous health, the Special Secretariat for Indigenous Health (SESAI), created in 2010, is responsible for managing the Indigenous Health Care Subsystem (SASISUS). The Subsystem is made up of 34 Special Indigenous Health Districts (DSEI), which are units inserted in indigenous lands, enabling the organization of health care services. The Multidisciplinary Teams of Indigenous Health (EMSI), are responsible for operating in these territories and for organizing services in the DSEI and the Permanent Education activities of health professionals who work in indigenous territories, are based on the National Policy for Permanent Education in Health and by the guidelines of the National Policy for Health Care for Indigenous Peoples (PNASPI), training professionals to align their actions and offer health care services in accordance with the reality of indigenous peoples, as well as preparing them to act in context intercultural. Data from spreadsheets sent by the 34 DSEI in the year 2021 were used and according to the goals defined in the District Plan for Indigenous Health for the period 2020-2023, it was verified the reach of 76.4% and 22.5% referring to the number of qualified workers in the improvement of health work and for acting in an intercultural context, respectively. In view of this, the results achieved demonstrate that Permanent Education actions with the aim of incorporating interculturality in the health actions of professionals working in the DSEI are of great relevance for the improvement of these professionals, contributing to the improvement of health care.

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### Role of professional training institutes in building Health Workforce Capacity: example of IAPH

Abdullatif Husseini<sup>1</sup>, Faris Lami<sup>2</sup>

<sup>1</sup>International Academy of Public Health (IAPH), Amman, Jordan,

<sup>2</sup>International Academy of Public Health (IAPH), Jordan

The public health systems success depends critically on the availability of a competent workforce. As a Results, building the capacity of a public health workforce is critical to strengthening national health systems ability to address current and future population health challenges. Continuous Professional Development (CPD) for the public health workforce is essential to ensure best practices in a discipline that involves multi-professional, multi-disciplinary, and multi-organizational activities. Particularly in the wake of the COVID-19 pandemic, the significance of practice-based public health has been emphasized. So, to effectively promote, protect, and improve the population's health, public health professionals need to have a broad range of knowledge and skills. A long-standing observation has been that the public health workforce is in jeopardy, and the health workforce generally lacks adequate public health competence. In the Eastern Mediterranean Region (EMR), most countries already face an overall shortage of healthcare workers, with weak competencies, geographical maldistribution, and a lack of specialized health workers. As a specialized public health educational institution in the region, The International Academy of Public Health (IAPH) Aims at responding to current and anticipated public health training needs and forging effective partnerships and synergies to scale up public health education and capacity for more robust health systems and better population health. IAPH offers accredited training programs in various public health disciplines in different modalities, face-to-face, blended and online. In this workshop, IAPH, in collaboration with its partners, will demonstrate a model capable of sustaining capacity building and responding to public health needs during times of turmoil. Workshop Objectives: This workshop Aims to highlight the importance of capacity building for the public health workforce and how professional training institutes respond to the need of the public health workforce. The specific Objectives of the workshop are to: 1.Highlight the importance of CPD for the public health workforce, 2.Present IAPH as a model for providing multidisciplinary professional training, 3. Explain the IAPH model of online training. Key questions: 1. How to maximize the value of CPD for the health workforce? 2. How can regional training institutes contribute to filling the gap in the quantity and quality of competent professionals? 3.How does IAPH contribute to building health workforce capacity in the EMR?Workshop Topics: 1. CPD concepts and approaches, 2. IAPH training model, 3. LMS demonstration

Methods: The workshop will be started with a presentation that covers the three topics and meets the set Objectives. The facilitator will engage attendees to actively participate in the Discussion through questions and answers, sharing experiences, and providing comments and suggestions on the presented topics. A considerable time will be allocated for the wrap-up and Conclusions: Workshop evaluation: At the end of the workshop, an evaluation form will be filled out by the participants to assess the participants' satisfaction.

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### Sharing good practice from global accreditation in public health education

Friday Okonofua<sup>1</sup>, Nick Viggiani<sup>2,3</sup>, Haitham Bashier<sup>4</sup>, Colleen Fisher<sup>5,1,6</sup>

<sup>1</sup>Agency for Public Health Education Accreditation (APHEA), Nigeria,

<sup>2</sup>University of the West of England, Bristol, United Kingdom, <sup>3</sup>Agency for Public Health Education Accreditation (APHEA), United Kingdom, <sup>4</sup>Agency for Public Health Education Accreditation (APHEA), Jordan, <sup>5</sup>School of Population and Global Health, The University of Western Australia, Perth, Australia, <sup>6</sup>Department of Public Health and Preventive Medicine, Second Faculty of Medicine, Charles University, Prague, Czech Republic

In 2012 The World Health Organization (WHO) estimated a shortfall of 7.2 million professional health workers (1) and in 2022 this prediction was revised upwards to a 10 million deficit by the year 2030 (2). There is universal agreement that low and lower-middle income countries will bear the brunt of these shortfalls, referred to as an 'inverse care law where areas in most need are least served. Previously in 2006, the World Health Organization had argued that "shortfalls will require building new institutions - for example, more schools of public health are needed" (3). More recently in 2022 the strategy focussed on building the "capacity of vocational and educational institutions, including related to faculty, competency-based curriculum, clinical learning opportunities, infrastructure and technology for learning, accreditation, and regulatory mechanisms to enable increased student intake and improve and maintain the quality of education." Furthermore, these activities should be strengthened through harnessing global partnerships, financing, and technology (4). Aims and Objectives: The aim of this workshop is to transfer knowledge of some of the latest innovative practices in public health education and training identified through accreditations in four WHO regions. The objective is to increase audience knowledge and understanding of pioneering practices in public health, continuous professional development (CPD) training, curricula, programmes and schools. The longer term objective is to encourage use of online resources where examples of good practice can be shared and discussed. The format will allow for brief presentations of activities followed by discussion: 1. Integrating community outreach – Nigeria, 2. Engaging students in quality improvement - United Kingdom, 3. COVID-19 response: online workforce training – Jordan, 4. Innovating student research routes – Australia. Key question: How can accreditation and regulatory mechanisms help build and strengthen capacity of vocational and educational institutions to improve and maintain the quality of education through global partnerships and technology? References: 1. World Health Organization, Global Health Workforce Alliance 2.Health Workforce 2030: A global strategy on human resources for health. Geneva.2015 [https://cdn.who.int/media/docs/default-source/health-workforce/2014-gshrh-strategy-brochure.pdf?sfvrsn=6754197a37\(6\)](https://cdn.who.int/media/docs/default-source/health-workforce/2014-gshrh-strategy-brochure.pdf?sfvrsn=6754197a37(6)). 3. Chen L, Evans D, Evans T, Sadana R, Stilwell B, Travis P, et al. Working together for health: The world health report 2006. Geneva, Switzerland: The World Health Organization. 2006. 4. World Health Organization. Working for Health Action Plan 2022-2030. 2022. <https://cdn.who.int/media/docs/default-source/health-workforce/working4health/w4h2-action-plan.pdf?sfvrsn=7c2b5c935&download=true> [2].Links:-----[1] <https://cdn.who.int/media/docs/default-source/health-workforce/2014-gshrh-strategy-brochure.pdf?sfvrsn=6754197a3&download=true>[2] <https://cdn.who.int/media/docs/default-source/health-workforce/working4health/w4h2-action-plan.pdf?sfvrsn=7c2b5c935&download=true>

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### Preparing the public health workforce though credentials, certificates and certifications

Allison Foster<sup>1</sup>, Laura King<sup>2</sup>, Kaye Bender<sup>1</sup>

<sup>1</sup>National Board of Public Health Examiners, Washington, United States,

<sup>2</sup>Council on Education for Public Health, Silver Spring, United States

This workshop will focus on the differences and relative benefits of degrees (credentials), certificate programs and certification programs from a perspective when resources such as time and money are limited. Degrees are a time-intensive course of study designed to provide students with a balanced education and the skills necessary to pursue a specific career field. Certificates provide a relatively simple way to ensure regional workforce have learned a very specific set of skills or area of knowledge at a specific point of time. Because certificates are commonly offered online, they are a convenient short-term option for continuing education. Certifications provide employers with a reliable way to identify qualified staff who have demonstrated their knowledge in their field, their commitment, and a willingness to stay current through recertification. Certified individuals have positive incentives to life-long learning as well as marketable evidence of their competency. Certifications also provide assurance that certified employees are competent across various domains, not only in their area of specialty. The COVID-19

pandemic has highlighted the need for assurance of workforce competency and also for the ability of the workforce to learn new skills quickly. The panel will discuss the difference between certifications, degrees and certificate programs. It will explain how certification programs are developed and how employers and governments can use certifications in workforce development. The workshop will also include individuals with degrees and certifications to provide firsthand accounts of their experience. Participants will actively participate by sharing their thoughts on the advantages and barriers of degree programs, certificates and certifications in their region. They will then compare benefits of each with the needs in their country/region and will work with session leaders to develop a recommendation by the end of the session. Learning outcomes by the end of the workshop, participants will be able to: 1. Distinguish between certificates, degrees and certifications, 2. Explain how certifications ensure the workforce has the skills knowledge and abilities needed to perform in their field, 3. Understand how each option can increase employee recruitment and retention and strengthen the public health workforce

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### **Closing the gap: the distribution of postgraduate medical specialty training posts to narrow health inequalities**

Kate Atkinson<sup>1</sup>, Ginny Bowbrick<sup>1</sup>, Jack Haywood<sup>1</sup>, Adrian Brooke<sup>1</sup>, Aidan Fowler<sup>1</sup>

<sup>1</sup>NHS England United Kingdom

Outline: In England, postgraduate specialty training posts have often been distributed based on historical arrangements, meaning posts are not always best aligned with patient needs. This has resulted in an imbalance in specialty training posts. In addition, we know that around 80% of specialty trainees completing their training settle within 50 miles of where they trained, meaning there is a resultant shortage of specialist senior clinicians across the country. This imbalance of specialists contributes to health and healthcare inequalities.

In 2018, Health Education England (HEE) and NHS England (NHSE) collaboratively commenced a programme to work towards an equitable distribution of specialty training places across the country. This will result in a fairly distributed medical workforce for the future which will in turn take a step towards addressing health inequalities. The programme will both redistribute current posts as well as allocate any new posts to underserved areas.

The redistribution is based on both HEE and NHSE workforce, current and projected healthcare demand, and regional deprivation modelling. However, "receiving" regions must also be able to accommodate these additional trainees, such as providing adequate supervision.

The programme was implemented in August 2022 in three specialties – cardiology, haematology, and obstetrics and gynaecology. There is a plan to redistribute most of the remaining specialties starting in the next 7 years in 3 phases.

The workshop's purpose is to specifically discuss the programme as a form of healthcare public health policy and its resultant impact on reducing health and healthcare inequalities.

**Aims/Objectives:** The aim of this workshop will be to collaborate regarding the Distribution of Postgraduate Medical Specialty Training programme, with a focus on reducing health inequalities.

The objectives to meet this aim are:

To describe the drivers and background of the programme, including the evidence base informing the programme, To describe the modelling methodology of deciding how to redistribute specialty posts, which focus on the relationship of workforce, current, projected, and changing patterns in healthcare demand, and regional deprivation, To discuss with international partners if there are similar initiatives in different parts of the world, learning from best practice and lessons learnt, particularly in attracting and retaining the workforce in hard to recruit areas such as remote, rural and coastal locations. To discuss the intended impact on reducing healthcare inequalities in the context of other factors also contributing to unequal health, and To develop key parameters to measure the success of the intended outcome of reducing health inequalities.

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### **Advancing and building infodemic management training for public health: introducing the Society for Infodemic Management (SIM)**

Dilek Aslan<sup>1</sup>, Lucie Bucci<sup>2</sup>, Craig Thompson<sup>2</sup>, Neville Calleja<sup>3</sup>, Craig Thompson<sup>4</sup>, Lucie Bucci<sup>4</sup>

<sup>1</sup>Hacettepe University, Department of Public Health, 06100 Sıhhiye, Ankara, Turkey, <sup>2</sup>Society for Infodemic Management, France, <sup>3</sup>Ministry for Health, Department for Policy in Health - Health Information and Research,

DHIR, 95, Telghet Gwardamanga, PIETA', Malta, <sup>4</sup>Society for Infodemic Management, Les Calimottes, 44 Rue de la Capelette, 62231 Coquelles, France

Brief Outline of the Overall Workshop

The reverberations of the pandemic, magnified by the accompanied infodemic, was and remains multifaceted for both the public, and public health staff. We have learned from this crisis, the fragility and the vulnerability the public are to misinformation, affecting health outcomes, and confidence and trust with public health programs. In addition, all health care staff struggle(d) with extreme stress, fatigue, and burnout.

In September 2022, the World Health Organization (WHO) responded by publishing a policy brief calling for more training opportunities in the management of health infodemics. Unfortunately, and to date, public health workers have not benefited widely. While Governments and public health agencies wrestle and are continually challenged with the onslaught of the information, ever changing, from a multitude of trusted and untrusted sources facilitated by global interconnectivity and digitization, societally we are becoming more divided and suspicious of once trusted organisations and sources of information. It has become imperative to act with a new allied organisation with an objective to facilitate Infodemic training for professionals. With additional organisation of these trained professionals we can then rebuild/strengthen trust in public health interventions. The Society for Infodemic Management is poised to develop and lead opportunities to train and organise public health professionals.

**Specific AIMS/Objectives and Component Parts**

Education and training modules are an efficient strategy for building capacity and maintaining competencies in the public health workforce and have shown effective by the WHO at delivering infodemic management curricula to a wide audience. Despite their effectiveness, the integration of infodemic management education and training programs into public health systems has not occurred in a systematic and pedagogical method. Teaching how to use infodemic management to the public health workers is an opportunity to overcome public health issues at the global level. The objectives of this workshop are to: 1) describe the importance of infodemic management education and training for public health staff; 2) review professional competencies and public health policies required for broad acceptance of infodemic management certification; and 3) discuss the activities of the Society for Infodemic Management (SIM), an international non-governmental organization, in facilitating the integration of infodemic management education, training into public health practice.

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### **School-based comprehensive sexual health education - from evidence to implementation and evaluation: case study from Italy**

Alice Chinelli<sup>1</sup>, Lara Tavoschi<sup>2</sup>, Johanna Marquardt<sup>3</sup>, Domenico Martinelli<sup>4</sup>, Marco Ubbiali<sup>5</sup>, Alice Chinelli<sup>1</sup>, Lara Tavoschi<sup>1</sup>

<sup>1</sup>University of Pisa Italy, <sup>2</sup>University of Pisa, Italy, <sup>3</sup>Bundeszentrale für Gesundheitliche Aufklärung (BZgA), Germany, <sup>4</sup>University of Foggia Italy, <sup>5</sup>University of Verona Italy

Brief outline of the overall workshop

Sexual and reproductive health (SRH) is a key dimension of health and well-being of individuals, especially relevant for young people. Global health organisations (e.g. WHO, UNESCO, E/CDC) and multicountry reviews recognise school-based sexuality education (SBSE), as one of the most important means of promoting sexual well-being of adolescents and a key component of HIV and sexually transmitted infections (STIs) prevention. International evidence recommends that SBSE should be addressed with a global approach to sexuality, that UNESCO defines as comprehensive sexuality education (CSE). SBSE, however, is still not available for many young people around the world, including Italian adolescents. Italy, in fact, is one of a few European countries that still lacks a comprehensive approach to SBSE coherently and equally implemented across the country, or included in schools' curricula. EduForIST project, funded by the Italian Ministry of Health in 2019, aims at providing an overview of SBSE in Italy and to develop and implement two pilot projects in secondary schools across the country.

**Specific aims/objectives and component parts**

**Introduction:** Sexuality and education: how to address this dimension in schools? Sexuality education represents an educative action that, nurtured by medical and scientific information, is aimed at making people flourishing in all the directions of their existence.

\* School-based sexuality education in Europe and central asia: 2016 IPPF and BZgA initiated a scope review to get an overview of the progress made in developing and integrating SBSE into formal school settings in 26 countries of the WHO European Region. The main key findings and recommendations as well as a

global overview will be addressed.

\* Co-creation of sbse interventions in lower and upper secondary schools in Italy: EduForIST is a multidisciplinary and intersectoral project that aims at providing theoretical and practical tools for SBSE to be implemented in Italian schools.

\* Implementing comprehensive sbse interventions in Italy-experiences from the field: report on the results and evaluation of EduForIST pilot projects in secondary schools.

\* How to evaluate a sbse intervention: experience from an Italian pilot project: starting from an epistemological reflection on the concept of evaluation in education, we proposed a framework that enable sexual educators in evaluating the implementation of the pilot project, using a qualitative approach. The written texts have been analysed through a phenomenological approach, showing the strengths and weaknesses of the project, the favourable conditions of the setting/institutions and the postures requested to a competent educator.

Conclusions: Future perspectives and recommendations for sbse in Italy  
Key questions

The workshop aims at enhancing public health interest and to foster debate on the topic of SBSE and the need to promote its implementation in the school context. The following questions will be addressed: which role can school play in promoting SRH? what is CSE and which topics should address? which stakeholders should be involved in the creation and implementation of SBSE interventions? which outcomes can be evaluated and which results can be expected? how can a SBSE intervention be evaluated?

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### Updated ecdc core competencies in applied infectious disease epidemiology: Processes, outcomes and opportunities for international academic collaboration

Mary Codd<sup>1</sup>, Karl Conyard<sup>2</sup>, Katarzyna Czabanowsk<sup>3</sup>, Nadav Davidovitch<sup>4</sup>, Ralf Reintjes<sup>5</sup>, Mary Codd<sup>6</sup>, Karl Conyard<sup>7</sup>

<sup>1</sup>University College Dublin ASPHER / University College Dublin "School of Public Health, Physiotherapy & Sports Science, Woodview House, Belfield, Dublin. D004 V1W8" Ireland, <sup>2</sup>School of Public Health Physiotherapy and Sports Science, University College Dublin, Association of Schools of Public Health in the European Region (ASPHER), Dublin, Ireland, <sup>3</sup>Maastricht University, The Netherlands, <sup>4</sup>Ben Gurion University of the Negev, Israel, <sup>5</sup>Hamburg University of Applied Sciences, Hamburg Germany, <sup>6</sup>University College Dublin University College Dublin, Ireland "School of Public Health, Physiotherapy & Sports Science, Woodview House, Belfield, Dublin, Ireland D004 V1W8" Ireland, <sup>7</sup>University College Dublin ASPHER / University College Dublin, Ireland "School of Public Health, Physiotherapy & Sports Science Woodview House, Belfield, Dublin. D004 V1W8" Ireland

Workshop context

In 2008 the European Centre for Disease Prevention and Control (ECDC) published Core competencies for public health epidemiologists working in communicable disease surveillance and response. There followed Core competencies for infection control and hospital hygiene professionals (2013); Core competencies for vaccine-preventable diseases and immunisation (2017); and Core competencies on public health emergency preparedness (2017). The COVID-19 pandemic identified the need to Update ECDC Core Competencies in Applied Infectious Disease Epidemiology (UCCAIDE) to capture developments in diagnostic methods, understanding transmission dynamics, genomic analysis, disease modelling and vaccinology.

Workshop specific aims/objectives

This workshop will profile the PROCESSES and OUTCOMES of UCCAIDE. OPPORTUNITIES for collaboration to harmonise and advance public health education transnationally will be proposed and POTENTIAL USES of UCCAIDE will be discussed.

Workshop component parts

\* UCCAIDE PROCESSES: A steering group comprising ASPHER (Association of Schools of Public Health in the European Region) Executive Board and COVID-19 Task Force members, ECDC Technical Advisory Group (TAG) and selected experts undertook a comprehensive literature review of competency frameworks from ASPHER, ECDC, CDC, OECD, PAHO and WHO to develop a preliminary set of core competencies. Qualitative interviews with 42 nominated experts, supplemented by workshops with the ECDC TAG, contributed to early revisions. A survey designed using the preliminary version was distributed to public health professionals in Europe and beyond. Further revisions based on 212 responses and consultation resulted in an agreed competency framework.

\* UCCAIDE OUTCOMES: The final set of core competencies for applied infectious disease epidemiology was published in April 2022 in all European

languages (<https://www.ecdc.europa.eu/en/news-events/competencies-applied-epidemiologists-now-available-all-eueea-languages> [1]). The framework consists of 157 competencies organised in 23 domains, mapped to 6 subject areas (A-F). The subject areas, to be described in the Workshop, are: A: Essential methods for applied infectious disease epidemiology (4 domains/28 competencies); B: Preparedness, surveillance and response to infectious disease outbreaks (3 domains/29 competencies); C: Communication and advocacy (4 domains/25 competencies); D: Practice of infectious disease epidemiology (5 domains/34 competencies); E: Contextual influences on infectious disease management (4 domains/21 competencies); F: Leadership and management (3 domains/20 competencies).

\* OPPORTUNITIES FOR COLLABORATION ARISING FROM THIS WORKSHOP: To facilitate use of the competency framework a self-assessment tool (S-AT) developed by ECDC permits individuals to analyse their proficiency in each competency and to access training resources, if desired. The strengths, limitations and opportunities for using the S-AT will be profiled. A pilot project of its application in a 2022/23 Master of Public Health class will be described as a prelude to a potential collaborative project between Schools of Public Health. The objectives of the project will be to identify proficiency levels of students, thereby highlighting public health education components that contribute well to proficiency levels and those for which improvement and development may be advisable.

\* POTENTIAL USES OF THE UPDATED ECDC COMPETENCY FRAMEWORK, e.g. individual proficiency assessment; training needs-assessment in public health schools and programmes; professional development planning; potential uses in accreditation; job description development; and the complementarity of ECDC UCCAIDE with other frameworks e.g. ASPHER and UK Faculty of Public Health, will be discussed. Links:-----[1] <https://www.ecdc.europa.eu/en/news-events/competencies-applied-epidemiologists-now-available-all-eueea-languages>"

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### World café on the health promotion posture of public health professionals

Manon Duay<sup>1</sup>, Nathalie Déchanetz<sup>2</sup>

<sup>1</sup>HES-SO University of Applied Sciences of Western Switzerland / School Nursing Fribourg Rte des Arsenaux 16a, 1700 Fribourg, Switzerland Switzerland, <sup>2</sup>School Nursing, University of Applied Sciences of Western Switzerland (HES-SO), Fribourg, Switzerland HES-SO University of Applied Sciences of Western Switzerland / School Nursing Fribourg Rte des Arsenaux 16a, 1700 Fribourg, Switzerland Switzerland

Methods: The course at the HES-SO University of Applied Sciences and Arts Western Switzerland is "Enhance his/her health promotion posture". It covers health promotion principles and the role of the nurse in various contexts: schools, health institutions, neighbourhoods, communities. The "health promoter" role is developed through the "patient-centred" approach that guides the training programme. It enables students to become aware of their health promotion posture, with a population-based approach in concrete projects in the field. Health is considered in a global and positive way, in terms of well-being and quality of life rather than risks and pathologies according to Ottawa Charter (WHO, 1986). In this workshop, we will discuss how a community diagnosis can be used in health professional training. It is inspired by the Pedagogy of the Oppressed (Freire, 1968).

The Key Questions That The Workshop Will Address Are:

\* How can health promotion be taught within the basic training of health professionals?

\* How can PHPs adopt the role of facilitators to promote community health? What experience do the workshop's participants have regarding community engagement and health promotion?

\* How to raise awareness of the health promotion posture among the participants?

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### Public health ethics in the education and training of our public health workforce

Tarun Weeramanthri<sup>1</sup>, Farhang Tahzib<sup>2</sup>, James Thomas<sup>3</sup>, Kasia Czabanowska<sup>4</sup>, Leanne Coombe<sup>5</sup>, Priscilla Robinson<sup>6</sup>

<sup>1</sup>Public Health Association of Australia Australia, <sup>2</sup>European Public Health Association, United Kingdom, <sup>3</sup>American Public Health Affiliation, United States, <sup>4</sup>Maastricht University Netherlands, <sup>5</sup>World Federation of Public Health Associations Public Health Association of Australia Australia, <sup>6</sup>World Federation of Public Health Associations La Trobe University United

## Kingdom

### Outline

Whilst the idea of the need for an ethical approach to public health practice has been around for many years, over the last 20 years there has been a specific body of work directed at identifying and defining the scope of ethical public health and getting it into practice, which is the focus of other workshops on the program.

As public health is concerned with the health of whole populations and ecosystems, rather than individuals, the conventionally described pillars of clinical ethics – autonomy, beneficence, non-maleficence, and justice – do not align with public health practice, because of the communitarian nature of public health.

Public health is concerned with populations and communities and not individuals, and with wide range issue such as disease prevention and health protection (such as screening and pandemic preparedness), risk identification and harm reduction (such as smoking and seatbelt use), and environmental protection (such as overuse of antibiotics and climate change). As a discipline it is considered as "science of social justice" and well placed to advocate for equity of access to safe health care and therapeutics, and for policy decisions which affect the health of whole populations in both health care and other areas which of direct concern to social determinates aspects of life, such as safe and secure housing, equal education, access to employment, safe food, clean air and water, not just for now but into the future.

Therefore, it is time that Public Health Ethics are incorporated into every-day public health work, taught in schools of public health, and made the business of the whole public health workforce.

In this workshop we will build on the content of other related public health ethics in practice workshops to consider how to embed public health ethics into public health curricula.

**Aims and objectives:** The aim of this workshop is to outline the current work being undertaken to define public health ethics, to identify ways in which public health ethics can be incorporated into public health education and training.

In particular, the three objectives of this workshop are to Identify the behaviours that constitute public health ethics Consider what competencies for public health ethics might inform public health education curricula, beyond merely "using codes of ethical practice" as a core competency Prioritise what public health ethics content should be taught in public health curricula.

**Key questions:** How can public health ethics content be taught in public health education and training programs AND What public health ethics teaching and learning resources need to be developed to support public health educators?

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## Decolonizing approaches to transforming public health, valuing indigenous knowledges and human rights

Emma Patu<sup>1</sup>, Summer Finlay<sup>2</sup>, Christina Ore<sup>3</sup>, Adrian Patu<sup>4</sup>

<sup>1</sup>WFPHA Indigenous Working Group WFPHA New Zealand WFPHA PHANZ New Zealand, <sup>2</sup>Indigenous Working Group, World Federation of Public Health Associations, Australia, <sup>3</sup>United States, <sup>4</sup>ManuKahu Associates Limited Indigenous Working Group WFPHA New Zealand

Indigenous Peoples globally have been practicing Planetary Health Population Health Health Promotion and Public Health for Millenia. In is embedded in our ways of knowing doing and being.

This workshop will feature Indigenous Public Health Experts who will share their knowledge and insight on how to engage, work with and for Indigneous Populations. This work shop will also serve to offer education to our broader public health community on how Indigenous knowledge underpins public health and how we can understand Indigenous knowledge systems and approaches, aligned heavily with Human rights approaches and values to strengthen public health practice and how to decolonise Public Health.

Participants with go away with practical actions and ability to apply ideas and frameworks in their practice which will help to increase efficacy in systems change approaches to address inequities for the most vulnerable populations, many of whom are Indigenous. In a world where climate change and planetary health are key to the survival of human kind it is essential that we step beyond the boundaries of what we think we know and engage in practices and knowledges that exsit and work in harmony with the environment, natural and built and are founded on the notion of the survival of the collective.

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## Spatial patterns and inequalities in skilled birth attendance and caesarean delivery in sub-Saharan Africa

Firew Bobo<sup>1</sup>, Augustine Asante<sup>2</sup>, Mirkuzie Woldie<sup>3</sup>, Angela Dawson<sup>4</sup>, Andrew

## Hayen<sup>4</sup>

<sup>1</sup>University of Technology Sydney, Sydney, Australia, <sup>2</sup>School of Population Health, University of New South Wales, Sydney, Australia, <sup>3</sup>Harvard T.H. Chan School of Public Health, Addis Ababa, Ethiopia, <sup>4</sup>School of Public Health, Faculty of Health, University of Technology Sydney, Sydney, Australia

**Background:** Improved access to and quality obstetric care in health facilities reduces maternal and neonatal morbidity and mortality. We examined spatial patterns, within-country wealth-related inequalities and predictors of inequality in skilled birth attendance and caesarean deliveries in sub-Saharan Africa.

**Methods:** We analysed the most recent Demographic and Health Survey (DHS) data from 25 sub-Saharan African countries. We used the concentration index (CCI) to measure within-country wealth-related inequality in skilled birth attendance (SBA) and caesarean section. We fitted a multilevel Poisson regression model to identify predictors of inequality in having SBA and caesarean section.

**Results:** The rate of SBA ranged from 24.3% in Chad to 96.7% in South Africa. The overall coverage of caesarean delivery was 5.4% (95% CI: 5.2% to 5.6%), ranging from 1.4% in Chad to 24.2% in South Africa. The overall wealth-related absolute inequality in having a skilled attendant at birth was extremely high, with a difference of 46.2 percentage points between the poorest quintile (44.4%) and the richest quintile (90.6%). In 10 out of 25 countries, the caesarean section rate was less than 1% among the poorest quintile, but the rate was more than 15% among the richest quintile in nine countries. Four or more antenatal care contacts, improved maternal education, higher household wealth status, and frequently listening to the radio increased the rates of having skilled attendant at birth and caesarean section. Women who reside in rural areas and those who have to travel long distances to access health facilities were less likely to have skilled attendant at birth or caesarean section.

**Conclusions:** There were significant within-country wealth-related inequalities in having skilled attendant at birth and caesarean delivery. Efforts to improve access to birth at the facility should begin in areas with low coverage and directly consider the needs and experiences of vulnerable populations.

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## Mortality from chronic noncommunicable diseases in Portuguese-speaking countries and sustainable development goals targets in 2030

Deborah Malta<sup>1</sup>, Crizian Gomes<sup>1</sup>, Guilherme Veloso<sup>2</sup>, Juliana Souza<sup>1</sup>, Patrícia Oliveira<sup>3</sup>, Paula Freitas<sup>3</sup>, Filipe Santos<sup>1</sup>, Albano Ferreira<sup>4</sup>, Paulo Ferrinho<sup>5</sup>, Mohsen Nagavi<sup>6</sup>, António Ribeiro<sup>1</sup>

<sup>1</sup>Universidade Federal de Minas Gerais, Brazil, <sup>2</sup>Universidade Federal Fluminense, Brazil, <sup>3</sup>Ministerio da Saude, Brazil, <sup>4</sup>Universidade Katyavala Bwila, Benguela, Angola, <sup>5</sup>Universidade Nova de Lisboa, Instituto de Higiene e Medicina Tropical, Portugal, <sup>6</sup>Institute for Health Metrics and Evaluation, Seattle, United States

Non-Communicable Diseases (NCDs) are one of the main global health problems, being responsible for a large number of premature deaths, disabilities and loss of quality of life. There are still few studies on the performance of the Portuguese Language Community in the 2030 Agenda, making it an opportunity to advance in this diagnosis and thus contribute to the strengthening of partnerships that allow monitoring progress in achieving the goals of the SDGs.

**Objective:** We analyzed trends in premature mortality from chronic non-communicable diseases (NCDs) between 1990 and 2019, the projections until 2030 and the risk factors attributable to these diseases in the Community of Portuguese Speaking Countries (CPLP).

**Methods:** Estimates from the Global Burden of Disease study and analysis of the burden of premature mortality from NCDs were used for nine CPLP countries, using age-standardized rates, using RStudio.

**Results:** Portugal, Brazil, Equatorial Guinea, Angola and Guinea Bissau have declining premature mortality rates from NCDs and; East Timor, Cape Verde, São Tomé and Príncipe and Mozambique showed an increase in rates. Projections indicate that none of the countries is expected to achieve the goals of reducing premature mortality from NCDs by one third by 2030. The attributable burden of disease showed that the most important risk factors in 2019 were: high systolic blood pressure, tobacco, dietary risks, high body mass index and air pollution.

**Conclusions:** here are many differences in the burden of NCDs in CPLP member countries. In addition, none of these countries is expected to achieve the goal of reducing deaths from NCDs by one third by 2030. Portugal and Brazil presented the best performances and, Angola, Guinea-Bissau, Mozambique and Equatorial Guinea, the worst. In order to make effective progress, it is imperative to build partnerships and exchanges between CPLP member countries.

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**Exploring health equity in Lesotho's child grants program**Elodie Besnier<sup>1</sup>, Thandie Hlabana<sup>2,3</sup>, Celine Sieu<sup>4</sup>, Virginia Kotzias<sup>5</sup>, Kathryn Beck<sup>6,7,8</sup>, Kimanzi Muthengi<sup>4</sup>

<sup>1</sup>Centre for Global Health Inequalities Research (CHAIN), Department of Sociology and Political Science/ Department of Public Health and Nursing, Norwegian University of Science and Technology, Norway, <sup>2</sup>National University of Lesotho, Lesotho, <sup>3</sup>University of Hull, United Kingdom, <sup>4</sup>UNICEF Lesotho country office, Lesotho, <sup>5</sup>Centre for Global Health Inequalities Research (CHAIN), Department of Sociology and Political Science, Norwegian University of Science and Technology, Norway, <sup>6</sup>Centre for Global Health Inequalities Research (CHAIN), Norway, <sup>7</sup>Centre for Fertility and Health, Norway, <sup>8</sup>Norwegian Institute of Public Health, Norwegian University of Science and Technology, Norway

Despite their growing popularity, little is known about how cash transfers can affect health disparities in targeted communities. Lesotho's Child Grant Program (CGP) is an unconditional cash transfer targeting poor and vulnerable households with children. Started in 2009, the CGP is one of Lesotho's key programs in developing the country's social protection system. Using the CGP's early phases as a case study, this research aims to capture how program stakeholders understood and operationalized the concept of health equity in Lesotho's CGP. The qualitative analysis relied on a desk review and semi-structured key informant interviews with program stakeholders. The program documents were coded deductively while the interview transcripts were coded inductively. Both materials were analyzed thematically before comparing their findings. When differences or disagreements arose within a theme, we explored potential determining factors for these variations according to the program's chronology, the stakeholders' affiliations and their role(s) in the CGP. The definitions of health equity in the context of the CGP reflected the complexity and multi-dimensional (or even debated) nature of the concept. This concept was overwhelmingly defined as focusing on children's access to health services for the most disadvantaged households. There was less agreement about other definitions of the concept, which seemed to be terminologies primarily used by specific stakeholders. These discrepancies in the definitions were further reflected in the role this concept played in the CGP, as the least common definitions were also comparatively less integrated into the program. Even the most common definitions of this concept didn't seem fully operationalized throughout the program, especially in the day-to-day operations and reporting at the local level. This operationalization gap not only affected the study of selected health spillover effects of the CGP but also might have undermined other program impacts related to specific health disadvantages or gaps.

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**Gypsies and Travellers' health status, access to healthcare and health prevention in relation to their environmental and living conditions in Nouvelle Aquitaine, France 2019-2022**Aude Mondeilh<sup>1</sup>, Stephanie Vandentoren<sup>2,3,4</sup>, Gilles Brabant<sup>5</sup>, Sahar Haidar<sup>2</sup>, Elodie Richard<sup>6,4</sup>

<sup>1</sup>Bordeaux Population Health Centre, University of Bordeaux, France, <sup>2</sup>Santé publique France, Saint Maurice, France, <sup>3</sup>Bordeaux Population Health, Université de Bordeaux, France, <sup>4</sup>PHARes, Centre Inserm U1219, Bordeaux, France, <sup>5</sup>Fédération Nationale des Associations Solidaires d'Action avec les Tsiganes et les Gens du Voyage (FNASAT-GDV), France, <sup>6</sup>Bordeaux Population Health, Université de Bordeaux, Bordeaux, France

**Background and Objectives:** Although crucial role of social determinants on health is well known; such as precarious living conditions, some underserved population remains under-investigated in France such as Gypsies and Travellers. We aimed to describe for the first time in France, Gypsies and Travellers' living conditions – including environmental exposure, and factors associated with their health status and their access to healthcare and prevention.

**Methods:** A cross-sectional study with a three-stage random sample design (living area, household, individual) was conducted between October 2019 and March 2022, in Nouvelle-Aquitaine. Trained social workers administered face-to-face questionnaires to collect data on adults and children including demographics and socioeconomic situation, living conditions, mobility, health status and access to healthcare and prevention (vaccination, screening, literacy). Anthropometric measurements, vaccination records and environmental exposure questionnaire were also collected.

**Results:** 1030 adults and 337 children were included with a very high participation rate (73.6%). For children, 77.8% had full measles-mumps-rubella vaccination

coverage, 16.2% were overweight and 7.6% suffered from behavioural and emotional difficulties. Over 74% of the households had housing insecurity, 22.2% did not have a drinking water supply, and 43% were located less than 200 meters from a major road. 71.3% of the adults were overweight (including obesity), 14.4% reported diabetes, 24.7% hypertension, and 14.0% depressive disorder. The prevalence of depressive syndrome was significantly higher in adults living in precarious and unauthorized housing than in those with adequate housing (19.2 vs 14.7%, p=0,04). Concerning access to healthcare, 82.6% had visited a general practitioner in the previous year.

**Conclusions:** Traveller children and adults faced deleterious environmental and living conditions potentially affecting their health and their access to healthcare and prevention. These Results demonstrate the need for urgent action targeting underserved populations, taking into account their specific needs.

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**Changing scenario of economic dependency and self-rated health among older adults in India from 2004 to 2018**Jyoti Das<sup>1</sup><sup>1</sup>International Institute for Population Sciences, Mumbai, India

**Introduction:** The demographic structure is changing with a continuous increase in the proportion and number of older adults. Complementary to it, the proportion of younger cohort is decreasing, levying a more significant challenge to the care and well-being of older population.

**Methodology:** This study is based on the 60 and above population using two rounds of the National Sample Survey, the 61st, 2004-05 (34,831) and the 75th, 2017-18 (42,762). For analysis, Descriptive statistics and the Probit regression model were employed.

**Results:** The Results show that although the highest proportion of elderly was completely dependent (61st round: 52% and 75th round: 47%), partial dependence had increase by 10% in 15 years. Poor SRH was higher among economically dependent older adults and remained so after considering socio-economic factors. **Conclusions:** This study recommends policy interventions related to social-welfare schemes for geriatric health—further, consideration of providing pensions to economically vulnerable social sections.

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**The socio-economic inequity in child nutritional status in Low- and Middle-income countries**Frehiwot Zurga<sup>1</sup>, Kiddus Kehali<sup>2</sup>, Firew Bobo<sup>3</sup>, Mirkuzie Woldie<sup>4</sup>

<sup>1</sup>Mizan-Tepi University, Southwest Ethiopia, Ethiopia, <sup>2</sup>Jimma University, Ethiopia, <sup>3</sup>Wollega University, Nekmete, Ethiopia, <sup>4</sup>University of British Columbia, Addis Ababa, Ethiopia

**Objectives:** Child undernutrition is a persistent public health problem contributing to about half of under-five child death in low-income countries, and it is severe among the poorest communities. The extent of socio-economic-related inequity in undernutrition within and between countries of different economic standing is still a question. This paper, therefore, aimed to examine the wealth-based inequity in nutritional status among 24 low, lower-middle, and upper-middle-income countries.

**Methods:** The most recent demographic and health survey data of children under five years got included. Inequity in child undernutrition measured by concentration index (C) values; and concentration curves. Subgroup analysis by place of residence; and sex of the child was done. We then fit bootstrapped Mata regression to check whether there is a variation in inequality of child undernutrition across different income category countries.

**Results:** The overall prevalence of child undernutrition was 35%. The figure was highest in India (47%); and Ethiopia (38.9%), while it was lowest in Turkey (8.5%). Wealth-related inequalities in child undernutrition got detected in about half of the countries and all three economic categories. Child undernutrition was highly abundant among the poor households of Turkey [C:-0.26, 95% CI, -0.31 to -0.20]; and Cameroon [C:-0.19, 95% CI, -0.22 to -0.17], and relatively it was less concentrated among the poor in Liberia [C: -0.07, 95% CI -0.11 to -0.04], and Gambia [C:-0.07, 95% CI -0.11 to -0.04]. Meta-regression analysis revealed no difference in the inequality levels between the three economic categories of countries.

**Conclusions:** The socio-economic-related inequality in child undernutrition within many of the included countries is still very significant. However, the economical category of countries made no difference in explaining socio-economic-related inequality in child undernutrition. Inter-sectoral collaboration to fight poverty and render special attention to the disadvantaged population segments would

potentially help to address the observed inequity.

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### Whistleblowing as an anti-corruption strategy in health and pharmaceutical organizations: a scoping review

Taryn Vian<sup>1</sup>, Brianna Agnew<sup>2</sup>, Keith McInnes<sup>3,4</sup>

<sup>1</sup>World Health Organization Collaborating Centre for Governance, Accountability, and Transparency in the Pharmaceutical Sector, University of Toronto, United States, <sup>2</sup>Public Health Program, Orange County Campus, University of San Francisco, San Francisco, United States, <sup>3</sup>Center for Healthcare Organization and Implementation Research (CHOIR), VA Medical Center, Bedford Massachusetts, United States, <sup>4</sup>Department of Health Law, Policy, and Management, Boston University, United States

**Background and Objectives:** Whistleblowing can bring suspected wrongdoing to the attention of someone who is in a position to rectify the problem. This can help deter corruption and promote health equity. The objective of this research is to understand the extent and type of evidence on whistleblowing as an anti-corruption strategy in health and pharmaceutical organizations in low- and middle-income countries (LMICs) and to inform future research agendas.

**Methods:** This scoping review searched the PubMed, Scopus, and Embase databases from 2005-2020, limited to English language. We also searched websites of multilateral agencies or international non-governmental organizations for policy documents, guidance and reports. Titles and abstracts were screened to remove those where the focus was not health, pharmaceuticals, whistleblowing, or LMIC context. Articles focused on research misconduct were excluded. Full text articles were assessed for eligibility on these same criteria. Included sources were analysed thematically, based on five categories including definitions and models; evidence of reporting frequency; factors influencing whistleblowing; cultural context; and outcomes.

**Results:** The review found 22 sources including reports, policies, and guidance documents (12, 55%), news articles (4, 18%), policy analyses/reviews (3, 14%), commentaries (2, 9%), and empirical studies (1, 5%). Most sources described whistleblowing policy and system components such as how whistleblowing is defined, who can report, and how confidentiality is assured. Few articles documented types and frequency of corruption identified through whistleblowing or factors associated with whistleblowing. Several studies mentioned cultural norms as a potential limitation to whistleblowing effectiveness. About one-third of the sources described fear of retaliation and noted the need to strengthen protection for whistleblowers. **Conclusions:** Research on whistleblowing is scarce in health and pharmaceutical organizations in LMIC. Documentation of policies, factors associated with whistleblowing, and whistleblowing outcomes is needed and could help countries to mainstream whistleblowing as a sectoral anti-corruption strategy.

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### Models of COVID-19 vaccination services in prison in six European countries: translating emergency intervention into routine life-course vaccination

Sara Mazzilli<sup>1</sup>, Lara Tavoschi<sup>1</sup>, Nicola Cocco<sup>2</sup>, Davide Petri<sup>3</sup>, Vlad Busmachiu<sup>4</sup>, Iakovos Stylianou<sup>5</sup>, Fadi Meroueh<sup>6</sup>, Babak Moazen<sup>7</sup>, Alicia Rosello<sup>8</sup>, Roberto Ranieri<sup>9</sup>

<sup>1</sup>Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa, Italy, <sup>2</sup>Penitentiary Infectious Diseases Service, Santi Paolo e Carlo Hospital, University of Milan, Italy, <sup>3</sup>Department of Clinical and Experimental Medicine, University of Pisa, Italy, <sup>4</sup>National Administration of Penitentiaries, Republic Of Moldova, <sup>5</sup>Cyprus Prison Department, Ministry of Justice and Public Order, Cyprus, <sup>6</sup>Centre Hospitalier Universitaire Montpellier, France, <sup>7</sup>Heidelberg University, Germany, <sup>8</sup>UK Health Security Agency, United Kingdom, <sup>9</sup>ASST Santi Paolo e Carlo Presidio Ospedale San Carlo Borromeo, San Paolo Hospital, Italy

**Introduction:** Vaccinations are one of the most powerful preventive tools discovered by modern medicine. Although expanded programs of immunization are well established in EU/EEA, significant immunity gaps and suboptimal coverage are registered among specific populations, including people living in prisons (PLP). PLP are also at increased risk of vaccine-preventable diseases (VPD) with potential outbreaks in prison, e.g. Flu, covid-19, as well as other VPDS such as HBV. The EU-funded project rise-vac, aimed at collecting models of care developed during the pandemic to design tailored vaccine delivery strategies that could be extended beyond the sole covid-19 vaccine.

**Methods:** Through a survey administered to healthcare staff working in prisons

in six countries of the EU/EEA (Cyprus, France, Germany, Italy, Moldova, up) we collected information on the implementation of covid-19 vaccination program. The following areas were investigated: challenges and barriers encountered, workload distribution, education and training activities for prison staff and PLP, referral strategies after release, and immunization information system.

**Results:** The respondents reported that in prisons covid-19 programs have been implemented efficiently. Strategies for optimal management of the vaccination campaign included: week-days dedicated to vaccination services when vaccines were delivered and immediately administered to overcome cold chain challenges; new staff recruitment and task shifting; administration of booster doses within prison premises for released individuals; distribution of informational material both to PLP and prison staff.

**Conclusions:** Our results show that universal immunization campaigns are feasible, acceptable and effective in places of detention when there is the commitment to implementing them. Evidence from the pandemic situation may inform the future provision of expanded immunization programs.

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### Multicomponent measures to assess the sustainability of diets: a systematic review

Mariana Rei<sup>1,2,3</sup>, Alexandra Costa<sup>4,5,6,7</sup>, Sofia Sosa<sup>8,9</sup>, Sofia Costa<sup>8,9</sup>, Colin Sage<sup>10</sup>, Duarte Torres<sup>10,8,11</sup>, Sara Rodrigues<sup>10,8,11</sup>

<sup>1</sup>Faculty of Nutrition and Food Sciences, University of Porto, Porto, Portugal, <sup>2</sup>Epidemiology Research Unit (EPIUnit), Institute of Public Health, University of Porto, Porto, Portugal, <sup>3</sup>Laboratory for Integrative and Translational Research in Population Health (ITR), Porto, Portugal, <sup>4</sup>Epidemiology Research Unit (EPIUnit), Institute of Public Health of the University of Porto, University of Porto, Portugal, <sup>5</sup>Laboratory for Integrative and Translational Research in Population Health (ITR), Portugal, <sup>6</sup>Faculty of Medicine, University of Porto, Portugal, <sup>7</sup>Epidemiology Research Unit (EPIUnit), Institute of Public Health, University of Porto, Portugal, <sup>8</sup>Laboratory for Integrative and Translational Research in Population Health (ITR), Faculty of Medicine, University of Porto, Portugal, <sup>9</sup>Faculty of Nutrition and Food Sciences, University of Porto, Portugal, <sup>10</sup>Laboratory for Integrative and Translational Research in Population Health (ITR), University of Porto, Portugal

**Background and Objectives:** The sustainability of a diet is difficult to measure and requires a holistic approach that accommodates the multi-criteria nature of this concept enabling more integrated measures that better reflect its complexity. Therefore, we aimed to identify multicomponent measures derived from individual food consumption data to assess the sustainability of diets in healthy adult populations.

**Methods:** We conducted a systematic review following the PRISMA guidelines. The protocol was registered in PROSPERO (registration number: CRD42022358824). Articles were identified via PubMed, Scopus, and Web of Science. The final search was conducted until September 19th, 2022, selecting references from peer-reviewed journal articles in English, Spanish, and Portuguese. The search strategy consisted of both keywords and MeSH terms. After the removal of duplicates, reviewers independently applied the eligibility criteria and, then, performed the data extraction and the methodological quality assessment of the included studies. A study was included in this review if it met the following criteria: 1) conducted in healthy adults, 2) assessed individual food consumption data, and 3) evaluated at least two components of sustainability (e.g., health/nutrition, economic, environmental, socio/cultural).

**Results:** The literature search generated 5663 references. After the duplicates were removed, 3869 references remained. Subsequently of the screening of the title and abstract, 144 references were selected for full-text review. Of these, 5 studies already met the inclusion criteria. Different multicomponent measures were observed: 2 diverse Sustainable Diet Indexes, the World Index food Sustainability and Health, the Affordability of foods, and the Ecoefficiency of foods. **Conclusions:** Different multicomponent measures were found, all of them using approaches that could be useful to easily and holistically assess diet sustainability, to follow sustainability-related changes in individual or population dietary patterns, and to study the link with long-term health outcomes in order to help in guiding future public health policies.

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### Use of child restraint systems in the Gulf region: a systematic review.

Marguerite Sendall<sup>1</sup>, Nejoood Nasher<sup>1</sup>, Shouq Baker<sup>1</sup>, Huda Almotawa<sup>1</sup>

**<sup>1</sup>Qatar University, Qatar**

Background: The United Nations General Assembly has a target to half the number of worldwide deaths and injuries from road traffic accidents by 2030. Globally, road traffic injuries and deaths are the leading cause of death for children and young adults aged 5-29 years (WHO, 2022). Child Restraint Systems (CRS) have been identified as a preventive measure. Objective: The Objective of this systematic review is to review the evidence about the use of CRS in the Gulf region.

Methods: PRISMA guidelines were used to conduct a review of the evidence-based literature about the use of CRS in the Gulf region. The search for literature was conducted on PubMed, Web of Science, Public Health ProQuest, and Cochrane. The date range was 1 January 2019 to 31 August 2022. MeSH terms were used to narrow initial search terms. Retrievals were stored in Endnote. Before manual screening, 31 duplicates were eliminated using the Al-Rayyan web tool. Three reviewers manually screened the remaining 188 studies; 12 studies were excluded. Next, 176 studies were sought for retrieval; 12 studies were not retrieved. Then, 164 studies were assessed for eligibility; 159 studies were excluded because they were not relevant, conducted in the Gulf region, older than 2019 or the population was not relevant.

Results: Five studies will be included in the final review. All studies are cross-sectional. Two studies were conducted in Qatar, two studies were conducted in Saudi Arabia and one study was conducted in the United Arab of Emirates. Preliminary Findings suggest the use of CRS in the Gulf region is influenced by a suite of different factors including lack of knowledge about risks and proper usage and the influence of local culture and attitudes. Conclusions: The authors will complete the final analysis and draw conclusions in time for the conference in May 2023.

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**Teaching and learning of social determinants in health in the region of the Americas**

**Maria Gómez<sup>1</sup>, María Gómez<sup>2</sup>, Erwin Hernández<sup>3</sup>, Camilo Correal<sup>3</sup>**

**<sup>1</sup>University of La Sabana, Sweden, <sup>2</sup>Karolinska Institutet, Sweden, <sup>3</sup>University of La Sabana, Colombia**

Introduction: The Americas region is currently considered the most unequal in the world; therefore, to overcome these inequalities, human resources in health play a central role, that is why, it is considered necessary to strengthen in the health science programs, the teaching and learning of Social Determinants in Health to promote their intervention and approach.

Methodology: A review of the literature on the teaching and learning of Social Determinants in the Americas was carried out, by searching for official documents and articles in databases (Web of Science, Clinicalkey, PubMed, Science Direct and Lilacs). 68 documents were selected and organized in the teaching and learning of Social Determinants, their relationship with Interprofessional Education, and their importance and social responsibility.

Results: The region of the Americas has made significant progress in several countries in terms of the inclusion of public policies that act on determinants and that help human health resources to be formed with a primary care approach; However, the health sciences faculties in the region must deepen their knowledge of research and pedagogical strategies that facilitate the teaching and learning of determinants; in turn, progress is observed in the inclusion of Interprofessional Education in the region.

Conclusions: The comprehensive approach to determinants in the region plays a fundamental role in reducing social inequalities and improving the health of its inhabitants.

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**Employment conditions and mental health of female migrant domestic workers in Hong Kong: a parallel mediation analysis**

**Timothy Sumerlin<sup>1</sup>, Jean Kim<sup>1</sup>, Roger Chung<sup>2</sup>**

**<sup>1</sup>The Jockey Club School of Public Health and Primary Care, The Chinese University of Hong Kong, Hong Kong, China, <sup>2</sup>The Jockey Club School of Public Health and Primary Care, Chinese University of Hong Kong, Shatin, Hong Kong**

Background and Objective: Female migrant domestic workers (MDW), approximately 8.5 million globally, often live in their employer's home under vulnerable conditions. In Hong Kong, MDWs currently comprise 5% of the population. This study was conducted to assess the association between employment conditions and mental health, and the mediating roles stress and job satisfaction have, among female MDWs in Hong Kong.

Methods: Participants completed an online cross-sectional survey. A total of 1,965

survey were collected between August 2020 and August 2021. Questions in the survey were related to MDWs Background: information, employment conditions, stress, job satisfaction, and two mental health outcomes: anxiety (General Anxiety Disorder-7) and depression (Patient Health Questionnaire-9). An employment conditions score was created to assess the cumulative effect poor employment conditions had on mental health. A multicategorical parallel mediation analysis was used to assess the direct effect employment conditions have on mental health and the indirect effects through stress and job satisfaction.

Results: Overall, 17.7% of MDWs were reported to be suffering from anxiety and 30.8% from depression. An increase in poor employment conditions was statistically significantly associated with an increase in both outcomes, while stress levels and job satisfaction mediated this association.

Conclusions: The findings call for increased scrutiny of employment conditions and mental wellbeing of MDWs.

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**Associated factors of interventions promoting COVID-19 vaccination among underserved population in the Greater Paris area and Marseille**

**Sahar Haidar<sup>1</sup>, Stephanie Vandentorren<sup>1</sup>, Elodie Richard<sup>2</sup>, Thomas Roederer<sup>3</sup>**

**<sup>1</sup>Santé Publique France, France, <sup>2</sup>University of Bordeaux, Bordeaux Population Health Center, France, <sup>3</sup>Epicentre MSF-OCP, France**

Background and Objective: Homeless people have an increased risk of infection of COVID-19, linked to several social, economic and environmental determinants, frequent comorbidities, as well as difficult access to social and health rights, medical coverage and overall insufficient use of healthcare. However, there is a lack of data not only concerning vaccination coverage but also the evaluation of interventions promoting COVID-19 vaccination among this underserved population in France. This study Aims to identify the associated factors of COVID vaccination uptake among people experiencing homelessness in the Greater Paris area and Marseille.

Methods: This multi-center cross-sectional survey took place in Marseille and in the greater Paris area. The survey, conducted from 15/11/2021 to 22/12/2021, included a representative sample of 3811 precarious people. A conceptual framework for vaccine uptake among underserved populations was proposed by integrating the behavioral model for vulnerable populations and the COM-B model (capability, opportunity, motivation and behaviour). The model included one measured variable (mobility) and nine latent variables: health literacy, information, attitudes towards vaccination, perceived needs, social support from associations and from relatives, discrimination, competing needs and accessibility to healthcare.

Results: Among the 3811 participants included in the sample, 74,5% had taken at least one dose of the vaccine. The main factors associated with vaccine uptake were attitudes towards vaccination, type of housing, vaccination history, journals and posters as a source of information, mobility, having a personal practitioner, having a healthcare coverage and having an accompaniment for an appointment. Conclusions: Disparities in vaccination coverage exist following a social gradient vulnerability. The public health system and national strategies needs to emphasize the importance to include vulnerable population from the begging on their decision-making.

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**Conditional cash transfer programs and HIV/AIDS incidence in Guatemala: an exploratory analysis**

**Ernestina Tecu<sup>1</sup>, Ernestina Tecu<sup>1</sup>, Cristian Figueroa<sup>2</sup>**

**<sup>1</sup>Universidad Rafael Landivar, Guatemala, <sup>2</sup>Instituto de Saúde Coletiva (ISC-UFBA), Guatemala**

Background and Objectives: HIV/aids incidence rose 40% during the COVID-19 pandemic in Guatemala. Previous scholarly work shows that targeting social and economic vulnerabilities reduces HIV incidence rates. Thus, this study aimed to analyze the relationship between conditional cash transfer programs (CTP) and HIV/aids incidence in Guatemala. Methods: This work is part of a larger study titled: "conditional cash transfer programs (CTP) and HIV/aids incidence in Guatemala: 2013-2021". We conducted a cross-sectional exploratory analysis for 2018. HIV/aids incidence rates, coverage of the CTP, amount of cash received, and health assistance rates were calculated for the 340 municipalities. Data was collected from Guatemala's Ministry of Health, and Ministry of Social Development. We used direct standardization method for rates comparability. We categorized incidence rates and CTP coverage for risk estimation. Finally, we investigated association through bivariate analysis.

Results: Highest coverage of the CTP was 5.2%. Municipalities in the Northeast had the higher coverages of both CPT and health assistance, and those in the metropolitan area had the lowest. Medium-sized cities in the Northern and Central regions had the highest standardized rates of HIV/aids and had no coverage of CTP. We found that HIV incidence rates were negatively correlated to CTP coverage ( $p: -0.113$   $p<0.05$ ) and the amount of cash received ( $p: -0.123$   $p<0.05$ ); and positively correlated with health assistance rates ( $p: 0.144$   $p<0.01$ ). Lastly, municipalities with CTP coverage  $<1\%$  had greater odds for having high HIV incidence rates (OR: 1.76 IC95%: 1.1 – 2.8). Conclusions: Conditional cash transfer programs are associated with the reduction of HIV/aids incidence rates. This evidence remarks the urge to include public policies targeting programmatic vulnerabilities in the HIV/aids prevention programs, in order to achieve the global agenda goals for reducing HIV transmission rates. The study's second phase will include longitudinal and multivariate analysis to better describe this association.  
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### Enhancing health equity and public health infrastructure

Kelly Morning<sup>1</sup>, Gerold Dermid<sup>2</sup>

<sup>1</sup>School of Public Health, University of Nevada, Reno, United States, <sup>2</sup>School of Public Health, University of Nevada, Reno, United States

The Nevada Public Health Training Center (NVPHTC) and Larson Institute for Health Impact and Equity (Larson Institute) have worked with health officials throughout Nevada to implement multiple workforce development assessments and create action plans based on survey findings. In 2019, NVPHTC re-launched a Workforce Development Survey to examine the status of Nevada's current public health workforce as well as competencies changes since 2015. With over 800 responses, Findings were used to identify distinctions within different populations of the public health workforce. Analysis highlighted key findings and significant differences in competencies, training preferences, and other characteristics between survey participants based on demographics such as ethnicity and race. In early 2021, the Larson Institute developed and implemented another needs assessment survey. This assessment was aimed at identifying opportunities to enhance health equity within public health programs, clinics and organizational settings. The Larson Institute leveraged its partnerships with state and local health authorities, healthcare systems, and non-profit partners to disseminate the first statewide Public Health Workforce Health Equity Needs Assessment and had nearly 600 responses. Key findings from the equity survey showcased a need for action within the public health workforce. Workforce development findings helped the Larson Institute develop Nevada's workforce by recognizing the unique needs of different members and encourage efforts to further diversify all public health roles, from support staff to directors and senior leaders. With each needs assessment, the Larson Institute supported development of comprehensive strategies for enhancing health equity and public health infrastructure. This included the development of individualized action plans and recommendations for best practices, including enhancing knowledge and promoting equity-driven conversations that address the environmental, social, and economic conditions impacting health. Beyond Nevada, this presentation will emphasize the need to act and support the advancement of health equity initiatives for healthier communities everywhere.

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### Measuring health equity in the ASEAN region: conceptual framework and assessment of data availability

Bryanna Mariñas<sup>1</sup>, Capucine Barcellona<sup>1</sup>, Si Ying Tan<sup>2</sup>

<sup>1</sup>Yale-NUS College, National University of Singapore, Singapore, <sup>2</sup>Saw Swee Hock School of Public Health, National University of Singapore, Singapore

Background: Existing research on health equity falls short of identifying a comprehensive set of indicators for measurement across health systems. Health systems in the ASEAN region, in particular, lack a standardized framework to assess health equity. This paper proposes a comprehensive framework to measure health equity in the ASEAN region and highlights current gaps in data availability according to its indicator components.

Methods: A comprehensive literature review was undertaken to map out a core set of indicators to evaluate health equity at the health system level. Secondary data collection was subsequently conducted to assess current data availability for ASEAN states in key global health databases, national health accounts, and policy documents.

Results: A robust framework to measure health equity was developed comprising 143 indicators across Health System Inputs, Outputs, and Outcomes. Across the ASEAN region, the Inputs sub-component of Health Financing had data available

for all indicators (160/160, 100%), while Access to Essential Medicine had the least data available (6/30, 20%). Under Outputs and Outcomes, Coverage of Selected Interventions (161/270, 59.63%) and Population Health (350/350, 100%) had the most data available, while other indicator sub-components had little to none ( $\leq 38\%$ ). Cambodia had the most complete data overall (79.72%) while Vietnam had the least (66.43%). Figure 1. Proposed conceptual framework for measuring health equity

Conclusions: The data availability gaps highlighted in this study underscore the need for a standardised framework to guide data collection and benchmarking of health equity in ASEAN. There is a need to prioritise regular data collection for overlooked indicator areas and in countries with low levels of data availability. The application of this indicator framework and resulting data availability analysis could be conducted beyond ASEAN to enable cross-regional benchmarking of health equity.

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### Understanding the non-use of harm reductions services by socially included women who use drugs

Sarah Perrin<sup>1</sup>

<sup>1</sup>Bordeaux Population Health - ISPED, University of Bordeaux, France

Women who use drugs represent 20% to 30% of those who visit harm reduction structures in Europe. Socially included people are also a minority in these services. Socially included women who use drugs are therefore doubly invisible in harm reduction structures. This communication Aims to explain the lower attendance by socially included women of harm reduction structures, in France and in Quebec. The results presented are based on 97 interviews carried out with socially included women and men who use drug, with harm reduction professionals and actors in drug-related public policies, in Bordeaux and Montreal. Harm reduction structures are, in both cities, more designed to meet the needs of a precarious men who use drugs. In Bordeaux as in Montreal, non-mixed spaces dedicated to women are rare, whereas non-mixed spaces have been shown to encourage the arrival of women in the services. The services and schedules proposed by the structures also correspond more to the needs of precarious drug users. However, structures exist which could better meet the needs of women and socially included people, but the drug users interviewed do not seek them either. This non-use can be explained by four main reasons: first, the participants believe that they do not need help. Secondly, some have already spoken about their drug use to professionals who are not specialized in the management of drug consumption, and they have felt judged or misunderstood, which subsequently constitutes an obstacle to health care. Third, most participants are unaware of the existing services. Fourth, the interviewees refuse to be assimilated to the marginalized public targeted by most of the harm reduction structures, in a strategy of avoiding stigma. Several recommendations can be considered to improve harm reduction among a female and socially included population, their non-use of the services constituting a public health problem.

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### Application of health equity audit to emergency care for acute myocardial infarction

Anna Acampora<sup>1</sup>, Laura Angelici<sup>2</sup>, Teresa Spadea<sup>3</sup>, Nicolás Zengarini<sup>3</sup>, Giulia Cesaroni<sup>4</sup>, Nera Agabiti<sup>2</sup>

<sup>1</sup>Dipartimento di Epidemiologia del Servizio Sanitario Regionale del Lazio, Rome, Italy, <sup>2</sup>Dipartimento di Epidemiologia del SSR del Lazio, ASL Roma 1, Rome, Italy, <sup>3</sup>Servizio Sovrazonale di Epidemiologia ASL TO3, Regione Piemonte, Torino, Italy, <sup>4</sup>Dipartimento di Epidemiologia del SSR del Lazio, ASL Roma 1, Rome, Italy

Background and Objective: Identifying and addressing health inequalities is a public health priority for Health Services to guarantee equitable access to effective care and health opportunities. Health Equity Audit (HEA) is a systematic methodology to evaluate inequalities in the distribution of health determinants, in the access to healthcare services and in the outcomes across the population, to define and implement actions to reduce them and to evaluate their impact. The objective of this work was to apply the HEA to in-hospital emergency care for Acute Myocardial Infarction (AMI) in Lazio Region, Italy.

Methods: A multidisciplinary group of different professionals was identified and an equity profile was defined. A conceptual framework was elaborated, the entry points for possible inequalities were identified. According to the framework, indicators, health determinants and data sources were identified. After data elaboration, results were fed back to relevant professionals in the participating hospitals (cardiology, emergency, health management) with the invitation to

organize audit meeting and to identify improving actions.

Results: The identified entry points include risk for AMI, access to timely health procedure, access to diagnosis and/or treatment, adherence to post-acute treatment, outcomes. Health determinants included sex, education, socioeconomic position, occupation, geographical area and country of origin. The sources of data were health information systems of the Lazio Region. Data firstly elaborated regard the inequalities in access to timely Percutaneous-Transluminal-Coronary-Angioplasty (PTCA) for patients with ST-elevation myocardial infarction(STEMI) and 30-days mortality after AMI, according to sex and education. The access to timely PTCA is lower in female while the 30-days mortality is higher in less educated patients.

Conclusions: HEA allowed to identify possible mechanisms for inequalities generation. Returning results to professionals involved in the care-pathways we expect to increase their awareness about the problems and to stimulate the adoption of improving actions and finally to reduce the gaps.

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### **Australian child and youth health and education wellbeing policy: are we addressing the social determinants of health?**

Clare Littleton<sup>1</sup>

<sup>1</sup>Torrens University Australia, Adelaide, Australia

Background: Children and youth are an important population group requiring specific policies to address their needs. In Australia, most children and youth are doing well, however, certain equity groups are not. To address health equity in policy, applying a social determinants of health approach is considered best practice. For over 10 years governments in Australia have been called upon to address the social determinants of health, however, there has been limited action. Health and education departments are typically most involved in policy development for children and youth. To date, there have been limited systematic analyses of Australian child and youth health policies, and selected education wellbeing policies, with a social determinants of health and health equity focus and this study aims to contribute to addressing this gap. Methods: We conducted a policy analysis study across 26 Australian child and youth health policies, and selected education wellbeing policies. We used an existing prior coding framework with a social determinants of health and health equity lens to understand the extent to which the social determinants of health and health equity were addressed. Policies were dated 2009 onwards.

Results: Across 26 selected policies only 10% of strategies addressed the social determinants of health. We report on the social determinants of health addressed, to some degree, which includes early childhood development, education, parental workplace conditions, healthy settings, and housing, and to a lesser extent, public transport and regulation. Conclusions: This study demonstrates a lack of policy action on the social determinants of health. Rather, the application of a siloed, and predominantly acute care approach. However, there is recognition of equity across all policies; an emphasis on housing as a determinant of health; and a link between health and education departments through education wellbeing policies, specifically addressing the issue of mental health.

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### **Defining rural surgery: the Philippine perspective**

Brent Viray<sup>1</sup>, Michael Leon<sup>2,3</sup>, Crisostomo Arcilla<sup>4,5</sup>, Anthony Perez<sup>4,5</sup>, Rodney Dofitas<sup>4,5</sup>, Jose Marfori<sup>4,5</sup>, May Viray<sup>6</sup>

<sup>1</sup>Aurora Memorial Hospital, General Emilio Aguinaldo Memorial Hospital, Philippines, <sup>2</sup>School of Health and Related Research, University of Sheffield, United Kingdom, <sup>3</sup>Institute of Public Health, Jagiellonian University Medical College, Krakow, Poland, <sup>4</sup>University of the Philippines, Philippines, <sup>5</sup>Philippine General Hospital, Philippines, <sup>6</sup>Rural Health Unit, Dingalan, Aurora, Philippines

Rural Surgery (RS) has been practiced and defined in developed countries (i.e., USA, Canada, and Australia) comprised largely of a huge land mass as general surgery practice done outside of their urban communities. It is characterized as a surgical practice that is rewarding as the surgeon is placed in professional isolation cloasely-knit personally in the community as he/she is expected to deliver even in the absence of more sophisticated health technologies and surgical techniques. The authors subscribed to these descriptions but would like to advance a more progressive and bottom-up approach of defining RS especially in an archipelagic developing country like the Philippines with 7107 islands. RS practice is generally defined as general surgery with heightened inclination on incorporating the social determinants of health on the Rural Surgeon's management algorithms and surgical Methods. While he/she performs the common appendectomies,

cholecystectomies, inguinal hernia repair and wound debridement, half of his/her management plan is formulated before and after the patient's admission. A keen inclination on how the health systems work and referral system is a large component of the plan. Rural Filipino patients are unique in the sense that mostly sought consult after initial presentation or complications of their disease because of compounding social factors like limitation in geographical access, financial capability, health-seeking behavior, and education as compared to their urban counterparts. The authors would suggest that defining RS in developing country as the practice of general surgery performed in disadvantaged areas with surgical management concocted with heightened considerations in the social determinants of health and the surgical health system of the area. Thereby, the authors also advocate that RS in the Philippines be more inclusive and should be aligned in the ongoing implementation of the Universal Health Care Act while it embraces the inevitable facets of challenging social determinants of health.

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### **Catastrophic injury related disability - A social determinant-based approach to achieving optimal community rehabilitation outcomes**

Chebiwot Kipsaina<sup>1,2</sup>, Angelita Martini<sup>1,3</sup>

<sup>1</sup>Brightwater Research Centre, Brightwater Care Group, Inglewood, Australia, <sup>2</sup>Curtin Medical School, Curtin University, Bentley, Australia, <sup>3</sup>The University of Western Australia, Crawley, Australia

Background and Objectives: Disability constitutes a major social problem. Globally, 1 billion people - approximately 15% of the population- live with some form of disability, of which one-third is as a result of preventable injury. Furthermore, nearly 4% of this population experience significant difficulties in functioning often requiring health care services. In recognizing the urgent need to attenuate the social and health inequalities associated with disability, 74th the World Health Assembly in 2021 adopted a resolution to provide the highest attainable standard of health for persons with disabilities by making the health sector more disability-inclusive and therefore ensuring no one is left behind in achieving the Sustainable Development Goals. The social determinant-based approach to disability related to catastrophic injury has seldom been applied in this area. We aim to describe the impact of health determinant approach on injury related disability rehabilitation outcomes not otherwise documented.

Methods: Prospective, mixed methods study within a Participatory Action Research approach with three-phase design: Phase 1: Scoping review of existing literature on catastrophic injury and disability. Secondary data review about injury and disability. Phase 2: Participants with catastrophic injury and disability: Development and implementation of a comprehensive general assessment database (demographics, injury details, social determinants measures, quality of life, knowledge and skills on disability), Open-ended survey; Clinical assessments. Data analysis. Phase 3: Key experts working with participants and/or with specialised knowledge: Qualitative interviews.

Results: The results will showcase the impact of applying a health determinants approach that has the potential to inform improved community-based rehabilitation and health service delivery of injury related disability.

Conclusions: New evidence will be generated regarding effective health determinants approach for addressing injury related disability and reducing health inequalities. Such information will be important to instigate the needed paradigm shift from conventional approach to disability to a social- determinant one.

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### **Inappropriate and inedible: public health insights into supermarket donations to an Australian food bank**

Sharonna Mossenson<sup>1</sup>, Roslyn Giglia<sup>2</sup>, Claire Pulker<sup>3</sup>, Christina Pollard<sup>4</sup>

<sup>1</sup>Curtin University, Australia, <sup>2</sup>Foodbank of Western Australia, Australia, <sup>3</sup>East Metropolitan Health Service, Australia, <sup>4</sup>Enable Institute, Curtin University, Australia

Background and Objective: Food banks provide food to people experiencing food insecurity, supporting the Sustainable Development Goals (SDGs) 2 and 12 (reducing hunger and waste by 2030). They source, warehouse and distribute food to community agencies and individuals, relying largely on donated food from major supermarkets. The donation of unwanted or surplus products is publicly framed as a food waste solution: rescuing tonnes of surplus food from landfill and feeding the needy. The quantity (kilograms) of donated food is well documented, but the quality is unknown. This study measured the quality of supermarket food donated to an Australian food bank. Methods: An audit of all donated food over five consecutive weekdays in May 2022 was conducted at a major food bank warehouse in Australia. All deliveries were documented using digital imagery on

a hand-held mobile device. Photographs were manually annotated to capture pre-determined public health and nutrition quality measures: type, brand and variety of product; delivery details (donor, weight of product, date marking); food safety and product quality.

Results: 1500 images collected for 72 donations, of which 36 were 'mixed loads' containing miscellaneous product lines in a single delivery. Supermarkets donated 61% of all mixed loads comprising 790 food products. Sixty-eight percent of products were categorised as ultra-processed (according to the NOVA level of processing), 9% were 'unsatisfactory' due to damaged packaging (ripped, dented +/- product exposed/leaking), compromised product (override, contaminated, blown or visible mould), or donated on/past the 'best before' or 'use by' dates. Products were sorted for distribution to clients and unsatisfactory items sent to landfill. Conclusions: The quality of foods donated by Australian supermarkets was predominantly inappropriate in terms of nutrition and safety for human consumption. There is an urgent need for a system to improve the efficiency, equity and effectiveness of food donations to food banks.

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### Equity and gender orientation of antimicrobial resistance policy formulation in Australia and Germany

Victoria Saint<sup>1</sup>, Clare Littleton<sup>2</sup>

<sup>1</sup>School of Public Health, Bielefeld University, Germany, <sup>2</sup>Torrens University, Australia

Background and Objective: Antimicrobial resistance (AMR) is one of the biggest contemporary threats to population health, food security and sustainable development globally. Significant progress has been made to tackle AMR, especially through a One Health approach. In line with the World Health Organization call to consider how AMR affects "people in their daily lives at work, home and in their communities", greater focus is needed on equity, social determinants of health (SDH) and gender dimensions of AMR. Methods: This study explored national AMR policy formulation in Australia and Germany with a focus on health equity, SDH and gender. We analysed national AMR policies in both countries and interviewed key stakeholders about the development and implementation of these policies, using a cross-disciplinary (public health and political science) approach. Results: We present cross country analysis of the two policies including conceptualisation of health and AMR, types of goals and strategies pursued, and the extent to which health equity, SDH and gender are recognised or targeted for action. We then present findings of semi-structured interviews that explore stakeholder perspectives about how health equity, SDH and gender are embedded into current policy and opportunities for expanding this focus in future AMR policies. Conclusions: While the emphasis and styles of the policies differ, in both policies equity, SDH and gender are only considered in a limited manner. The policies predominantly reflect a biomedical framing, with a narrow understanding of prevention and a focus on awareness raising and behavioural change. We discuss areas for expansion and provide insights on how the policy agenda in the future could reflect a stronger consideration of these dimensions of AMR. This cross-country study in Australia and Germany provides real-world insight into the state of the AMR policy environment and policy makers' perspectives on formulating equity-oriented AMR policy in the future.

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### Assessing community barriers exacerbating viral non-suppression in children living with HIV (CLHIV) in Mangochi, Malawi

Ndifanji Namacha<sup>1</sup>, Henry Nsona<sup>2</sup>, Clement Udedi<sup>2</sup>

<sup>1</sup>Malawi AIDS Counseling and Resource Organization (MACRO), Malawi,

<sup>2</sup>Malawi AIDS Counseling and Resource Organization (MACRO), Lilongwe, Malawi

Background: According to the National HIV/AIDS policy 2022-2027, Malawi achieved the 90:90:90 treatment targets in 2020 and is on course towards achieving 95:95:95 targets by 2025. This means viral suppression must in the least be at 95% among HIV positive clients. Though remarkable progress has been made towards HIV mitigation and prevention clinically, community barriers have stalled progress by invigorating poor ART adherence and/or treatment failure. The aim of this study was to identify and mitigate the root causes of high viral load in CLHIV in Mangochi district.

Methods: A cohort of 2146 CLHIV with an initial suppression rate of 73% (1566) was enrolled under a case management program and assessed at household level to establish the factors that affect their adherence to ART. Standard questionnaires were administered and analysis was done using DHIS2.

Results: The assessment revealed factors such as parental neglect, misleading

religious counsel, food shortages, long distances to health facilities and sharing of medication with other HIV positive clients as some of the underlying causes of viral non-suppression in CLHIV. The program responded with interventions such as case conferences, identification of treatment supporters, provision of nutritional support and transport support to needy clients, active viral load tracking, frequent household visits and virtual reminders via phone calls. As a result, an additional 148 CLHIV attained viral suppression to bring the total number of CLHIV with suppressed viral load to 1714 (80%) within six months.

Conclusions: Clinical support provided to CLHIV in health-facilities is insufficient to achieve viral suppression. A coordinated approach with community structures is required to ensure CLHIV receive a continuum of care in their communities to achieve viral suppression as part of epidemic control.

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### The emerging field of legal epidemiology and its global potential for better health

Scott Burris<sup>1,2</sup>

<sup>1</sup>UK Faculty of Public Health, American Public Health Association (APHA), Philadelphia, United States, <sup>2</sup>Temple University, Philadelphia, United States

Background/Objectives: Legal Epidemiology (LE) is the scientific study of the health effects of laws and legal practices. In the past decade, it has gained a strong foothold in US public health, and is growing as a field globally. It builds on robust methods of policy surveillance to measure law, and a range of method for quasi-experimental evaluation prevailing in epidemiology, economics and other social sciences. LE provides useful tools for transdisciplinary research, but also a vocabulary and specific competencies that public health professionals can use to increase their comfort and effectiveness in engaging legal factors in their work. The objective of this presentation is to demonstrate the range and utility of LE for global public health.

Methods: Review of prior research, existing competencies, available methods and tools, and effective applications of LE in policy development and advocacy.

Results: LE research includes evaluation of: 1) the effects/side effects of "interventional" public health laws such as road safety or tobacco control laws; 2) the relationship of "infrastructural" health laws (establishing the powers and duties of health agencies) and health system effectiveness; and 3) "incidental" public health laws (the many laws that shape the social determinants of health, such as income support, anti-discrimination, tax, housing and education laws). All these areas are important, but law is a particularly potent and malleable tool for addressing social determinants. Clear method of legal measurement and the use of modern software and AI tools has improved "policy surveillance," the scientific tracking of laws of public health importance. The presentation will describe CityHealth.org, a successful intervention using legal data to promote the spread of healthy policies in the largest US cities.

Conclusions: Legal epidemiology provides a range of effective methods, tools and concepts for helping improve the use of law and legal change for better health globally.

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### Complementary medicine approaches among homeless individuals in Switzerland: Desirable? Relevant? A mixed-method descriptive study

Véronique Grazioli<sup>1</sup>, Laurent Hyvert<sup>1</sup>, Chantal Berna<sup>2</sup>, Hangartner Evelyne<sup>1</sup>, Luana Schaad<sup>1</sup>, Justin Nikles<sup>1</sup>, Tshahé Anongba<sup>3</sup>, Patrick Bodenmann<sup>4</sup>

<sup>1</sup>Center for Primary Care and Public Health, Unisanté, Switzerland,

<sup>2</sup>Lausanne University Hospital, Switzerland, <sup>3</sup>Sleep-in, Lausanne, Switzerland,

<sup>4</sup>Center for primary care and public health, Unisanté, Switzerland

Background and Objectives: Despite their important health needs, homeless individuals (HomI) face barriers to healthcare, including lack of trust due to negative experiences. Whereas emerging Findings from the US suggest that complementary medicine (CM) may help engage this population into the healthcare system, there is a dearth of research exploring this thematic in Europe. This study aimed to explore CM interests and needs among HomI in Switzerland.

Methods: Participants (N= 123) were HomI in French-speaking Switzerland who completed a questionnaire assessing interests in 17 CM approaches. A subset of participants (n= 19) and 13 professionals (healthcare and social workers, shelter watchers) participated in semi-structured interviews exploring their perceptions of CM. Descriptive statistics and conventional content analysis were used to analyze quantitative and qualitative data.

Results: The top 5 most endorsed approaches included osteopathy, (61.5% interested), therapeutic massage (59.2%), nutritional supplements (57.1%)

music therapy (50.8%) and acupuncture (49.1%). Three themes emerged from the qualitative analysis: 1) CM meets HomI interests and might help address several of their health needs; 2) Importance to follow specific rules to engage HomI in CM interventions; 3) Setting priorities (CM interventions vs. more basic needs). According to both professionals and HomI, CM interventions, such as music therapy, osteopathy or animal therapy might lead to improvements in self-confidence, well-being, social isolation and chronic pain. All participants recommended offering CM interventions in existing structures and involving professionals to promote them. Finally, a few participants questioned the relevance to develop a CM offer, highlighting more urgent social needs to be fulfilled first. Conclusions: Main findings suggest that developing CM approaches, such as osteopathy or music therapy might meet HomI interests and health needs. Using a community-based participatory paradigm would ensure following the recommendations to develop the offer within existing structures and involve professionals to promote the intervention.

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### From evidence to practice: implementing effective nutrition and high-quality early childhood education in low resource settings, the successful case of the Guatemala city municipal nurseries

Ana Palacios<sup>1</sup>, Erik Parker<sup>2</sup>, Lisa Villanueva<sup>3</sup>, Matthew Flynn<sup>1</sup>, Helen Bland<sup>1</sup>, Stephanie Dickinson<sup>2</sup>, Dzyana Nazaruk<sup>1</sup>, Joseph Telfair<sup>1</sup>, Gregory Reinhart<sup>1</sup>  
<sup>1</sup>Georgia Southern University, United States, <sup>2</sup>Indiana University Bloomington, United States, <sup>3</sup>The Mathile Institute for the Advancement of Human Nutrition, Guatemala

**Background:** In Guatemala, the IV National Maternal and Child Health Survey 2014-2015 indicated that about one every two children < 5 years-of-age are stunted (length-height-for-age z-scores<-2). Childcare programs offer a cost-effective opportunity to deliver early education and learning opportunities, health, and nutrition services in a safe environment, especially for children in poverty or suffering from neglect. The purpose of this study was to compare growth outcomes, math performance, fluid intelligence, and receptive vocabulary between 8-year-old children in second grade that attended the Guatemala City Municipal Nurseries (GCMN) and received micronutrient supplements vs. sex, grade, and age-matched children (controls) that did not attend the municipal preschools. **Methods:** A cross-sectional design nested in a retrospective cohort between 2015-2019 was performed. Both GCMN children and control participants were asked to complete a math-, a receptive language- and a fluid intelligence test. Primary caregivers completed a sociodemographic survey. General and generalized linear mixed effect models were constructed to compare children that attended the GCMN vs. controls prior to elementary school. Models were adjusted by maternal education, sex, asset score, and school, data collection year, and case/control pair were included in the models as random effects.

**Results:** Children that attended the GCMN exhibited greater math and fluid intelligence scores relative to controls in adjusted models [ $\beta = 6.48$ ; 95% CI (2.35–10.61)] and [ $\beta = 1.20$ ; 95% CI (0.12–2.29)], respectively. Lower odds of stunting were significant for children who went to any childcare institution [AOR = 0.28; 95% CI (0.09–0.89)]. **Conclusions:** Our findings support the effectiveness of integrating high-quality early nutrition and education via childcare programs serving low-resourced populations, in child's nutritional status and academic performance. This model may be scalable and prove effective in improving children wellbeing from impoverished backgrounds.

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### Rapid methods to monitor nutrients in sustainable healthy diets of collective catering systems

Giulio Barocco<sup>1,2</sup>, Elenora Croci<sup>3</sup>, Paolo Bogoni<sup>4</sup>, Antonella Calabretti<sup>4</sup>, Francesco Buccì<sup>5</sup>, Tiziana Longo<sup>6</sup>, Andrea Pernarcic<sup>6</sup>, Arianna Marsi<sup>6</sup>, Sofia Scalisi<sup>3</sup>, Jacopo Sepe<sup>3</sup>, Gabriela Guzzo<sup>3</sup>

<sup>1</sup>The Local Health Agency of Trieste, Trieste, Italy, <sup>2</sup>Faculty of Medicine, Trieste University, Trieste, Italy, <sup>3</sup>Faculty of Medicine, The Local Health Agency of Trieste integrated with Trieste University, Italy, <sup>4</sup>Department of Economic, Business, Mathematical and Statistical Science, Trieste University, Italy, <sup>5</sup>Faculty of Medicine, Local Health Agency of Trieste integrated with Trieste University, Italy, <sup>6</sup>Faculty of Medicine, The Local Health Agency of Trieste Integrated with Trieste University, Italy

**Background:** The WHO and FAO in the "Sustainable Healthy Diet guiding principles" (SHD) underline synergies among foods, nutrients present in dietary patterns and their bioavailability, degree of food processing, and subsequent health impact, even on non communicable disease, reported in target 3.4.1 of SDGs. In Italy almost

one in 10 people eat a meal in collective catering (CC) every day. In accordance with SHD, the Italian Ministry of Health (MH) in the national guidelines for CC indicate activating procedures for the conservation of nutritional qualities (NQ) of micronutrients and bioactive substances. The central purchasing bodies of the Region of Friuli Venezia Giulia have applied these criteria, introducing the process of critical control points of nutrient analysis (NACCP) in the Public Procurement for the school catering of 26 municipalities and for all 18 regional hospital CC with more than 3 million meals per year served. The aim of the project was to develop rapid and cheap methods for monitoring the NQ of meals by applying the NACCP process.

**Methods:** 80 samples of vegetables, meat and fish with different degrees of processing were taken from the CC and analysed both with chemical techniques and with optical rapid techniques (600 analyses).

**Results:** The samples were subjected to conventional analyses to determine the oxidation state and the content of characterizing molecules such as polyphenols, histamine, and total compounds of Maillard. The same samples were then analyzed by color measurements. The results showed a good correlation between the two analytical systems, in particular the color measurements and the Maillard compounds and the color measurements and the oxidation state.

**Conclusions:** Project findings can be applied in the NACCP process to rapidly cost-effectively monitor the nutritional quality of CC meals, and adhere to WHO and FAO the SHD guiding principles and MH guidelines for CC.

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### Unemployment status subsequent to cancer diagnosis and therapies: a systematic review and meta-analysis

Martina Chimienti<sup>1</sup>, Giustino Morlino<sup>1</sup>, Martina Chimienti<sup>1</sup>, Giustino Morlino<sup>1</sup>, Leonardo Palombi<sup>1</sup>, Leonardo Gialloreti<sup>1</sup>, Francesco Torino<sup>1</sup>

<sup>1</sup>Roma Tor Vergata, Italy

**Background and Objective:** In the years to come, cancer cases are expected to increase by 60%; for this reason, and due to improved treatments, the number of cancer survivors will increase considerably. Therefore, it is important to assess the social impact cancer and treatments will have on these individuals, especially those of working age. The purpose of our study is to examine whether cancer and subsequent treatments are associated with job loss or change in employment status.

**Methods:** Eight prospective studies were included in the systematic review and meta-analysis, with a total of 11,495 individuals aged 18-65 years, analyzing treatment regimens and psychophysical and social status in a post-cancer follow-up of at least 2 years. In the meta-analysis, a comparison was made between recovered unemployed cases and cases from a standard reference population. The Results are summarized graphically using forest plot.

**Results:** The study found that cancer and subsequent treatment are risk factors for unemployment with an overall Relative Risk of 7.24 (In RR: 1.98, 95% CI: 1.32 - 2.63). Individuals undergoing chemotherapy and/or radiation treatment or those with brain and colorectal cancers are more likely to develop disabilities that negatively affect the risk of unemployment. Finally, variables such as: low educational level, female sex, older age, overweight and obesity before the start of therapy are associated with a higher risk of unemployment.

**Conclusions:** In the future, it is necessary for people with cancer to have greater access to specific health, social welfare and employment support programs. In addition, it is desirable that they become increasingly involved in the choice of therapeutic treatment.

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### Observed neighborhood physical disorder and health behaviors in a large urban area

Jesse Plascak<sup>1</sup>, Tatyana Desire-Brisard<sup>2</sup>, Darren Mays<sup>3</sup>, Brittney Keller-Hamilton<sup>1</sup>, Andrew Rundle<sup>4</sup>, Emma Rose<sup>5</sup>, Electra Paskett<sup>6</sup>, Stephen Mooney<sup>7</sup>  
<sup>1</sup>College of Medicine, The Ohio State University, United States, <sup>2</sup>School of Public Health, Rutgers University, United States, <sup>3</sup>College of Medicine, The Ohio State University, United States, <sup>4</sup>Mailman School of Public Health, Columbia University, United States, <sup>5</sup>Brigham Young University, United States, <sup>6</sup>College of Medicine, The Ohio State University, United States, <sup>7</sup>School of Public Health, University of Washington, United States

Neighborhood physical disorder is an indicator of urban disinvestment that may act as a psychosocial stressor. This study tested associations between observed neighborhood physical disorder and tobacco use, alcohol bingeing, and sugar-sweetened beverage consumption among a large population-based sample. Individual-level data of this cross-sectional study were from adult

respondents of the New Jersey Behavioral Risk Factor Surveillance System, 2011-2016 (n = 62,476). Behavioral Risk Factor Surveillance System is the largest continuously conducted health survey system in the world. Aggregated area-level observed neighborhood physical disorder were from virtual audits of 23,276 Google Street View streetscapes. Tobacco use (current cigarette smoking or chewing tobacco, snuff, or snus use), monthly binge drinking occasions (5+/4+ drinks per occasion among males/females), and monthly sugar-sweetened beverages consumed were self-reported. Logistic and negative binomial regression models were used to generate odds ratios, prevalence rate ratios (PRR), 95% confidence intervals (CI) by levels of physical disorder. Compared to the lowest quartile, residence in the second (PRR: 1.16; 95% CI: 1.03, 1.13), third (PRR: 1.24; 95% CI: 1.10, 1.40), and fourth (highest) quartile of physical disorder (PRR: 1.24; 95% CI: 1.10, 1.40) was associated with higher monthly sugar-sweetened beverage consumption. Associations involving tobacco use and alcohol bingeing were mixed. Observed neighborhood disorder might be associated with unhealthy behaviors, especially sugar-sweetened beverage consumption. Studies across globally diverse urban setting are needed to explore external validity and motivate urban policy recommendations.

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### Maintaining personal health in a complex environment: how slum dwellers in Nigeria use lay consultation networks to make personal treatment decisions

Chinwe Onuegbu<sup>1</sup>

<sup>1</sup>Division of Health Sciences, Warwick Medical School, University of Warwick, United Kingdom

**Background and Objective:** Poor healthcare in urban slums in developing regions represents a complex humanitarian crisis requiring innovative and bottom-up solutions. How slum dwellers manage their health despite huge health risks and poor healthcare access, by utilising their social connections and social capital, is poorly understood. Drawing on social network theory, this study examined how slum dwellers in Nigeria used their Lay Consultation Networks (informal and naturally occurring networks with whom people discuss illness symptoms and health problems) to make treatment decisions.

**Method:** A mixed-method approach was adopted. Surveys (n=480) and semi-structured interviews (n=30) were conducted among working-age adults in two slums in Ibadan (large south-Western city), Oyo state, Nigeria. A public reference group comprising community members and researchers at the University of Ibadan was constituted to guide the study.

**Results:** Most participants consulted 1 to 3 informal network members during illness. Those consulting non-family members were significantly more likely to use alternative medicine than formal care. Use of online-based networks was scarce mainly due to poor digital literacy, and lack of digital devices. Network members shared advice about prescriptions and treatments (learnt from others or through their own experiences) with ill persons, some useful and some not. Limited neighborhood trust, busy work schedules, discrimination, and stigmatization of certain groups contributed to shaping who participants could talk to. Participants displayed a strong sense of agency when implementing advice or support from others.

**Conclusions:** Lay consultation networks can be an integral part of the overall health system. They can be incorporated into health policies and programmes to increase coverage and effectiveness of health interventions in slums and disadvantaged communities in low-and-middle-income countries.

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### Household food security and household dietary diversity in rural Bangladesh during the COVID-19 pandemic - baseline results from a community-based cluster randomized controlled trial

Tanvir Huda<sup>1</sup>, Michael Dibley<sup>1</sup>, Tazeen Tahsina<sup>2</sup>, Afrin Iqbal<sup>2</sup>, Mohammad Hasan<sup>2</sup>

<sup>1</sup>Sydney School of Public Health, The University of Sydney, Australia,

<sup>2</sup>International Centre for Diarrhoeal Disease Research, Bangladesh

**Background:** There has been a limited decline in undernutrition rates in Bangladesh. Household food security is one of the major factors. Despite Bangladesh's remarkable progress in agricultural production, household food insecurity persists, especially in rural areas. This study examined household food insecurity and household dietary diversity in the rural areas of northwest Bangladesh during the COVID-19 Pandemic.

**Methods:** The study used data from baseline assessment of a large cluster randomized trial on social protection and child undernutrition. The data were

collected from December 2020 to October 2021 from 2756 households. The Household Food Insecurity experience scale (FAO 2018) was used to assess household food insecurity, while the household dietary diversity was measured by the household dietary diversity score (FAO 2006).

**Results:** Nearly 35% of all households were moderately or severely food insecure. The prevalence of food insecurity among land-rich farmers or professionals was much lower (26%) than among families of other occupations (42%). The prevalence of food insecurity among families with educated women was almost half (22%) compared to families with uneducated women (45%). The mean HDDS was six food groups indicating that families had, on average, access to 6 out of twelve food groups daily. The dominant consumed food groups were cereals (90%), fish (75%), and vegetables (79%), while the lesser consumed food groups were eggs (28%), legumes (22%), meat (25%), milk (38%). We did not find any significant seasonal variation in household food security and dietary diversity.

**Discussion:** Our findings showed that the percentage of households experiencing moderate to severe food insecurity during the pandemic was more significant than the pre-pandemic national average (15%). Most families relied on less expensive food choices during the pandemic period. The seasonal poverty period (Monga in the local language) did not further affect food security and dietary diversity.

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### A posteriori derived dietary patterns of adults in Italy: results from the third Italian National Food Consumption Survey, INRAN-SCAI 2005-06

Nicolò Scarsi<sup>1</sup>, Nicolò Scarsi<sup>1</sup>, Angelo Pezzullo<sup>1</sup>, Cosimo Savoia<sup>1</sup>, Roberta Pastorino<sup>1</sup>, Gian Raspolini<sup>1</sup>, Stefania Boccia<sup>1</sup>

<sup>1</sup>Section of Hygiene, Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy

A large body of literature showed the importance of dietary patterns (DPs) analysis in nutritional epidemiology. The objective of this research was to derive and characterize adults dietary patterns in a large Italian population-based cohort and to assess individuals' diet adherence with z-scores. Participants to the third Italian National Food Consumption Survey (INRAN-SCAI 2005-06) were included. We classified all food items (N = 878) into 24 pre-defined food groups according to a modified version of the updated food classification system FoodEx2. Dietary patterns were obtained through principal component analysis, after adjusting log-transformed input variables, without minimum values, using the residual method. Relying on data from 2831 subjects (median age 47, IQR 35-60), five principal components (PC) were retained, explaining 35.63% of the overall variance. PC1 was similar to the high-fat diet characterized by positive loadings for vegetables, starchy roots, eggs products, fat and oils, and low amount of alcoholic beverages. PC2 was a picture of a carnivorous eating behavior, positively charged by processed meat, offals, other meats, juices, special nutritional, composite food, and snacks. PC3 was representative of a health conscious, positively loaded by vegetables, fruits and water, negatively associated with the consumption of pork meat and alcoholic beverages. PC4 showed similarities with a vegetarian diet, positively loaded by grain products, vegetables, herbs, and spices. The last PC represents an unhealthy dietary pattern, positively charged by sugar and confectionery, non-alcoholic beverages and negatively correlated with vegetable consumption. According to z-scores, 69% of our cohort showed high DPs adherence. These findings are valuable for understanding the dietary habits of adults in Italy, to orient public health policies and promote healthier food behaviors in the future.

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### Health literacy related to health care, disease prevention, and health promotion in the Italian adult population

Luigi Palmieri<sup>1</sup>, Luigi Palmieri<sup>1,2</sup>, Chiara Lorini<sup>3</sup>, Chiara Cadeddu<sup>4</sup>, Aldo Rosano<sup>5</sup>, Chiara Donfrancesco<sup>1</sup>, Guglielmo Bonaccorsi<sup>6</sup>, Paola Castro<sup>7</sup>, Cinzia Noce<sup>1</sup>, Claudia Meduri<sup>1</sup>, Matilde Bocci<sup>1</sup>, Daniela Galeone<sup>8</sup>, Graziano Onder<sup>4</sup>, Brigid Unim<sup>1</sup>

<sup>1</sup>Department of Cardiovascular, Endocrine-metabolic Diseases and Aging, Italian National Institute of Health, Rome, Italy, <sup>2</sup>Istituto Superiore di Sanità, Italy, <sup>3</sup>Department of Health Sciences, University of Florence, Italy, <sup>4</sup>Università Cattolica del Sacro Cuore, Rome, Italy, <sup>5</sup>National Institute for the Analysis of Public Policy, Rome, Italy, <sup>6</sup>Department of Health Sciences, University of Florence, Florence, Italy, <sup>7</sup>Scientific Communication Unit, Italian National Institute of Health, Rome, Italy, <sup>8</sup>Ministry of Health, Rome, Italy

**Background and Objective:** Health Literacy (HL), defined as the ability to access/obtain, understand, appraise/judge/evaluate, apply/use health-related information, has a direct impact on the capacity of managing three main domains

of health-relevant information: Health Care (HC), Disease Prevention (DP), and Health Promotion (HP), which are fundamental for improving individual and population health.

**Methods:** In 2021, a national survey of a representative sample of the Italian population aged 18+ years (N=3,500) was conducted in the framework of the WHO M-POHL (Measuring Population and Organizational Health Literacy) network. The validated HL questionnaire at 12 items (HLS-Q12) included general HL, sociodemographic characteristics, risk factors, lifestyles sections. For each of the 3 HL domains, 4 items were analysed. For each HL-item, a 4-point Likert scale was applied: very easy, easy, difficult, very difficult. For the 3 HL domains (healthcare, disease prevention, health promotion), the percentage of very easy+easy answers was used as a score and classified in 5 groups (0%, 25%, 50%, 75%, 100%).

**Results:** For all the 3 HL domains, the majority of participants were in the 75% and 100% groups (63.1% for HC, 56.8% for DP, 70.7% for HP). They were mostly in the 18-29 age group (72.3% for HC, 59.9% for DP, 72.7% for HP), women for HP only (72.5%), with a high educational level (66.6% for HC, 59.0% for DP, 72.4% for HP), living in north Western regions (65.1% for HC and 58.4% for DP) and central Italy (74.2% for HP).

**Conclusions:** The results on HL domains of the general HL highlighted the need to improve HL especially in adult and elderly population, in those with a lower level of education, and in the Southern and Central areas of the country. Better HL level could improve the general population's ability to manage health information regarding care, prevention, and promotion of health.

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### The relationship between blood pressure variability and cognitive function

Yang Zhao<sup>1</sup>, Lili Song<sup>1</sup>

<sup>1</sup>The George Institute for Global Health, Beijing, China

**Background and Objective:** It has been well-established that long-term blood pressure variability (BPV) plays an important role in the progression of cerebrovascular damage and the incidence of cardiovascular diseases. Knowledge about the association between long-term BPV and cognitive performance was scarce and ambiguous. This study aims to systemically examine the potential association between BPV and the trajectory of cognitive decline among Chinese adults, by using nationally representative population-based data from an 8-year prospective cohort.

**Methods:** We used four waves (2011-2018) of the China Health and Retirement Longitudinal Study, including 5696 participants aged  $\geq 45$  years. BPV was measured using the within-individual standard deviation (SD) of mean systolic blood pressure (SBP) obtained from three waves visits, and the coefficient of variation (CV). The cognitive function was measured as the total score of episodic memory and mental status, with a higher cognition score indicating superior cognitive functions. Multivariable linear regression models were applied.

**Results:** The mean value of SBP, mean SD of SBP and mean CV of SBP was 128.05 mm Hg and was 10.28 and 0.08, respectively. Both the SD (coefficient=-0.092, 95% CI=-0.144, -0.040) and CV of SBP variability (coefficient=-0.085, 95% CI=-0.137, -0.034) significantly decreased the risk of cognitive function. Subgroup analyses revealed significant relationships in both females and males.

**Conclusions:** In middle-aged and older Chinese adults, higher long-term SBP variability could be an independent predictor of accelerated cognitive decline. Further high-quality studies are warranted to evaluate and confirm the benefit of BPV-lowering strategies for preventing cognitive impairment.

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### Disentangling the multigenerational transmissions of socioeconomic disadvantages and mental health problems by gender and across lineages: findings from the Stockholm Birth cohort multigenerational study

Baojing Li<sup>1</sup>, Ylva Almqvist<sup>1</sup>, Can Liu<sup>1</sup>, Lisa Berg<sup>1</sup>

<sup>1</sup>Stockholm University, Sweden

**Background and Objective:** There is a paucity of research examining the patterning of socioeconomic disadvantages and mental health problems across multiple generations. The significance of research on multigenerational processes is based on a concern with how socioeconomic, mental health, and gender inequalities evolve over a longer period of time. The current study therefore aimed to investigate the interconnected transmissions of socioeconomic disadvantages and mental health problems from grandparents to grandchildren through the parents, as well as the extent to which these transmissions differ according to lineage (i.e., through matrilineal/patrilineal descent) and grandchild gender.

**Methods:** Drawing on the Stockholm Birth Cohort Multigenerational Study, the sample included 21,416 unique lineages by grandchild gender centered around cohort members born in 1953 (parental generation) as well as their children (grandchild generation) and their parents (grandparental generation). Based on local and national register data, socioeconomic disadvantages were operationalized as low income, and mental health problems as psychiatric disorders. A series of path models based on structural equation modelling were applied to estimate the associations between low income and psychiatric disorders across generations and for each lineage-gender combination.

**Results:** We found a multigenerational transmission of low income through the patriline to grandchildren. Psychiatric disorders were transmitted through both the patriline and matriline, but only to grandsons. The patriline-grandson transmission of psychiatric disorder partially operated via low income of the fathers. Furthermore, grandparents' psychiatric disorders influenced their children's and grandchildren's income.

**Conclusions:** We conclude that there is evidence of transmissions of socioeconomic disadvantages and mental health problems across three generations, although these transmissions differ by lineage and grandchild gender. Our findings further highlight that grandparents' mental health problems could cast a long shadow on their children's and grandchildren's socioeconomic outcomes, and that socioeconomic disadvantages in the intermediate generation may play an important role for the multigenerational transmission of mental health problems.

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### Educational trajectories and inequalities in longevity: a comparison across 14 European countries

Cornelia Wagner<sup>1</sup>, Stéphane Cullati<sup>1</sup>, Stefan Sieber<sup>2</sup>, Tim Huijts<sup>3</sup>, Arnaud Chiolero<sup>1</sup>, Cristian Carmeli<sup>1</sup>

<sup>1</sup>University of Fribourg Switzerland, <sup>2</sup>University of Lausanne Switzerland,

<sup>3</sup>Maastricht University Netherlands

**Background:** While educational gradients in longevity have been observed consistently in adult Europeans, these inequalities have been understudied within the context of family- and country-level influences. We utilized population-based multi-generational multi-country data to assess the role (1) of parental and individual education in shaping intergenerational inequalities in longevity, and (2) of country-level social net expenditure in mitigating these inequalities.

**Methods:** We analyzed data from 52,271 adults born before 1965 who participated in the Survey of Health, Ageing and Retirement in Europe, comprising 14 countries. Mortality from all causes (outcome) was ascertained between 2013 and 2020. Educational trajectories (exposure) were High-High (reference), Low-High, High-Low, and Low-Low, corresponding to the sequence of parental-individual educational attainment. We quantified inequalities as years of life lost (YLL) between the ages of 50 and 90 estimated via differences in the area under standardized survival curves. We assessed the association between country-level social net expenditure and YLL via meta-regression.

**Results:** Inequalities in longevity due to educational trajectories were associated with low individual education regardless of parental education. Compared to High-High, having High-Low and Low-Low led to 2.2 (95% confidence intervals: 1.0 to 3.5) and 2.9 (2.2 to 3.6) YLL, while YLL for Low-High were 0.4 (-0.2 to 0.9). A 1% increase in social net expenditure led to an increase of 0.01 (-0.3 to 0.3) YLL for Low-High, 0.007 (-0.1 to 0.2) YLL for High-Low, and a decrease of 0.02 (-0.1 to 0.2) YLL for Low-Low.

**Conclusion:** In European countries, individual education could be the main driver of inequalities in longevity for adults older than 50 years of age and born before 1965. Further, higher social expenditure is not associated with smaller educational inequalities in longevity.

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### Masculinities in focus: how can the consideration of gender roles pave the way for gender-transformative healthcare services and improve health for all?

Céline Miani<sup>1</sup>, Sudeepa Khanal-Bhattarai<sup>1</sup>, Stephanie Batram-Zantvoort<sup>1</sup>, Jan Morawe<sup>1</sup>, Emily Finne<sup>1</sup>, Melanie Boeckmann<sup>1</sup>, Julia Zielke<sup>1</sup>

<sup>1</sup>Bielefeld University Germany

**Background and objective:** How are men addressed by healthcare services? How is the role of men understood in the construction of gender-equitable health? Through a mixed-methods project on masculinities and health, we investigated the gender-transformative potential of reflecting on and taking into account gender roles in the design and implementation of healthcare services.

**Methods:** We conducted a systematic review on smoking cessations interventions

for expecting and new parents, narrative interviews on the construction of masculinities in relation to family planning and contraception decisions, and a scoping review on masculinities and health in gender-transformative interventions. Results: With regard to smoking cessation (n=9 studies), we found that current healthcare structures tend to not engage specifically with fathers, and that men are forced into rather classic and passive gender roles that leave little room for change. Yet, in the interviews (n=13), we found that men consider their roles in reproductive health, contraception and family planning as complex and would like to take on more responsibility, be more proactive and engaged. This finding echoes the results of the scoping review (n=24 studies), which shows that a more critical approach to masculinity is possible and can lead to concrete and measurable improvements in health outcomes, especially in the fields of domestic violence, AIDS/HIV, sexual health and general well-being.

Conclusion: Not taking into account masculinities in the design and implementation of healthcare services appears as a missed opportunity that reinforces stereotypes and traditional gender roles. Although transfer from theory to practice on the one hand, and from lived experiences to interventions on the other hand, remains challenging, men themselves and a handful of promising and innovative approaches point toward the potential of gender-transformative healthcare services to improve health for all.

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### Monitoring health in the Brazilian municipalities for the Sustainable Development Goals (SDGs)

Rômulo Paes-Sousa<sup>1</sup>, Fabrício Silveira<sup>1</sup>, Gabriela Silva<sup>1</sup>

<sup>1</sup>Fiocruz Minas, Brazil

Background and Objective: This study proposes a summary index for monitoring the health-related SDG's indicators in Brazilian municipalities, enabling both the interiorization of the 2030 Agenda in the territory, reducing inequalities in the space, and its effective adoption in policymaking.

Methods: The ecological study comprises 23 SDGs health indicators for the 5570 municipalities of the country analyzed in the period between 2015-2021. The empirical Bayesian rate was adopted to smooth each data series due to the spatial effect previously detected. The annual municipal index and 7 thematic subindexes (maternal health; infant health; non-communicable diseases; infectious diseases; injuries/violence; environmental; coverage) were standardized from 0 (worse performance) to 100 (best performance). Each are weighted by symmetrical regional-level indexes. The municipalities are ranked according to the level of sophistication of the local health equipment.

Results: Four main regional health profiles were identified in the country: (i) the north region is characterized by low technological complexity and huge gaps in most health topics; (ii) the Northeast presents the highest spatial disparities in the country; (iii) the south the highest thematic disparities, with the country's best profile on maternal and child health themes and the worst in some infectious diseases and topics of violence and injuries; finally, (IV) the Southeast and Midwest regions present the best overall infrastructure of health in the country, which reflects on the index.

Conclusion: The evaluation of the health SDGs at disaggregated levels requires the recognition of the spatial dependence of health phenomena. Indeed, both health and disease seem less local than a regional phenomenon in the country's territory. By enabling the continuous monitoring of the indicators over time, the methodology developed opens new paths for the achievement of the SDGs.

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### Post-pandemic health inequalities: global estimates of the evolution of the health-related SDG indicators

Rômulo Paes-Sousa<sup>1</sup>, Wanessa Miranda<sup>2</sup>, Fabrício Silveira<sup>1</sup>

<sup>1</sup>Fiocruz Minas Brazil, <sup>2</sup>Fiocruz Minas / UFMG, Brazil

Background and objective: The world has entered a critical period for accelerating the responses to the main global challenges expressed in the Sustainable Development Goals (SDGs), from the elimination of poverty and hunger to improving health to tackling climate change. Much of the previous efforts, however, have been hampered by the direct and indirect impact of the COVID-19 pandemic. Against this backdrop, this study estimates the impact of the COVID-19 pandemic on the health-related indicators, making it possible to size the countermeasures necessary to keep the commitments of the 2030 Agenda.

Methods: We explore the evolution of 40 health-related SDGs indicators, covering seven major health themes, using the information available for 185 countries in the period between 2000 and 2019. A global counterfactual evolution curve is estimated by using panel data models. The curves allow the extrapolation of the

impact of revisions of the expected growth of the Gross National Product per capita on the potential evolution of each indicator for all countries.

Results: The disproportionately greater economic losses in the poorest countries may increase global health inequalities in the aftermath of the COVID-19 pandemic. Although the average expected loss in the evolution of the health-related indicators is around 5', in some countries the damage is five times worse, amplified by the indirect impact of economic losses on maternal and children health indicators. At the same time, the greater fiscal room to accommodate increases of expenditures in the developed world should also contribute to increase global disparities.

Conclusions: The study's findings reveal the importance of incorporating the fight against health inequalities in the global development agendas, which can be oriented by the SDGs.

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### "We've been portrayed as commodities who because of their age are a bit of a nuisance": A qualitative analysis of older people's socio-ecological determinants of health and well-being during the COVID-19 pandemic in Ireland

Viveka Guzman<sup>1</sup>, Frank Doyle<sup>1</sup>, Ronan Foley<sup>2</sup>, Penny Wilson<sup>1</sup>, Noelene Crowe<sup>1</sup>, Peter Craven<sup>1</sup>, Ailbhe Smith<sup>1</sup>, Gerry Hegarty<sup>1</sup>, Maria Pertl<sup>1</sup>

<sup>1</sup>Royal College of Surgeons in Ireland, Beaux Lane House, Mercer Street Lower, Dublin, Ireland, <sup>2</sup>Maynooth University, Maynooth, Co. Kildare, WE23 HW31, Ireland,

Background: Evidence indicates that older people with biological and social vulnerabilities are at high risk of short- and long-term consequences related to the COVID-19 pandemic. However, studies have also highlighted that the crisis may present opportunities for personal growth if individuals are met with appropriate resources and support. This study's aim was to explore the perceptions of older people regarding how individual, social, and environmental factors supported or hindered their well-being and health during COVID-19.

Methods: We analyzed data collected between April-May and October-November 2021 from the Well-being, Interventions, and Support during Epidemics (WISE) study, a qualitative investigation of community-dwellers based in Ireland and aged 65 years or over. Participants (n=57) completed written submissions, narrative interviews, and/or go-along interviews detailing their experiences during the pandemic. Framework analysis was carried out in NVivo 12 to identify determinants, linkages, and explanations within Bronfenbrenner's socio-ecological model.

Results: Mean age of participants was 74.9 years, 57% were female, 45% lived alone, and 88% lived in urban or suburban areas. Our findings highlight the heterogeneous effect of COVID-19 across diverse older individuals who held distinct concerns, capabilities, and roles in society before and during the pandemic. Contextual characteristics such as housing, access to nature and neighbourhood social and built environments had an influential role in participants' well-being and supports. We identified mixed views regarding public health restrictions, but a consensus emerged questioning the suitability of one-size-fits-all approaches based on chronological age. Moreover, respondents suggested that some negative consequences could have been avoided by collaborating with older people and with the provision of clearer communications.

Conclusion: Our analysis identified interdependencies between individual characteristics and socio-ecological factors that influenced participants' development of adaptive strategies, coping mechanisms, and availability of supports. These represent areas of opportunity for the development of age-friendly interventions during and beyond public health crises.

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### Food choices and nutrient intake of workers in the hospital canteen of San Daniele del Friuli, Italy

Diana Menis<sup>1</sup>, Federica Fiori<sup>1</sup>, Daniela Zago<sup>1</sup>, Peter Cautero<sup>1</sup>, Lucia Lesa<sup>2</sup>, Alessandro Conte<sup>3</sup>, Laura Brunelli<sup>4,5</sup>, Maria Parpinel<sup>1</sup>

<sup>1</sup>Department of Medicine, University of Udine, Udine, Italy, <sup>2</sup>Azienda Sanitaria Universitaria Friuli Centrale, Italy, <sup>3</sup>Medical Directorate, University of Udine, Hospital of San Daniele-Tolmezzo, Azienda Sanitaria Universitaria Friuli Centrale, San Daniele del Friuli, Udine, Italy, <sup>4</sup>Department of Medicine, Azienda Sanitaria Universitaria Friuli Centrale, University of Udine, Udine, Italy, <sup>5</sup>Accreditation, Quality, and Clinical Risk Unit, Azienda Sanitaria Universitaria Friuli Centrale, Udine, Italy

Background and Objective: Recently, the awareness of the role that food play in human and planetary health has grown. Although the nutritional and environmental benefits of plant-based diets are widely recognized, little is known about the availability of healthy foods in workplaces. Our aim was to evaluate food choices

and nutritional composition of the meals consumed in a hospital canteen in Italy. Methods: An observational study was conducted in San Daniele del Friuli hospital on 5 working days in September 2022; photos of lunch trays of all workers who agreed to participate were taken before and after the meal. Energy and nutrient intakes were assessed after visual estimation of wastes using the Italian food composition database for epidemiological studies (bda-ieo.it). Recipes and portions were provided by canteen staff. Intakes were compared to the Italian Dietary Reference Values (DRVs).

Results: 480 photos of 240 meals were analyzed. Overall, the lunch met the DRVs. The meals contained a median of 642 (511–826) kcal (men: 781 kcal; women: 607 kcal), of which 18 (15–23)%E came from proteins, 34 (27–39)%E from fats, 44 (37–50)%E from carbohydrates, and 2 (2–4)%E from fiber. About half of the participants consumed high fats and low carbohydrates. Vegetarian meals (N=30; 13%) contained high amount of fats (41; 37–48%E) and saturated fatty acids (10; 8–17%E), as meat was usually replaced with cheese. Vegan options (N=15; 6%) consisted mainly of soups, rice, vegetables, and fruits and were low in energy (599; 449–645 kcal) and protein (13; 9–15 g/tray vs. 34; 25–42 g/tray in omnivorous meals).

Conclusion: We observed inadequate nutrient composition in vegetarian and vegan meals. Dietary education interventions are needed to promote healthier behaviors. However, poor food choices may be partially attributed to the lack of variety of vegetarian/vegan alternatives offered in the canteen.

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### Women's collectives address health determinants in urban slums of Indore, India

Kanupriya Kothiwala<sup>1</sup>, Siddharth Agarwal<sup>1</sup>, Shabnam Verma<sup>1</sup>

<sup>1</sup>Urban Health Resource Centre, Research Associate, Humaypur, Safdarjung Enclave, New Delhi, India

Background and Objective: Accessing timely, affordable services is a crucial health determinant urban for urban poor in India.

Urban Health Resource Centre (UHRC) mentors slum-based women's savings groups in slums of Indore, India. Each group comprises of 10-12 members. We studied how collective savings and loans help families of women's groups in addressing health determinants.

Methods: Interviews were carried out during 2022 with 2 women office-bearers each from 10 women's groups formed between 2010 to 2015. Interviews covered reasons for borrowing from saving's group and how the collectives contributed to meeting their family's health needs.

Results: Women borrowed to meet medical costs and prevent delay in seeking care. This involved arranging for cost of emergency transportation to the health facility by borrowing from collective pool at midnight. Women borrowed in advance for planned expenses including birth-preparedness, delivery, other surgical or medical treatment and repay in instalments. Being part of women's groups contributed to enhanced knowledge of health care including pregnancy care, facilities for delivery, other treatment at Government/low-cost private health facilities. Improved access to outreach services such as Antenatal check-up and registration, vaccination during pregnancy and childhood. Women drew loans to purchase grains at harvest time to cater to families' nutritional requirements.

Conclusions: Women's groups in slums can address several determinants of health in slums and contribute towards fulfilling SDG 3. Group meetings also helped women in establishing stronger social cohesion and gain knowledge about healthcare. Continuous mentoring by CSOs plays a crucial role in smooth functioning of savings groups. Government policies in India such as National Urban Health Mission (NUHM) mandate formation of women's health groups but the implementation remains weak on ground. UHRC's approach can potentially guide policy implementation to sustain savings groups in slums with effective Government-CSO partnerships.

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### Access to COVID-19 prevention, diagnosis and care for migrants and ethnic minorities in the WHO European Region: a systematic review

Chiara De Marchi<sup>1</sup>, Arianna Bellini<sup>1</sup>, Angela Gatta<sup>1</sup>, Maria Tosti<sup>1</sup>, Franca D'Angelo<sup>1</sup>, Silvia Declich<sup>1</sup>, Elena Mazzalai<sup>1</sup>, Salvatore Scarso<sup>1</sup>, Giulia Marchetti<sup>1</sup>, Caterina Ferrari<sup>1</sup>, Francesco Mondera<sup>1</sup>, Giancosimo Mancini<sup>1</sup>, Igor Aloise<sup>1</sup>, Marise Sabato<sup>1</sup>, Leonardo Siena<sup>1</sup>, Dara Giannini<sup>1</sup>, Anissa Jaljaa<sup>1</sup>, Federica Turatto<sup>1</sup>, Maurizio Marceca<sup>1</sup>

<sup>1</sup>Department of Public Health and Infectious Diseases, Sapienza University, Rome, Italy

Background & Objective: The COVID-19 pandemic has had a major impact on Migrants and Ethnic Minorities (MEMs) population in terms of risk of SARS-CoV-2 infection, morbidity, and mortality. The COVID-19 pandemic was defined as a syndemic for its interaction with pre-existing socio-economic determinants of health, widening health inequalities and worsening health outcomes. The aim of this study is to investigate inequalities in access to healthcare for COVID-19 among MEMs compared to the general population. Migrants represent almost 10% of the population living in the WHO European Region, so the issue is of particular interest to this region.

Methods: A systematic review was conducted, collecting studies on MEMs' access to healthcare for COVID-19 in the WHO European Region in terms of access to prevention, diagnosis, and care, published from January 2020 to February 2022, on the following databases: Medline, Embase, Biosis, Scisearch, Esbiobase.

Results: Of the 19 studies identified, 11 were about vaccine hesitancy, 5 about vaccine execution, 2 on access to COVID-19 testing and 1 was about access to information on COVID-19. Around 65% of the studies were conducted in UK. Overall, MEMs population faced higher barriers to the access to vaccination, turned out to be more vaccine hesitant and faced more difficulties in access to COVID-19 information and testing.

Conclusion: These findings highlight the inequalities MEMs population faced accessing healthcare services for COVID-19. Social determinants of health are one of the main factors involved in the genesis of health inequalities: a framework of structural racism leading to lower trust in government choices, together with a disadvantaged socio-economic status, determined inequalities in accessing healthcare services and health information. These findings underline the need for policymakers to prioritize strategies for building trust and engage ethnic minorities, and to overcome the socio-economic barriers when designing health promotion programs.

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### Evaluating the intersectionality of social determinants of health on AIDS using a cohort of 28.3 million Brazilians

Davide Rasella<sup>1,2</sup>, Iracema Lua<sup>1</sup>, Andrea Silva<sup>1</sup>, Priscila Pinto<sup>1</sup>, Laio Magno<sup>3</sup>, James Macinko<sup>4</sup>, Ronaldo Coelho<sup>5</sup>, Luis Souza<sup>6</sup>, Ines Dourado<sup>6</sup>

<sup>1</sup>Institute of Collective Health at the Federal University of Bahia (ISC/UFBA); Center for Integration of Data and Knowledge for Health (CIDACS), Gonçalo Moniz Institute, Oswaldo Cruz Foundation, Brazil, <sup>2</sup>ISGlobal, Hospital Clinic - Universitat de Barcelona, Barcel, Spain, <sup>3</sup>Department of Life Sciences, Bahia State University (DCV/UNEB), Brazil, <sup>4</sup>Department of Health Policy and Management, University of California, Los Angeles, USA, <sup>5</sup>Department of Chronic Conditions Diseases and Sexually Transmitted Infections, Ministry of Health, Brazil, <sup>6</sup>Institute of Collective Health at the Federal University of Bahia (ISC/UFBA), Brazil

Background and Objective: Societies that live with socio-structural inequalities and health inequities need to better understand these processes. In that regard intersectionality theory becomes fundamental to public health. The scientific literature on HIV/AIDS presents associations and isolated effects of some social determinants of health (SDH), but the intersection between them is still poorly addressed.

Thus, our objective was to evaluate the intersectional effects of SDH on AIDS outcomes: incidence, mortality, and case-fatality rates.

Methods: A retrospective cohort of 28.3 million individuals was evaluated over a 9-year period (2007-2015). The multivariable Poisson regression were estimated using robust standard errors clustered on the municipality of residence, for each outcome. The intersections and combined effects were evaluate from the dummy variables of interaction of the highest exposure categories of the variables race/skin color, education, and wealth. Interactions additive was estimated from the index of synergy (S).

Results: The risk of getting sick and dying from AIDS was higher in the intersection groups of the 3 highest exposure categories: black people, lower wealth, and lower education, had the highest AIDS incidence (34.33/100,000py; RRA:3.07, 95%CI:2.68-3.52) mortality (14.10/100,000py; RRA:5.01, 95%CI:4.04-6.22) and case-fatality rates (7.53/100py; RRA: 1.62; 95%CI:1.18-2.21). This intersection represents a positive additive interaction for the risk of getting sick (S:1.60) and dying (S:2.40) from AIDS. Among people living with AIDS the synergistic effect for case-fatality was even greater (S:2.95).

Conclusion: The intersections of identities that mark socio-structural inequalities, amplify the risks of getting sick and dying from AIDS, exceeding the sum of the risks of each exposure separately. The skin color stands out, since the (sub) groups with the combination of black color were those with the worst outcomes. Since this is an unchangeable characteristic, it highlights the need for social

policies to expand education and income for these groups.

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### Social determinants of the health behaviours of children and adolescents during the COVID-19 pandemic

Viviane Richard<sup>1</sup>, Roxane Dumont<sup>1</sup>, Elsa Lorthé<sup>1</sup>, Andrea Loizeau<sup>1</sup>, Hélène Baysson<sup>1</sup>, María-Eugenia Zaballa<sup>1</sup>, Francesco Pennacchio<sup>1</sup>, Julien Lamour<sup>1</sup>, Rémy Barbe<sup>1</sup>, Klara Posfay-Barbe<sup>1</sup>, Idris Guessous<sup>1</sup>, Silvia Stringhini<sup>1</sup>  
<sup>1</sup>Geneva university hospitals, Rue Jean-Violette 29, Switzerland

**Background and Objective:** The COVID-19 pandemic and related restrictions may have modified children's health behaviours with varying effects according to social circumstances. We aimed to assess the demographic and socio-economic determinants of health behaviours and their changes during the pandemic.

**Methods:** A population-based sample of children (3-17 years) was recruited between December 2021 and June 2022 in Geneva, Switzerland. Screen time (ST), physical activity (PA), green space time (GST), sleep time, and their pandemic-related changes were parent-reported. Adherence to international recommendations for health behaviours was defined using age-specific thresholds (tertiles for GST), and determinants evaluated with generalized estimating equations.

**Results:** Of 2067 children (49% female; mean age=10.2), 68% met the recommendations for ST and PA, and 80% for sleep time. Girls and older children were more likely not to meet PA (Odds Ratio=1.88; 95% Confidence Interval: 1.55-2.27, OR=1.11, 95%CI: 1.08-1.14, respectively) and sleep guidelines (OR=1.29; 95%CI: 1.02-1.63, OR=1.09, 95%CI: 1.05-1.12, respectively), and to have low GST (OR=1.43; 95%CI: 1.19-1.72, OR=1.18, 95%CI: 1.15-1.21, respectively); age was also associated with excessive ST (OR=1.53; 95%CI: 1.46-1.62). Children whose parents were born in Southern/Eastern-Europe or outside Europe, or had a lower education were at increased risk of not meeting ST and sleep recommendations. During the pandemic, older age and an average-to-poor financial situation were associated with unhealthy behavioural changes including increased ST, and decreased PA and GST, but also with sleep quality improvement. Decrease in PA and GST was also more likely among children from Southern/Eastern- or non-European origin, or whose parents had a lower education.

**Conclusion:** Older age, migration background and lower socio-economic conditions were determinants of unhealthy behaviours and of a worsening of behaviours during the pandemic, although positive effects were also observed. The pandemic may have reinforced existing social patterning of health behaviours, which calls for tailored interventions targeting specific subgroups.

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### The impact of celebrity and influencer endorsement on the gambling attitudes of Australian young people

Samantha Thomas<sup>1</sup>, Hannah Pitt<sup>1</sup>, Simone McCarthy<sup>1</sup>

<sup>1</sup>Deakin University, Australia

**Background:** Research shows that young people perceive celebrity endorsement as having an influential impact on the appeal of gambling for young people. While regulations have focused on limiting the times gambling marketing can be shown, very little consideration has been given to the overall appeal strategies used within advertising, and how these might reach young people via different media platforms. This study aimed to understand young people's perceptions about the use of celebrity and influencer endorsement in gambling promotions, the impact of these strategies, and young people's perceptions of the policy mechanisms that could be used to respond.

**Methods:** 21 focus groups were conducted using photo elicitation techniques. Participants were asked questions relating to celebrity and influencer endorsements of gambling advertising, what they could recall about this marketing, and their attitudes towards these forms of promotion. Data was analysed using reflexive thematic analysis.

**Results:** Young people recalled seeing gambling marketing that featured celebrities and influencers in a range of media spaces. They perceived that both celebrities and influencers would have an impact on the normalisation of gambling because young people look up to them and would be prompted to want to try the brand advertised as a way of showing support. However, young people were also critical of such endorsements. Banning celebrities and influencers from gambling ads was supported by most young people in this study.

**Conclusion:** This research provides an in-depth understanding of young people's attitudes towards celebrity and influencer endorsements of gambling. This extends previous literature that shows celebrity endorsements as particularly influential for young people, and suggests that influencers are effective in normalising gambling for young people. Policy makers should move beyond thinking about

timing as the most important area for regulation, to consider the broader factors within marketing that may normalise gambling for young people.

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### Australian women's attitudes towards alcohol industry sponsorship of women's sport

Hannah Pitt<sup>1</sup>, Florentine Martino<sup>1</sup>, Samantha Thomas<sup>1</sup>, Simone McCarthy<sup>1</sup>, Grace Arnot<sup>1</sup>, Sarah Marko<sup>1</sup>, Danica Keric<sup>2</sup>, Julia Stafford<sup>2</sup>

<sup>1</sup>Deakin University, Australia, <sup>2</sup>Cancer Council WA, Australia

**Background:** The alcohol industry uses a range of tactics to align themselves with female friendly causes and events. These promotional strategies may influence women's views about alcohol products and their subsequent consumption behaviours. While the alcohol industry has mainly sponsored male sports, there is evidence that they are increasingly sponsoring women's sports. This study aims to explore how women interpret and support alcohol industry relationships within women sport.

**Methods:** An online panel survey was conducted with n=497 Australian women who had consumed alcohol in the past year. This presentation focuses on questions related to alcohol industry sponsorship of sport. This included questions about why participants thought the alcohol industry sponsored women's sport, their support for this, and the perceived influence of these sponsorships on women's alcohol attitudes. Reflexive thematic analysis was used.

**Results:** Women perceived that the alcohol industry sponsored women's sport for: a) the increased exposure of their brands, b) as a mechanism to increase their profits, and c) to normalise the consumption of alcohol use. About half of women were supportive of these sponsorship relationships, stating that the alcohol industry was a legitimate business and could be positive for women's sport by increasing equality with men's sport and providing much needed financial support. Women who were not supportive perceived that women's sport was not an appropriate platform to promote alcohol, that children could be exposed to this marketing, and that it could ultimately increase women's alcohol consumption.

**Conclusion:** Globally, women's sport is rapidly growing and is arguably an increasingly attractive marketing space for unhealthy industries to increase their markets. Strategies should be developed to protect women's sport from such promotions. This includes government intervention to restrict the alcohol industry's ability to sponsor sporting teams and events and develop mechanisms to enable women's sport to resist such sponsorship deals.

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### Health Action Zones in Sicily: a model to identify social and health inequalities

Antonio D'Anna<sup>1</sup>, Alessandro Arrigo<sup>2</sup>, Alessandra Allotta<sup>2</sup>, Emanuele Amodio<sup>3</sup>, Nicole Bonaccorso<sup>1</sup>, Alessandra Casuccio<sup>3</sup>, Francesco Leonforte<sup>3</sup>, Antonello Marras<sup>2</sup>, Sebastiano Pollina<sup>2</sup>, Walter Priano<sup>3</sup>, Claudio Rubino<sup>3</sup>, Martina Sciortino<sup>3</sup>, Salvatore Scondotto<sup>4</sup>, Francesco Vitale<sup>3</sup>, Alessandro Migliardi<sup>5</sup>

<sup>1</sup>Doctor Resident in Hygiene and Preventive Medicine, University of Palermo, Italy, <sup>2</sup>DASOE Sicily, Italy, <sup>3</sup>University of Palermo, Italy, <sup>4</sup>ex DASOE Sicily, Italy, <sup>5</sup>Servizio sovrazonale di Epidemiologia - ASL TO3, Piedmont Region, Italy

**Background & Objective:** The Health Action Zones (HAZs) represent geographical aggregates that allow to divide larger territories into smaller areas. They were developed by the English National Health Service (NHS) in the 2000s to identify deprived areas and, ultimately, target, tackle and reduce health inequalities over the whole territory. Since Piedmont was the first Italian region to develop the HAZs, a collaboration with Sicily was signed to implement the system over the insular territory as well.

The framework of the HAZs system for the Sicilian region is proposed below.

**Material and method:** In each HAZ social and health inequalities would be evaluated based on two indicators: their socio-economical condition and their overall health status.

**INDICATOR OF SOCIAL DISADVANTAGE:** Subjects with low education: percentage of individuals (between 15-60) having stopped their education at completion of primary school or before. Inactive subjects: percentage of individuals (between 15-64) students, homemakers, unable to work or retired. NEET: percentage of individuals (between 15-30) not being engaged in employment research, education, and professional training. Percentage of subjects in crowded households: overcrowding would be established if the residence size is less than 30, 50, 65, 80, 110, and 125 m<sup>2</sup> when the cohabitants are respectively 1, 2, ..., 6.

**INDICATOR OF HEALTH.** Based on an epidemiologic study conducted in Sicily, these items have been selected by D'Anna et al as the most critical: Crude mortality

rate associated with diabetes. Crude mortality rate associated with cardiovascular disease. Infant mortality rate. Percentage of women (between 50-69 years) who undergo breast cancer screening. Road accidents per capita.

Results: 231 HAZs were identified (111 between provincial capitals and 120 in inner areas) with an average population of 22,000 inhabitants.

Conclusion: This tool can contribute to the Evidence-Based-Policy-Making process, promoting health-service development and improving effectiveness of Sicilian Health System in reducing inequalities.

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### Exploring the determinants of demand for solar systems in Ghanaian Healthcare Facilities - a choice experiment

Ana Perez Arredondo<sup>1</sup>, Kennedy Alatinga<sup>2</sup>, Evelyn Ewera<sup>3</sup>, Callistus Agbam<sup>1</sup>, Katja Bender<sup>1</sup>

<sup>1</sup>International Centre for Sustainable Development (IZNE) of the University of Applied Science Bonn Rhein-Sieg (HBRS), Sankt Augustin, Germany,

<sup>2</sup>Faculty of Planning and Land Management at SD Dumbo University of Business and Integrated Development Studies, Wa, Ghana, <sup>3</sup>Center for Development Research (ZEF), University of Bonn, Bonn, Germany

Background: Access to electricity is one of the enabling factors for healthcare service provision. From the sustainable development perspective, an essential requirement for improving health and caring for our environment is to assure that health facilities have sufficient and reliable access to the supply of clean and sustainable energy. The objective of this work is to investigate the users' perceptions of electricity needs and electricity sources and the way those influence different attributes and their relevance for the diffusion of renewable electricity systems in healthcare facilities.

Methods: To identify preferences and choices, Stated Choice modelling was applied as the use of solar PV systems in health facilities is not widespread in Ghana. This method allows to present the respondents with hypothetical options, which have attributes close to the real world. Four attributes were considered, namely electricity system configuration, initial investment cost, monthly costs, and improvements to the reliability of the electricity supply.

Results: The largest share of the 200 health facilities interviewed reported services provision as outpatient treatment, provision of maternity services and family planning, which are relatively low electricity-intensive services. However, there was a general perception that increased reliability on the electricity supply can improve the health service provision and operation of the facilities. Moreover, despite that preferences towards the solar systems, the initial investment costs of the solar systems is still perceived as preventing the adoption of this technology

Conclusion: From this study we can conclude that health facilities in Ghana rely greatly on the national supply which has issues with reliability, compromising the delivery of healthcare services. However, the adoption of alternative electricity technologies based on renewable sources is not likely to occur at the facility level without the engagement of other actors that can help bridging the barriers for adoption, as initial investment costs.

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### What does the world think about working or not? World Values Survey 2017-2022

Elif Yüce Yörük<sup>1</sup>, Aslı Ata Teneler<sup>2</sup>, Ceren Varer Akpınar<sup>3</sup>

<sup>1</sup>Muğla Provincial Health Directorate, Orhaniye, İsmet Çatak Cd. 22- 6, Muğla Merkez/Muğla, Türkiye, <sup>2</sup>Giresun Community Health Centre, Çınarlar, Sokakbaşı Cd., Giresun Merkez/Giresun, Türkiye, <sup>3</sup>Public Health Department, Giresun University Faculty of Medicine, Türkiye

Background and Objective: By using the 7th wave of World Value Survey (WVS), we investigated the cross-region differences in opinions about working life and the relations with sociodemographic determinants.

Methods: In current descriptive/cross-sectional study, WVS data which contains 78 countries from 6 World Health Organization (WHO) regions (African Region (AFR), Region of the Americas (AMR), South-East Asian Region (SEAR), European Region (EUR), Eastern Mediterranean Region (EMR), Western Pacific Region (WPR)) with 87760 participants were pooled for the analysis. Opinions about working life were selected as dependent variable. Their relation with age, sex, place of residence, marital status, education level, sector of employment, status of employment, social class, income level, immigration status, feeling of happiness, self-rated health, satisfaction with life and country region by WHO classification were evaluated. Descriptive and the chi-square analysis were conducted ( $p < 0.05$ ). Results: Mean age was  $42.85 \pm 16.35$ , 52.5% were female. The distribution of the regions were 26.2% of AMR, 23.0% WPR, 22.3% EUR, 13.6% EMR, 9.3% SEAR, 5.6%

of AFR.

It was determined that 60.3% of the participants were full-time employees and the highest rate was 71.2% in SEAR. The highest income level was 11.5% in SEAR. Being an immigrant was reported mostly in the EUR (10.0%). According to regions, opinions about working life differ significantly ( $p < 0.001$ ).

In terms of opinions on working life; those who stated work is important (88.5%) and those who thought work is a duty to society (89.8%) were highest in the AFR. Additionally, those who reported men should have more right to a job was 74.2%, those who agreed that native people should have the job priority was 89.2% which were the highest in the EMR.

Conclusion: Differences of opinions between regions regarding the place of women and immigrants in working life are quite evident. Discrimination in working life is an important issue concerning public health.

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### Knowledge and practice of biosafety among laboratory staff in Tunis governorate, Tunisia

Sondes Derouiche<sup>1</sup>, Nissaf Bouafif ep Ben Alaya<sup>1</sup>, Mohamed Makhoulouf<sup>2</sup>, Salah Amor<sup>3</sup>, Hejer Letaief<sup>1</sup>, Aicha Hechaichi<sup>1</sup>

<sup>1</sup>National Observatory of New and Emerging Diseases, Tunis, Tunisia, <sup>2</sup>DRS Sfax, Tunisie, Minister of Health, Tunisia, Sfax, Tunisia, <sup>3</sup>CO-Coordinateur scientifique du programme FETP Tunisia

Background: Developing countries often lack biosafety standard operating procedures. A need to study biosafety practices among staff of state and private laboratories has been identified. This study aimed to assess the knowledge and practices of laboratory standard precautions (LSP) among laboratory staff in human and animal laboratories in the governorate of Tunis.

Methods: A cross-sectional descriptive study were conducted using a standardized questionnaire administered between December 2021 and January 2022. Data were collected among laboratory staff who agreed to participate in this study. Answers were judged according to the score granted to each item and used during a face-to-face interview.

Results: Among the 152 staff interviewed, 70% were from the public sector. The majority of staff was vaccinated against hepatitis B (84.5%). The overall level of knowledge was satisfactory in 51% of cases. In the area of proper use of personal protective equipment, 95% wore the mask and 80% the gloves. On a practical level, 66% of the staff questioned, regardless of their categories, had an adequate overall perception of biosafety.

Conclusion: Although this study revealed several limitations such as the reluctance and unavailability of laboratory staff during the study period, significant gaps affecting both knowledge and practice among laboratory staff in Tunis region have been identified. Continuous staff training based on behavior and on application of universal and specific hygiene measures as well as periodic evaluations of these laboratories is recommended.

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### The 2008 economic crisis' impact on perinatal and infant mortality in Southern European countries

Julia Doetsch<sup>1</sup>, Ricardo Almendra<sup>2</sup>, Teresa Leão<sup>3</sup>, Eva Pilot<sup>4</sup>, Thomas Krafft<sup>4</sup>, Henrique Barros<sup>3</sup>

<sup>1</sup>Institute of Public Health, University of Porto (ISPUP), Epidemiological research Unit (EPIUnit) Germany, <sup>2</sup>CEGOT-Centre of Studies on Geography and Spatial Planning; Department of Geography and Tourism, University of Coimbra Milton Severo EPIUnit - Instituto de Saúde Pública da Universidade do Porto, Portugal, <sup>3</sup>EPIUnit - Instituto de Saúde Pública da Universidade do Porto, Portugal, <sup>4</sup>Faculty of Health, Medicine and Life Sciences, Care and Public Health Research Institute, Maastricht University, Maastricht, the Netherlands

Background and objective: The study of crises events provides important lessons to prepare for upcoming events. The Great Recession's impact on perinatal health in Europe can provide relevant insights on the healthcare and social protection systems' response in the protection of the health of the most vulnerable groups. To assess time trends and international disparities in perinatal (PMR) and infant mortality (IMR), following the Great Recession, and their association with socioeconomic indicators in Portugal, Greece, Italy and Spain.

Methods: Associations were assessed through generalised linear models for all four countries. A Poisson joinpoint regression model was applied to explore PMR and IMR trends changes between 2000 and 2018. Country disparities were analysed using Mixed Effect Multilevel models.

Results: IMR and PMR have decreased overall in the four selected countries

between 2000 and 2018. Still, whereas in Spain, Italy and Portugal the decreasing pace was attenuated after 2009, in Greece a positive trend was found after the 2008 crisis. IMR and PMR were significantly associated with socioeconomic indicators in all four countries. National disparities in the evolution of IMR and PMR were significantly associated with most socioeconomic indicators between 2000 and 2018.

**Conclusion:** Our results confirm the impact of the Great Recession on PMR and IMR trends in all four countries, taking recurring associations between macroeconomic cycles, variations in mortality trends, macroeconomic volatility, and stagnation of IMR and PMR into account. The association with socioeconomic indicators stresses the necessity to strengthen social protection systems and healthcare systems to better protect the population health from the earliest days.

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### Cancer-related incidence and mortality among children and adolescents in the MENA region countries: Gap between rich and poor countries

Basema Saddik<sup>1</sup>, Ankita Shukla<sup>2</sup>, Rouba Georgi Zeidan<sup>3</sup>

<sup>1</sup>College of Medicine, University of Sharjah United Arab Emirates, <sup>2</sup>Research Institute for Medical and Health Sciences "806, Al gurg 212 building al nahda 2" United Arab Emirates, <sup>3</sup>Research Institute for Medical and Health Sciences, University of Sharjah

**Background:** Cancer is among one of the leading causes of death in children and adolescents and majority proportion of these cases are clustered into low and middle income countries. Previous studies have shown discrepancy in all age cancer incidence and mortality by country's level of development. The MENA region comprises of countries with heterogeneous income and development level. Present study aims to assess if discrepancies exist for cancer incidence and death rates among children and adolescents in the MENA region countries.

**Material and Methods:** Data on cancer incidence and mortality rates were drawn from the Global Burden of Disease Study (GBD) 2019 for all malignant neoplasms (including non-melanoma skin cancers) excluding benign neoplasms. The analysis is restricted to children and adolescents aged less than 20 years. Mortality Incidence rates (MIR) are calculated as proxy measure of survival for each cancer type and country. Moreover, Pearson's correlation coefficient is calculated for association between socio development index (SDI) and MIR.

**Results:** A marked difference is observed in cancer-related death rates in low income vs high income countries. MIR is higher in low income countries, especially for males and certain types of cancer such as liver, colon and rectum, brain and central nervous system, and non-Hodgkin lymphoma among others. There is a negative correlation between country's SDI and MIR i.e. the higher the SDI of the country, the lower the MIR values.

**Conclusion:** Present discussion calls for evidence-based action to reduce cancer-mortality and burden of disease in this age group. The updated data on cancer incidence and mortality at the national level is missing for countries in the region. Reliable estimates of the cancer burden can provide a comprehensive picture of how the impact of cancer varies between geographic areas and between economies. Such estimates, can inform the development of cancer control strategies.

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### Living in poverty is associated with accelerated biological aging

Andrea Dalecká<sup>1</sup>, Albert Ksinan<sup>1</sup>, Anna Polcova<sup>1</sup>, Hynek Pikhart<sup>2</sup>, Martin Bobák<sup>2</sup>

<sup>1</sup>Masaryk University RECETOX Kamenice 34, Brno, Czech Republic,

<sup>2</sup>University College London, Masaryk University Department of Epidemiology and Public Health, RE CETOX 1-19 Torrington Place, London, United Kingdom

**Background and Objective:** Biological aging reflects a decline in the functions and integrity of the human body that is closely related to chronological aging, but it is also driven by many external factors. A variety of biomarkers have been found to predict biological age. Biological age higher than chronological age (biological age advancement) indicates an accelerated state of biological aging and a higher risk of premature morbidity and mortality. This study investigated how socioeconomic disadvantages influence biological aging.

**Methods:** The data from the National Health and Nutrition Examination Survey (NHANES) IV, including 10 nationally representative cross-sectional surveys between 1999-2018, were used. The analytic sample was N = 54,168 (20-85 years). We used a total of 11 biomarkers for estimating the biological age. Our main outcome was biological age advancement (BAA), calculated as biological age minus the chronological age, where positive values indicate worse health. Poverty

was measured as a ratio of family income to the poverty level (5 categories). The BAA was regressed on poverty levels, age, their interaction, education, sex, race, and a data collection wave. Sample weights were used to make the estimates representative of the US adult population.

**Results:** The results showed that BAA was positively associated with poverty (B = 0.16 per 1 category, p < .001), above and beyond other covariates. The association between BAA and age was U-shaped. Importantly, the interaction of poverty and age was significant (B = .017 per year, p < .001), as the effect of poverty was the greatest in middle-aged categories, while limited in younger and elderly groups.

**Conclusion:** In a nationally representative US adult population, we showed that higher poverty enhances the acceleration of biological age, particularly in middle-aged persons. It might be hypothesized that the social stressors accumulated at younger age can promote health inequalities later in life.

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### Reframing Health in Urban Airport Regions

Evelyn de Leeuw<sup>1</sup>, Alana Crimeen<sup>1</sup>, Robert Freestone<sup>2</sup>

<sup>1</sup>University of New South Wales Australia, <sup>2</sup>University of New South Wales

**Background and Objectives:** The COVID-19 pandemic has elevated awareness of the role of airports in public health. However, the influence of airports on health goes beyond the spread of infectious diseases. In cities, airports have increasingly complex relationships with transportation networks, economies and industries, built and natural environments and social systems. A new international airport in Sydney, Australia, is being developed alongside an airport-focused city plan, creating the opportunity to interrogate the considerations given to determinants of health within urban airport planning.

**Methods:** A literature review was conducted to identify research, policies and programs of urban airport development relevant to health and health-adjacent planning approaches such as green infrastructure, sustainability, liveability and wellbeing. A content analysis of strategic planning documents for the Western Sydney Airport region was then conducted, identifying the presence and framing of these concepts at a local, regional and state level.

**Results:** There is a growing global trend towards airport policies and programs that, at a strategic level, align with the Sustainable Development Goals, reduce environmental impacts and promote urban integration. Many of these programs adopt health-adjacent goals. Health-explicit approaches primarily focus on environmental protection and pollution management. These findings are reflected in the Western Sydney Airport regional planning documents. However, the strategic plans of the near-airport area have a reduced presence of the health promoting planning priorities of the greater region and an increased focus on the airport-specific planning requirements.

**Conclusion:** More consideration needs to be given to the broader public health implications of the airport. This includes problems such as disruptions to local transportation, presence of community spaces and the equitable distribution of economic benefit. Centralising a comprehensive focus on public health creates an opportunity to develop solutions to the conflict between urban airports and communities.

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### Identifying health literacy profiles among migrant communities to improve health and equity outcomes

Sónia Dias<sup>1</sup>, Maria Marques<sup>1</sup>, Ana Gama<sup>2</sup>, Christina Cheng<sup>3</sup>, Richard Osborne<sup>1</sup>

<sup>1</sup>NOVA School of Public Health, Public Health Research Centre, CHRC, Universidade NOVA de Lisboa, Lisboa, Portugal, <sup>2</sup>NOVA School of Public Health, Universidade NOVA de Lisboa, Portugal, <sup>3</sup>Centre of Global Health and Equity, Swinburne University of Technology, Melbourne, Australia

**Background and Objective:** Health literacy is a key enabler to accelerating progress towards noncommunicable diseases targets in the Sustainable Development Goals. Gaining an understanding of people's health literacy strengths, needs and preferences provides insight into whether individuals can access, understand, appraise, remember or use health information or engage with health services. Using health literacy as a measurable multidimensional concept, we aimed to identify priority groups of migrants at risk of poor health and equity outcomes.

**Methods:** We combined quantitative and qualitative cross-sectional data of 1126 migrants living in Portugal. Quantitative assessments used the Health Literacy Questionnaire (HLQ), with nine distinct dimensions and sociodemographic variables. Descriptive and hierarchical cluster analyses were performed to characterise and generate profiles of groups with similar health literacy patterns. Semi-structured interviews were conducted with 15 migrants, stratified by the identified clusters.

Results: We found 16 distinct profiles with different patterns of health literacy strengths and needs. While 11 profiles revealed strengths in 'finding health information' (74.8% of migrants) and 'understanding health information' (73%), 75.4% of the participants from 13 profiles experienced difficulties (low to very low scores) regarding 'health provider support'. Notably, 36.8% (6 profiles) exhibited challenges across many health literacy domains. The interviews revealed that migrants experienced multiple barriers regarding accessing information and services, including service responsiveness, trust and rapport with health care professionals, cultural safety, stigma, and language. A key enabler in relation to health information and service access and engagement was the perceived support from family and peers.

Conclusion: The identification of profiles proved useful to target underserved groups of migrants that are being left behind and not receiving or easily accessing health information or health care. Tailored health literacy-informed strategies that use strengths-based approaches and are informed by peoples needs and preferences can potentially be more effective and equitable.

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### **IQOS marketing to points-of-sale in Israel: a cross-sectional survey with Arab and Jewish retailers**

Amal Khayat<sup>1</sup>, Amal Khayat<sup>1</sup>, Hagai Levine<sup>2</sup>, Carla Berg<sup>3</sup>, Daniel Elbaz<sup>1</sup>, Lorien Abrams<sup>4</sup>, Yael Bar-Zeev<sup>1</sup>

<sup>1</sup>Braun School of Public Health and Community Medicine, Hadassah Medical Organization, Faculty of Medicine, Hebrew University of Jerusalem Ein Kerem, Jerusalem, Israel, <sup>2</sup>Hebrew University of Jerusalem, Israel,

<sup>3</sup>Milken Institute School of Public Health, George Washington University, Washington, United States, <sup>4</sup>George Washington University, United States

Background and Objectives: IQOS is a heated tobacco product (HTP). It is the global HTP market leader and the only HTP in Israel. Smoking rates, as well as IQOS and/or electronic cigarette use, are higher in the Arab than the Jewish population in Israel. The point-of-sale (POS) environment is one of the understudied marketing channels. The way IQOS is promoted to merchants might affect their direct-to-consumer approach. This study aimed to assess and compare POS merchants' attitudes towards IQOS and IQOS marketing strategies at POS between Arab and Jewish neighborhoods.

Methods: We used publicly available data on IQOS Israel website to identify IQOS POS locations in 5 large cities in Israel, Arab, Jewish and mixed. A cross-sectional survey with the POS owner or manager was conducted via phone or in-person. Bivariate analysis was performed using Chi-Square and Fischer's exact test.

Results and Conclusion: 69 surveys were filled - 21 Arab and 48 Jewish. More merchants from Arab POS perceived IQOS as an e-cigarette and that it has appealing flavors ( $p < 0.05$  for all). IQOS marketing has been mostly uniform, but with more personal communication with Arab merchants (80% vs. 50% among Jewish POS,  $p$ -value  $< 0.05$ ). In Arab POS, a higher proportion of merchants were given branded items and invited to IQOS parties, and/or had any interaction with a PMI salesperson ( $p < 0.05$  for all)

Conclusion: IQOS marketing strategies were similar across Arab and Jewish POS, with more personal communication marketing efforts directed at Arab POS. Surveillance of marketing strategies at the POS should include also those serving minority populations.

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### **Socioeconomic disparities of life expectancy: Analysis of 34 provinces in Indonesia as of 2019**

Syarif Hasibuan<sup>1</sup>, Ede Darmawan<sup>2</sup>, Vetty Permanasari<sup>3</sup>

<sup>1</sup>Indonesian Public Health Association, Faculty of Public Health, Universitas Indonesia, Kampus UI Depok, Indonesia, <sup>2</sup>Indonesian Public Health Association (IPHA), Research and Community Service Center, Faculty

of Public Health, Universitas Indonesia, Kampus UI Depok, Indonesia, <sup>3</sup>Department of Health Policy and Administration, Faculty of Public Health

Universitas Indonesia, Indonesian Public Health Association (IPHA) Kampus UI Depok, Indonesia

Background: Life expectancy at birth is one of the Human Development Index (HDI) that measure human development. More than half of Provinces in Indonesia have average of life expectancy at birth lower than the average of national life expectancy at birth (71,3 years). The range of gap is 10 years between Provinces with the lowest and highest life expectancy average at birth.

Objective: To analyze the effect of socioeconomic disparities to Life expectancy at birth among provinces in Indonesia based on data 2019

Methods: We used aggregate data of Province and Districts Government Budget

Allocation for Health from Ministry of Finance and other socioeconomic data form the Central Bureau of Statistics. Dependent variables included average life expectancy of people in each Provinces. Independent variables included the socioeconomic aspect from each Province such as availability of healthcare and physicians, dependency ratio estimates, government budget allocation for health and proportion of people with income below half of the median. Pearson correlation test used to see the correlation between dependent and independent variables.

Results: We found significant correlation between life expectancy average at birth with dependency ratio ( $r = -0,467$ ,  $p$ -value = 0,00), proportion of people with income below median ( $r = -0,386$ ,  $p$ -value = 0,02), and hospital ratio per 1.000 people ( $r = 0,355$ ,  $p$ -value = 0,04). While there are no correlation between life expectancy average at birth with the other independent variable such as physician ratio per 100.000 people, public health center ratio per 100.000 people, poverty percentage and government budget allocation for health.

Conclusions: There are significant disparities of life expectancy average at birth in socioeconomic aspect among Provinces in Indonesia. This study could be evidence-based input for the policymakers to reduce the disparities among Province or evermore to increase life expectancy average at birth.

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### **The geographical access of users with diabetes and hypertension to the 'there's a people's pharmacy here' programme (atfp), Brazil**

Marcio Natividade<sup>1</sup>, Kionna Bernardes Santos<sup>2</sup>, Juracy Bertoldo<sup>1</sup>, Vinicius Mendes<sup>3</sup>, Daniela Morato<sup>4</sup>, Samilly Miranda<sup>1</sup>, Luís Portela<sup>1</sup>, Erika Aragão<sup>1</sup>

<sup>1</sup>Institute of Collective Health / Federal University of Bahia Brazilian Collective Health Association (ABRASCO) R. Basílio da Gama, s/n - Canela,

Salvador - BA, 40110-040 Brazil, <sup>2</sup>Faculty of Medicine - Federal University of Bahia, <sup>3</sup>Faculty of Economics - Federal University of Bahia Brazilian Collective Health Association (ABRASCO) Praça da Piedade, 06 - Dois de

Julho, Salvador - BA, 40070-010 Brazil, <sup>4</sup>Institute of Collective Health / Federal University of Bahia

Introduction: Access to medication constitutes one of the most important socio-economic challenges to treatment continuity. In Brazil, one initiative to expand access to the medication available through primary healthcare is the 'There's a People's Pharmacy Here' Programme (Programa Aqui Tem Farmácia Popular: ATFP), created in 2004; a partnership between the federal government and the private sector, which, since 2010, has dispensed medication to patients with hypertension and diabetes, free of charge. AIM: To identify the factors associated with geographical access to medication for the treatment of Diabetes and Hypertension in Brazil.

Methods: An individualized, descriptive study involving all the dispensation of medication, between 2001 and 2017, for diabetes and hypertension treatment to the users of pharmacies in the Primary Healthcare Network and private retail pharmacies accredited by the ATFP Programme. We calculated the travel patterns from user households to dispensing sites, adopting 3 measures (800, 1,000 and 1,250 metres) to infer "geographically hard to access." To obtain the differences and their respective significance, we applied Pearson's Chi-Squared test, while Estimates of Prevalence Ratios (PR) were used to ascertain the associations between the independent variables.

Results: Between 2010 and 2015, 961,862 medication dispensations were undertaken to treat diabetes and 3,270,635 to treat hypertension, distributed through the Primary Healthcare Network and the accredited retail pharmacies of the ATFP Programme. Across the country, the median distance travelled by users to collect their diabetes medication was 1.5 km, while for hypertension medication, it was 1.3 km. The findings reveal that most users find their medication geographically hard to access regardless of pathology and distance cut-off point. Considerations: An analysis of access to ATFP medication allowed us to identify that in the North, Northeast and Central-West regions, users travel greater distances to collect medications. The first two regions are the poorest in Brazil.

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### **Intergenerational transmission of self-reported body mass index in the context of social mobility - evidence from german longitudinal data**

Michael Porst<sup>1</sup>, Alexander Rommel<sup>1</sup>

<sup>1</sup>Robert Koch Institute, Epidemiology and Health Monitoring, Health Reporting General-Pape-Str. 62 - 66 12101 Berlin Germany

Background: There is evidence of robust intergenerational correlates of body mass index (BMI) suggesting that health is persistent across generations. Since

BMI is closely related to health behaviors that become healthier with higher socioeconomic status (SES), this raises the question of inequalities when poor health persists. We assume that social mobility (SoM) is associated with changes in health behaviors and hypothesize that the degree of transmission varies between mobile groups.

**Methods:** We use longitudinal household-level data from the German Socio-Economic Panel. It provides information on self-reported height and weight, starting in 2002 (two-year cycle). We build a sample of individuals aged 15 to 35 years (12,108 person-years; 50.7% male) and link information on their parents. We calculate BMI as body weight (in kilograms) divided by height (in meters) squared. We measure SoM using offspring and parental education. Comparison leads to three groups: downward mobile (D), no mobility (N), and upward mobile (U). We estimate fixed effects panel models to obtain elasticities by SoM groups. **Results:** After controlling for sociodemographic and household characteristics, we obtain elasticities of 0.156 (D; standard error (SE): 0.043), 0.050 (N; SE: 0.022), and 0.047 (U; SE: 0.025) between mothers and offspring. A comparison with the father-offspring results shows similarities: Elasticities range from 0.137 (D; SE: 0.046), 0.022 (N; SE: 0.023), and 0.068 (U; SE: 0.036). The F-test shows significant group differences between the elasticities of downward and immobile individuals ( $p < 0.05$ ).

**Conclusion:** We obtain differences in BMI elasticities between SoM groups. While elasticities of immobile and upwardly mobile individuals are modest and not significant at the 5% level, a considerable degree of persistence can be found for downwardly mobile ones. For the downward movers, the change in BMI of the offspring is still influenced by the shared family environment, highlighting the need for behavioral prevention.

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### Sleep disorders among medical students in the Middle East and North Africa: a systematic review and meta-analysis

Sonia Chaabane<sup>1</sup>, Karima Chaabna<sup>1</sup>, Salina Khawaja<sup>1</sup>, Jasmine Aboghanem<sup>1</sup>, Dhruv Mittal<sup>1</sup>, Ravinder Mamtani<sup>1</sup>, Sohaila Cheema<sup>1</sup>

<sup>1</sup>Institute for Population Health, Weill Cornell Medicine - Qatar

**Background and objective:** Medical students appear to experience high-level academic load and clinical duties and are a high-risk population for sleep disorders (SDs). Multiple sleep disturbances have been identified among medical students in the Middle East and North Africa (MENA) countries. However, the SD epidemiology is still unclear. Quantifying SD proportion in medical students and assessing the associated factors can help inform the development of targeted interventions to reduce SDs. Our objective is to synthesize SD prevalence and assess associated factors among medical students in MENA countries.

**Methods:** PubMed, Web of Science, Google Scholar, and reference lists of relevant studies were searched by two independent reviewers for grey and non-grey relevant literature. Studies reporting SD prevalence with or without associated factors among medical students in any MENA country were included. Meta-analyses were performed using random-effects models.

**Results:** Twenty-two studies were included in the meta-analysis ( $n=19,955$ , mean age $\pm$ SD [range: 20.5 $\pm$ 1.67 to 23.1 $\pm$ 3.8 years]; sample size [range: 122 to 1,041]). Hypersomnolence was the most prevalent SD [prevalencepooled range: 30.9% (Jordan) to 62.5% (Saudi Arabia)], followed by insomnia [prevalencepooled range: 30.4% (Jordan) to 59.1% (Morocco)], circadian rhythm disorders [prevalencepooled range: 13.5% (Jordan) to 22.4% (Saudi Arabia)], breathing-related sleep disorders [prevalencepooled range: 12.2% (Jordan) to 22.5% (Pakistan)], sleep-related movement disorders [prevalencepooled range: 5.9% (Egypt) to 30.6% (Saudi Arabia)], and parasomnias [prevalencepooled range: 5.6% (Jordan) to 17.4% (Saudi Arabia)]. SD were associated with female sex, studying in the senior years of medical school, anxiety, excessive internet use, and poor academic performance. **Conclusion:** SDs are prevalent among MENA medical students. Further investigation is required to understand SDs for which there is limited data. Public health interventions that are culturally appropriate to the local context of the academic setting are necessary to mitigate SDs and improve the health, well-being, safety, and productivity of MENA medical students.

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### A gender equality assessment tool for the prevention plan of five Italian regions

Clara Mazza<sup>1</sup>, Arianna Bellini<sup>1</sup>, Alessandro Berti<sup>2</sup>, Ester Bonanno<sup>1</sup>, Virginia Casigliani<sup>1</sup>, Francesca Grosso<sup>2</sup>, Veronica Gallinoro<sup>3</sup>, Giusy Fauci<sup>3</sup>, Aurelia Salussolia<sup>3</sup>, Giorgia Soldà<sup>3</sup>

<sup>1</sup>Italian Society of Hygiene and Preventive Medicine, Department of Public

Health, Experimental and Forensic Medicine, University of Pavia, Pavia, Italy, <sup>2</sup>Italian Society of Hygiene and Preventive Medicine, Italy, <sup>3</sup>Italian Society of Hygiene and Preventive Medicine School of Hygiene and Preventive Medicine, University of Florence, Florence, Italy

**Background and objective:** According to the World Health Organization (WHO), sex and gender interact in complex ways to affect health outcomes. In Italy, the most important document regarding planning of prevention strategies is the "Regional Prevention Plan" (RPP), developed by each region according to the national recommendations. All RPPs have 10 mandatory programs that focus on specific Public Health areas. The study aimed to develop a Gender Equity assessment tool for the 10 RPPs programs, to evaluate how gender is included in the plans and raise awareness for future implementations.

**Methods:** The WHO "Checklist for assessing the gender responsiveness of sexual and reproductive health policies" was identified as the main reference after a narrative synthesis of literature. The adapted Gender equality assessment tool is composed of 5 domains, analyzing the dimension of gender in the context, the objectives, the actions, the expected impact, and the monitoring indicators of each program contained in the plans.

**Results:** Five RPPs, representative of Northern (Lombardia, Emilia-Romagna), Central (Lazio, Marche) and Southern (Puglia) Italy, were analyzed. In the context analysis, gender was included in 7 programs in Emilia-Romagna, 10 in Lombardia, 6 in Lazio, 5 in Marche and 4 in Puglia. When considering the objectives, the actions, and the expected impact, no plan had a score higher than 2/10, 5/10 and 1/10, respectively. In Puglia, Marche and Lazio, gender was never detected as having influence on the access to care and on chosen monitoring indicators.

**Conclusion:** In the RPPs investigated, there was never a clear distinction between sex and gender; they were considered mainly in the context analysis, but this did not translate in their consideration in other parts of the plans. These findings underline the need for policymakers to give greater attention to gender and account for its potential impact on health policy outcomes.

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### Social sustainability of healthcare systems: a scoping review

Gianluca Papatutto<sup>1</sup>, Vera Benedetto<sup>2</sup>, Luca Gori<sup>2</sup>, Sabina Nuti<sup>2</sup>

<sup>1</sup>Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa, Italy Health Science Interdisciplinary Research Centre, Sant'Anna School of Advanced Studies, Pisa, Italy, <sup>2</sup>Sant'Anna School of Advanced Studies, Italy

**Introduction:** Sustainability of healthcare systems has become a central issue during recent years. However, most of the research that performed so far focuses on economic sustainability, overlooking other key dimensions such as social and environmental. A scoping review to synthesize the available evidence on social sustainability of healthcare systems was conducted.

**Methods:** We searched Scopus (from 2015 to 2022) for all English, free full text articles and reviews addressing social sustainability strategies and measures applied on or by the healthcare systems. We excluded articles that were not focused on healthcare systems WHO building blocks: health service delivery, health workforce, health information systems, access to essential medicine, health system financing, leadership and governance. Additionally, we separated the articles based on the criteria identified by the literature as measures of social sustainability in healthcare.

**Results:** A total of 210 articles were retrieved. After screening, 34 articles met the inclusion criteria. Number of articles has increased over the past few years. The included studies explored the following dimensions of social sustainability in healthcare: 16 (47%) articles focused on sustainable health, 8 (23%) on patient education or satisfaction, 8 (23%) on workforce education, training or satisfaction, 5 (14%) on availability, affordability or accessibility, and 1 (3%) on employment.

**Conclusion:** Our scoping review has highlighted how research in recent years has focused on sustainable health issues. A minority share concerns sustainability through the assessment of human resources, patients wellbeing and healthcare building construction. Therefore, the findings of this study provides evidence about the necessity of designing a comprehensive, flexible framework to assess and program social sustainability of healthcare systems and programs, including dimensions of community activation and involvement.

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### COVID-19, breast cancer care, and social determinants of health: a cross-sectional study to investigate the impact of a pandemic on health and health care

Charlotte Myers<sup>1</sup>, Kathleen Bennett<sup>2</sup>, Caitriona Cahir<sup>1</sup>

<sup>1</sup>Royal College of Surgeons, Ireland, <sup>2</sup>Royal College of Surgeons, Ireland

Background: Health services for non-communicable diseases, including cancer, were significantly disrupted during COVID-19. Breast cancer (BC) is the most common cancer for women and the on-going impact of the pandemic on BC care needs to be established. The aims of this study were to explore the impact of COVID-19 stressors on healthcare services and quality of life (QoL) in women living with and beyond BC in Ireland and whether the impact varied by social determinants of health (SDH).

Methods: This cross-sectional study was conducted from September 2020 to April 2021. Questionnaire data was collected on predictor variables (e.g. COVID-19 impact, SDH, and clinical characteristics) and outcome variables (e.g. disrupted health services and QoL). The association between COVID-19 impact, disruption to BC services, and QoL was assessed using multivariable regression models. The interaction between COVID-19 impact and health insurance status was assessed within each model.

Results: Of the 387 women who completed the survey, 30.5% reported a high COVID-19 impact and most women reported disrupted BC care. Women who reported a high COVID-19 impact reported significantly more disrupted BC services ( $p < 0.001$ ) and a lower QoL ( $p < 0.001$ ) compared to women who reported a low COVID-19 impact. Private health insurance was found to significantly moderate the impact of COVID-19 on BC services and QoL. Women with a high COVID-19 impact and no insurance experienced significantly more disruption to BC services and lower QoL compared to women with low COVID-19 impact and private insurance ( $p < 0.05$ ).

Conclusions: There was a large disruption to BC services and low QoL for women with BC in Ireland, however, the impact of COVID-19 was not the same for all women. It is important to identify the women who experienced a larger impact during the pandemic so they can be reintegrated into proper BC care, along the entire cancer continuum.

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### Exploring the association between covid-19 vaccination coverage and socioeconomic factors in high income countries

Angelica Gris<sup>1</sup>, Leonardo Villani<sup>1</sup>, Valerio Corona<sup>2</sup>, Maria Gualano<sup>3</sup>, Walter Ricciardi<sup>4</sup>

<sup>1</sup>Section of Hygiene, University

Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>2</sup>Università Cattolica del Sacro Cuore, Italy

<sup>3</sup>School of Medicine, UniCamillus-Saint Camillus International University of Health Sciences, Rome, Italy

Background: COVID-19 vaccination is currently the most effective tool to contain the spread of the pandemic and drastically reduce the number of hospitalizations and deaths. Despite the efficacy demonstrated in clinical trials, ecological studies, and real-world data, two years after the beginning of the vaccination campaign in many countries adherence is low, sometimes with coverage rates  $< 50\%$ . The aim of the study is to explore the association between socioeconomic factors and COVID-19 vaccination coverage worldwide.

Methods: High income countries with a population of more than 350,000, were included, for a total of 49 countries. Vaccination coverage (single dose and complete cycle at September 2021, and booster at November 2022) was extracted from OurWorldinData and WHO database. From WorldBank website we obtained 12 indicators related to education, economic development, and health governance. To evaluate the associations between these indicator and Covid-19 vaccination coverage, we used Spearman's rank correlation coefficient with 95% bootstrapping confidence interval. P values  $< 0.05$  was considered statistically significant.

Results: Of the 12 indicators analyzed, 5 are significantly correlated ( $p < 0.05$ ) with vaccination coverage in the countries analyzed. Percentage of population using internet is correlated with entry into the vaccination cycle ( $r = 0.296$ ). Instead, percentage of population with primary education ( $r = -0.370$ ;  $r = -0.271$ ) and with secondary education ( $r = -0.497$ ;  $r = -0.412$ ) are inversely correlated with first dose and full cycle coverage. Human Development Index ( $r = 0.400$ ;  $r = 0.283$ ;  $r = 0.231$ ) and GDP per capita ( $r = 0.231$ ;  $r = 0.283$ ;  $r = 0.255$ ) are both correlated with coverages of the primary cycle and booster dose.

Conclusions: Socioeconomic factors have played significant roles in influencing vaccinations coverage worldwide even during Covid-19 pandemic. Public health professionals in national prevention campaigns should take these factors into account in order to design more effective interventions based on the socioeconomic characteristics of population subgroups

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### Understanding the social determinants of child mortality in three latin american countries: an approach with machine learning

Carlos Chivardi<sup>1</sup>, Carlos Chivardi<sup>2</sup>, Alejandro Zamudio<sup>3</sup>, Daniella Cavalcanti<sup>4</sup>, Jose Ordoñez<sup>4</sup>, Juan Diaz<sup>5</sup>, Daniela Zuluaga<sup>6</sup>, Cristina Almeida<sup>7</sup>, Edson Mori<sup>8</sup>, Philipp Hessel<sup>9</sup>, Ana Moncayo<sup>7</sup>, Davide Rasella<sup>10</sup>

<sup>1</sup>Center for Health Economics, University of York, UK United Kingdom,

<sup>2</sup>University of York, U United Kingdom, <sup>3</sup>Health Research Consortium -

CISIDAT, <sup>4</sup>Institute of Collective Health, at the Federal University of Bahia

(ISC-UFBA) Brazil, <sup>5</sup>Universidad de los Andes, School of Government,

<sup>6</sup>Universidad de los Andes, School of Government, Colombia, <sup>7</sup>Centro

de Investigación para la Salud en América Latina (CISEAL), Pontificia

Universidad Católica del Ecuador Ecuador, <sup>8</sup>Instituto Nacional de Salud

Pública Mexico, <sup>9</sup>Swiss Tropical and Public Health Institute, Department

of Public Health and Epidemiology Swaziland, <sup>10</sup>Institute of Global Health

(ISGlobal), Barcelona, Spain Spain

Objective: Evaluate the relationship between the social determinants of health (sociodemographic and health system resources) and the under-five mortality rate (TMM5).

Methods: Municipal-level data was obtained from 2000 to 2019 from 9,142 municipalities in three Latin American countries: Brazil, Ecuador, and Mexico. To explore the relationship between social determinants and U5MR, we trained a Random Forest (RF) algorithm, and to assess model robustness, we also trained a Gradient Boosting Machine and a Model Generalized Additive. Finally, we present the mean square error (MSE), root mean square error (RMSE), and mean absolute deviation (MAD) and r-squared to compare the performance of the trained algorithms.

Results: The most important variables to predict the MMR5 according to the RF were illiteracy, poverty, and the Gini index according to the random forest algorithm. We found positive relationships between illiteracy and poverty with U5MR. Nonlinear relationships were also observed between the Gini index and the U5MR. The RF results were MSE = 60626.96, RMSE = 246.22, MAD = 125.61, r-squared = .14, from the Gradient Boosting Machine were MSE = 61956.91, RMSE = 248.91, MAD = 129.49, r-squared = .12 and, from the Model Generalized Additive were MSE = 65813.03, RMSE = 256.54, MAD = 135.87, r-squared = .07.

Conclusions: According to the results obtained, long-term public policies to reduce the MMR5 should focus on reducing illiteracy, poverty, and inequality. Information on modifiable social factors can be useful in planning intervention programs to promote child survival in Latin America and other low-income countries.

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### Trend and magnitude of homicide mortality inequality in the city of são paulo, Brazil, 2006-2019

Edige de Sousa Santos<sup>1</sup>, Katia Bassichetto<sup>2</sup>, Margarida de Azevedo Tenório Lira<sup>3</sup>, Samantha Farias<sup>4</sup>, Moisés Goldbaum<sup>5</sup>, Chester Galvão Cesar<sup>1</sup>, Marilisa de Azevedo Barros<sup>4</sup>

<sup>1</sup>Faculdade de Saúde Pública da Universidade de São Paulo Brazil,

<sup>2</sup>Faculdade de Ciências Médicas da Santa Casa de São Paulo Brazil,

<sup>3</sup>Projeto Temático "Desigualdades Sociais em Saúde nos municípios sedes de duas metrópoles paulistas: mensuração, monitoramento e análises".

Brazil, <sup>4</sup>Faculdade de Ciências Médicas da UNICAMP Brazil, <sup>5</sup>Faculdade de Medicina da Universidade de São Paulo Brazil

Background and objectives: Homicides have a profound meaning, as they are a reflection of inequality and social inequity. The highest homicide mortality rates have been observed in areas of greater social vulnerability (SV). The objective of this study is to analyze the trend in homicide mortality and the magnitude of inequality in this indicator, in the population aged 10-69 years, according to strata of social vulnerability (SSV) in the municipality of São Paulo (MSP), Brazil, between 2006 and 2019.

Methodology: Ecological study of time series, developed in five strata of areas of residence of the MSP, according to level of social vulnerability, considering the São Paulo Social Vulnerability Index of 2010. Homicide mortality rates were calculated for each of the SSV, for each year of the selected period and for the first and last five years. As a measure of inequality, rate ratios (RR) between SSV were used. For trend analysis, the Prais-Winsten regression model and the Annual Percentage Change (APC) were used.

Results: There were significant declines in homicide mortality rates, in both sexes and in all SSV. Mortality inequality in males increased significantly between the analyzed five-year periods (RR from 2.51 to 3.18;  $p = 0.028$ ) between the high and low SV stratum, while in females, inequality remained stationary (RR=2.41 for RR=2.28;  $p = 0.615$ ).

Conclusions: Despite the reduction in homicide mortality rates observed, the

values remain very high, especially for men. The increase in inequality observed among men points to the need to strengthen multisectoral public policies to reduce social inequality and the determinants of violence, with the adoption of intervention measures aimed especially at those who live in areas of high SV, and it is up to the sector health the production of knowledge to show who these people are and where they live.

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### **An intervention program to promote sustainable healthy consumption in foodservice**

Margarida Martins<sup>1</sup>, Rita Rodrigues<sup>2</sup>

<sup>1</sup>Coimbra Health School, Polytechnic Institute of Coimbra Portugal, <sup>2</sup>Faculty of Nutrition and Food Sciences, University of Porto Portugal

**Background and Objective:** The impact of animal source food consumption and food waste on the food sustainability reinforce the adoption of more sustainable diets, being essential to reduce animal protein sources consumption. This study aims to implement an intervention program in order to increase the consumption of vegetable-based meals and reduce food waste in foodservice.

**Methods:** The program was implemented in two business companies. Before intervention, weighing of the individual portions of animal-protein sources and food waste evaluation (leftovers and plate waste) were performed during 8 days. In order to improve the food supply, a guide of vegetarian recipes was prepared and training was given to the foodservice teams by dietitians and a Chef. Awareness materials and videos were developed and posted in the canteen and social networks to encourage adhesion to a more sustainable diet. The consumption of vegetarian dishes and food waste was monitored before and during the intervention.

**Results:** The food waste obtained before intervention was 245.8kg, presenting the animal-protein sources a total of 80.3 kg for plate waste and 10.8 kg for leftovers. Plate waste per consumer varied between 12g and 125g, being the most wasted dishes, those that use more natural resources in their production, such as cow and pork-based dishes. Regarding consumption, 2.1% of participants reported to be vegetarians, 34% never consume the vegetarian dish in the canteen, and 28% consume less than once a month. Only 23% of the participants reported consuming vegetables at least once a day. During intervention, it was observed an 45% increase in the choice of vegetarian dishes replacing animal protein sources. **Conclusion:** The intervention program leads to an increase in the consumption of vegetarian dishes and a decrease in animal-protein sources food waste. This intervention must be reproduced in other canteens contributing to a more sustainable food system.

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### **Analysis of Emergency Room accesses at IRCCS Ospedale Policlinico San Martino, Genoa, north-west Italy: differences between Italian and foreigner Liguria residents**

Erica Baldoni<sup>1</sup>, Elvira Massaro<sup>1</sup>, Oriana Ferrante<sup>1</sup>, Erika Zumerle<sup>1</sup>, Nicola Calcavecchia<sup>2</sup>, Elisabetta Costa<sup>1</sup>, Stefano Mosca<sup>3</sup>, Giancarlo Icardi<sup>4</sup>

<sup>1</sup>University of Genoa Dipartimento di Scienze della Salute (DiSSal), Università di Genova Italy, <sup>2</sup>University of Genoa, <sup>3</sup>Centro Interuniversitario per la Ricerca sull'Influenza e le altre Infezioni Trasmissibili CIRI-IT Dipartimento di Scienze della Salute (DiSSal), Università di Genova Italy, <sup>4</sup>University of Genoa Dipartimento di Scienze della Salute (DiSSal), Università di Genova, Hygiene Unit, Ospedale Policlinico San Martino IRCCS Genoa, Genoa, Italy

**Introduction:** Several recent studies deal with health inequity regarding the access to health services. Is it possible to use emergency room access as an indirect index of health status of the migrant population? What is the status of inequity in the emergency room of Policlinico San Martino, Genoa? Trying to answer these questions was the goal of our study.

**Methods:** We retrospectively analyzed the characteristics of 265'341 ED accesses from January 1, 2019 to April 12, 2022. 233'926 were of Italian nationality, whereas 31'415 were foreigners. We then considered only people with a residency in Liguria. They were 247'457, and 24'841 were non-Italian (10% vs. 90%). The median age of the two groups was 38 and 59 years respectively, while the gender composition was similar: 52.9%F and 47.1%M the former and 52%F and 48%M the latter.

The analysis shows that 17'647 (71%) people of non-Italian nationality accessed the emergency department for not-urgent color codes (white and green). All of them were below the median age of the population considered. In comparison, 122'999 (55%) Italians accessed the emergency department for not-urgent complaints. Of these 77'702 (63.2%) were below the median age.

Multivariate analysis shows that residents with non-Italian nationality have 4% higher chances than residents with Italian nationality of accessing the emergency room for eye diseases, which is the second most frequent diagnosis out of total accesses (19'406.8%).

Similarly, non-Italian women were 30% more likely than Italians to access the emergency room for pregnancy-related complications.

**Conclusions:** The results show that a different use of services is a potential indication of health and gender inequity. A qualitative epidemiological analysis should be conducted to study the real causes of this dissimilarity.

In the meantime, we will deepen our analysis including additional social and demographic aspects.

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### **Self-reported vs measured body mass index in the Italian adults within cuore project 2018-19**

Chiara Donfrancesco<sup>1</sup>, Laura Iannucci<sup>2</sup>, Emanuela Bologna<sup>2</sup>, Elisabetta Profumo<sup>2</sup>, Cinzia Lonoce<sup>2</sup>, Brigitta Buttari<sup>2</sup>, Anna Lonardo<sup>2</sup>, Serena Vannucchi<sup>2</sup>, Luigi Palmieri<sup>1</sup>

<sup>1</sup>Istituto Superiore di Sanità Department of Cardiovascular, Endocrine-metabolic Diseases and Aging, Italian National Institute of Health Via Gian della Bella 34 00161 Rome Italy, <sup>2</sup>Italian National Institute of Statistics

**Background:** The body mass index (BMI) is often assessed within national surveys from self-reported height and weight rather than measured values for the monitoring population health and the effectiveness of public health strategies.

The discrepancies between measured and self-reported values were assessed using data collected within a health examination survey (HES) on the general adult population, and correction models were estimated and implemented on national interview survey data.

**Methods:** The Italian National Institute of Health conducted the HES 2018-2019 within the CUORE Project measuring weight and height and collecting data on self-reported values in random samples of general population aged 35-74 years residing in ten (of 20) Italian regions distributed in the North, Centre and South: 1033 men and 1061 women.

**Results:** Self-reported and measured data comparison showed greater differences in mean values of height than weight and in women than in men (height +2 cm in men and +3 in women; weight -1 kg and -1 kg, respectively) corresponding to an underestimation of BMI (-1 kg/m<sup>2</sup> and -1 kg/m<sup>2</sup>, respectively). Stable differences were found across age groups and educational levels, except for height, which discrepancy was greatest in women aged 65 years and over. Self-reported vs measured prevalence were: normal weight 40%-33% in men and 55%-45% in women, overweight 46%-46% and 26%-29%, obesity 14%-20% and 16%-24%. Linear regression models were assessed for height and weight adjusting by sex and age classes (R<sup>2</sup>>=0.92); they were implemented to estimate adjusted BMI and normal weight/overweight/obesity prevalence on the national multi-purpose interview survey data collected by the Italian National Institute of Statistics.

**Conclusions:** CORRECTED Self-reported values, adjusted using correction models developed on the basis of the relationship between self-reported and measured height and weight values, could be considered to provide more accurate prevalence of normal weight, overweight and obesity.

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### **Social determinants and diagnosed non-communicable disease in the adult Indonesian population: Longitudinal study from Indonesia family life survey 2007 and 2014**

Kamaluddin Latief<sup>1</sup>, Kamaluddin Latief<sup>1</sup>, Dieta Nurrika<sup>2</sup>, Wayne Gao<sup>3</sup>  
<sup>1</sup>Taipei Medical University "250 Wu-Hsing Street Taipei Medical University" Taiwan, <sup>2</sup>Ministry of Research, Technology and Higher Education, Higher Education Service Institution (LL-DIKTI) Region IV, Indonesia, <sup>3</sup>Taipei Medical University Taipei Medical University Taiwan

**Background:** Social determinants factors, such as education level, socioeconomic, smoking, and nutritional status on non-communicable disease have been known; however, such an association among adults in developing countries remains unclear. The present study was to investigate the social determinants factor and diagnosed non-communicable diseases (NCDs) in the adult's Indonesian population.

**Methods:** A 7-year prospective longitudinal study based on the 2007 and 2014 Indonesia Family Life Survey (IFLS) was conducted on 6,225 adult Indonesian population (≥40 years). The exposure variables were social determinant factors (i.e., employee, smoking, monthly per-capita expenditure (PCE), education level, health insurance, and visited health facility). The outcome variable was diagnosed

NCDs by a health worker, the NCDs defined according to the following 4 diseases: diabetes, coronary heart disease, cancer, or asthma. A multivariate-adjusted logistic regression model was used to investigate association between social determinants factors and diagnosed NCDs

Results: Among 6,225 participants, 9.4% were discovered diagnosed NCDs by health worker. The odds ratios (ORs) and 95% confidence intervals (CIs) of diagnosed NCDs were significantly higher among those who live in an rural area (OR, 1.22; 95%CI 1.01-1.47), who have lower monthly PCE (OR, 1.80; 95% CI, 1.46-2.22), who had BMI  $\geq 23.0$  kg/m<sup>2</sup> (OR, 1.79; 95% CI, 0.148-2.16), and who did not visit health facilities (OR, 1.38; 95% CI, 1.11-1.72), than those who live in a urban area, who have higher monthly PCE, had BMI <23.0 kg/ m<sup>2</sup>, and who did visited health facilities.

Conclusions: There was an association between diagnosed NCD and living in rural areas, low monthly PCE, high BMI and not visiting health facilities. Our study suggests that NCD programs, especially surveillance, are more focusing on the rural areas for those who have low socioeconomic status, overweight or obese and relatively rarely visit health facilities.

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### Pathways towards zero hunger - food security, safety and sustainability in India

Pankaj Patel<sup>1</sup>, Bishwajeet Beshra<sup>1</sup>

<sup>1</sup>International Institute for Population Sciences Mumbai, India

The Indian population is adding 17 million people to the worlds total yearly, with an annual growth rate of 1.6 percent. Despite rapid economic growth in the past two decades, India is unlikely to meet the 2nd SDG Goal of cutting the proportion of hungry people almost to zero by 2030. Per capita availability and consumption of food grains in India have declined since 1996. Global Hunger Index (GHI-2022) ranks India 107th out of 121 countries, which placed it in the category of nations where hunger is at a serious level on the GHI severity scale. Worse, Indias score was poorer than that of many sub-Saharan African counties with a lower GDP than Indias.

In recent years India has made considerable progress in tackling hunger and undernutrition. The pace of change has been uneven in the past two decades, and many have been left behind. This paper examines Indias hunger and nutrition situation due to the rising population and food scarcity through a broad literature review and statistical analyses using four rounds of NFHS data. Findings suggest the proportion of underweight children changed insignificantly between 2015-16 and 2019-21 (from 35.8 to 32.1 percent for the age group of 0-5 years). The latest NFHS 2019-21 shows that 35.5% of children under five years are stunted (height-for-age), 19.3% of children under five years are wasted (weight-for-height), and 7.7% of children under five years are severely wasted (weight-for-height). These are appalling figures.

Our study suggests policy measures for ensuring adequate food security at the household level, particularly for marginalized groups, women, and children. It will be an essential input to a broader international discussion of hunger, food security, nutrition, and food system under UN sustainable development goals, including eradicating hunger.

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### Community mobilization in preventing non-communicable diseases through pbri model among older adults dwelling in Thailand

Sukjai Charoensuk<sup>1</sup>, Yupawan Thongtanunam<sup>2</sup>, Vichai Tienthavorn<sup>3</sup>

<sup>1</sup>Praboromarajchanok Ministry of Public health Praboromarajchanok Institute, Ministry of Public health, Tiwanon Road, Nonthaburi Province, Thailand. Thailand, <sup>2</sup>Boromarajonani College of Nursing

Chonburi Praboromarajchanok Institue, Ministry of Public health 69/1 Sukhumwit Road, Muang District, Chonburi Province, Thailand. Thailand,

<sup>3</sup>Praboromarajchanok Institue

Background and Objective: NCDs are the leading health threat in Thailand. The prevalence of NCDs in Thailand has been increasing for several years, with about 320,000 deaths due to NCDs each year During 2014-2018, it was accounting for 75% of all Thai mortalities. The top three NCD-related causes of deaths were cancers, cerebrovascular diseases, and ischemic heart disease. The objective of this study were to assess the health status of older adults dwelling in the community and to test the feasibility of using community mobilization through PBRI Model to prevent and control NCDs.

Methods: Sample were 2000 older adults living in the Ban-suan Sub-district, Thailand. The health screening was conducted during March 15th - September

30th, 2022. Health data including BMI, blood sugar level, blood pressure, and health behavior related to exercise, diet, emotion, alcohol consumption, cigarette smoking, and obesity were collected using questionnaire. The health care workers in the community were trained to use PBRI Model, which provided the meaningful interpretation to older adults and guideline to control their health risk behaviors based the 7- colors of the balls which represented their health status

Results: The results showed that of 2,000 older adults, 30.80% were in the hypertension patient's group and 4.25% were at risk of hypertension. Additionally, 15.45% were diabetic patients and 2% were at risk of diabetes. The older adults at risk of hypertension or diabetes were invited to the PBRI model conducted by health care volunteer as a part of community mobilization to promote health of these orders. The older adults who participated in this preventing scheme were able to statistically significant improved their blood sugar and blood pressure at p-value .05.

Conclusion: The PBRI model should be used to advocate older adults and caregiver's abilities to assess health problems and able to promote healthy behavior.

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### Intervention strategies and techniques to promote health literacy among socioeconomically disadvantaged groups - a systematic review with albatross plots

Hunny Singh<sup>1</sup>, Florence Samkange-Zeeb<sup>1</sup>, Ruben Herrmann<sup>1</sup>, Jonathan Kolschen<sup>1</sup>, Barnils Pedrós<sup>1</sup>, Tilman Brand<sup>2</sup>, Hajo Zeeb<sup>2</sup>, Benjamin Schüz<sup>1</sup>

<sup>1</sup>Institute of Public Health and Nursing Research, University of Bremen, Bremen, Germany, <sup>2</sup>Department of Prevention and Evaluation, Leibniz

Institute for Prevention Research and Epidemiology - BIPS, Bremen, Germany

Background: Health literacy comprises the ability to identify, obtain, interpret and act upon health information. Low health literacy is a major risk factor for morbidity, premature mortality, and increased use of emergency care. Systematically developing interventions to increase health literacy using effective techniques is an important public health task. The aim of this systematic review therefore is to summarize interventions to increase health literacy in socioeconomically disadvantaged groups and identify the most effective techniques.

Methods: Following PRISMA guidelines, we searched the databases SCOPUS, Pubmed, Web of Science and CINAHL. We included intervention studies with a quantitative study design and a control group aiming to promote health literacy or health knowledge in socioeconomically disadvantaged populations between 18 and 65 years. Where possible, we converted effect sizes into cohen's d and compared mean differences of intervention and control groups. Using p-values, sample sizes and effect sizes we created albatross plots to summarize the results according to different outcomes (health knowledge on childfeeding and maternal nutrition, diabetes, food, cancer screening, functional health literacy, HIV knowledge, mental health literacy).

Results: We screened 3696 titles and abstracts and 206 full-texts. In total, 86 articles were included of which 57 were summarized in seven albatross plots. The majority of the studies had a randomized controlled study design (n=50). More effective intervention approaches used focus group discussion prior to intervention, used multilingual educational materials and included professionals as intervention deliverers who were fluent in the first languages of the study population. Additionally, the use of educational materials in video, and text form, fotonovelas and interactive group education sessions with role playing exercises were effective as well.

Conclusion: Effective interventions to improve health literacy and knowledge in socioeconomically disadvantaged populations should take into account the background of participants, use multiple languages and if possible professional intervention delivery personnel.

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### Primary care organisation in remote rural municipalities in Brazil

Lucas Cabral<sup>1</sup>, Ronaldo Teodoro<sup>2</sup>, Márcia Fausto<sup>2</sup>

<sup>1</sup>State University of Rio de Janeiro Brazil, <sup>2</sup>Oswaldo Cruz Foundation

Results: Health measures to surmount barriers to access were identified in all RRM, while other measures differed to suit the characteristics of the territories. RRM generally showed improved PHC infrastructure, non-routine itinerant activities and PHC teams taking services into the interior, particularly in the work of CHWs and nursing personnel. In areas of the Amazon region, where access is predominantly by river, floating PHC facilities and ambulance launches were found; in areas accessed mainly by road, in addition to itinerant activities, nurses played an expanded role and worked call-shifts. In the semi-arid, PHC facility

opening hours were organised differently and PHC teams travelled daily to visit support stations in remote communities. In a region of traditional populations, where agribusiness was expanding, there were itinerant "task force" activities and health care for priority groups. The CHWs' role was crucial to continuous, routine monitoring in remote areas of municipalities. Conclusions remote rural territories displayed specific and differing populational, geographical, climatic, economic, social and cultural features to be considered when organising health services, as they demand differing models to guarantee universal access with equity. Primary health care organisation in remote rural municipalities in Brazil demand differing models to guarantee universal access with equity.

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### Social inequality in smoking in Mongolia

Enkhjargal Batbaatar<sup>1</sup>, Javkhlanbayar Dorjdagva<sup>2</sup>, Munkhjargal Dorjradvan<sup>3</sup>, Naranzul Dambaa<sup>4</sup>, Tsolmon Boldoo<sup>5</sup>

<sup>1</sup>University of Eastern Finland Department of Social Sciences Finland Kuopio Campus, Yliopistonranta 1 E, Snellmania P.O.Box 1627 FI-70211 Kuopio, Finland, <sup>2</sup>Institute of Public Health and Clinical Nutrition, <sup>3</sup>Department of Hygiene and Public Health, Kansai Medical University Japan, <sup>4</sup>Tuberculosis Surveillance and Research Department, National Center for Communicable Disease Mongolia, <sup>5</sup>Tuberculosis Surveillance and Research Department, National Center for Communicable Disease

**Background and Objectives:** Smoking is one of the main public health problems as it is one of leading causes of preventable disease, disability, and death. However, socioeconomic inequality in smoking is less studied in developing countries such as Mongolia. The aim of the study is to examine socioeconomic inequality in smoking in the adult population in Mongolia.

**Methods:** This study analyzed the data of 41,777 adults from the Mongolian National Tuberculosis Prevalence survey conducted between 2014 and 2015 by the National Center for Communicable Disease and the Ministry of Health Mongolia. Self-reported smoking was used as an outcome variable. Socioeconomic status was measured by educational level. We employed the Erreygers concentration index to assess the degree of socioeconomic inequality in smoking.

**Results:** Smoking prevalence in females and males in Mongolia was 7.5% and 52.9%, respectively. Smoking was concentrated among the lower-educated males (-0.057, p<0.01). The higher-educated women tended to smoke more but it was statistically insignificant. Erreygers's concentration index for smoking in the general population was significantly negative (-0.047, p<0.01), indicating that the lower educated people tended to smoke more. The decomposition results show education level, alcohol consumption level, location, and employment status were the main contributors to social inequality in smoking in Mongolia.

**Conclusion:** Social inequality in smoking exists in Mongolia and its pattern and magnitude vary between females and males. Further public health policies on smoking should consider the characteristics of social inequality in smoking in the country.

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### The changing burden of disease: causes of death and social inequality, Amsterdam; from 1854

Dr. Elands<sup>1</sup>, Prof. Janssens<sup>2</sup>

<sup>1</sup>Radboud University The Radboud Group for Historical Demography and Family History Erasmusplein 1, Nijmegen, the Netherlands Netherlands, <sup>2</sup>Radboud University

According to the epidemiological transition theory, the dominant pattern of causes of death due to infectious disease began to give way from approximately 1870 onwards to a pattern dominated by degenerative diseases which include various forms of cancer, cardiovascular diseases and strokes. Although the general outline of this theory is widely accepted, there are two limitations. First, the theory is based on highly aggregated data, such as national statistics. Second, the theory does not take into account socioeconomic gradients within populations. Possibly, the epidemiological transition of disease occurred at a different pace and timepoint for designated socioeconomic groups, confounded by the spatial distribution of these groups in a given city. Within this scope, the socioeconomic and nutritional determinants that have driven the modernization of the health system in the Netherlands were spatially reconstructed. In the Amsterdam Health and Disease Database Crowdsourcing Project, individual-level determinants of death and disease at the city level in Amsterdam from 1854-1940 were collected and digitized for 625.563 individuals. Apart from the cause of death, the registers state age, sex, address, marital status, rental price, and occupation of each individual. With this unique data, the epidemiological

transition theory can be tested with more accuracy. To what extent, was the decline in the burden of infectious disease socioeconomically and nutritionally patterned across the city? A spatial analysis of individual-level cause of death data was employed to understand diffusion mechanisms linked to the spread and variation of sociodemographic behaviors. This novel approach promises to make a breakthrough in the current academic debate on the determinants of the great leaps in life expectancy before the 1940s, thereby offering prevention strategies for countries currently undergoing the epidemiological transition of disease.

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### Premature mortality and levels of inequality in years of life lost across 296 regions of 31 European countries in 2019: A burden of disease study

Nour Mahruseh<sup>1</sup>, José Chen-Xu<sup>2</sup>, Periklis Charalampous<sup>3</sup>, Terje Eikemo<sup>4</sup>, Orsolya Varga<sup>5</sup>, Diana Grad<sup>6</sup>, Andreea Badache<sup>7</sup>, Enkeleint Mechili<sup>8</sup>, Romana Haneef<sup>9</sup>, Juanita Haagsma<sup>3</sup>, Elena Von der Lippe<sup>10</sup>, Grant Wyper<sup>11</sup>, Carl Baravelli<sup>4</sup>

<sup>1</sup>Department of Public Health and Epidemiology, Faculty of Medicine, University of Debrecen Department of Public Health and Epidemiology, Faculty of Medicine, University of Debrecen Hungary, <sup>2</sup>Public Health Unit, Primary Healthcare Cluster Baixo Mondego NOVA National School of Public Health, Public Health Research Centre, Universidade NOVA de Lisboa Portugal, <sup>3</sup>Department of Public Health, Erasmus MC University Medical Center, Rotterdam Netherlands, <sup>4</sup>Norwegian Institute of Public Health Norway, <sup>5</sup>Department of Public Health and Epidemiology, Faculty of Medicine, University of Debrecen Hungary, <sup>6</sup>Department of Public Health, FSPAC, Babeş-Bolyai, Cluj-Napoca Romania, <sup>7</sup>Örebro University, Swedish National Research School of Ageing and Health Sweden, <sup>8</sup>Department of Healthcare, Faculty of Health, University of Vlora Albania, <sup>9</sup>Department of Non-Communicable Diseases and Injuries, Santé Publique France France, <sup>10</sup>Robert Koch Institute, Berlin Germany, <sup>11</sup>School of Health and Wellbeing, University of Glasgow United Kingdom

**Background and Objectives:** Inequalities in life expectancy and years of life lost (YLL) are key measures of disease burden within a population. Although European countries aim for convergence in health status, few comparative studies have addressed health inequalities at the sub-national level. This study aimed to examine all-cause YLL by sub-national NUTS2 regions in the European Economic Area (EEA) and assess level of regional inequality in YLL rates through the Gini Coefficient (GC), between males and females in 2019.

**Methods:** To quantify existing inequalities, we extracted from Eurostat (2019) socio-economic data, age-standardised population, and deaths by all causes for 296 NUTS2 regions across the EEA. Residual life expectancy was retrieved from the Global Burden of Disease study (2019). Age-standardised YLL (expressed as rate/100,000 inhabitants) and GC of sub-national inequalities in YLL rates were calculated with 95% Confidence Intervals (CI) using STATA.

**Results:** The highest YLL in 2019 for females were observed in Bulgaria (Severozapaden), with 24,102 (CI 20,769–27,434), followed by Hungary (Észak-Magyarország) with 22,532 (CI 20,100–24,963). For males, the highest YLL values were again in Bulgaria (Severozapaden) with 43,523 (CI 38,854–48,192), followed by Romania (Southeast region), with 42,390 (CI 39,717–45,062). Overall, there were higher GC for sub-national YLL rates across countries in males (0,15; CI 0,14–0,16) compared to females (0,12; CI 0,11–0,13). France (0,08; CI 0,02–0,14) and Portugal (0,08; CI 0,04–0,11) had the highest GC for females, whereas the highest GC for males were estimated for Belgium (0,08; CI 0,06–0,11) and Portugal (0,08 CI 0,05–0,11).

**Conclusion:** Our comparative analyses showed that regions located in Eastern and Central European countries had the highest YLL, while Western European countries had the highest GC values, indicating larger inequalities in premature mortality within these countries. Public health strategies need to take into account these regional health inequalities for future policies and interventions.

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### Integral strategy for the strengthening of agrifood practices and knowledge, and income generation for afro-colombian, indigenous and migrant communities in Colombia, during the pandemic

Mariana Gallego<sup>1</sup>, Laura Chiquillo<sup>1</sup>, Jovana Cañas<sup>1</sup>, Diego Lucumí Cuesta<sup>2</sup>, Yenny Rueda Guevara<sup>2</sup>, Jhon Patiño Rueda<sup>1</sup>

<sup>1</sup>Research Line on Health Systems, Childhood, Gender, Interculturality and Tropical Diseases, Research Group on Public Health, Medical Education and Medical Professionalism, School of Medicine, Universidad de los Andes, Bogotá DC, Colombia Colombia, <sup>2</sup>School of Government, Universidad de los

### Andes Colombia

**Background and objective:** In the world, 820 million people suffer from malnutrition. The COVID-19 pandemic, and its socioeconomic repercussions, have deepened the nutritional status of the most vulnerable population groups. The objective of this study was to propose recommendations for a strategy to strengthen agro-food practices and knowledge and income generation for Afro-Colombian, indigenous and migrant communities in Colombia, 2021.

**Methods:** A quantitative-qualitative methodological study was conducted. Several national databases (2017-2019) were analyzed in order to analyze the food and nutritional situation baseline of Afro-Colombian populations, indigenous populations and migrant population in Colombia. Thirty two semi-structured interviews were conducted in order to learn about the food and nutritional situation during the COVID-19 pandemic in six municipalities of Colombia. Quantitative and qualitative analyses were carried out with STATA and Nvivo software, respectively. **Results:** Statistically significant differences in proportions between the ethnic and non-ethnic populations were found in the following variables: moderate and severe acute malnutrition, less than three meals a day due to lack of money, inadequate drinking water source, and food insecurity. In the qualitative analysis, populations had difficulty in obtaining the food of the basic family food basket given the scarcity and lack of money. For Afro-descendant and indigenous populations, the lack of territory (due to forced displacement or national boundaries) has become a factor that increases food insecurity. Finally, the communities demonstrated the importance of practices such as bartering, food exchange and community cooking pots.

**Conclusion:** Four recommendations were proposed for guiding a food strategy in the context of humanitarian crises: Permanent adaptation of the humanitarian response for food security to changing circumstances and contexts; Maintenance of conditions that guarantee a balanced diet; Adoption of a differential approach at each stage of the food strategy in humanitarian crises; and Establishment of spaces and means to discuss interests and expectations.

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### Education and inequities in mortality: a global systematic review and meta-analysis

Claire Henson<sup>1</sup>, Mirza Balaj<sup>2</sup>, Joeseeph Friedman<sup>3</sup>, Terje Eikemo<sup>4</sup>, Emmanuela Gakidou<sup>5</sup>

<sup>1</sup>Institute for Health Metrics and Evaluation United States, <sup>2</sup>Norwegian University of Science and Technology, <sup>3</sup>Caltech-UCLA Medical Scientist Training Program United States, <sup>4</sup>Norwegian University of Science and Technology Norway, <sup>5</sup>Institute for Health Metrics and Evaluation

**Background:** Education is a critical determinant of health, and thus access to quality education through tertiary levels is included in Sustainable Development Goal (SDG) 4. This study aims to estimate the reduction in all-cause adult mortality risk that is associated with increased education globally and in distinct regions.

**Methods:** We conducted a systematic review and meta-analysis of all studies capturing the effects of education on adult mortality. Mixed-effects Bayesian meta-regression models were implemented to address heterogeneity in referent and exposure measures and to adjust for study-level confounders including age, sex, wealth, marital-status, and race/ethnicity.

**Results:** The review produced 9,750 effect measures extracted from 557 studies spanning 56 countries. The data biased towards High-income countries (HIC) at 86% of the sample, with 0.54% of results from Sub-Saharan Africa and none from North Africa and the Middle East. There was a dose-response relationship between education and adult mortality resulting in an average reduction in mortality risk of 1.42% (95%CI 1.24-1.59) per additional year. Compared to 0 years of education, achieving 6 years of education reduced mortality risk by 3.15% (1.5-4.89), improving to 8.83% (6.11-11.65) at 12 years and 25.56% (22.36-28.7) after 18 years. There were distinctly different effects of education on mortality risk in HICs compared to others, with an additional average yearly protective effect of 0.88% (0.16-1.44) among non-HICs.

**Conclusion:** We identified an unequal distribution of studies estimating the impacts of education on mortality, particularly in Africa and the Middle East. We quantified the global impact of education on adult mortality and showed that lower education is a risk factor for premature mortality across regions even after controlling for other markers of socioeconomic status. This study provides robust evidence that SDG goals to keep learners in school through secondary and tertiary levels are a mechanism to improve long-term population health.

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### Palestinian health care providers' barriers to ask about violence: a qualitative study

Amira Shaheen<sup>1</sup>, Amira Shaheen<sup>2</sup>, Nagham Joudeh<sup>3</sup>, Abdulsalam Alkhayyat<sup>2</sup>

<sup>1</sup>Department of Biomedical Science Faculty of Medicine An-Najah National University Nablus Occupied Palestinian Territory, <sup>2</sup>An-Najah National University, Occupied Palestinian Territory, <sup>3</sup>An-Najah National University, Occupied Palestinian Territory

**Background:** Health care providers (HCPs) have regular contact with women in a variety of circumstances. This includes routine appointments, and childbirths visits. Nurses and midwives, in particular, are in an ideal position to screen women for domestic violence (DV). It is recommended that HCPs should ask about DV when there is an identified risk, or assessed condition that may have been caused by DV (1). Guidelines in different countries required HCPs to routinely screen for DV (1). Yet, some HCPs are reluctant to undertake this important role. The current study aims at assessing barriers that face Palestinian HCPs and limit their chance to ask about violence.

**Methods:** Four primary health care clinics, that serve disadvantaged populations in the West Bank, were purposely chosen. HCPs views about barriers that limited their chance to ask about violence were assessed through semi-structured interviews. Those were audio-recorded, translated and transcribed verbatim into Arabic. A sample of the transcribed interviews was checked against the Arabic recording by the first author, to ensure accuracy. Transcripts were then translated into English. Data from the transcript were anonymized and analyzed thematically. Ethical approval was obtained from An-Najah National University.

**Results:** Twenty four HCPs were interviewed. Individual, community, and managerial barriers were commonly viewed by HCPs as barriers to ask about DV. At individual level, lack of knowledge about the availability of DV protocols in the clinics, and experience, and fear of family retaliation. were reported as barriers by most of HCPs. At community level, women refuse to disclose violence as well as views around family privacy. At managerial level, heavy workload and lack of support.

**Conclusion:** Reproductive health care services are an important setting, where most women can easily visit. Assessing and eliminating barriers that limited the chance of HCPs to help survivors of violence is crucial.

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### Population health and burden of disease profile of south african women between 1990 and 2019

Inge Kleinhans<sup>1</sup>, Flavia Senkubuge<sup>1,2</sup>, Alfred Musekiwa<sup>1</sup>, Mahloko Flavia Mogashoa<sup>1</sup>, Tom Achoki<sup>1,3</sup>

<sup>1</sup>School of Health System and Public Health, Faculty of Health Sciences, University of Pretoria, Pretoria, South Africa

<sup>2</sup>Kofi Annan Global Health Leadership Fellowship, Africa CDC, African union commission, Addis Ababa, Ethiopia

<sup>3</sup>Africa Institute for Health Policy, Nairobi, Kenya

**Background:** South Africa faces a quadruple burden of disease and women are affected disproportionately. Understanding the epidemiological trends and burden of disease profile of women is important for targeted implementation of public health programs. This study describes the trends and burden of disease of communicable, maternal, neonatal, nutritional diseases (CMNNDs), non-communicable diseases (NCDs), and injuries of women in South Africa between 1990 and 2019.

**Methods:** In this descriptive cross-sectional study we used the open-access secondary data from the Institute for Health Metrics and Evaluation (IHME) from 1990 to 2019. We measured population health as per the World Health Organization (WHO) standards using age-standardized disability-adjusted life years (DALYs), years of life lost (YLLs), years lived with disability (YLDs) and age-specific death rate (ASD). Level 1 and 2 causes and risk factors for all ages and sexes were clustered into CMNNDs, NCDs, and injuries respectively.

**Results:** Findings for women over the 29-year period revealed that the leading causes of death, DALYs and YLLs were, HIV/AIDS, sexually transmitted infections (STIs) and cardiovascular disease. The leading cause of YLDs in women was other non-communicable diseases. Trend analysis showed a decline in prevalence as follows NCDs from 93 544,9 cases per 100 000 population in 1990 to 93 377,4 cases per 100 000 population in 2019 (-0,18%); CMNNDs from 87 668,61 cases per 100 000 population in 1990 to 80 101,36 cases per 100 000 in 2019 (-8,63%); and Injuries from 15 404,4 prevalent cases per 100 000 population in 1990 to 12 225,37 prevalent cases per 100 000 population (-20,64%). Considering the provincial mortality rates among women, in 1990 the Gauteng province had the highest mortality rate at 1000,09/100 000 population whilst the Limpopo province had the lowest (697,71/100 000 population) amongst women. However, in 2019, the Free-State province had the highest mortality rate among women (1188,48/100 000 population) and the Limpopo province the least (801,60/100 000 population). **Conclusion:** HIV/AIDS, STIs and cardiovascular disease are the leading causes

of death, DALYs and YLLs among women in South Africa. Strengthening national policies and implementing public health programs with a gender lens is recommended to address the burden of disease among women.

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### Is it acceptable to consume alcohol at scientific events?

Francisca Valente<sup>1</sup>, Ana Baptista, Diogo Lopes<sup>1</sup>, Dinis Loyens<sup>1</sup>, Francisco Barcelos<sup>1</sup>

<sup>1</sup>Public Health Unit of Amadora Portugal

**Background:** In 2022, alcohol continues to dominate public health conference venues nationally and internationally and is indirectly promoted by the same public health experts fighting NCDs and alcohol-related diseases. This study aimed to determine whether and why scientists wish to keep alcohol in scientific events and potential alternatives to alcohol consumption.

**Methods:** Using keywords, a non-systematic narrative search was conducted in PubMed. Grey literature was also included.

**Results:** A MINIMAL number of studies were found. According to a survey, 70% of scientists favour the continued presence of alcohol at scientific events. Alcohol consumption is believed to facilitate networking and break down barriers, and alcohol bans are thought to restrict drinkers choices. There may be a way to change this pattern by providing limited non-exchangeable drink tickets, providing more non-alcohol drinks, substituting food for alcohol, and going out for drinks afterwards.

**Conclusion:** Conference venues, scientific meetings, and university spaces are not alcohol-free zones. Alcohol availability can facilitate excessive behaviour, overconsumption, and peer pressure and undermine efforts to prevent alcohol epidemics.

Considering that there is not much data available, more research must be done on this topic. In addition, peers must be made aware of its significance.

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### Results of the social innovation workshops developed in dispersed rural territories, using the phases of the desing thinking methodology

Marta Jaramillo-mejia<sup>1</sup>, Marta Jaramillo-Mejía<sup>1</sup>, Lina Marcela<sup>2</sup>

<sup>1</sup>Universidad Icesi Departamento de Gestión Organizacional Calle 18 # 122-135 Cali, Valle del Cauca Colombia, <sup>2</sup>Rivas Tafurt Universidad Icesi Helena Cancelado Carretero Universidad Icesi Departamento de Ingeniería Industrial Calle 18 # 122-135 Cali, valle del Cauca Colombia

**Introduction:** Dispersed rural communities have social determinants that hinder access to health services; therefore, it is necessary to use effective, diverse, flexible and innovative methodologies to develop transformational processes that generate positive impacts, from territorial perspectives and worldviews, with a differential approach that is maintained over time. This article aims to present the results derived from health workshops, carried out in dispersed rural territories with social innovation tools.

**Methods:** Operational and descriptive study. We used participatory methodologies of scorecards developed in six (6) municipalities with high rurality located in Colombia. The workshops had a participation between 30 and 40 people in each territory. This information was collected and analyzed in three phases (empathize, define and devise) which correspond to the method of problem/challenge solving with a creative base, called desing thinking.

**Results:** The results obtained in the territories show that people have a concept of health that is related to: well-being, absence of disease, fundamental right and living in harmony. On the other hand, the community actors recognize as health resources the health institutions and Western health resources, ancestral knowledge. The rain of problems in the territories reflected: the loss of ancestral knowledge, lack of access to quality health services, lack of a primary health care model, environmental problems and poor use of free time, which were analyzed through a problem tree. In the visioning exercises, attendees recognized the importance of empowering processes, intersectoral work and collective actions. Workshop attendees were able to propose achievable and measurable challenges to reach the future vision.

**Conclusions:** It is necessary to develop projects with innovation methodologies to involve communities in a timely manner and generate social transformation processes that truly embrace the worldviews, concepts and perceptions of all types of actors

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### Violence against women by intimate partners in the COVID-19 pandemic: an analysis of reported cases

Margareth de Almeida<sup>1</sup>, Dinair machado<sup>1</sup>, Rayene Cunha<sup>2</sup>

<sup>1</sup>São Paulo State University Comendador Pedro Stefanini, 373, Botucatu Brazil, <sup>2</sup>São Paulo State University

**Background and objective:** From the perspective of gender and patriarchy, as dialectical processes, the objective was a broader understanding of intimate partner violence against women in the context of the COVID-19 pandemic.

**Methods:** A study with a quantitative and qualitative approach was carried out, in two stages: survey of cases of violence against women by partner, formalized in police reports at the Police Station for the Defense of Women, in a city in the interior of the state of São Paulo/Brazil, from March 1, 2020 to October 31, 2020, eight (8) months. After the characterization and identification of women (first stage), interviews were conducted with some of these women, based on guiding questions, aiming to learn about the experience of intimate partner violence during the period of social isolation.

**Results:** The material was recorded, full transcribed and systematized for thematic analysis. In the first phase, 254 police reports were analyzed, predominantly women with working and reproductive age, aged between 20 and 44 years (63%), white women (73%) and were separated from the partner (63%). Psychological violence was the most reported in 73% of cases and 77% of women requested protective measures. The in-depth analysis of the interview with twelve women made it possible to understand how previously existing situations of violence were even more tense during the COVID-19 pandemic, skin worsening of living and working conditions and/or the intensification of coexistence due to isolation. **Conclusion:** Therefore, the study indicated a complexity and diversity of situations, a "new experience" of women in the face of violence, enabling them to denounce the violence suffered, even in the midst of the pandemic.

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### Describing the occurrence of Hypoxic Ischemic Encephalopathy disease in Huye district, Rwanda, 2021

Kizito Habakurama<sup>1</sup>

<sup>1</sup>Rwanda

**Background:** Hypoxic Ischemic Encephalopathy (HIE), a brain dysfunction that occurs when the brain does not receive enough oxygen or blood flow, remains a problem of great concern worldwide especially in developing countries. The incidence of HIE ranges from 1.5 to 8 per 1000 live births and from 2 to 26 per 1000 live births respectively in developing and underdeveloped countries including Rwanda. Despite the above information there is paucity of data about the magnitude of HIE in Rwanda. We analyzed HIE data to describe characteristics of HIE patients in Huye district during the period of 2021.

**Methods:** This a descriptive study by conducting a retrospective review of surveillance data. HIE case was defined as neonate admitted in Kabutare hospital for HIE as final diagnosis in 2021. We described demographic characteristics of HIE cases as well as maternal underlying factors contributing to the occurrence and calculated Incidence and case fatality (CFR) rates. Results were presented in frequency and proportions.

**Results:** In total, 956 neonates were recorded by Huye district including 120 HIE cases (Incidence rate 125 per 1000 births in 2021). Of them, 64.2% were males, 13.3% died (CFR=19.2%); gestation age was (GA) 73.3% at term and 20.8% unknown; 62.5% were born at the Hospital and 36.6% at Health center; 80% of HIE neonates were from mothers aged between 18-35 years and 52.5% from mothers with Gravida one.

**Conclusions:** Incidence and CFR were higher than in developing countries. Lack of knowledge on last menstrual period, delivery at the hospitals, primigravida mother and gestational age should be analytically studied to set up preventive measures as recommended during the provision of feedback to the decision makers in Huye district.

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### Health literacy for Tunisian youth: What should we do for effective prevention of hemoglobinopathies?

Foued Maaoui<sup>1</sup>

<sup>1</sup>Pasteur Institute of Tunis, Tunis, Tunisia

**Background and Objective:** Health education in secondary school plays a critical role in anticipating hemoglobinopathies transmission risks. Nonetheless, there are only a few research studies examining the health literacy level of adolescents under age 19. The objective of our study is to explore the knowledge and skills related to the prevention of hemoglobinopathies.

**Methods:** A cross-sectional investigation was conducted among Tunisian youths attending public secondary schools and learning about human genetics (n = 356;

male 28.1 %, female 71.9 %).

Results: The Results show that concerning literacy to hemoglobinopathies, significant differences in knowledge, risk perception, and behavioral attitudes were found by gender, age, and school level (Sig < 0.05). 65,4 % has not identified the hereditary nature of diseases and confuse it with dietary iron anemia 41,6 %. Although 55,3 % of respondents recognized severe anemia as a symptom, however, 71,3 % did not link jaundice to thalassemia, almost 30% said this disease causes rash, fever, dry cough and sore throat. The Results show low levels of the difficulties of youths to consider the hereditary transmission risks of haemoglobinopathies and to understand the importance of screening and genetic counseling. 36,8% of students (59% Male vs 28 % Female) do not consider it necessary to inform their partner of their carrier status. 59.5 % (67% Male vs 56.64 Female; Sig = 0.04) do not see the benefit of genetic counseling and prenatal diagnosis even if the family of one of the two partners has a history with disease.

Conclusions: Knowledge acquisition in human genetics remains insufficient to actively engage adolescents in the primary prevention of hemoglobinopathies. It is essential to plan health promotion and education interventions in conjunction with genetic learning. Messages based on real-life stories can help in understanding these diseases and promote health literacy.

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### Comparing characteristics of food insecure and food secure patients in an underserved heart failure clinic

Sachi Patel<sup>1</sup>

<sup>1</sup>University of Alabama at Birmingham, United States

The HRTSA (Heart Failure Transitional Services for Adults) clinic at the university of Alabama at Birmingham Hospital serves uninsured and underinsured individuals with heart failure (HF). In this study, we examined the differences in sociodemographic factors, clinical characteristics, depression and anxiety scores, health literacy scores, and health status perception scores among food secure and food insecure patients who established care in clinic. Between January 2018 and April 2021, 575 patients established care in the HRTSA clinic post-hospitalization. Patients were adults ≥ 18 years of age with heart failure. At the first clinic visit, baseline sociodemographic and medical history were obtained. Through descriptive statistics, t-tests, and chi-square tests conducted using SAS we compared demographic and clinical characteristics of food insecure and food secure clinic patients. Among all of the sociodemographic factors, clinical characteristics, depression and anxiety scores, health literacy scores, and health status perception scores that were assessed, none were found to be statistically significant. Although none of our Results were statistically significant, food insecurity is still an important social determinant of health that has previously been found to be associated with higher depression and anxiety. The difference in Results from previous studies can be due to change in study population size.

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### Health determinants related to low levels of Vitamin D, in women of childbearing age and older people in the Chilean population, according to the National Health Survey 2016 - 2017

Rodrigo Contreras<sup>1</sup>, Sandra Alvear<sup>1</sup>

<sup>1</sup>University of Talca, Chile

Introduction: Vitamin D is a fat-soluble compound, which is obtained by the body from sunlight and intake through the diet. The deficiency of this vitamin causes disorders in both children and adults, ranging from rickets to osteoporosis, depending on the age range analyzed. Objective: To explain the social determinants involved in low levels of Vitamin D in women of childbearing age and older people in the Chilean population, according to the National Health Survey 2016 - 2017. Methodology: The present study constitutes a quantitative research carried out from secondary data, which were obtained from the Third National Health Survey 2016-2017, ENS 2016-2017. The statistical analysis of the data was performed using the STATA tool, from which a Logit Multinomial Logistic Regression Model was designed, to determine if there is an association of variables, in which the variable explained or under study (dependent) will be related with those that, presumably, are related to it or directly affect it (independent). Conclusions: in both study groups, the low levels of circulating Vitamin D exceed 80%, which makes this condition dangerously abnormal for the development of infants and for optimal quality of life when age is advanced; Most of the social determinants of health analyzed point to higher probabilities of finding low levels of Vitamin D in the population studied. Keywords: Vitamin D, Social Determinants, ENS 2016-101.

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### The determinants of the acceptance of restrictions on unhealthy food advertising

Mariusz Duplaga<sup>1</sup>, Urszula Zwierczyk<sup>2</sup>

<sup>1</sup>Department of Health Promotion and e-Health, Institute of Public Health, Jagiellonian University Medical College, Krakow, Poland, <sup>2</sup>Department of Health Promotion and e-Health, Institute of Public Health, Jagiellonian University Medical College, Poland

Background and Objective: The last decade faced the re-discovery of commercial determinants of health (CDoH). Significant research is currently conducted on the corporate aspects of CDoH. This study aimed to assess society's readiness to adopt restrictive measures against unhealthy food advertising.

Methods: The analysis was based on data from an online survey in 2008 Polish adults aged 18-65. The questionnaire comprised 86 items, including instruments measuring health literacy (HL) and e-health literacy (eHL). The multivariable logistic regression model (MLRM) was developed for the variable reflecting respondents' acceptance of the ban on unhealthy food advertising.

Results: 46.9% (n=943) of respondents supported introducing some form of ban on advertising unhealthy food products. MLRM revealed that HL and eHL were significantly associated with the support of such measures. Persons with higher eHL (more likely than those with lower eHL supported such restrictions (all following Results were given as odds ratio and 95% confidential interval: 1.05, 1.03-1.07). Respondents with an undetermined level of HL were less prone to support the ban on advertising than those with inadequate HL (0.57, 0.40-0.82). Older persons supported the adoption of restriction in comparison to younger ones (1.03, 1.02-1.04), persons with the highest level of education compared to those with the lowest level (1.76, 1.10-2.82), and students compared to employees (1.60, 1.03-2.48). Singles compared to married (0.68, 0.52-0.88) and persons who did not reveal their income compared to those from the lowest income group were less likely to support restrictions (0.69, 0.49-0.98).

Conclusions: The views of public opinion about adopting more restrictive measures against the consumption of unhealthy food products depend on the complex interplay of various determinants. However, the development of skills and attitudes encompassed in health literacies seems to be an essential intervention in preparing society for the Introduction of countermeasures to the impact of commercial determinants.

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### Evaluation of the health rights of sex workers: overview of rights violations

Kadir Simsek<sup>1</sup>, Nuray Özgülner<sup>2</sup>

<sup>1</sup>Institute for Collective Health, Silopi District Health Department, Türkiye, <sup>2</sup>Istanbul Faculty of Medicine, Istanbul University, Türkiye

Background and Objective: The purpose of this research is to evaluate the violations of the right to health of sex workers in Turkey with historical comparison.

Methods: The research was designed as a qualitative, phenomenological study and was conducted in Istanbul. A total of 24 people was interviewed including 19 sex workers and 5 physicians. A semi-structured interview form was used in the interviews. The Findings were obtained by conducting a content analysis on the MAXQDA program. Ethics committee approved the research.

Results: In this study, the main findings are grouped into 6 themes: violations of the right to health, negative attitudes of health personnel (transphobia/discrimination/indifference/stigmatization), quality of health care, historical change in health care, behaviours developed because of negative experiences, and positive attitudes. Transphobia generally occurs in the form of addressing people with their deadname (assigned/identity name), sarcastic looks, and being admitted to the service according to the assigned gender, while stigmatization occurs in the form of associating sex work with various STIs, especially HIV/AIDS. Violations of rights mostly occur when physicians do not perform examinations in accordance with the Istanbul Protocol during assault examinations. Difficulties encountered in accessing health care lead people to radical methods such as hesitating to receive health care services.

Conclusions: The 90s were years when the health rights of sex workers working in Turkey were frequently violated for many reasons. In the intervening years, although the medical literature has developed in a more inclusive way, the perspective of the young physicians who grew up with these developments has changed in a positive way; in particular, it is necessary to ensure that health personnel receive training against discrimination, to regulate the social rights of sex workers, and to contribute to the change of society's perspective with egalitarian and inclusive policies.

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### Knowledge, attitude and practice of healthcare providers who may come in contact with women who have experienced intimate partner violence: qualitative research

Zaruhi Arakelyan<sup>1</sup>

<sup>1</sup>American University of Armenia, Armenia

The most common form of violence that women experience is initiated by intimate partners. IPV includes physical and sexual violence, stalking and psychological aggression by a current or former intimate partner. A multi-country study conducted by WHO on reporting domestic violence shows that the prevalence of women who have experienced violence ranges from 15% to 59%, while the prevalence of women ever experiencing intimate partner violence ranges from 22% to 47%. IPV may require regular, repeated messages from physicians to convince battered women to end their involvement with their abusive partner. Although a number of surveys have discovered the burden of domestic violence in Armenia since 2007, Armenia still has gaps in statistics on domestic violence clarifying time trends due to the lack of a surveillance system for domestic violence. This study assessed the knowledge, attitudes, and practices of general practitioners, gynecologists/obstetricians and emergency department clinicians regarding intimate partner violence among their patients in Yerevan, Armenia. The study investigator conducted 3 in-depth interviews and 3 focus group discussions in policlinics and hospitals, where overall 17 healthcare providers participated. Directed content analysis was used to analyze the data. The study findings showed that Armenian healthcare providers are knowledgeable of domestic violence and its types. They can recognize violence through physical and non-physical signs; but because of the lack of practice, skills and knowledge on how to deal with victims, they are not able to manage those cases. A number of barriers and facilitators was identified, which either help or impede the healthcare provider to ask about violence and to support the victim. A new study should be conducted, which will be able to cover both rural and urban areas of Armenia. Healthcare specialists need to be trained in order to identify and deal with domestic violence, including Intimate Partner Violence.

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### The childhood-adolescence transition in a poverty area in Brazil: promoting Public Health actions and integrating university and community

Fernanda Germano<sup>1</sup>, Rubens Bedrikow<sup>1</sup>, Fernanda Germano<sup>2</sup>, Carolina Novo<sup>3</sup>, Helenice Nakamura<sup>3</sup>

<sup>1</sup>School of Medical Sciences, State University of Campinas, Brazil, <sup>2</sup>State University of Campinas (UNICAMP), Brazil, <sup>3</sup>University of Campinas (UNICAMP), Brazil

Background and Objective: the wide prevalence of teenage pregnancy and sexual violence in Brazil is a common scenario in poverty areas of the country, known as "favelas". With that in mind, the Vila Paula third mission program, carried out by professors and medical students from state university of Campinas (UNICAMP), since 2018, promotes dialogic interactions between residents of a favela in Campinas and the university, which stimulated students to create the growing in favela, a project that addresses themes related to the childhood-adolescence transition, integrated to public health actions in the territory, as the vulnerability of children and adolescents living in the area was realized as a health determinant. The objective is to welcome children and adolescents and guarantee safe information about the transition process between childhood and adolescence, marked by vulnerabilities and violences observed in the territory and not addressed in school or families. Methods: The project promotes talks, with participants from 8 to 12 years of age, about puberty, sexuality, pregnancy, STIS and sexual and gender violence. After each activity, a discussion group is held, with teaching specialists, addressing the corresponding topic in an integrated way with public health, in addition to a report. With these materials, the quality of the activity, its relation with health practices and the construction of relationships are evaluated.

Results: It was observed the engagement of children and adolescents in the proposed activities, with drawings, texts and dialogues, given the possibility of safely expressing their own experiences and perceptions on the topics addressed. Conclusions: the interaction between university and children and adolescents living in areas of high vulnerability highlights the construction of public health actions jointly with university and community. The execution demonstrates that this interface promotes dialogic relationships, collaborating for enriching interventions and bonds through the exchange of information in health.

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### University third mission program: contributions to the care of socially vulnerable communities

Rubens Bedrikow<sup>1</sup>, Maria Vilela<sup>2</sup>

<sup>1</sup>School of Medical Sciences, State University of Campinas, Brazil, <sup>2</sup>Nursing Faculty, State University of Campinas, Campinas, Brazil

Background and Objective: The increase in poverty, unemployment and social inequality in Brazil in recent years has led to an increase in the number of people living in new urban slums. The Objective of this work was to analyze studies linked to an ongoing university third mission program in an urban slum in São Paulo - Brazil. Methods: Content analysis of the results of 15 surveys conducted over 5 years with urban slum dwellers.

Results: The research themes emerged from the dialogical interaction between students, teachers and community in the territory of the slum. It was found that social inequality, increased poverty and unemployment determine health problems related to food insecurity, low education, precarious housing, prejudice, and greater difficulty in access to health services and treatments, which intensified after the beginning of the COVID-19 pandemic. Primary Health Care, in the way it is organized, is not able to adequately perceive the suffering of highly vulnerable and poorly organized communities, such as the women who live in the shantytown studied who revealed suffering related to precarious housing, transience, social isolation, silencing and violence. The residents choose unique therapeutic itineraries, preferring emergency services to primary care health units near the slum, because of the uncertainty about their definitive permanence in the new territory. Rules and norms for combating the spread of COVID-19 that are effective for other groups in society may not be appropriate for communities living in slums with high social vulnerability that must therefore be approached uniquely. Conclusions: University third mission program of the academic social type is crucial for the university to realize the main problems that affect poor communities living in new slums, and to be able to envision more effective and unique forms of care.

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### The social determinants associated with the advanced stage diagnosis of breast cancer in Egypt in the previous ten years: a single-center quantitative retrospective cohort study

Madonna Fekry<sup>1</sup>, Hamdy Azim<sup>2,3</sup>, Loay Kassem<sup>2</sup>, Justin Yang<sup>1</sup>

<sup>1</sup>Centre for Public Health, Wolfson Institute of Population Health, Queen Mary University of London, United Kingdom, <sup>2</sup>Clinical Oncology Department, Kasr Alainy School of Medicine, Cairo University, Cairo, Egypt, <sup>3</sup>Cairo Oncology Center, Egypt

Background: Breast cancer (BC) is the most common cancer among women worldwide. Most BC patients are diagnosed late in Egypt. This study aims to observe the socio-demographic inequalities associated with the advanced stage diagnosis of BC in Egypt in the previous ten years. Methods: This is a retrospective cohort study of patients with BC who presented to Cairo Oncology Center between 2011 and 2020.

Results: This cohort included 1953 patients. Logistic regression analyses revealed that most socio-demographic factors affected the stage of BC diagnosis. Single patients had 21% lower odds of being diagnosed at advanced stages than married ones (odds ratio [OR]=0.79; 95% CI 0.638 – 0.979, p=0.031). Unemployed patients had 27.5% higher odds of getting diagnosed late than employed ones (OR=1.275; 95% CI 1.062 – 1.531, p=0.009). Patients who live in rural areas were 89.1% more likely to present with advanced disease than those who live in urban areas (OR=1.891; 95% CI 1.314 – 2.722, p=0.001). Patients with three children or less had 29.3% lower odds of presenting with advanced disease than those with more than three children (OR=0.707; 95% CI 0.572 – 0.873, p=0.001). In contrast, there was no significant difference in odds of presenting with advanced BC between males and females and between Muslims and Christians (OR=1.936; 95% CI 0.686 – 5.641, p=0.212, OR=1.180; 95% CI 0.804 – 1.732, p=0.399, respectively). There was no difference in the mean age at diagnosis between advanced and early disease patients (52.3 vs. 51.233, p=0.057).

Conclusions: This 10-year single-center study highlights the socio-demographic disparities among BC patients. The study concluded that marital status, employment status, residence, and the number of children are highly associated with the stage of BC diagnosis. In contrast, religion, gender, and age at diagnosis are not associated with the stage of BC diagnosis.

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### Sexism and the intention to use the male contraceptive injection

Vanessa Jiménez<sup>1</sup>, Lesly Baltazar<sup>1</sup>, Rebeca Ontiveros<sup>1</sup>, Angelica Marin<sup>1</sup>, Felix Celedonio<sup>1</sup>, Josue Villegas-Dominguez<sup>1</sup>

<sup>1</sup>Universidad del Valle de Mexico, Mexico

**Background:** In Latin America, sexism is a situation that is still frequently experienced, especially in Mexico, where culture promotes this situation by giving them certain roles and responsibilities, including family planning.

**Objective:** To determine the sexism as factor associated with the intention to use the contraceptive injection in adult men in the state of Veracruz.

**Methods:** An observational, analytical, cross-sectional and prospective study was carried out during January-April 2022. Men between the ages of 18 and 45 from Veracruz were included, excluding transsexual and homosexual participants, patients with a diagnosis of psychiatric illness that conditions the functions mentally superior or with a diagnosis of any type of dementia, patients with diagnosed infertility and vasectomy performed. Incomplete surveys were removed. A probabilistic sample size was calculated, with convenience sampling. The main independent variables were machismo (EMSsexism-12 test, a.Cronbach 0.83), family function (family APGAR test, a.Cronbach 0.83), type of family and knowledge about the contraceptive injection, while the dependent variable was the intention of use the contraceptive injection. For the statistical analysis, absolute and relative frequency measurements were made using the SPSS software for X2 test with Odds Ratio and confidence interval (95%).

**Results:** 263 were obtained, being single in 89%. The factors (OR/CI) with a significant association (p<0.05).

**Conclusions:** Age, number of children, and marital status are associated with the intention to use the contraceptive injection, while machismo, schooling, and family function are not.

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### Cross-sectional analysis of family determinants of lifestyle habits in a sample of Italian primary school children: the I-MOVE Project

Francesco Esposito<sup>1</sup>, Francesco Esposito<sup>2</sup>, Francesco Sanmarchi<sup>3</sup>, Alice Masini<sup>3</sup>, Carolina Poli<sup>4</sup>, Anna Kawalec<sup>5</sup>, Susan Scrimaglia<sup>3</sup>, Lawrence Scheier<sup>6</sup>, Laura Dallolio<sup>3</sup>, Rossella Sacchetti<sup>7</sup>

<sup>1</sup>Dipartimento di Scienze Biomediche e Neuromotorie (DIBINEM), Alma Mater Studiorum, Università di Bologna, Italy, <sup>2</sup>Dipartimento di Scienze Biomediche e Neuromotorie, Università di Bologna, Italy, <sup>3</sup>DIBINEM, Alma Mater Studiorum, Università di Bologna, Italy, <sup>4</sup>(DIMEC), Alma Mater Studiorum, Università di Bologna, Italy, <sup>5</sup>Department and Clinic of Paediatric Nephrology, Wroclaw Medical University, Poland, <sup>6</sup>LARS Research Institute, Inc., Arizona and Prevention Strategies, North Carolina, United States, <sup>7</sup>Department of Education Studies Giovanni Maria Bertin, Alma Mater Studiorum, University of Bologna, Italy

**Background and Objective:** Several authors showed how the acquisition of healthy habits during childhood is essential for maintaining them during adulthood. Most children's eating and physical behaviors are acquired in two main contexts: school and family. The present study aimed to explore families' determinants as potential predictors of healthy lifestyle habits (adherence to the Mediterranean Diet (MD), Leisure Screen Time (LST), Moderate to Vigorous Physical Activity (MVPA), and engagement in organized sports (SE)) among a sample of primary school children. **Methods:** This cross-sectional study was conducted among 106 children (mean age 7.92 ±1.40; 50% male, 50% female) enrolled in a primary school in Imola (Italy). Data were collected from October to December 2019 using an interactive tool to assess parental features and children's lifestyle (zoom-8 questionnaire) and actigraph accelerometers, to analyze children's activity levels and sedentary behavior over a seven-day period. Multiple linear regression models with backward stepwise selection were employed to identify the independent factors associated with the continuous outcome variables.

**Results:** Adherence to md (expressed by Kidmed index) was positively associated with fathers' educational level ( $\beta=1.0$ ; 95%ci 0.10, 1.9), parental sport participation ( $\beta=1.0$ ; 95%ci 0.17, 1.9) and parental health literacy nutritional knowledge score ( $\beta=0.45$ ; 95%ci 0.10, 0.81). Moreover, higher mothers' educational level was negatively related to LST. Among the parental characteristics, nutritional knowledge is positively related to children's average daily minutes of se ( $\beta=2.8$ ; 95%ci 0.15, 5.4). However, MVPA was not related to parents' characteristics.

**Conclusions:** The present study emphasizes the importance of parental determinants that affect the lifestyle of primary school children. In this context, we can underline how health promotion actions aimed at the adult target can also have an important impact on the younger populations.

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### Estimation of the correlation between the social determinants and the obesity during the pre-adolescent age of the apulian population in Southern Italy

Maria Balducci<sup>1</sup>, Osvalda De Giglio<sup>2</sup>, Alessia Quaranta<sup>2</sup>, Pasquale Pedote<sup>3</sup>, Maria Montagna<sup>2</sup>

<sup>1</sup>Department of Precision and Regenerative Medicine and Ionian Area (DiMePRe-J) Italy, <sup>2</sup>Interdisciplinary Department of Medicine, University of Bari Aldo Moro, Italy, <sup>3</sup>Epidemiology Unit, Brindisi Local Health Authority Italy

Even in Italy, the people with the poorest resources and skills get sick more, heal less and die earlier. This requires a more incisive approach to combat avoidable inequalities, also in consideration of the fact that social disadvantage represents the main risk factor for health and quality of life. It is known that the health outcomes related to chronic diseases are mainly derived from specific risk factors, and the social determinants can often be the "causes of the causes" of these risk factors. The aim of the study was to estimate the extent to which the effects of some social determinants (economic difficulty and the parental level of education) can influence obesity in primary school children residing in the Apulia region and to evaluate the potential health gain that children could have, by improving the those social determinants.

The contribution of social determinants to the onset of the obesity risk factor in children (unknown factor) was calculated with arithmetic proportion software called CoEsDi Children (Contribution to the Exposure of Inequalities). This software used as a data source the regional survey, Okkio alla SalutePuglia 2019, which studied the prevalence of obesity in children and the social determinants of their parents. The data analysis was mainly aimed at estimating the prevalence of the detected variables, setting the confidence interval at 95%.

Forty-three percent of obese Apulian children who have parents with low levels of education and severe economic difficulties would be able to reduce their weight status if social inequalities were changed, and 7% would not be able to develop obesity if they were raised in a family without social inequalities.

Obesity in children is closely related to the socio-economic status of the parents: the higher the level of income inequality is, the more overweight the children are.

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### Challenges in Public Health: SARS-CoV-2 vaccination of hard-to-reach population during COVID-19 pandemic. Experience of a local health authority in Lazio Region (Italy)

Francesca Mosaico<sup>1</sup>, Emanuele Bottosso<sup>1</sup>, Giammarco Aceti<sup>1</sup>, Vincenzo Loccisano<sup>1</sup>, Raffaele Catapano<sup>1</sup>, Giovanna Russo<sup>1</sup>

<sup>1</sup>Azienda Sanitaria Locale (ASL) Roma 6, Italy

**Background and Objective:** International literature suggests that disadvantaged groups are at higher risk of morbidity and mortality from SARS-CoV-2 infection due to poorer living/working conditions and barriers to healthcare access.

In Lazio region (Italy), from June 2021, proximity health initiatives, such as mobile health unities (MHU), were put in place to ease the access to COVID-19 vaccinations, outside clinical settings (outreach), of irregular migrants, some of them without health coverage from Italian Health System (SSN).

**Methods:** Data from 2021/2022 local Vaccination Centers of ASL Roma 6 and from the Regional Vaccination Registry (AVR) were integrated and analyzed. Demographic variables and those relating to administrative-welfare data were analyzed using descriptive methods.

**Results:** 272 irregular migrants were vaccinated from July 2021 to April 2022: 58,5% were male, average age was 34.6 years. 512 vaccine doses (primary series and booster doses) were administered.

Most of them came from European area, in particular from Ukraine (30,1%).

77% has completed a primary series of vaccination and 53% of doses were provided by the MHU.

All people found without health coverage during vaccination sessions (n.170, 62,5%) were regularized.

**Conclusion:** In Italy, during the first year of campaign, SARS-CoV-2 vaccination avoided about 8 million infections, over 500,000 hospitalizations, over 55,000 ICU admissions and approximately 150,000 deaths, with a positive cost-effectiveness ratio.

Through this local outreach initiative, a fragile population towards COVID-19 was able to benefit from the most effective form of primary prevention against the infection and administrative barriers to healthcare coverage have been removed. Migratory flows and recent COVID-19 pandemic, challenge health systems to find and strengthen innovative approaches in health services offering.

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### Substance use among Serbian adolescents -prevalence, trends and comparison with European countries

Biljana Kilibarda<sup>1</sup>, Jelena Gudelj Rakic<sup>1</sup>, Mirjana Tosic<sup>1</sup>, Verica Jovanovic<sup>1</sup>, Milena Vasic<sup>1,2</sup>

<sup>1</sup>Institute of Public Health of Serbia "Dr Milan Jovanovic Batut" Serbia,

<sup>2</sup>Faculty of Dentistry, Pancevo, Serbia

**Background and Objective:** Adolescents substance use is public health challenge and changing phenomenon that requires regular monitoring in order to provide adequate interventions. The aim of this study was to explore prevalence and trends in substance use among Serbian school students and compare it with other European countries.

**Methods:** This is a secondary analysis of data obtained through the European School Survey Project on Alcohol and Other Drugs (ESPAD), a repeated, cross-sectional study of substance use and other forms of risk behavior among students in European countries aged 15-16 years. The ESPAD is carried out every 4 years at European level and Serbia participated in this study in 2008, 2011 and 2019. Descriptive statistic was used for this analysis.

**Results:** Data from ESPAD 2019, show that lifetime prevalence (LTP) of any illicit substance use among Serbian school students 16 years old (8.6%) is lower than ESPAD average (17%) with only three ESPAD countries reporting smaller prevalence in 2019. Cannabis is the most used substance with LTP 7.3% which is more than twice lower than ESPAD average (16%). Prevalence of high-risk cannabis users in total sample of students (2.0%) is also lower than ESPAD average (4.0%), but higher among last 12 months cannabis users (38.0% in Serbia compared to ESPAD average (36%). In total, there is a slight increase in LTP cannabis use (from 7% in 2008 to 8% in 2019) with stable trend among boys and slight increase among girls. **Conclusions:** LTP of all explored illicit substances stance use is lower in Serbia compared to EU average that correspond with lower prevalence of substance use among adult general population. There are no major changes in the trends for the period 2008-2019. In depth analysis is needed to determine the wider determinants related to differences in substance use among countries.

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### Prevalence of alcohol consumption in the population of the municipality of Mitú 2022: cross-sectional study applying the audit test

Holman Vega<sup>1</sup>, Jovana Ocampo Cañas<sup>1</sup>, Jhon Patiño Rueda<sup>2</sup>

<sup>1</sup>Universidad de Los Andes Cra. 1 #18a-12, La Candelaria, Bogotá, Cundinamarca, Colombia. Colombia, <sup>2</sup>Universidad de Los Andes

**Introduction:** Problematic alcohol consumption in indigenous communities has been documented in numerous countries in the Americas. In the department of Vaupés, 81.7% of the population is indigenous and this phenomenon has not been rigorously quantified. The purpose of this article is to measure the prevalence of risky, harmful and dependent alcohol consumption in the urban population of the municipality of Mitú, in the department of Vaupés, Colombia in 2022.

**Methodology:** An observational study of cross-sectional design was carried out through the application of the AUDIT survey in the urban population of the municipality of Mitú in the year 2022. Alcohol risk consumption was quantified through the Alcohol Use Disorders Identification Test (AUDIT), whose cut-off point was 8 units. Descriptive analysis of the information was performed in Microsoft Excel and STATA.

**Results:** A total of 397 people participated, aged between 18 and 95 years with a median of 34 years (RIQ 23 years). Within the population evaluated, the majority were women (50.6%), of indigenous race (89.6%), belonging to the Cubeo, Desano and Tucano ethnic groups. Problematic alcohol consumption was more prevalent in men than in women (PR 2.36,  $p < 0.01$  CI95% 1.39-3.98), in indigenous vs. non-indigenous (PR 3.55 CI95% 1.34 - 9.44) and in youth (PR 3.44 CI95% 1.57 - 7.56) and adults (PR 3.39 CI95% 1.59 - 7.25) vs. old age.

**Discussion and conclusions**

Problematic alcohol consumption requires a multidimensional approach. The Desano, Guanano and Tuyuca ethnic groups showed a higher prevalence of problematic alcohol consumption; this could be related to the cultural context and the role of alcoholic beverages within the communities. Research is needed to investigate individual or collective factors in these populations that may have an impact on problem drinking.

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### Development of health literacy in Czech Republic

Nora Veselá<sup>1</sup>

<sup>1</sup>Institute for Postgraduate Medical Education Ruská 2412/85100 05 Praha 10

### Czech Republic

Health literacy is a determinant that greatly influences individual and population health. In 2014, the first systematic study of health literacy in selected EU countries was published (HLS-EU) - Austria, Bulgaria, Germany, Greece, Spain, Ireland, Netherlands, Poland. Same method was used in Czech Republic the very same year. Results were rather alarming yet not surprising. Level of health literacy was insufficient and problematic among Czechs (13,3% insufficient and 29,2 % problematic). Ten years after the first European Health Literacy Study (HLS - EU), the results of the second European Health Literacy Study (HLS19), based on the experience of respondents from 17 countries in the WHO European Region were published. The countries included are Austria, Belgium, Bulgaria, Czech Republic, Denmark, France, Germany, Hungary, Ireland, Israel, Italy, Norway, Portugal, Russian Federation, Slovakia, Slovenia and Switzerland. These two studies will be compared and presented in the context of the level of health literacy of the Czech population. The presentation will include an introduction to existing health literacy support structures in Czech Republic (e.g. the Institute for Health Literacy, the Czech Medical Association of J.E.Purkyně, the National Institute of Public Health). In conclusion, it appears that there is a need for repeated measurement of health literacy, clarifying the evaluation methodology and thus avoiding bias.

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### COVID-19 infection and comorbidities: A cross-sectional study on two central Italy prisons

Francesca Galassi<sup>1</sup>, Anna Angelone<sup>1</sup>, Ciro Marziliano<sup>1</sup>, Francesca Marzi<sup>1</sup>, Marianna Mastrodomenico<sup>2</sup>, Fausto Frabotta<sup>2</sup>

<sup>1</sup>University of L'Aquila Italy, <sup>2</sup>ASL1, Avezzano-Sulmona-L'Aquila Italy

**Background and Objective:** The presence of multiple chronic diseases is significantly associated with an increase in the probability of mortality when it is associated to COVID-19 infection. The aims of our study were: i) to evaluate the association between the severity of the COVID-19 disease and the presence of one or more comorbidities in the population of prisoners in 2 prisons of central Italy: LAquila and Sulmona; ii) to describe the profiles of inmates using multiple correspondence analysis.

**Methods:** For these purposes, a database was created including age, gender and clinical variables. The database containing anonymized data has been password protected. The Kruskal-Wallis's test was used to evaluate a possible association between diseases and the severity of covid-19 stratified by age groups. We used multiple correspondence analysis (MCA) to describe a possible characteristic profile of inmates.

**Results:** Our results show that age group 0-50y (covid-19 negative), of the LAquila prison, 19/62 (30.65%) were without comorbidity, 17/62 (27.42%) with 1-2 comorbidities and only 3.23% had >2 diseases. It is interesting to note that in the elderly the frequency of 1-2 or >2 pathologies were higher and only 3/51 (5.88%) inmates did not had comorbidities and were covid-19 negative ( $p=0.008$ ). The MCA identified the following profiles: the prison of LAquila shows a group made up of women, aged over 60, with diabetes, with cardiovascular, orthopedic problems and hospitalized for covid-19; the Sulmona prison presents a group aged over 60, with diabetes, with cardiovascular, respiratory, urological, gastrointestinal and orthopedic problems and hospitalized or symptomatic due to covid-19.

**Conclusion:** Our study showed that COVID-19 infection affected inmates with more than one comorbidity and older age with create disease severity.

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### Sociodemographic characterization and access to health services in the gypsy community of Barcelos, Portugal

Marina Pinheiro<sup>1</sup>, Sílvia Silva<sup>1</sup>, Marta Lemos<sup>1</sup>, Lucinda Barros<sup>1</sup>, Rosa Zambrano<sup>1</sup>, Edite Brito<sup>1</sup>, Ana Fonseca<sup>2</sup>, David Nascimento<sup>1</sup>

<sup>1</sup>Public Health Unit, ACES Cávado III Barcelos/Esposende, Braga, Portugal,

<sup>2</sup>Ana Fonseca Portugal

The Gypsy Community in Portugal is characterized by deficient standards of living, especially in terms of health. This work aims at a sociodemographic and access to health characterization of the Gypsy Community covered by the Grouping of Health Centers (ACES) of Cávado III - Barcelos/Esposende in Portugal so that with their greater knowledge it is possible to diagnose the situation and consequent intervention regarding their health needs. This descriptive observational study is based on clinical records (secondary data) consulted during the period January-March, 2022. The results obtained regarding the sociodemographic characterization Gypsy Community (n=237) demonstrate the existence of an extremely young population (average age=26.9 years) in a group of 56 households, a large part of which (71%) reside in the same parish, in Barqueiros. Regarding

access to primary health care, 97% of this Gypsy Community have a family doctor and 81% had at least one consultation with their doctor in the last 2 years. The main chronic diseases identified are hypertension, diabetes, dyslipidemia, and obesity. The prevalence of hypertension, diabetes, and dyslipidemia in the Gypsy Community is 11% and the prevalence of obesity and overweight is 30%. Regarding access to the emergency service in the period 2019-2022, 8 and 4% of this population used the ER at least 5 and 10 times, respectively. With regard to compliance with the National Vaccination Program (PNV), 30% of this population fails to comply with the PNV. It is essential to improve living and housing conditions and eradicate health inequalities presented by minority groups, including Gypsy Communities. This objective must be included in the priorities and agenda of the National Health Program (PNS), at the national level, and in the Diagnostics of the Situation at the local level.

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### Realist evaluation of effect's conditions of health mediation on healthcare utilization and participation in cancer screenings among underserved populations: The ecemso protocol study

Elodie Richard<sup>1</sup>, Judith Martin-Fernandez<sup>2</sup>, Leïla Ramiz<sup>3</sup>, Linda Cambon<sup>3</sup>, Stéphanie Vandentorren<sup>1</sup>

<sup>1</sup>PHAReS, Centre Inserm U1219, Bordeaux Population Health, Université de Bordeaux France, <sup>2</sup>Université de Bordeaux Searcher France, <sup>3</sup>Centre Hospitalier de Bordeaux / PHAReS, Centre Inserm U1219, Bordeaux Population Health, Université de Bordeaux France

**Introduction:** Despite all the existing strategies, such as organized cancer screening, healthcare utilization and participation in screening remain insufficient, particularly among underserved population. This population is more exposed to diseases, less receptive to prevention messages, and have less healthcare utilization. Interventions that promote healthcare utilization by underserved populations must therefore go beyond the question of supply. Health Mediation (HM) is one of the promising interventions that promote healthcare utilization. However, except for some pioneering studies, no study seems to have demonstrated HM's effectiveness and conditions of effect experimentally. The objective of the ECEMSo study is to identify the HM's conditions of effect on healthcare utilization and participation in cancer screening.

**Methods and analysis**

The ECEMSo study adheres to the theory-driven evaluation framework where the realist evaluation method and contribution analysis are used to explore the effects, mechanisms, and influence of context on the outcome. We will conduct a longitudinal study mobilizing mixed methods with a sequential explanatory multi-case and multicenter design. Knowledge mobilization workshops will be organized to promote collaboration between partners involved in HM and the health care system. The centers involved will be located in several regions of mainland France and support underserved populations who live in informal settlements. Outcomes are the evolution of healthcare utilization and cancer screenings used 6 months for those who have never been screened after the start of ECEMSo. To implement this survey we will use questionnaires, semi-structured interviews, focus groups and observations. The target number of participants are 800 beneficiaries and 33 professionals.

**Discussion**

The realist evaluation will allow us to identify contextual associations to the intervention, see how they work, and whether they can be adapted to implement health mediation in other settings if it proves effective. This study will allow recommendations / guidelines' production.

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### Evaluation of waste reduction promoted by the implementation of digital x-ray in social service of commerce dental clinic between may 2022 and november 2022 and its relation with the united nations sustainable development goals

Ellen Amaral<sup>1</sup>, Fernanda Paiva<sup>2</sup>, Marcus Bezerra<sup>3</sup>

<sup>1</sup>Social Service of Commerce Health Management 106, Marquês de Olinda St. apt. 212, Botafogo, Rio de Janeiro, 22251-040. Brazil, <sup>2</sup>Social Service of Commerce Claudia Coscarelli Social Service of Commerce Health Management 179, Sorocaba St. 103 apt, bl 01, Botafogo, Rio de Janeiro, Brasil, zip code 22271-110 Brazil, <sup>3</sup>Social Service of Commerce Health Management 60, João Alfredo St, apt 504, Tijuca, Rio de Janeiro. Zip code 20511-390 Brazil

**Background and objective:** The United Nations has been promoting Sustainable Development Goals (SDGs) which are a call for action by all countries to promote

prosperity while protecting the planet. The Social Service of Commerce (SESC) has been committed to the SDGs since February 2022. Thus, it has been developing several actions to achieve these goals. The objective of this study is to evaluate the waste reduction promoted by the implementation of digital x-ray in dental clinic.

**Method:** It evaluated the amount of residual trash no longer produced at the dental clinic of Social Service of Commerce (SESC), Ramos by using the digital dental x-ray in the period comprehended from May 2022 until November 2022, totalizing 139 days of working days. Each component of the intraoral radiographic film was weighed and compared with the weight of the plastic used to protect the sensor of digital x-ray during a radiographic taken. These data allowed us to calculate the difference between the waste produced in each method. Thus, it was possible to determine the reduction of waste in this period and carry out the projection for 3, 6, 9, and 12 years.

**Results:** A total of 2100 intraoral exams were performed between May 2022 and November 2022; a total of 4.304g of waste was produced by conventional RX method and 123,9g with digital radiographic technique. Conclusion there was a significant reduction of waste especially plumb, converging straight to SDGs: good health and well-being; clean water and sanitation; responsible consumption and production; life below water; life on land. In 3, 6, 9 and 12 years a total of 22.104, 44.208, 66.312 and 88.416 grams, respectively, will no longer be produced, representing a 97,13% of waste reduction.

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### Barriers to healthcare services access among nursing students

Mohamed Kahloul<sup>1</sup>, Imene Kacem<sup>2</sup>, Rania Nakhli<sup>2</sup>, Imene Mlouki<sup>3</sup>, Mohamed Ajmi<sup>1</sup>, Walid Naija<sup>1</sup>, Mrizak N<sup>2</sup>

<sup>1</sup>Department of Occupational Medicine, Farhat Hached Academic hospital, Faculty of Medicine of Sousse, University of Sousse, Sousse, Tunisia,

<sup>2</sup>Department of Anesthesia and Intensive Care, Sahloul Academic Hospital, Faculty of Medicine of Sousse, University of Sousse, Sousse, Tunisia,

<sup>3</sup>Department of Preventive and Community Medicine, Mahdia Academic Hospital, Faculty of Medicine of Monastir, Tunisia

**Background:** Easy and timely access to health care services is essential for nursing students who are particularly vulnerable. National researchs on the difficulties of access to healthcare among students are rare. The aim of this study was to determine the barriers to healthcare services as reported by nursing students in order to propose solutions.

**Methods:** This is a cross-sectional study that took place over two month period and included all 2nd and 3rd year students enrolled in the applied license in nursing science at private nursing school during the academic year 2021/2022. The questionnaire enquired about barriers to using physical and mental healthcare services separately.

**Results:** A total of 150 students participated in the study, representing a participation rate of 47.3%. The health state was considered poor in 14% of cases. Psycho-affective and somatic complaints were frequently reported in 12.7% of cases for each. The social security scheme paid for in 36% of cases. The main obstacles to accessing care reported, in terms of mental health, were non-respect of confidentiality (84%), financial difficulties (82.7%), lack of time (74.7%) and fear of adverse effects (70%). Regarding physical health, they included difficulties in accessing university doctors (88%), risks related to covid-19 (79.3%) and financial difficulties (78%).

**Conclusion:** The difficulties of access to healthcare among students are various, requiring targeted preventive measures. Institutional programmes should use this information for improving the usage, satisfaction and effectiveness of healthcare delivery systems for nursing students.

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### Occupational health surveillance in Brazil: challenges in implementing the sustainable development goals in the 2030 agenda

Janine magaly arruda tavares<sup>1</sup>, Solange laurentino dos santos<sup>1</sup>

<sup>1</sup>UFPE Brazil

**Background and objectives:** Occupational Health Surveillance (VISAT) directs health promotion and prevention actions, minimizing worker risks and vulnerabilities. The Sustainable Development Goals (SDGs) of the 2030 agenda propose a global pact, focused on human development involving motivational, political and social issues. This article aims to describe the relationship between SDG 2030 and VISAT, based on the manufacturing process. In this sense, the productive chain of clothing becomes prominent in the Agreste of Pernambuco,

they are centers of small industries, generating economic, social and territorial impacts for locals.

**Methods:** This is a systematic study, using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) method, with a search in PubMed, BIREME LILACS, Web of Science Scopus and extension queries. The choice was based on search selection criteria using descriptors, two articles were selected, from the perspective of sustainable development and VISAT, in the query for the introduction of materials aimed at policies on workers health.

**Results:** The results of the analysis show two articles extracted by PRISMA and three materials in the expanded consultation, which subsidized, changed the theme ODS, VISAT and the production process of clothing. Thus, the SDGs with the greatest reduction in the object, considering goals and indicators, involvement 3 – health and well-being, 6 – drinking water and sanitation, 9 – decent employment and economic growth, 11 – sustainable city and communities, 12 – consumption and responsible production. It is concluded that there are direct correlations between the SDGs and the manufacturing activity, however, there is a limitation in the achievement of goals and indicators, due to factors such as financial investments.

**Conclusion:** The research enabled a better understanding related to the activity of clothing, VISAT and sustainable development, whose happiness is indicative of establishing better living conditions for the health of workers and communities.

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### Equitable accessibility to health services using timely measurements

Luis Gabriel<sup>1</sup>, Carmen Villamizar Johns<sup>2</sup>, Luis Cuervo<sup>3</sup>, Eliana Martinez<sup>3</sup>

<sup>1</sup>Cuervo Amore Colaborative Project United States, <sup>2</sup>Hopkins University, United States, <sup>3</sup>Amore Colaborative Project-UNIVERSIDAD AUTONOMA DE BARCELONA United States

**Introduction:** The links between traffic congestion, accessibility to health services, and equity show how traffic congestion impacts accessibility among different populations. It can also be used to improve health services and land use planning. The study proposes an approach to measuring, analysing, and communicating accessibility to health services in terms of travel time, as opposed to traditional travel time analyses.

**Methodology:** We studied the entire city of Cali (2.258 million), assessing accessibility by car to urgent care (tertiary care emergencies) and frequent ambulatory care (haemodialysis and radiation therapy) in July and November 2020. The study is the cocreation of an interdisciplinary multisectoral group involving authorities, academia and other civil society, service providers and beneficiaries.

**Results:** Services are far from where most of the population lives, especially some of the most vulnerable. These people pay more to access essential health services. New analyses will indicate potential solutions and their potential impact.

**Discussion:** The study used a person-centred design to address the needs of different stakeholders. Studies like this can expand to other services, transportation means, and locations. They allow for integrating health equity with urban planning and enable participatory evidence-informed decision-making.

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### Incarceration, inclusion, and health equity: evidence, perspectives, and future directions

Stuart Kinner<sup>1</sup>, Lisa Puglisi<sup>2</sup>, Anne Bukten<sup>3</sup>, Marianne Stavseth<sup>3</sup>, Amanda Slaunwhite<sup>4</sup>, Mo Korchinski<sup>5</sup>, Amanda Butler<sup>6</sup>, Lindsay Pearce<sup>6</sup>, Rohan Borschmann<sup>7</sup>

<sup>1</sup>Justice Health Unit, School of Population Health, Curtin University, Australia, <sup>2</sup>SEICHE Center for Health and Justice, Yale University, United States, <sup>3</sup>Norwegian Centre for Addiction Research, University of Oslo, Norway, <sup>4</sup>BC Centre for Disease Control, University of British Columbia, Canada, <sup>5</sup>Unlocking the Gates, Canada, <sup>6</sup>Department of Family Medicine, McMaster University, Canada, <sup>7</sup>Department of Psychiatry, Oxford University, United Kingdom

Globally more than 11 million adults are imprisoned on any given day, and at least 410,000 children are held in criminal justice detention. Incarceration is a marker for extreme disadvantage, and exposure to incarceration may compound health inequalities. Complex health needs among people in custody are normative. Given the rapid movement of people between disadvantaged communities and carceral settings, improving the health of people exposed to incarceration is important to reducing health inequalities globally. Health outcomes after incarceration are especially poor, with high rates of preventable mortality, injury, infectious disease,

and decompensation of chronic disease documented in a growing number of (mostly high-income) countries. In this workshop we will consider prisons from a public health perspective: as settings through which marginalised and typically unwell members of the community pass, and in which health needs are managed by carceral systems that are rarely fit for purpose. We will summarise the evidence on health outcomes after incarceration, emerging from large cohort studies of adults and children released from incarceration in Australia, Norway, Canada and USA, and from an international consortium examining mortality after incarceration in 13 countries. We will identify key gaps in the evidence base, critically including research in low- and middle-income countries, and mechanisms for routinely monitoring health outcomes in and after incarceration. Informed by these brief presentations, we will facilitate a multi-disciplinary Discussion focussing on the following key questions: 1. Is incarceration a cause of poor health outcomes, a marker of pre-existing health inequalities, or both? Does it matter? 2. What opportunities exist to improve health outcomes before, during, and after incarceration, through: \*3. Upstream prevention and diversion; 4. Prison healthcare quality, standards, and monitoring; 5. Transitional support and post-release care coordination. 6. What critical next steps are required to support advocacy and policy reform, specifically for public health agencies, policy makers, clinicians, researchers, advocates, and civil society? At the conclusions of the workshop we will draft a Consensus Statement on Incarceration and Health Inequalities, which will be submitted to key international agencies for potential ratification. Specific workshop Aims: 1. Sensitise a global public health audience to the health-related needs of children and adults who experience incarceration, and the role of incarceration in compounding or mitigating health inequalities at the population level 2. Identify multi-sectoral opportunities to improve the health of people exposed to incarceration through prevention, improved care, and post-release support. 3. Identify critical next steps for advocacy and policy reform. 4. Draft a Consensus Statement on Incarceration and Health Inequalities, which will be submitted to international agencies for potential ratification and published in a leading international journal.

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### What could go wrong? How to critically analyze the unintended effects of public health interventions on health inequities

Caroline Adam<sup>1</sup>, Josée Lapalme<sup>2</sup>

<sup>1</sup>Cégep du Vieux Montréal, Canada, <sup>2</sup>McConnell-Université de Montréal, Canada

**Public health Aims** to improve the health of populations and reduce health inequities, notably through action on social determinants of health, including physical and social environments, public policies, access to health services, and community empowerment. Despite these intentions, growing research demonstrates that public health interventions can unintentionally contribute to increasing social inequalities in health by perpetuating social norms that can stigmatize vulnerable groups, neglecting the needs of vulnerable groups, or replicating power dynamics that disenfranchise vulnerable populations. In order to reverse these effects, researchers and professionals need to become aware of and reflect on the potential impacts of their actions on vulnerable populations. Bacchis "What is the problem represented to be?" (WPR) approach proposes a framework for analyzing policies and interventions that relies on a critical understanding of problem representation, that is, the ways in which a health problem is conceptualized by decision-makers. This useful framework has been used by many researchers to bring light to the unintentional effects of public health actions. It is through WPR's 6 analytical questions that researchers and professionals come to critically reflect on their actions. The 6 questions are: 1) What is the problem represented to be? 2) What assumptions underlie the problem representation? 3) How has this problem representation come about? 4) What is left unproblematic in the problem representation? 5) What effects are produced by the problem representation? 6) How could the problem representation be questioned, disrupted, and replaced? **Specific Aims/Objectives:** Based on three public health intervention cases drawn from innovative research Findings and critical reflections, this workshop Aims to critically co-analyze these cases using Bacchi's WPR approach in order to: 1. identify the problem representation of each intervention 2. explore how the identified problem representations could produce unintended effects 3. think of alternative equity-informed interventions for the three cases **Component parts:** 1. A brief Introduction to present the workshop topic and learning Objectives (5 min) 2. Break-out groups to discuss each of the three cases (30 min) 3. A plenary Discussion to report the break-out groups' Discussions (10 min) 4. Comments of the three panelists on each case and collective lessons drawn (15 minutes) The cases that will be discussed are: 1. A population-level smoke-free policy adopted in Québec in 2015 where smoke-free public places

were added to the already existing policy. 2. A mandatory cultural safety training for all healthcare employees implemented by the Québec government in 2020 following an Indigenous woman's death. 3. Alternative food security interventions to traditional food security interventions, such as food banks. Key questions that the workshop will address: 1. How do the ways in which public health problems are represented influence public health interventions and their unintended effects on health inequities? 2. How might public health researchers and practitioners reflect critically about the unintended consequences of public health interventions in order to develop health equity-informed interventions?

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### The political determinants of health: a local perspective

Marguerite Sendall<sup>1</sup>

<sup>1</sup>Qatar University, Qatar

The relationship between our environment, the prevailing political context and policy landscape, and health outcomes from a planetary perspective is not linear. There is no straight forward to understand the links between these three concepts. Consequently, the political determinants of health are not well recognized in public health. This is for several reasons - they are not seen as underpinning all other determinants of health, they are too hard, and they are under researched so there is a limited body of evidence to draw. Conclusions: However, the political determinants of health within a planetary perspective are emerging as an increasingly important variable in health outcomes. This workshop will address complex contemporary public health issues within the context of policy, politics, and health outcomes from a planetary perspective to provide a deep understanding of the political determinants of health. This workshop is more important than ever to prepare the current and next generation of public health, health promotion practitioners and health policy makers for their progressively more intricate careers. Specific aims/objectives and component parts: The specific aim of this workshop is to encourage critical thinkers by challenging participants to explore complex concepts in a safe environment, to think about disciplinary ideas in different and novel ways and to kindle the inner activist to challenge the status quo, make a difference to how things are done, progress fair and equal treatment across the population, bring to the fore and highlight complexities and inequities and not accept complacency. The approach for this workshop is participant centred, interdisciplinary, multi-national and activity based. Complex concepts will be addressed in a highly interactive, engaging and thought-provoking way, the learning approach and activities will be pedagogically robust, and the structure will be logical and easy to follow. A suite of learning activities will cater to diverse learning styles and prior knowledge. The specific components of this workshop are: 1. small and interactive group activities, 2. focused and localized scenario-based activities, 3. hands-on and technology-based activities, 4. participant-led and practice relevant activities. The key questions that the workshop will address: This workshop will expose the explicit and implicit relationships between political decisions, policy and public health outcomes from a planetary perspective. The social determinants of health are well understood in public health, however the political environment which creates these conditions, is rarely given the attention required to truly understand, for example, advocacy and action strategies. The political determinants of health and the social determinants of health are intertwined and complex. This foundational understanding about the complex juxtaposition between these concepts will ensure participants meet learning objectives and feel inspired to apply this new knowledge in their local practice environment. This workshop will address two key questions: 1. How does political decision making from a planetary perspective affect our health - physical, emotional, mental, social, cultural, economic, commercial and environmental - across populations? 2. How can public health, health promotion practitioners and health policy makers engage in the political decision-making process to address health outcomes?

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### Sustainable Global Health Equity: acting locally, thinking globally

Marta Lomazzi<sup>1</sup>, Rocio Saenz<sup>2,3</sup>, Fernanda Lopes<sup>4</sup>

<sup>1</sup>World Federation of Public Health Associations, Switzerland, <sup>2</sup>Latin American Alliance for Global Health (ALASAG), Costa Rica, <sup>3</sup>Network for Health Equity in the Americas (HENA / RAES), <sup>4</sup>Brazilian Association of Collective Health (ABRASCO), Brazil

Achieving sustainable health equity should be a priority for all countries. Several national and international organisations support sustainable health equity as a guiding principle for economic, social and environmental policies. However, very often governments do not apply this principle and the basic needs of many population groups are not met even if the planet has sufficient resources. To

reduce inequalities and promote a more equitable distribution of resources, several determinants of health must be addressed. This is even more true in the complex reality in which we live, facing a series of crises such as climate change, COVID-19, etc. that further exacerbate the gap between higher and lower income countries and reverse progress in developing economies. The various aspects of inequality, such as income, education, gender, health, employment opportunities, are closely interrelated and mutually reinforcing. Inequality starts with unequal education. Health is a human right; sustainable health equity should be our commitment for the next generations. During the workshop, renewed public health leaders from different regions of the world will present their real-life experiences, discuss current projects and innovative ideas on how to develop and strengthen approaches to ensure sustainable health equity at the national and global level and to guarantee the dignity of every human being.

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### Co-building new partnerships, policies and practices for health, social wellbeing, and sustainability

Luis Souza<sup>1</sup>, Rory Truell<sup>2</sup>, Bettina Borisch<sup>3</sup>, Rosa Pavanelli<sup>4</sup>

<sup>1</sup>World Federation of Public Health Associations (WFPHA), Brazil,

<sup>2</sup>International Federation of Social Workers, Switzerland, <sup>3</sup>World Federation of Public Health Associations, Switzerland, <sup>4</sup>Public Services International, France

It is largely agreed that health and wellbeing are socially determined. Yet, across the world, health and social service policies have primarily been designed separately with emphasis on each sector responding to an individual's concern only after a problem has been identified. In countries with relatively well-funded welfare systems, the focus has been on the individual rather than the wellbeing of communities and the sustainability of life on Earth. The prolonged application of such policy approaches strips communities of their organic role and partnership in co-building healthy confident environments and lifestyles. Such policy approaches are also proposed, funded and exported by the global North to countries that are in the process of developing public services. This workshop, organised by The World Federation of Public Health Associations (WFPHA), The International Federation of Social Workers (IFSW), and the Public Services International (PSI), is a part of a rapidly evolving wider discussion on the need to rethink health, social services, public services and development. With memberships across the world, these four organisations are committed to co-designing new policy and delivery paradigms, beyond the integration of sectors, to promote sustainable development, including the public and communities as permanent partners in creating and organising services with people, rather than for people. A range of case study examples from countries with differing socio-economic contexts will be presented illustrating that building partnerships between integrated public services and the people can significantly improve the health and well-being of populations in relatively short timeframes with or without additional funding requirements. Workshop participants will be invited to share their experiences and observations and to become a part of this movement that is rethinking the philosophy, relationships, values, strategies and partnerships for sustainable well-being.

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### Getting to the details: Understanding the commercial determinants of health by learning from local experiences and difference contexts

May van Schalkwyk<sup>1</sup>, Nason Maani<sup>2</sup>, Salma Abdalla<sup>3</sup>, Mark Petticrew<sup>1</sup>

<sup>1</sup>London School of Hygiene & Tropical Medicine United Kingdom, <sup>2</sup>University of Edinburgh, United Kingdom, <sup>3</sup>Boston University School of Public Health, Boston, United States

Aims/objectives and component parts

To map the commercial determinants of health and channels of influence through local, 'on the ground' experience from across the world. The session will start with short presentations from public health professionals working in different contexts and topic areas that will provide an introduction to the commercial determinants, the different ways in which the commercial determinants of health exert their effects, and the gaps in our understanding of these mechanisms. Different industries, settings and commercial strategies will be introduced briefly and the ways in which the activities of the private sector can be framed as a public health issue by shifting the problem definition and revisiting what we mean by "upstream" or "causes of causes". The workshop will be mainly dedicated to active participation by the attendees. Attendees of the workshop will engage in activities that aim to: Enable identifying commercial determinants in local contexts, exploring if and how this can be done or is currently being done. Map

the ways that commercial determinants interact with other influences such as the political, social, and environmental determinants of health and how this poses a challenge to, but also an opportunity to strengthen, public health practices. Explore the benefits and challenges of adopting a commercial determinants of health lens and how this may differ depending on the context, the industry, and other local factors. Discuss how to establish and adopt approaches to addressing commercial determinants that are responsive to their contextual nature while recognising the similarities in strategies and tactics across time and place, and the need for global collaboration on this agenda.

Key questions

How can we identify and characterise commercial determinants of health in our everyday practices as public health professionals? How does adopting a commercial determinants of health lens to public health issues strengthen or challenge taking action to address them?

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### Free and charitable clinics

Julie Darnell<sup>1</sup>, Nicole Lamoureux<sup>2</sup>, Cat Hulbert<sup>3</sup>, Julie Darnell<sup>1</sup>

<sup>1</sup>Loyola University Chicago Parkinson School of Health Sciences and Public Health Department of Public Health Sciences 1120 W. Loyola Avenue St. Joseph's Hall Room 121 Chicago, IL 60626 United States, <sup>2</sup>National Association of Free and Charitable Clinics, Alexandria, United States, <sup>3</sup>Americares, United States

A uniquely American response to the coverage gaps created by the American approach to healthcare. America's health care delivery system is complicated, expensive, fragmented, and inequitable. These characteristics have contributed to sizable and intractable uninsured and underinsured problems. In 2021, an estimated 8.6% of the U.S. population lacked health insurance. Though reaching a historic low, the number of uninsured exceeded 27 million. Furthermore, this overall rate masks racial and ethnic disparities: 9.6% of Black residents and 17.7% of Latino residents lacked health insurance versus 5.7% of Whites. For nonelderly adults 19-64, 13.5% of Black residents and 24.6% of Latino residents lacked health insurance, compared with 8.2% of Whites. Among adults with incomes below 100% of the federal poverty level (\$26,500 for a family of 4), 24.0% had no health insurance. In addition to the millions of U.S. residents without any health insurance, an estimated 23% of U.S. adults were underinsured, defined as having inadequate health insurance coverage that did not provide them with affordable access to health care.

This session aims to increase knowledge about free and charitable clinics, which are lesser known – yet vital – members of the U.S. health care safety net that seek to serve uninsured and underinsured persons. Free and charitable clinics are private, nonprofit organizations that utilize volunteer licensed healthcare professionals to deliver a range of services (medical, dental, mental and behavioral health) at no cost or for a small fee to patients who are uninsured and underinsured and disproportionately members of racial and ethnic minority groups. Collectively, the estimated 1,400 known free and charitable clinics in the U.S. annually reach approximately 2 million patients and provide between 4 to 5 million medical and dental visits.

Leveraging the disparate backgrounds of the three presenters who represent academia, a national membership association serving more than 800 free and charitable clinics, and a national humanitarian aid organization that is an important resource to free and charitable clinics, this session will share the latest scientific research, discuss the relevant policies affecting this unique sector, and highlight innovative programs that demonstrate free and charitable clinics' unique gap-filling role in the safety net and showcase how they provide high-quality care to the most marginalized populations in the United States.

During the session, the presenters will feature an innovative national program that they jointly co-lead, called "Roadmap to Health Equity." Launched in 2017, it has involved more than 150 free and charitable clinic stakeholders, including state-level associations serving free and charitable clinics and clinic leaders across the U.S., with the shared goal of improving the quality of care and reducing inequities. Its centerpiece is a custom national data repository of 15 validated clinical quality measures, such as blood pressure control, and patient-level characteristics, including age, race, ethnicity, and language. The repository makes available stratified performance data on the clinical quality outcomes.

Focusing attention on these little known, yet critical, members of the U.S. safety net that serve patients who might otherwise fall through the cracks offers tremendous potential for rich interactions with a diverse audience from around the globe about community-level strategies that advance equity.

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### Social and environmental determinants of health inequalities

Alastair Leyland<sup>1</sup>, Mauricio Barreto<sup>2</sup>, Philip Cooper<sup>3</sup>, Natalia Romero<sup>4</sup>

<sup>1</sup>University of Glasgow MRC/CSO Social and Public Health Sciences Unit University of Glasgow Berkeley Square 99 Berkeley Street Glasgow G3 7HR United Kingdom, <sup>2</sup>Centro de Integração de Dados e Conhecimentos para Saúde (Cidacs/Fiocruz), Brazil, <sup>3</sup>St George's University of London, United Kingdom, <sup>4</sup>Universidad Internacional del Ecuador Ecuador

Outline we provoke a discussion based on our experience of working in Brazil and Ecuador, where we have a unit focused on the social and environmental determinants of health inequalities

Health inequalities are in large part attributable to the social determinants of health – the conditions in which people are born, grow, work, live, age and die. Many environmental factors, including urbanisation and the climate emergency, are increasing priorities for individual and population health. These tend to have the most harmful impacts on the most deprived in society. The health system needs to respond to such social and environmental threats, but its organisation may mean that it is not protecting the most vulnerable in society. To try to reduce the impact of social conditions such as poverty, many governments (particularly in Latin America) have introduced policies such as conditional cash transfers or housing programmes for the very poor. Similarly, governments may introduce environmental policies to protect the environment and mitigate any harmful effects on living conditions. While such policies may not be primarily aimed at improving health, they may still have large impacts on health and health inequalities, and much of the historical improvement in life expectancy attributable to these policies. There are many axes along which we can measure health inequalities, including income, ethnicity, race, sex, geography, migration, urbanicity and deprivation. Focusing on reducing inequalities in any one dimension to the exclusion of the others runs the risk of increasing inequalities in the other axes. Aims and objectives The aim of this workshop is to encourage thinking around how non-health sector policies may be used to reduce health inequalities, particularly in low and middle income countries. Following a brief introduction to each of a series of key questions (see below), participants in the workshop will discuss ways in which social and environmental policy can reduce health inequalities and how such impacts can be evaluated.

Key questions

Why does health equity matter rather than health improvement? Why focus on policy to reduce health inequalities? What does non-health sector policy have to do with health inequalities? How can we evaluate the impact of policies on inequalities in health?

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### 5 practical actions for national health literacy development

Richard Osborne<sup>1</sup>, Shandell Elmer<sup>1</sup>, Melanie Hawkins<sup>1</sup>, Sónia Dias<sup>2</sup>, Astrid Wahl<sup>3</sup>

<sup>1</sup>Swinburne University of Technology Australia, <sup>2</sup>Universidade NOVA de Lisboa Portugal, <sup>3</sup>University of Oslo Norway

Brief outline of the overall workshop

This highly participatory and interactive workshop is suitable for attendees working in low to high resource settings. It will provide participants with guidance about how to undertake practical actions for health literacy development at a local and national level. The workshop activities will focus on the five action areas for health literacy development and responsiveness as described within the report 'Health literacy development for the prevention and control of noncommunicable diseases: Volume 3. Recommended actions' (World Health Organization; 2022). The workshop facilitators collaborated with the WHO to produce this report. Drawing on their practical knowledge and experience from low- to high-income countries, the workshop facilitators will lead the participants through a series of activities and case studies related to each of the five action areas. This workshop will model to the participants how they can incorporate health literacy approaches into their own organisation's strategic planning and evaluation. In this way the workshop will be both translational and build capacity.

Specific aims/objectives and component parts

This workshop has two aims:

\* Translate the framework for health literacy development and responsiveness into action.

\* Build the capacity of the participants to undertake health literacy development After a brief orientation to the report, the workshop will focus on the five action areas for the development of health literacy development and responsiveness. These action areas were designed as a framework that can be taken into different settings to be adapted and contextualized as needed. This workshop will enable participants to undertake a simulated activity in each area and begin to plan for

implementation in their own setting. The five action areas and related activities are described below:

1. Prepare for national health literacy development and responsiveness.

\* Activities will focus on developing an understanding of health literacy measurement

2. Build health literacy responsive health systems

\* Activities will focus on organisational assessment

3. Build community health literacy

\* Activities will focus on co-design and working with community leaders

4. Target community groups

\* Activities will focus on identifying who is missing out on services (e.g. digital exclusion)

5. Integrate health literacy at the national level through to local levels

\* Activities will focus on developing sustainable support structures (e.g. national health literacy action plan, community of practice)

The key questions that the workshop will address

\* How organisations can use health literacy development strategies for health and equity improvements at local and regional levels

\* How to effectively deliver health services and health-promotion activities to people with varying health literacy profiles in different contexts

\* What practical activities can be applied to develop health literacy in populations, organisations and communities

\* How to identify and prioritise groups that are being left behind (people that services are failing to engage effectively)

\* How to strengthen the reach and effectiveness of services and programs through the integration of health literacy at a local and national level

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### Experiences of primary care workers in the implementation of primary health care approach to address noncommunicable diseases: a qualitative case study

TJ Moncatar<sup>1</sup>

<sup>1</sup>Department of Health Policy and Administration, College of Public Health, University of the Philippines, Manila, Philippines

Background: Information on how the execution of primary health care towards addressing noncommunicable diseases to bring about desired health outcomes have been limited. Hence, this study aims to determine the experiences in implementing a primary health care approach to address noncommunicable diseases based from the perspectives of various concerned health workers at the primary care level.

Methods: A qualitative case study approach was employed using data from 16 focus groups discussions with 68 primary care workers. A semi-structured interview was utilized to determine perceptions and experiences in implementation of primary health care approach to address noncommunicable diseases in selected care facilities from all cities and municipalities in one province in the Philippines. All interviews were audio-recorded and transcribed verbatim. An inductive content analysis using NVivo 12 was employed to distinguish and classify relevant thematic codes.

Results: An inclusive delivery of primary health care approach through health education and promotion, assessment and monitoring of patients, patient treatment and management, and collaboration among health workers and care institutions were implemented. This resulted to an efficacious patient health outcome such as increased health knowledge and awareness, prevention of diseases or untoward progression, and better patient satisfaction. Enablers of primary health care implementation to address noncommunicable diseases include the following: (1) supportive leadership and governance; (2) dedicated and competent healthcare workers; (3) prioritization of noncommunicable diseases; (4) functional referral mechanism; and (5) efficient utilization of limited resources. However, noncommunicable disease service delivery was overshadowed by: (1) health human resource constraints; (2) logistical inadequacies; (3) limited access and availability of services and facility; (4) patient issues and impediments; and (5) structural restrictions. Conclusions: Primary care workers argued a robust delivery of primary health care approaches to confront noncommunicable diseases positively enhancing patient health. However, its implementation is determined by concurrence of various facilitating and hindering factors.

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### Factors associated with patients defaulting HIV treatment at Helen Joseph Hospital, Gauteng Province, South Africa

Letsatsi Potsane<sup>1</sup>

<sup>1</sup>Democratic Nursing Organization of South Africa, Roodeport, South Africa

Background: South Africa's government has significantly improved access to antiretroviral treatment. However, antiretroviral treatment adherence remains a significant challenge in Helen Joseph Hospital. A rate of adherence of 95% to 100% is necessary to achieve the intended outcomes of antiretroviral treatment. ARV adherence is affected by numerous factors, but long waiting times are a major concern at Themba Lethu clinic. Objective: This study aimed to examine the factors associated with ARV therapy non-adherence amongst HIV-Patients at Helen Joseph Hospital. Methods: The study used a case-control design. EPINFO 7.2 was used to calculate crude odds ratios, and SPSS Version 26 was used to conduct multivariate logistic regression to compute adjusted odds ratios, 95% confidence intervals, and P-values. In total, 322 questionnaires were administered to each participant during their clinic visit.

Results: In total, there were 322 (100%) study participants, of which 51% (n=165) were non-adherent to ARV therapy. Treatment non-adherence was associated with long waiting times in Helen Joseph, Themba Lethu clinic, after adjusting for gender, age, educational level, and employment status. The adjusted odds ratio was 4.78, 95% confidence interval: (1.12 -20.42), and p value=0.04. Conclusions: The study explored factors associated with ARV treatment defaulting in Helen Joseph hospital. Long waiting times were strongly correlated with ARV treatment non-adherence in Helen Joseph hospital. If clinic waiting times are reduced, ARV treatment adherence can be improved. Contribution: To achieve an adherence rate of 95% to 100%, the Helen Joseph Hospital has to reduce patient waiting times. Managers need to formulate strategies and redesign health systems to reduce waiting times.

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### Association of antiretroviral therapy adherence and health-related quality of life among people living with HIV/AIDS currently enrolled at a Tertiary Government Hospital treatment hub in Cebu city, Philippines during the COVID19 pandemic

Maeben Ho<sup>1</sup>

<sup>1</sup>CEBU Philippine Obstetrical and Gynecological Society, Vicente Sotto Memorial Medical Hospital, Capitol Cebu City, Philippines

Introduction: The COVID19 pandemic has caused global stagnation. All individuals, more so for people living with chronic health conditions such as HIV/AIDS are at high risk of contracting or developing problems. Health-related quality of life (HRQoL) is becoming an important outcome measure among PLHIVs. We assessed the health related quality of life, antiretroviral therapy adherence and its association with the sociodemographic and clinical characteristics among people living with HIV/AIDS currently enrolled at a tertiary government hospital treatment hub in Cebu City, Philippines during the COVID19 Pandemic.

Methods: Descriptive cross-sectional study design was conducted from May to June of 2022. Simple random sampling was done to derive the sample population. Respondents were asked to answer a structured questionnaire. Health-related quality of life was assessed using WHOQOL-BREF and medication adherence using SMAQ. CD-4 count and clinical staging was extracted from treatment hub registry.

Results: A total of 385 respondents were included in this study. Majority were 18-35 years old (66.5%), male (74.5%), single (78.9%), college graduate (70%), employed (64.4%), were living with their family (69.6%), at immunologic stage 1 (48.1%) and are clinically at stage 1 (57.4%) of the disease. Overall HRQoL amongst respondents was 61.65± 19.39. Furthermore, highest and lowest mean scores were related to environmental domain (64.13±22.48) and social domain (60.67±25.06), respectively. 69.35% of the respondents were adherent to ART.

Conclusions: The study showed that people living with HIV/AIDS currently enrolled at a tertiary hospital treatment hub during the COVID19 Pandemic had low social health related quality of life, in relation to the other domains. Female, single, patients who were living with their family, and are at stage 2 of clinical staging have better adherence to antiretroviral therapy and is directly correlated to better health-related quality of life.

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### Integrating rehabilitation services into primary health care: policy options for Iran

Saeed Shahabi<sup>1</sup>

<sup>1</sup>Health Policy Research Center, Institute of Health, Shiraz University of Medical Sciences, Shiraz, Iran

Background: Providing rehabilitation services in primary health care (PHC) is associated with numerous health, social, and economic benefits. Therefore, low

and middle-income countries, such as Iran, should benefit from the advantages of integrating rehabilitation services into PHC. We conducted a qualitative study to determine policy solutions that could facilitate the integration of rehabilitation services into Iran's PHC network. Methods: Semi-structured interviews were conducted with 38 participants, including health policymakers, rehabilitation managers, faculty members, and rehabilitation practitioners. Purposive and snowball sampling strategies were adopted to recruit participants. The WHO Health System building blocks framework analysis was applied to analyze the collected data.

Results: Participants perspectives and experiences outlined potential policy options including: 1) stewardship: increasing political support, strengthening the leadership of the rehabilitation sector, and promoting inter-sectoral collaborations; 2) service delivery: increasing the knowledge of healthcare professionals, using local volunteers, deploying mobile rehabilitation teams, using telerehabilitation, and improving referral pathways; 3) financing: increasing government funding, preparing a package of rehabilitation services, and using appropriate payment mechanisms; 4) human resources: expanding rehabilitation workforce, training rehabilitation assistants, and enhancing employment and social opportunities; 5) information systems: establishing a comprehensive information system and an effective surveillance system; and 6) technologies: facilitating access to a range of rehabilitation equipment and raw materials, especially for prosthetics and orthotics services.

Conclusions: Based on the WHO six building blocks framework, this study identified several policy solutions for integrating rehabilitation services into the Iranian PHC Network. Some of the policy options include increasing political support, promoting inter-sectoral collaborations, increasing the skills and knowledge of healthcare workers, establishing effective referral pathways, strengthening team-working, and increasing government funding.

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### **A scoping review of community health needs and assets assessment: concepts, rationale, tools and uses**

Hamid Ravaghi<sup>1</sup>, Zhaleh Abdi<sup>2</sup>, Ann Guisset<sup>3</sup>

<sup>1</sup>World Health Organization, Eastern Mediterranean Regional Office (EMRO), Egypt, <sup>2</sup>National Institute of Health Research, Ministry of Health and Medical Education (MOHME), Iran, <sup>3</sup>World Health Organization, Headquarters (HQ), Geneva

Objectives: Community health needs and assets assessment is a means of identifying and describing community health needs and resources, serving as a mechanism to gain the necessary information to make informed choices about community health. Thus the current scoping review was performed to shed more light on concepts, rationale, tools and uses of community health needs and assets assessment.

Methods: We conducted a scoping review of the literature published in English using PubMed, Embase, Scopus, Web of Science, NIH database, Cochrane library, CDC library, Trip, and Global Health Library databases until November 2020.

Results: A total of 166 articles including empirical papers and theoretical and conceptual work were ultimately retained for analysis. Relevant concepts were examined guided by a conceptual framework. The empirical papers were dominantly conducted in the US. Qualitative, quantitative and mixed-method approaches were used to collect data on community health needs and assets, with an increasing trend of using mixed-method approaches. Almost half of the included empirical studies used a participatory approach to incorporate community inputs at all stages of the process. Conclusions: Our Findings highlight the need for having holistic approaches to assess the community's health needs focusing on physical, mental and social well-being, along with considering the broader systems factors and structural challenges to individual and population health. Furthermore, the Findings emphasize assessing community health assets as an integral component of the process, beginning foremost with community capabilities and knowledge. There is a trend toward using mixed-methods approaches to conduct the assessment in recent years that led to the inclusion of the voices of all community members, particularly vulnerable and disadvantaged groups. A notable gap in the existing literature is the lack of long-term or longitudinal-evaluation of the community health needs assessment impacts.

Keywords: community, needs assessment, assets assessment, population health, scoping review

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### **Impact of volunteering in promoting active aging**

Andreia Costa<sup>1,2,3</sup>, Patricia Valentim<sup>4</sup>, Adriana Henriques<sup>5,6</sup>, Paulo Nogueira<sup>5,6</sup>

<sup>1</sup>Centro de Investigação, Inovação e Desenvolvimento em Enfermagem de Lisboa (CIDNUR), Escola Superior de Enfermagem de Lisboa (ESEL), Lisboa, Portugal, <sup>2</sup>Laboratório de Genética e Instituto de Saúde Ambiental (ISAMB) da Faculdade de Medicina da Universidade de Lisboa, Lisboa, Portugal, <sup>3</sup>Laboratório Associado TERRA, Faculdade de Medicina, Universidade de Lisboa, Lisboa, Portugal, <sup>4</sup>Centro de Investigação, Inovação e Desenvolvimento em Enfermagem de Lisboa (CIDNUR), Escola Superior de Enfermagem de Lisboa (ESEL), Portugal, <sup>5</sup>CIDNUR-Escola Superior de Enfermagem de Lisboa (ESEL), Portugal, <sup>6</sup>Instituto de Saúde Ambiental (ISAMB), Faculdade de Medicina, Universidade de Lisboa, Portugal

Background and objectives: Demographic transitions in Europe emphasize the need to develop innovative solutions for active ageing. The practice of volunteering has been recognized as crucial for the promotion of active aging, as well as health literacy through the acquisition of individual resources. The aim is to identify the existing scientific evidence on the impact of volunteering in promoting active aging.

Methods: Scoping review according to the Methodology proposed by the Joanna Briggs Institute, following three steps of research: An initial search in CINAHL® and MEDLINE®; a broader search, using the same Keywords and search terms, in the CINAHL®, MEDLINE® databases and in the Google Scholar tool, and finally, a search in the bibliographical references of the selected articles. The defined time period was between 2017 and 2022.

Results: The state of retirement implies new commitments and redefinition of social roles (Kleiner, A., et al., 2022; Matthews, K. and Nazroo, J., 2020). Volunteering plays a crucial role in the social inclusion and active participation of older people in society (Papa, R., Cutuli, G., Principi, A. and Scherer, S., 2019) and in promoting active aging (Stathi, A., et al., 2021; Papa, R., Cutuli, G., Principi, A. and Scherer, S., 2019). Higher levels of health literacy promote active aging, as well as lead to the acquisition of other resources (Eronen, J., et al., 2021), such as volunteering. Discussion and Conclusions: Health literacy and volunteering proved to be strategies that can be directly related and that contribute to the promotion of active aging. Health professionals, such as nurses, have a privileged role in promoting Health Literacy, which is why it is extremely important to join forces in their training (DGS, 2019).

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### **Health mothers' groups in Nepal: barriers, facilitators, and recommendations**

Shradha Manandhar<sup>1</sup>, Kenda Cunningham<sup>2</sup>, Ramesh Adhikari<sup>3</sup>, Pooja Rana<sup>3</sup>, Ajay Acharya<sup>4</sup>, Madeline Pollifrone<sup>5</sup>, Lok Nepali<sup>3</sup>, Padam Darji<sup>6</sup>, Nidhu Dangal<sup>3</sup>

<sup>1</sup>University of Huddersfield, Nepal, <sup>2</sup>Helen Keller International, United States, <sup>3</sup>Helen Keller International, Nepal, <sup>4</sup>FHI360, Nepal, <sup>5</sup>Columbia University, United States, <sup>6</sup>Cooperative for Assistance and Relief Everywhere, Inc. (CARE), Nepal

Nepal's female community health volunteers (FCHVs) each lead a monthly health mothers' group (HMG) to share health-related information and engage communities in the health system. In this study, we explored HMG functionality and variation across Nepal, including barriers and facilitators to attending HMG meetings. Cross-sectional survey data from 16 districts (n = 192 FCHVs and 1850 mothers with children <2y) were used. Qualitative data were obtained from 3 of 16 survey districts (n = 30 observations, n = 30 in-depth interviews with mothers, and n = 16 focus groups with mothers, family members, FCHVs, health workers, and SII staff). Household head sex, maternal age, maternal education, maternal self-efficacy, and engagement with an FCHV were associated with whether mothers were active participants in meetings. Qualitative findings highlighted systems-level barriers, including lack of FCHV skills, demotivation, and heavy workload. Mothers noted time as the major constraint and family support, the HMGs' savings component, and active FCHVs as facilitators to participation. Findings suggest that both supply- and demand-side solutions are needed to improve HMG performance and uptake in Nepal.

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### **Data-driven change: assessing health promotion in the hospital/health service setting**

Oliver Groene<sup>1</sup>, Kerii Katsaros<sup>1</sup>

<sup>1</sup>International Network of Health Promoting Hospitals and Health Services, Germany

Background and Objective: The International Network of Health Promoting Hospitals and Health Services (HPH) was initiated by WHO following the WHO

Ottawa Charter's action area to reorient health services, it currently consists of over 600 members from 30 countries. In order to provide practical guidance to members, standards and self-assessment tools were developed. Methods: The 2020 HPH Standards were developed using a combination of literature review, standards mapping exercises, and a two-stage Delphi panel with national and regional HPH network coordinators and individual experts. Common domains, subdomains, and measurable elements across these materials were assessed in terms of clarity, scope and importance and refined following a Delphi consultation. Results: 20 experts including 11 HPH national and regional network coordinators participated in the Delphi process. Assessments of clarity, relevance, and importance and clarity and priority ranged from 5.4 to 6.6 and 4.6 to 6.9, respectively. As a result of the feedback and analysis five overarching standards, 18 substandards and 86 standard statements were identified. A .pdf and excel tool were created that allow organizations to assess and score the level of implementation and make qualitative comments. The excel tool generates graphs and visuals of the data so that those responsible for implementation can easily identify improvement areas. The standards have already been translated into 11 languages. Conclusions: Hospitals and health services who adopt a comprehensive health promotion approach guided by data can transform their organizations into health promoting settings. References: International Network of Health Promoting Hospitals and Health Services. Self-Assessment Tool for implementing the 2020 Standards for Health Promoting Hospitals and Health Services, Version 1.1. Hamburg, Germany: International HPH Network; November 2021.

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### Effectiveness of interventions to reduce social inequalities of overweight and obesity in adolescents: a systematic review and meta-analysis

Mohamed Dakin<sup>1</sup>, Francis Guillemin<sup>2</sup>, Abdou Omorou<sup>2</sup>

<sup>1</sup>Institute for Collective Health, Adaptation, Measure and Assessment in Health Laboratory (APEMAC, UR 4360), University of Lorraine, France, <sup>2</sup>UR 4360 APEMAC, University of Lorraine, France

**Background and Objective:** Reducing social inequalities of overweight and obesity in adolescents is a public health priority. Several interventions are implemented to overcome these inequalities, but their effectiveness is challenged. This study aimed to examine the effectiveness of interventions to reduce social inequalities of overweight and obesity in adolescents through a systematic review and a meta-analysis.

**Methods:** A systematic search of all randomized control trials and quasi-experimental studies aiming to reduce social inequalities of weight in adolescents was conducted in five electronic databases. The primary outcome was social inequalities in Body Mass Index [BMI] z-score and the secondary outcomes were social inequalities in BMI, waist circumference, percent body fat and prevalence of overweight/obesity. Interventions were effective when they reduced social inequalities in at least one obesity-related outcome. Pooled difference means or Odds Ratios (OR) and their 95% Confidence limits (CI) were estimated for each outcome by using random effect models on Review Manager 5 software. The review is registered on PROSPERO (CRD42022362952).

**Results:** This review included 38 publications from 33 studies. In these studies, interventions were universal (n=3), or proportionate (n=1) or targeted disadvantaged adolescents (n=29) and mostly underpinning the social cognitive theory (n=16). Interventions were effective in half of included studies (n=19, 57.6%). A meta-analysis (27 studies) revealed that targeted interventions reduced significantly adolescent's BMI z-score (beta= -0.04; CI= [-0.08, -0.01]), BMI (beta= -0.32; CI= [-0.47, -0.18]), waist circumference (beta= -0.84; CI= [-1.48, -0.21]), unlike percent body fat and prevalence of overweight and obesity. Universal interventions did not reduce these inequalities.

**Conclusions:** This review shows moderate effectiveness of interventions targeting disadvantaged adolescents in the reduction of social inequalities of overweight and obesity whereas universal scarce interventions are not effective. Then, high quality research with a better implementation to reach their full potential is required to strengthen the evidence.

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### Comparative understanding and preference of Nutri-Score and NutrInform battery in a sample of Spanish consumers

Morgane Fialon<sup>1</sup>, Nancy Babio<sup>2,3,4</sup>, Jordi Salas-Salvadó<sup>2,3,4</sup>, Pilar Galan<sup>1</sup>, Emmanuelle Kesse-Guyot<sup>1</sup>, Mathilde Touvier<sup>1</sup>, Mélanie Deschasaux-Tanguy<sup>1</sup>, Barthélémy Sarda<sup>1</sup>, Serge Hercberg<sup>1</sup>, Nadine Khoury<sup>2,5,4</sup>, Lydiane Nabec<sup>6</sup>,

Chantal Julia<sup>1</sup>

<sup>1</sup>Nutritional Epidemiology Research Team (EREN), Sorbonne Paris Cité Epidemiology and Statistics Research Center (CRESS), Inserm U1153, Inrae U1125, Cnam, Université Sorbonne Paris Nord University, Bobigny, France,

<sup>2</sup>CIBEROBN, Instituto de Salud Carlos III, Madrid, Spain, <sup>3</sup>Unitat de Nutrició Humana, Departament de Bioquímica i Biotecnologia, Universitat Rovira i Virgili, Spain, <sup>4</sup>Institut d'Investigació Sanitària Pere Virgili (IISPV), Reus, Spain, <sup>5</sup>Departament de Bioquímica i Biotecnologia, Unitat de Nutrició Humana, Universitat Rovira i Virgili, Spain, <sup>6</sup>Centre de Recherche Réseaux, Innovation, Territoire et Mondialisation (RITM), Université Paris-Saclay, Gif-sur-Yvette, France

**Background & objective:** Interpretive Front-of-Pack Labels (FoPLs) are supported by the World Health Organization as a key policy tool to promote healthy diets. At present, various FoPLs formats co-exist in the European Union (EU). However, as part of the Farm to Fork strategy, the European Commission stated it would adopt a single mandatory FoPL in 2022. The aim of this study was to analyze Spanish consumers reactions to Nutri-Score and NutrInform, two FoPLs that are currently the subject of debate in EU, testing the objective understanding of the FoPLs as well as their preference among participants through subjective understanding and perception.

**Methods:** The experimental study was conducted in 2021 on a representative sample of 1026 Spanish adults (50% women, mean age  $\pm$  SD = 46  $\pm$  14 years), through an online randomized questionnaire where participants were exposed to Nutri-Score or NutrInform. Objective understanding of and preference for these two FoPLs were assessed in three food categories (Breakfast Products, Breakfast Cereals and Added Fats). Objective understanding was tested using multivariate logistic regression while preference using Principal Component Analysis (PCA) and t-tests.

**Results:** In terms of objective understanding, Nutri-Score was significantly associated with an increase in consumers' ability to identify healthier food products across all food categories compared to NutrInform (OR=19.1 [14.2-25.7], p<0.0001). On the preference dimension, Nutri-Score was perceived as significantly easier to use and was more liked than NutrInform (standardized PCA dimension resp. 0.32 $\pm$ 1.58 vs. -0.29 $\pm$ 1.66, p<0.0001 and 0.080 $\pm$ 1.18 vs. -0.072 $\pm$ 1.17, p=0.039) and participants found Nutri-Score more helpful to discriminate the nutritional quality of Breakfast Products and Breakfast Cereals (resp. 1.32 $\pm$ 1.00 vs. 1.14 $\pm$ 1.02, p<0.01 and 1.33 $\pm$ 1.00 vs. 1.00 $\pm$ 1.03, p<0.0001). **Conclusions:** Results of this study provide new evidence to support Nutri-Score in comparison with the NutrInform Battery, on both objective understanding and preference aspects.

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### Evaluation of the happy child program: a randomized study in 30 Brazilian municipalities

Tiago Munhoz<sup>1,2</sup>, Iná Santos<sup>3</sup>, Raquel Barcelos<sup>4</sup>, Cauane Blumenberg<sup>3</sup>, Caroline Bortolotto<sup>3</sup>, Alicia Matijasevich<sup>5</sup>, Cristiane Salum<sup>6</sup>, Hernane Santos<sup>7</sup>, Leticia Marques<sup>8</sup>, Luciano Correa<sup>9</sup>, Marta Roverio<sup>10</sup>, Pedro Lira<sup>11</sup>, Vitor Pereira<sup>12</sup>, Cesar Victora<sup>3</sup>

<sup>1</sup>Federal University of Pelotas, Brazil, <sup>2</sup>Federal University of Rio Grande, Brazil, <sup>3</sup>Postgraduate Program in Epidemiology, Federal University of Pelotas, Brazil, <sup>4</sup>Postgraduate Program in Psychology, Federal University of Rio Grande, Brazil, <sup>5</sup>Faculdade de Medicina, Universidade de São Paulo, São Paulo, Brazil, <sup>6</sup>Centro de Matemática, Computação e Cognição, Universidade Federal do ABC, Santo André, Brazil, <sup>7</sup>Instituto de Saúde Coletiva, Universidade Federal do Oeste do Pará, Santarém, Brazil, <sup>8</sup>Instituto de Saúde Coletiva, Universidade Federal da Bahia, Salvador, Brazil, <sup>9</sup>Departamento de Saúde Comunitária, Universidade Federal do Ceará, Fortaleza, Brazil, <sup>10</sup>Departamento de Saúde Coletiva, Universidade Federal de Goiás, Goiânia, Brazil, <sup>11</sup>Departamento de Nutrição do Centro de Ciências da Saúde, Universidade Federal de Pernambuco, Recife, Brazil, <sup>12</sup>Escola Nacional de Administração Pública, Brasília, Brazil

**Background and Objective:** The Happy Child Program (Programa Criança Feliz - PCF, in Portuguese) reaches 1.4 million Brazilian children under three years of age with home visits aimed at promoting neuropsychomotor development. Based on a conceptual model, PCF implementation and impact were evaluated in a randomized study in 30 municipalities. Thus, we aim to present the Results of this impact evaluation of the PCF program.

**Methods:** A total of 3242 children were allocated to the intervention (IG) or control (CG) group, 80.0% of whom were prospectively followed up from late 2018 to late 2021. Development was assessed by the Ages and Stages Questionnaire (ASQ3). During the three-year study period, visits were replaced by virtual contacts

for an average of 12 months due to COVID-19. At the endline survey, intent-to-treat analyses showed mean scores of 203.3 in the IG and 201.3 in the CG. Additional analyses using instrumental variables and propensity scores matching also showed no effect, since the number of contacts with the program was not associated with ASQ3 scores.

Results: No impact was observed on stimulation, responsive interactions, or psychological attributes of children. The implementation study revealed low coverage in the IG, contamination of the CG, deficiencies in management and low quality of visits in many municipalities.

Conclusions: The study did not demonstrate an impact of PCF implemented under routine conditions but provides elements for its improvement. Additionally, these results show that several measures are needed to strengthen the implementation of the program, so that the stakeholders can ensure investment in early childhood as one of the priorities.

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### Impact of a high-resolution primary care emergency center over emergency department demand

Marcela Garrido<sup>1,2</sup>, Alejandro Sepulveda<sup>1</sup>

<sup>1</sup>Departamento de Epidemiología y Estudios en Salud, Universidad de los Andes, Chile, <sup>2</sup>Clínica Universidad de los Andes, Chile

Background: Emergency Departments (ED) overcrowding is a worldwide problem causing poorer inpatient outcomes and the inability of staff to adhere to protocols. EDs are, for many people the access gate to health system. In Chile, for a population around 17 million, they had over twenty million visits in 2019, compared with 17 million in primary care. The demand is growing up every year increasing crowding EDs. Since 2015, it has been implemented High Resolution Primary Care Emergency Center (HRPCEC) near to main Hospitals trying to control demand, the first one was Miraflores HRPCEC. But its impact has not been analyzed yet. Objective: To analyze the impact of implementation of Miraflores HRPCEC over Dr. Hernan Henriquez Aravena (DHHA) Hospital ED visits. Methods: We analyze visits by triage categorization, wait time and admission rate, from DHHA Hospital ED since 2012 to 2018 and visits to Miraflores HRPCEC from 2015 to 2018 with R Core Team (2022) software. We compare the period before and after 2015. To trend analysis, we used least squares regression lines, modeling the estimation error using an ARMA model. To compare the number of visits by triage, we use a Poisson model regression.

Results: Demand to DHHA Hospital ED is growing until 2014. Since 2015, there is a decrease in visit trend in 37% ( $p < 0.05$ ). At the same time, Miraflores HRPCEC visits double. All visits by triage categorization decrease since 2015, but it is especially significant in C4 and C5 (37% and 65%). Wait times for C1, C2 and C3 fall in 90%, 71% and 55% respectively. Hospitalization rates stay stable for all triage categories. Conclusions: The implementation of HRPCEC impact directly on DHHA Hospital ED visits. Reducing demand of non-urgent triage categorization patients and improving wait time of those who need urgent care.

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### Street Medical Consultation: a care model for homeless people in Brazil

Tatiana Alecrim<sup>1</sup>, Simone Protti-Zanatta<sup>2</sup>, Fernanda Bugado<sup>1</sup>, Débora Araújo<sup>1</sup>, Sonia Zerbetto<sup>1</sup>, Isis katayama<sup>3</sup>, Simone Protti-Zanatta<sup>4</sup>

<sup>1</sup>Federal University of São Carlos (UFSCar), São Carlos, Brazil, <sup>2</sup>Universidade Federal de São Carlos, São Carlos, Brazil, <sup>3</sup>Faculdade de Engenharia de Sorocaba (Facens), Sorocaba, Brazil, <sup>4</sup>UFSCar, São Carlos, Brazil

Background: The homeless population presents highly vulnerable to illness, requiring health services that articulates their practices and guarantees them a full-time care through public policies and actions that responds to their real needs. Brazil has a specific health service for the homeless population care, the Street Medical Consultation. Census carried out in 2022 in São Paulo, the largest city in the country, revealed 31884 people living on streets, an increase of 31% compared to 2019, which showed 24334 people living on streets. Aim: to presents the experience of professionals from health field, who works in the teams of the Street Medical Consultation, regarding the care of homeless population in the city of São Paulo, Brazil. Methods: Qualitative study from a descriptive nature, professional experience report type, with a cross-sectional time frame.

Results: The care model used by the teams of Street Medical Consultation makes it possible to carry out "in loco" all actions provided for in primary care; therefore, accurate knowledge of the territory was highlighted; ability to build bonds, which are fundamental for adherence to treatment; performance of clinical and epidemiological diagnoses; team action planning; intersectoral

network articulation; tracking performance, procedures, treatments, and complete care. Conclusions: Street Medical Consultation teams promotes individual and collective actions in a dynamic, strategic, creative, and empathetic way, thus, contribute strongly to guarantee access to health services, complete care, expanding the possibilities of chronic and infectious diseases early detection and monitoring from homeless population, promoting healing and social reintegration.

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### What makes a health promotion intervention in school a perceived as a "success"? Correlates of perceived success of health-promoting interventions in elementary schools in Quebec, Canada

Erin O'Loughlin<sup>1,2</sup>, Teodora Riglea<sup>3</sup>, Jodi Kalubi<sup>1</sup>, Jennifer O'Loughlin<sup>4</sup>, Annie Pelekanakis<sup>4</sup>

<sup>1</sup>École de Santé Publique de l'Université de Montréal, Canada, <sup>2</sup>University of Toronto, Canada, <sup>3</sup>École de Santé Publique de l'Université de Montréal and CRCHUM, Canada, <sup>4</sup>École de santé publique de l'Université de Montréal and CRCHUM, Canada

Background and Objective: School-based health-promoting interventions (HPIs) aim to support youth development, but few interventions are formally evaluated and schools may often rely on subjective indicators to decide whether or not to maintain an intervention long-term. Identifying factors that contribute to or hinder the perceived success of HPIs could facilitate their adaptation, improve implementation. The objective of this study was to identify factors in three domains (school characteristics, characteristics of the HPI, and factors related to planning and implementation) associated with perceived success of HPIs as reported by school principals in elementary schools.

Methods: Data were drawn from PromeSS, a cross-sectional study of school principals in a convenience sample of 171 public elementary schools across Quebec, Canada. School board and school recruitment spanned three academic school years (2016-2019). Data on school and participant characteristics, HPI characteristics, variables related to HPI planning and implementation and perceived success of the HPI were collected in two-part, structured telephone interviews. Descriptive statistics were used to characterize schools and study participants. Twenty-eight potential correlates of perceived HPI success were investigated separately in multivariable linear regression modelling.

Results: Participants generally perceived HPIs as highly successful. After controlling for number of students, language of instruction, school neighbourhood and school deprivation, we identified five correlates of perceived success: lower teacher turnover; higher scores for school physical environment; school/teacher commitment to student health; principal leadership; and school having developed the HPI de novo (vs. adopting it from an external source).

Conclusions: Because school principals are key players in the school environment and instrumental in HPI implementation and sustainability, we contend that their perception of HPI effectiveness is a key indicator of the potential usefulness of HPIs. If replicated, these factors should be considered by HPI developers and school personnel when planning and implementing HPIs in elementary schools.

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### People's health development using the PI model for persons' care in a community in One Province, Thailand

Pisit Poltana<sup>1</sup>, Pisit Poltana<sup>2</sup>, Vichai Tienthavorn<sup>1</sup>, Sujkai Charoensuk<sup>3</sup>, Supaporn Voraroon<sup>3</sup>, Purin Srisodsakul<sup>3</sup>

<sup>1</sup>Praboromarajchanok Institute, Ministry of Public Health, Thailand, <sup>2</sup>Boromarajonani College of Nursing, Faculty of Nursing, Praboromarajchanok Institute, Suphanburi, Thailand, <sup>3</sup>Boromarajonani College of Nursing, Faculty of Nursing, Praboromarajchanok Institute, Ministry of Public Health, Thailand

The research is focused on preventing and lowering diabetes and high blood pressure complications in one Thai province. PI Institute wants to integrate teaching, learning, and academic services by reducing chronic illnesses occurring in different community areas by applying simple principles of screening, grouping patients using ping pong balls in seven colors to categorize. The model is an application of community-based primary health strategies as an instrument for screening patients from normal groups to groups with complications. The researchers want to integrate teaching, learning, and academic services by reducing chronic illnesses occurring in different community areas. Hence, this research aims to explore and gain an in-depth understanding of the health conditions of people in the community and the situation of community engagement involving the health of the people in the community, as well as develop a model for improving the health of the people in the community by using the 7-colored traffic ping pong

balls for life, with the following specific Objectives: 1) To analyze community involvement in relation to the health of people in the community. 2) To develop a model for improving public health in the community by using the seven-colored traffic ping pong balls for life, and 3) To obtain policy recommendations for setting guidelines for the care of chronic patients in the community by using the seven-colored traffic ping pong balls for life, which apply the theory of innovative care for chronic conditions (ICCC) from the World Health Organization. The researchers chose villages for the study using the multistage sampling method, grouping the province and randomly selecting colleges in each district as study samples. The randomly selected colleges were selected from Area.

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### Health-promoting schools in Latin American countries: a systematic review on internal and external validities

Valter Filho<sup>1</sup>, Patricia Bastos<sup>2</sup>, Ana Cavalcante<sup>2</sup>, Isabela Teixeira<sup>2</sup>, Laécio Araujo<sup>2</sup>, Janiel Felício<sup>2</sup>, Antonio Júnior<sup>2</sup>, Maria Silva<sup>2</sup>

<sup>1</sup>Ceará State University, Brazil, <sup>2</sup>Post-Graduate Program on Collective Health, Ceará State University, Brazil

**Background and Objective:** Elements of internal (e.g., effectiveness) and external (e.g., implementation) validities of the World Health Organization's Health-Promoting Schools (HPS-WHO) in Latin American countries are still unknown. This study aimed to synthesize information on internal and external validities (using the RE-AIM model: reach, effectiveness/efficacy, adoption, implementation, and maintenance) of interventions based on the EPS-WHO in Latin American schools. **Methods:** This systematic review follows the PRISMA guidelines (PROSPERO: CRD42020168069). Searches were performed in May 2020 in eight databases (Medline, LILACS, Web of Science, Scopus, PsycINFO, Eric, SciELO, and Cochrane), five gray literature websites, eight institutional websites, and similar reviews. Eligible studies were interventions with strategies that address the HPS-WHO model and included students aged 5-18 years of schools from Latin American countries. A validated 21-item checklist was used to calculate RE-AIM scores according to the interventions' characteristics (age groups, country, and theoretical model adopted).

**Results:** Initially, 2347 titles were reached; 58 studies were eligible, representing 23 interventions from seven countries: Brazil (n=12), Mexico (n=5), Peru (n=2), Chile, Costa Rica, Ecuador, and Uruguay (1 study each). "Reach" and "Effectiveness" were reported in all interventions. "Adoption", "Implementation", and "Maintenance" were reported in 91.3%, 82.6%, and 56.5% of interventions, respectively. The RE-AIM total score was low (0-7 points) in 12 interventions, moderate (8-14 points) in 10, and high (15-21 points) in one. Better RE-AIM total scores were observed in studies with the following characteristics: with adolescents, the HPS-WHO as the theoretical framework of strategies, and from Brazil.

**Conclusions:** We found a large number of interventions based on HPS-WHO in Latin America, but most of them had limited reporting, especially on external validity. Improving these elements is mandatory, which may guide research and practice of effective, scale-up, culturally adapted HPS-WHO strategies in countries from the region.

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### Major public health problems in Nigeria

Dennis Anthony<sup>1,2</sup>, Augustine Onyeaghalu<sup>3</sup>

<sup>1</sup>Department of Public Health, University of Abuja Teaching Hospital, Nigeria, <sup>2</sup>Makwalla Health Care Services LTD, Nigeria, <sup>3</sup>University of Ibadan, Ibadan, Nigeria

The inadequate programs designed to address the numerous health problems in Nigeria have led to the little improvement in our health status. Besides the continued neglect of the importance of addressing public health issues would make matters worse for poor Nigerians most of who are at the receiving end. The study adopted a qualitative approach so as adequately describe the study aims and objectives. The data for this study were collected through scientific database sources, web search engines and objectives, direct observation and relevant documents from the Nigerian Ministry of Health. The major Public Health challenges Nigeria faces are infectious diseases, control of vector some diseases, maternal mortality, infant mortality, poor sanitation and hygiene, disease surveillance, non-communicable diseases, and road traffic injuries etc. Nigeria is currently working towards archiving the Millennium Development Goals. Despite the collaborative efforts of both Nigerian Government Donor Agencies and NGOs to provide an efficient and effective health care delivery in Nigeria.

**Keywords:** public health, maternal-mortality, HIV/AIDS, Nigeria

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### Beyond standardized healthy food promotion interventions: understanding culinary practices as care among South Asian women in Hong Kong

Elena Nichini<sup>1</sup>, Saba Asim<sup>1</sup>, Aneeta Ansar<sup>1</sup>, Dong Dong<sup>1</sup>

<sup>1</sup>JC School of Public Health and Primary Care, The Chinese University of Hong Kong, Hong Kong, China

**Background and Objective:** "Unhealthy" diet has been identified as one of the leading factors for the higher prevalence of diabetes, hypertension and obesity among South Asians in Hong Kong. Standardized health promotion interventions aim at improving knowledge of "healthy" food, assuming a lack of awareness around ideas of healthy diet and nutrition. Yet South Asian women in Hong Kong, who are the main carers of the family, do care about their children's diet and mostly recognize "unhealthy" food; despite this awareness, yet they often cook it for their children. This study aims then at exploring such contradiction and ultimately complicates our understanding of culinary practices as a form of care.

**Methods:** Interviews and focus groups were conducted among South Asian women in Hong Kong to explore their perceptions and attitudes towards their children's diet, "healthy" food and cooking as a form of care; this study is part of an ongoing larger research project on South Asian women's health needs.

**Results:** When asked about their main health concerns, South Asian women in Hong Kong often discuss about their children's diet. While they appropriate and engage with the categories of "healthy" and "unhealthy" food, yet they would rather cook anything requested by their children; culinary practices are for them a form of care. The societal context of post-colonial Hong Kong and their South Asian ethnic and migrant identity further shape these women and their children's perspectives, where "unhealthy" ingredients are more accessible, some "unhealthy" food options may be considered "modern" and some others "outdated".

**Conclusions:** This study suggested that standardized health promotion interventions aiming at promoting "healthy" diet fail to acknowledge cooking as an act of care embedded in the family's social life and affected by larger social forces; alternative approaches taking into account these dimensions need to be developed.

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### Community-based intervention for promotion healthy ageing through MAHA mobile application

Irati Redondo<sup>1</sup>, Irati Redondo<sup>2</sup>, Ane Zabala<sup>1</sup>

<sup>1</sup>Kronikgune Institute for Health Service Research, Spain, <sup>2</sup>Instituto de Investigación en Servicios de Salud Kronikgune, Spain

**Background and Objectives:** eHealth technologies and tools can be effective instruments to address the challenge of ageing in EU, providing an opportunity to improve the health and well-being of older people by enabling access to knowledge and improving relationships with peoples environment, and ensuring the sustainability of health systems. Within Gatekeeper European project, the Basque Country region (Spain) has implemented a community-based intervention to assess the effectiveness of MAHA App for the promotion of healthy lifestyle habits among Basque elderly people.

**Methods:** This quasi-experimental and longitudinal study Aims to approach 10000 people aged 65+ and/or their caregivers. The community-based intervention is boosted by the community network that involves more than 39 community organizations belonging to the Basque Health Ecosystem. The MAHA App, the health asset promoted, is a self-managed tool that offers contents and materials to reinforce socialization; foster health literacy and empowerment; and promote healthy lifestyles. A mixed method approach is being carried out, using quantitative techniques, through validated questionnaires and metrics; and qualitative techniques, to collect user experience and identify the determinants, factors, and aspects of the intervention impact, and user engagement.

**Results:** The monitoring data shows that the actions implemented are effective, as the intervention has been widely disseminated and almost 5,000 people have accepted to participate. However, only 5% finally registered in the application. This intermediate Results shows low adherence to the intervention and a high level of dropout, as it is understood that once the user has agreed to participate, he/she has not followed the study protocol (defined as downloading the app, registering, and using it).

**Conclusions:** The community-based intervention implemented in the Basque Country will contribute to generating awareness and new data on research into the intention-to-treat, adherence, and attrition rate of the use of eHealth applications self-managed by the elderly. clinicaltrials.gov identifier: NCT05614479

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**The need for healthcare public health to be the third domain**Muir Gray<sup>1</sup>, Duncan Selbie<sup>2</sup>, Walter Ricicardi<sup>3</sup>, Maggie Rae<sup>4</sup><sup>1</sup>The Oxford Value and Stewardship Programme, United Kingdom, <sup>2</sup>Saudi Arabia Public Health Agency, Saudi Arabia, <sup>3</sup>Università Cattolica, Italy, <sup>4</sup>NHS England, United Kingdom

Value based healthcare is the new paradigm enfolding the previous paradigms of quality improvement and efficiency as health services struggle to close the gap between need and demand on the one side and resources on the other. Value based healthcare requires those who pay for or manage health services to focus on populations as well as patients and use the population as the denominator in all their decisions about the allocation and use of resources. It also requires the development of population-based systems and networks and the need to create a culture of stewardship, so that every clinician becomes committed to preserving universal healthcare by minimising waste of time, money and carbon. The skills and experience of public health professionals are of vital importance in this paradigm shift. The development of population-based screening programmes provides a very good model for the development of systems for people with asthma or people with dementia to give two examples of the systems that are needed. The public health commitment to, and understanding of, equity can support health services as they make the shift their focus from providing care to the patients who manage to access services to using their resources to help all the people with a particular need in the population. Furthermore, the public health commitment to sustainability in the broadest sense of the term makes public health professionals ideal leaders in the development of a culture of stewardship. This is a tremendous opportunity for the profession, now recognised in a number of countries including Ireland, Wales, England and Saudi Arabia. A training programme has been developed to develop the skills of population healthcare and it is proposed that healthcare public health be regarded as a public health workstream alongside health promotion and health protections.

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**Boost smoke-free environments: how small incentives for local policy can trigger big changes**Selinde Rouwenhorst<sup>1</sup><sup>1</sup>GGD GHOR Nederland Netherlands

In The Netherlands, around 20.000 people die each year from the effects of smoking and passive smoking. Every week, hundreds of children become addicted to smoking. To improve the overall public health in the Netherlands, it is important to substantially reduce the prevalence of smokers. Until recent years, municipalities played next to no role in helping to reduce smoking in the Netherlands. The start of a campaign that aims a smokefree generation by 2040 has changed that.

Part of that campaign is to create smoke-free environments. In a two-year program, 90% of the Dutch municipalities started policy and actions to ban smoking from public places, as part of the National Prevention Agreement. The participating municipalities were supported by all 25 Regional Health Services (GGDs) by providing knowledge and manpower on a regional level, together with national, regional and local organisations. The project has a number of successful elements: the GGD received a small budget to actively participate in the region; knowledge was shared between the regions and from national to local level and legal issues were dealt with by the Nat Assoc of Municipalities.

In 2021, 317 out of 352 Dutch municipalities were active in this project. There is a significant increase of smoke-free environments, mostly schoolyards, playgrounds, sports facilities, bus stops and municipal institutions. Other results are integrated plans for smoking cessation care and accessible stop smoking service, e.g. in GGD Fryslan the number of registrations for smoking cessation care increased dramatically and 80% actually quit smoking.

All parties involved agree that the strength of this project is its positive approach and the broad social support it generates. It is about persuasion, not compulsion. Working from a national focus towards a smoke-free environment, while taking into account local differences and needs, makes this project a success.

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**Nudging as a tool to prevent tobacco and alcohol use: findings from a scoping review**Marcello Di Pumo<sup>1,2</sup>, Marcello Di Pumo<sup>1,2</sup>, Alessio Perilli<sup>1</sup>, Mario Nurchis<sup>1</sup>, Giuseppe Greco<sup>1</sup>, Luca Sbrogio<sup>2</sup>, Gianfranco Damiani<sup>3</sup><sup>1</sup>Università Cattolica del Sacro Cuore, Rome, Italy, <sup>2</sup>Azienda ULSS6 Euganea,Regione Veneto, Padua, Italy, <sup>3</sup>Università Cattolica del Sacro Cuore, Rome, Italy - Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy

Background and Objective: Alcohol and tobacco consumption are among the main preventable risk factors for non-communicable diseases related deaths, disabilities, and overall burden.

There are many possible mono and multicomponent prevention interventions available. One promising technique, recently applied to healthcare, is "Nudging". It aims to change behaviors by modifying the physical, psychological and social dimensions of environment in which people make choices without freedom restriction. The objective of the study was therefore to review the use of nudging techniques to prevent tobacco and alcohol use in adults.

Methods: A scoping review of the literature was performed. Participants were required to be 18-64 years of age, no gender or clinical condition restrictions were applied, mono and/or multicomponent nudge-based interventions performed in community, clinical, community and clinical or online settings were considered.

Results: 20 studies were included. 11 studies addressed tobacco use, of which 63% were set in the community and 27% online, 64% being monocomponent and 36% multicomponent, with 54% reporting successful outcomes. 7 studies addressed alcohol use, of which 29% had a community setting, 29% a clinical setting, 43% a clinical and community setting and 29% were online (29% not reported), 86% were monocomponent and 14% multicomponent with 71% reporting successful outcomes. 2 studies addressed both risk factors, of which 100% had a clinical setting, 100% were multicomponent and 50% reported success.

Conclusion: The study shows promising results in the implementation of nudging to prevent tobacco and alcohol use in adults. A set of specific measure outcomes and a comprehensive framework to inform, monitor and evaluate nudging programs and public health policy decisions are much needed. It is also important to study equity in applying nudge strategies in groups socio-economically diverse. In addition, further research is strongly required to evaluate nudge-based interventions targeting risk factors in younger people.

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**Healthy cities status analysis by a survey for healthy city managers in Korea**Bicna Lee<sup>1</sup>, Seungwon Shin<sup>1</sup>, Yunhee Yang<sup>1</sup>, Yumi Oh<sup>1</sup><sup>1</sup>Korea Health Promotion Institute, Korea, Republic Of

Background and Objective: In Korea, healthy cities were implemented individually by local governments, but with the recent revision of the National Health Promotion Act, a central management system is being prepared. The purpose of this research is to provide basic data for local government support plan by analyzing current status of healthy city projects in Korea.

Methods: The research surveys for 105 cities that joined the healthy cities networks(Korea Healthy Cities Partnership, Alliance for Healthy Cities) in 2022. The contents of the survey are current status of healthy city projects promoted by local governments, such as general status, implementation system, and project status. Main status of the system such as organization, manpower, and budget among cities was compared. Difficulties and suggestions were investigated.

Results: There are differences between healthy cities due to the lack of dedicated departments, manpower, guidelines, lack of budget, and no standards of planning and evaluation. In part of organization, 88.6% of local governments were conducting projects at public health centers, and 11.4% were main office of local governments. In case of implementation system, 80.0% of cities answered that there is no dedicated manpower for the healthy city project. Each local government was promoting the healthy city project by taking advantage of the characteristics of the local government. The representative projects were targeted to people of all ages(72.4%), adults(7.6%), elderly(2.9%). Representative project area was operating health promotion activities(27.0%), spreading the health promotion culture(25.0%), creating a physical environment(27.0%), establishing the foundation of policy(15.5%).

Conclusion: Compared among healthy cities in Korea, needs as managing, supporting and reward for the healthy cities at the central government level were identified. Guideline and education for healthy city managers should be prioritized. Health promotion projects in various fields should be encouraged through active linkage and cooperation with cross-departments.

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**"Why will I use Family Planning? I don't want to have a family yet." Defining the Delayers, an overlooked Family Planning audience**Via Abellanos<sup>1</sup>, Billie Puyat Murga<sup>1</sup>, Kimiko Colardo<sup>2</sup>, Cathy Church-Balin<sup>1</sup><sup>1</sup>Johns Hopkins Center for Communication Programs/USAID Reac

### hHealth Project, Philippines, <sup>2</sup>RTI Philippines, USAID ReachHealth Project, Philippines

Demand generation for family planning (FP) in the Philippines has always focused on reaching Filipino couples with at least one child. This leaves out women who do not have any children yet and want to delay their first pregnancy. Among unmarried, sexually active women, only 17% used contraceptives despite 49% of the segment expressing an unmet need for FP use (NDHS 2017). FP is perceived by Filipinos to primarily be for married people. As one young woman interviewee expressed: "Why will I use family planning? I don't want to have a family yet." We dubbed this overlooked audience group "the Delayers."

USAID ReachHealth launched It's OK to Delay (IOTD), a social media platform to reach the Delayers—young, sexually active individuals aged 18-34 who may want to have a child someday, but not today. It is a refreshing take on FP, reminding the Delayers about their goals while providing information on how they can achieve these with the help of FP. IOTD uses an engaging and humorous tone to provide lifestyle and informational content about FP, emphasizing the benefits of proper and effective FP use.

Since its launch, IOTD has reached over 20 million individuals and currently has 64,000 followers. A December 2021 IOTD online survey revealed that 79% of respondents are either interested in using FP or have experience using FP, demonstrating the Delayers have FP needs distinct from that of adolescents and couples with one child or more.

Social media allows us to establish a two-way line of communication with the Delayers, linking individuals towards service provision. IOTD also highlights the importance of ensuring good service delivery, with many sharing experiences in dealing with biased providers who refuse service provision due to being unmarried, or not yet having children. A lot of work still needs to be done.

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### Association between health status, behaviour and communicative health literacy-Results of a Hungarian nationwide survey

Frederico Israel<sup>1</sup>, Frederico Israel<sup>1</sup>, Éva Bíró<sup>1</sup>, Ferenc Vincze<sup>1</sup>

<sup>1</sup>Doctoral School of Health Sciences, University of Debrecen, Debrecen/Hungary. Department of Public Health & Epidemiology, Faculty of Medicine, Hungary

**Background and Objective:** The ability of a person to obtain, interpret, and use health information is crucial for their health status. Research on health literacy has been increasing significantly, perhaps because of its impact on health care services, the health and well-being of the population. Communicative health literacy (COMM-HL) is an important aspect in healthcare services as it affects the way how a person interprets and eventually conveys a message, which could change the health behaviour and consequently the health status of an individual. Given the importance of COMM-HL, the field has become more important from the public health perspective, especially in health promotion. Our aim was to find the link between health status, behaviour and COMM-HL.

**Methods:** A total of 1205 Hungarian adults aged 18 years and older completed the telephone interview as part of the international Health Literacy Survey 2019. The questionnaire included items among others on sociodemographic data, health status, health behaviour and communicative health literacy. Statistical weights were applied to ensure that estimates reflect the general adult Hungarian population by gender, age group, educational level, and settlement type. The relationship between COMM-HL and the health outcome variables was investigated by binary logistic regression.

**Results:** The mean score of the COMM-HL scale was 86.8, nearly one-eighth of the respondents had difficulties during communication in health care services. Individuals with high level of COMM-HL had lower odds of limitation by health problems and higher odds of regular physical activity and daily fruit and vegetable consumption.

**Conclusion:** The study found some association between COMM-HL and the investigated variables, high level of COMM-HL contributes to a better health outcome and behaviour. Therefore, the COMM-HL of patients should be improved. Enhancing of the health care professionals' communication skills and environmental changes could support this process.

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### Health Promotion in Italy: structures and activities of the NHS

Roberta Bosco<sup>1</sup>, Giovanni Guarducci<sup>1</sup>, Nicola Nante<sup>2</sup>, Gabriele Messina<sup>2</sup>, Bruno Aiello<sup>3</sup>, Franco Cocchi<sup>4</sup>

<sup>1</sup>University of Siena, Post Graduate School of Public Health, University of Siena, Italy, Via Aldo Moro, 2, Italy, <sup>2</sup>University of Siena, Department of

Molecular and Developmental Medicine, University of Siena, Italy, <sup>3</sup>Italian Society of Health Promotion - SIPS, <sup>4</sup>Training and Skills Unit, Local Health Authority Rome 1, Rome, Italy

**Background and Objective:** The Ministry of Health is the primary health decision-making body, in Italy. It produces the National Health Plan, which is taken over by the Regions, to reference the Local Health Authorities (LHAs) responsible for health promotion (HP) activities. The objective of the study was to investigate structured HP activities at the national, regional and territorial levels.

**Methods:** From February 2020 to July 2021, an online search was conducted on existing HP structures, projects (divided by 17 themes) and responsibilities. The sources were the official websites of the Ministry of Health, the 21 Italian Regions, and the LHAs.

**Results:** Over a "prevalent period" 2014-2021, we found 41 active facilities dedicated to HP: 7 Complex Operating Units and 34 Simple Units. In another 30 facilities, we found HP activities despite the absence of dedicated units. The most treated topic seems to be a physical activity (63%), followed by addictions (53%), nutrition (48%), prevention (33%), at the tail end, dental hygiene and family/parenting (both at 7%). One of the LHAs of Turin and LHA of Salerno have the highest number of topics.

**Conclusions:** Despite the growing need to find complete and clear answers on the web, the results showed a great heterogeneity in the Italian context regarding HP activities published online, both in the organization of structures and in the implementation of projects. It is hypothesized that the phenomenon depends more on less attention to the digitization of information and less on actual HP-related offerings.

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### Acceptance of a blended physical activity intervention among German older adults - Results of a quantitative and qualitative feedback analysis

Claudia Pischke<sup>1</sup>, Manuela Peters<sup>1</sup>, Tiara Ratz<sup>2</sup>, Saskia Muellmann<sup>3</sup>, Frauke Wichmann<sup>3</sup>, Claudia Voelcker-Rehage<sup>4</sup>, Sonia Lippke<sup>5</sup>

<sup>1</sup>Institute of Medical Sociology, Centre for Health and Society, Heinrich-Heine-University Duesseldorf, Germany, <sup>2</sup>Department of Reproductive Endocrinology, University Hospital Zurich (USZ), University of Zurich (UZH), Switzerland, <sup>3</sup>Leibniz Institute for Prevention Research and Epidemiology-BIPS, <sup>4</sup>Department of Neuromotor Behavior and Exercise, Institute of Sport and Exercise Sciences, University of Muenster, Germany, <sup>5</sup>Department of Psychology & Methods, Jacobs University Bremen, Germany

**Background/objectives** Knowledge of individual preferences is central to designing interventions adaptable in terms of the different requirements of older adults regarding interventions for the promotion of physical activity (PA). This study aimed to evaluate acceptance and use of a blended PA intervention, including tailored home-based exercises and supervised on-site group sessions, and to identify requirements.

**Methods:** As part of a nine-month randomized trial with a cross-over design, web- and print-based intervention materials to promote PA were tested in adults aged 60 and above (n=242). Use and acceptance of program components were assessed via self-administered questionnaires three and nine months after baseline. Additionally, participant feedback was assessed in fourteen guided group interviews and via protocols of onsite group sessions. Results were analyzed descriptively and using qualitative content analysis. Data were coded based on six social-ecological requirement levels (intrapersonal, interpersonal/sociocultural, intervention content, spatial, digital, organizational).

**Results:** At the intrapersonal level, participants reported an increased awareness of health benefits resulting from participation. At the interpersonal level, they stated that group sessions provided companionship, encouragement from others, and opportunities for exchange with peers. At the content level, exercises and instructions for increasing strength, balance, and flexibility were appreciated. At the spatial level, participants raised small room sizes and lack of suitability of the spaces that group sessions were held in as issues. At the digital level, activity trackers were reported working well for keeping track of personal achievements and the website design was rated positively. However, some participants had difficulties handling the menus on the web interface or app. At the organizational level, regular appointments were rated positively, while the length of the program was criticized.

**Conclusion:** Our analysis provided information regarding acceptance and use of PA intervention components in older adults and identified requirements for future interventions at various levels.

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### Opportunities and challenges of integrating eye care and neglected tropical diseases services in primary health care setting in Sierra Leone: a mixed method study

Sapana Basnet<sup>1</sup>, Lloyd Williams<sup>2</sup>, Emma Jolley<sup>1</sup>, Nancy Smart<sup>3</sup>, Elena Schmidt<sup>4</sup>, Jalikatu Mustapha<sup>5</sup>

<sup>1</sup>Sightsavers "35 Perrymount Road Haywards Heath" United Kingdom, <sup>2</sup>Ministry of Health and Sanitation, Sierra Leone, <sup>3</sup>Sightsavers Sierra Leone "74 Wilkinson Road Nylander Drive Freetown" Sierra Leone, <sup>4</sup>Sightsavers United Kingdom, <sup>5</sup>Ministry of Health and Sanitation, Sierra Leone Sierra Leone

**Background and Objective:** The World Health Organisation (WHO) recommends reorienting health systems towards primary health care (PHC), as a foundation for achieving universal health coverage (UHC). Sierra Leone is integrating some previously vertical programmes, Neglected Tropical Diseases (NTDs) and Primary Eye Care (PEC), into its PHC services. In this study, we explored the experiences and capacities of PHC staff trained in eye care; investigated the readiness of the PHC facilities and staff to deliver NTD services; and sought to understand how PHC can deliver essential eye care and NTD services to all.

**Methods:** We employed a mixed-method approach, including desk review of key documents. We interviewed 57 purposively sampled health care personnel, and we conducted facility-based surveys in 32 PHC facilities. Drawing on the WHO health systems building blocks, we used a framework analysis approach to analyse all data. Ethics were obtained from the Sierra Leone Ethics and Scientific Review Committee. Empirical data was collected from 4 districts in Sierra Leone between December 2021 and February 2022.

**Results:** Trained staff are now able to treat basic eye diseases, provide on spot services for communities in hard-to-reach areas, and conduct outreach programmes to educate communities on eye care and NTD management. Despite the successes, multiple shortcomings and challenges across the health system continue to hinder efficacy of the training and its potential to improve eye care services. Challenges include lack of basic infrastructure including electricity and water; insufficient paid staff; shortages of basic drugs; lack of infrastructure to support digitalised data management; lack of funds for outreach programmes; and lack of accessible facilities for women and people with disabilities. Recommendations included pre- and in-service training modules for all PHC staff. **Conclusion:** Training PHC workers without the accompanying system strengthening is not enough to provide the successes that these trainings envisage.

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### Human papillomavirus vaccination uptake: preliminary results of a cross-sectional study in Italy

Francesca Licata<sup>1</sup>, Gabriella Di Giuseppe<sup>2</sup>, Marika Romeo<sup>1</sup>, Francesco Napolitano<sup>2</sup>, Aida Bianco<sup>1</sup>, Francesca Licata<sup>1</sup>

<sup>1</sup>University of Catanzaro "Magna Græcia", Catanzaro, Italy Department of Health Sciences, School of Medicine, University of Catanzaro "Magna Græcia", Catanzaro, Italy, <sup>2</sup>University of Campania "Luigi Vanvitelli", Naples, Italy Department of Experimental Medicine, University of Campania "Luigi Vanvitelli", Naples, Italy

**Background and Objective:** Human papillomavirus (HPV) vaccination is a well-known strategy in the prevention of HPV infection and related diseases. However, HPV vaccination rates are still below the level required for community immunity. The aim of this study is to assess the uptake of HPV vaccination among young adults and its potential predictors.

**Methods:** This cross-sectional study was conducted among a sample of young adults (aged 18-30 years) in Southern Italy. Data was collected through an anonymous self-administered questionnaire designed to retrieve sociodemographic information, knowledge about HPV infection and vaccine, attitudes towards HPV and sexual behaviours.

**Results:** Among 264 respondents, 69.7% were women, 4.5% identified themselves as homosexual and 4.5% as bisexual. The majority knew that HPV vaccination is effective to prevent cervical cancer (91.7%) and believed that it is useful to prevent HPV infection (95.8%), but just 41.7% were worried to contract HPV infection. The main sources of information were school/university (76.5%) and healthcare workers (HCWs)(52.3%). Less than half (47.3%) received HPV vaccination and female gender and younger age were the strongest predictors of HPV vaccination uptake. A later sexual debut, having had multiple sexual partners, homosexual orientation, believing that HPV vaccine is useful to prevent HPV infection and having received information from HCWs and/or school/university were positively associated with HPV vaccine uptake.

**Conclusion:** HPV vaccination uptake was lower in the sample than the primary target of coverage in girls (>80%). Improving HPV vaccination coverage in adolescents

is a relevant public health goal that must be pursued through multicomponent intervention. Public health systems should work on the integration of several approaches, such as individual reminders, information and education activities. The finding that prevalence of male HPV vaccine uptake was lower than female highlight the need to have more male-specific HPV campaign to reduce the overall prevalence of HPV infection.

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### The family and community nurse as a resource to promote health: The pilot experience of an health district in the metropolitan city of rome

Rosaria Gallo<sup>1</sup>, Luz Iaià<sup>2</sup>, Francesco Mondera<sup>3</sup>, Shadi Orlandi<sup>3</sup>, Elena Megli<sup>2</sup>, Giulia Cairella<sup>4</sup>, Fabio Boldrini<sup>4</sup>, Barbara Porcelli<sup>4</sup>, Andreina Lancia<sup>4</sup>

<sup>1</sup>Local Health Unit Rome 2 - Department of Public Health and Infectious Diseases, Sapienza University of Rome Italy, <sup>2</sup>Local Health Unit Rome 2, <sup>3</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome Italy, <sup>4</sup>Local Health Unit Rome 2 Italy

**Background and Objective:** National Health Systems should be oriented on a community-based approach, through proactive and proximity interventions to the detection of expressed and hidden needs. The aim of the work is to describe the launch of a pilot project in the Health District 9 Local Health Unit Rome 2, in the urban context of the metropolitan city of Rome, oriented towards the territorial activation of the specific resource of the Family and Community Nurse.

**Methods:** The target population is represented by 45-65 year olds recruited from the databases of General Practitioners (GPs), not in therapy for oncological pathologies. Patients receive an invitation email from their GP for an interview with the Family and Community Nurse at their practice. During the interview a 30-item questionnaire is administered to identify behavioral risk areas, which correspond to intervention areas and health objectives that are re-evaluated in subsequent appointments.

**Results:** Since February 2022, 3 Family and Community Nurses, 11 GPs were involved and 51 participants were enrolled. Of those recruited, 1 citizen out of 2 reported a change in lifestyle as early as the second interview. A mapping of the health services was carried out and an information brochure was drawn up in collaboration with the Prevention Department. Integrated care pathways have been created with Prevention Department, dietetics service, Addiction and Mental Healthcare Services, "Psychological well-being" desk of Rome Municipality.

**Conclusion:** The interaction between the services has allowed the creation of a dimension that welcomes the citizen and the Family and Community Nurse thus becomes a tool for the realization of comprehensive Primary Health Care.

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### Users characteristics of a park-based physical activity promotion in an urban context

Alessandro Bianconi<sup>1</sup>, Alice Masini<sup>1</sup>, Francesco Sanmarchi<sup>1</sup>, Stefania Toselli<sup>2</sup>, Laura Bragonzoni<sup>2</sup>, Alessia Grigoletto<sup>2</sup>, Sofia Marini<sup>2</sup>, Zhengyang Xu<sup>2</sup>, Giuseppe Barone<sup>2</sup>, Erika Pinelli<sup>2</sup>, Raffaele Zinno<sup>2</sup>, Mario Mauro<sup>2</sup>, Pietro Loro Pilonè<sup>3</sup>, Sonia Arduini<sup>3</sup>, Simona Galli<sup>3</sup>, Mauro Vitiello<sup>3</sup>, Bruno Vicentini<sup>4</sup>, Giorgia Boldrini<sup>4</sup>, Muriel Musti<sup>3</sup>, Paolo Pandolfi<sup>3</sup>, Maurizio Liberti<sup>3</sup>, Gerardo Astorino<sup>3</sup>, Pasqualino Maietta Latessa<sup>2</sup>, Laura Dallolio<sup>1</sup>

<sup>1</sup>University of Bologna Department of Biomedical and Neuromotor Sciences Italy, <sup>2</sup>University of Bologna Department of Life Quality Studies Italy, <sup>3</sup>AUSL di Bologna Department of Public Health Italy, <sup>4</sup>Municipality of Bologna Culture and City Promotion Department Italy

**Background:** Physical Activity (PA) provides several benefits to human health. More than 25% of people worldwide are estimated not to comply with the World Health Organization recommendations on PA. Urban living is linked to sedentary lifestyles. Some aspects of the built environment, such as public greenness, may nudge residents' PA levels. The aim of the study was to assess the typical user profile of the "Moving Parks" project, a park-based PA promotion intervention.

**Methods:** The "Moving parks" project took place during summer in the public parks of Bologna (Italy). The project was created by the Local Health Authority and the Municipality of Bologna. Different types of activities were proposed, free-of-charge, twice-a-week and managed by qualified instructors. A questionnaire was proposed at the beginning of the intervention period. The variables collected involved participants' socio-demographic information, PA habits and psychological/general wellbeing, assessed through the Psychological General Well Being Index - Short version (PGWB-S).

**Results:** In 2022, a total of 568 participants were involved in the project, 85% were women.

The 23%(n=133) of participants were younger than 35, 55%(n=314) were 35-to-64 and 21%(n=121) were older than 64. Moreover, n=54(10%) respondents had an educational level lower than a high-school degree, n=198(35%) had a high-school degree and n=313(55%) had a university degree. PA was already a habit in the 74% of the respondents, and 41% declared to perform regular vigorous PA. The PGWB-S composite mean score was 3.49(SD 0.71).

**Conclusion:** This study highlights that most of citizens that participated to this intervention were females, highly educated and already physically active. Since built environment is experienced differently by genders, and green spaces are less used by women, this project suggests that group-activities may nudge a more gender-inclusive use of public parks. Further adjustments are needed to promote this type of interventions to reach more sedentary citizens.

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### Adapted physical activity for osteoporotic women with vertebral fractures: reading results of a qualitative study in a quantitative perspective

Fiorella Lanzillotta<sup>1</sup>, Alice Conni<sup>1</sup>, Sofia Marini<sup>1</sup>, Maria De la Rosa<sup>1</sup>, Alice Masini<sup>1</sup>, Laura Dallolio<sup>1</sup>

<sup>1</sup>University of Bologna Italy

**Background and Objective:** In a previous trial on osteoporotic women with past vertebral fractures, we found a significant improvement of some physical performance markers after a 6 months Adapted Physical Activity (APA) program. In this study – using the Capability Opportunity Motivation behavior (COM-b) model domains - we investigated barriers and enablers to maintain APA over time in a perspective that it could aid us to monitor lasting healthy behavior changes relapses.

**Methods:** The McGill Illness Narrative Interview (MINI) was chosen as qualitative tool to perform interviews. Three researchers analyzed independently the interviews by an ad hoc checklist, looking for barriers and enablers to continue the APA program. A consensus was reached by checklist comparison and each factor influencing behavior was classified into one of the three COM-b model domains.

**Results:** Seven out of the twenty-one women originally enrolled in the study group agreed to be interviewed. Four women were continuing APA for a fee and two reported to still practice Physical Activity (PA) on their own. Our assessment showed that: the three women who did not continue the APA program referred distance from the gym as the main obstacle (Opportunity barrier); the only woman who stopped all PA showed relevant physical limitations (Capability barrier); human and professional trainer skills were very appreciated facilitators (Opportunity and Motivation enablers); almost all reported both physical and psychological great benefits (Motivation enablers).

**Conclusions:** Several internal and environmental determinants affected the APA maintaining. Their exploration allowed us identifying potential barriers to overcome and levers to work on in order to maintain healthy behaviors over time. In the future, to improve long-term adherence to PA programs, it is important to design Behavior Change Wheel model-based strategies, to be included in future trials, also in light of a continuous monitoring of overall potential lasting benefits.

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### Engaging academic institutions in public health programs: lessons from anemia control program in India

Kapil Yadav<sup>1</sup>, Abhishek Jaiswal<sup>2</sup>, Kashish Vohra<sup>3</sup>, Preetu Misra<sup>4</sup>, Ravneet Kaur<sup>3</sup>, Mohan Bairwa<sup>3</sup>, Sanjay Rai<sup>3</sup>

<sup>1</sup>All India Institute of Medical Sciences, New Delhi, India Professor, Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi, India Centre for Community Medicine, Old OT-Block, AIIMS, Ansari Nagar, New Delhi (Pin Code-110029), India India, <sup>2</sup>ESIC Medical College and Hospital, Faridabad, Haryana, India, <sup>3</sup>All India Institute of Medical Sciences, New Delhi, India India, <sup>4</sup>UNICEF, India India

**Background and Objectives:** Public health nutrition (PHN) programs in India have seen increased focus and high political commitment recently. National Nutritional Strategy, POSHAN Abhiyaan, and Anemia Mukta Bharat (AMB) have set defined targets in line with Global Nutrition targets (2025) to strengthen nutrition services. Engaging academic institutions (medical colleges, nutrition colleges, other allied discipline academic institutions) is an important strategy to strengthen public health.

**Methods:** All India Institute of Medical Sciences (AIIMS), New Delhi established in 1956, is an Apex Medical Institution of India. The trinity of mission of AIIMS is teaching/training, patient service, and research with >2000 students, 300,000 patients and 600 research publications as output every year. Over last 70 years,

AIIMS contributed significantly in PHN. AIIMS was designated as National Centre for excellence (CoE) for AMB (NCEAR-A) in 2018. It has been instrumental in testing innovations in research and technology; developing guidelines incorporating scientific and community perspectives; capacity building; monitoring and supportive supervision of AMB.

**Results:** With its skilled workforce, AIIMS has contributed to various PHN-orientated scalable research such as iron-fortification, effectiveness of parenteral-iron formulations, and validation techniques for hemoglobin estimation. Apart from research, NCEAR-A has been actively involved in setting up Test, Treat and Talk camps in several parts of India and developing 'Training Manual' and 'Advocacy Booklet on Anemia' for medical professionals, program managers, and service providers. It works in collaboration with professional bodies to disseminate AMB strategy, support states, and institutions for developing SCOE. Establishment of an apex reference laboratory is underway.

**Conclusions:** Academic institutions support national public health programs through research, innovative interventions, integration of scientific knowledge and practice, and creation of a skilled younger generation. Academic institutions in return benefit from this engagement by getting platform for testing knowledge products and also can leverage greater resources for institutions.

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### Effect of the 'there's a people's pharmacy here' programme on hypertension and diabetes-related mortality

Samilly Miranda<sup>1</sup>, Kionna Santos<sup>1</sup>, Marcio Natividade<sup>2</sup>, Juracy Bertoldo<sup>1</sup>, Vinícius de Araújo Mendes<sup>1</sup>, Luís de Souza<sup>2</sup>, Erika de Aragão<sup>1</sup>

<sup>1</sup>UFBA Brazil, <sup>2</sup>UFBA

**Background and objective:** Information about the real prevalence of non-communicable diseases (NCDs) in Brazil, and their rate of treatment and control, remains scarce. Despite the evolution of technologies for medical treatment, some sections of the population do not adhere to it. This study therefore aims to analyse the effect of the 'There's a People's Pharmacy Here' Programme (Programa Aqui Tem Farmácia Popular: ATFP) on hypertension and diabetes-related mortality.

**Methods:** An individualized, descriptive study involving all the dispensation of medication, from 2001 to 2017, for the treatment of diabetes and hypertension, to the users of the Primary Healthcare Network and the pharmacies accredited by the ATFP Programme. We calculated travel patterns from user households to dispensing sites, adopting 3 measures (800, 1,000 and 1,250 metres) to infer "geographically hard to access." To obtain the differences and their respective significance, we applied Pearson's Chi-Squared test. Estimates of Prevalence Ratios (PR) were used to ascertain the associations between the independent variables.

**Results:** Municipality-controlled multivariate models maintained a protective effect for double medication dispensing for both diabetes (9%) and hypertension (11%). Analysis per region enabled confirmation that, for both pathologies, the region with the greatest protective effect against deaths with double medication dispensing was the Southeast. We noted that large municipalities had the most widespread pattern for a reduction in deaths from diabetes, although the same behaviour was not identified for hypertension cases.

**Conclusion:** In general, it was possible to identify the protective effect of double medication dispensing on admissions and deaths related to diabetes and hypertension, and to determine that the ATFP programme acts as a complementary model to the primary healthcare network. The study outlines the need for a general diagnosis of access to medication and participation in the ATFP program.

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### Mortality analysis for the state of Rio de Janeiro, Brazil: Observing the public health system conditions

Mônica Morangeira<sup>1</sup>, Paulo Eduardo<sup>1</sup>, Xavier de Mendonça<sup>1</sup>, Rodrigo Torres Oliveira<sup>1</sup>, Rodrigo Lages<sup>2</sup>, Marcela Souza Caldas<sup>2</sup>, Alice Lima<sup>3</sup>, Paulo Almeida Rodrigues<sup>4</sup>, Thauanne de Souza Gonçalves<sup>4</sup>, Ana Matheus Peres<sup>5</sup>, Lucas da Silva Cabral<sup>2</sup>, Paula Pungartnik<sup>1</sup>, Édnei Santos Junior<sup>1</sup>

<sup>1</sup>IESC/UFRJ Brazil, <sup>2</sup>COSEMS Brazil, <sup>3</sup>COSEMS, <sup>4</sup>UERJ/IMS Brazil, <sup>5</sup>UNIFASE/COSEMS Brazil

**Background, Objectives:** Understanding the causes of mortality in the population is essential for the reorganization of the public health system, especially after the covid-19, that mobilized health structures in Brazil and around the world. The objective is to describe and analyze indicators of mortality to understand the regional epidemiological characteristics and support decision-making in public health planning and management in the state of Rio de Janeiro, Brazil.

Médicos

Open data available in the Health Information Systems provided by the Brazilian Government were used. The General Mortality Rate of the population of the SRJ, crude and standardized, from the year of 2019, was analyzed in comparison to the indicators of Brazil and other Brazilian States. Resultados

The characteristics of persons who die in the SRJ has a slight predominance of males, a higher percentage of white people, aged over 70 years and a higher occurrence of deaths in hospitals. The Standardized Mortality Rate was 8.3% for the SRJ. The main causes of death were diseases of the circulatory system, neoplasms, diseases of the respiratory system and external causes, with a significant burden of violent deaths. The General Mortality Rate increased between 2000 and 2020 and infant and perinatal mortality maintained a downward trend. Conclusã

This analysis allows us to outline prospects for reconstruction for the future in state and municipal public health. The mortality rate in the SRJ was higher than the Brazilian rate with disparity between the health regions of the state. Deaths from heart diseases have a homogeneous distribution in all regions of the state and deaths from ill-defined causes points to the need for investment in the qualification of information. The rates are strongly influenced by the age structure between the regions of the state, showing the need to organize care based on the characteristics of population aging.

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### Mental health-promoting interventions in elementary schools: School context correlates of availability and alignment with evidence-based practices

Jodi Kalubi<sup>1</sup>, Teodora Riglea<sup>1</sup>, Isabelle Doré<sup>1</sup>, Louise Potvin<sup>1</sup>, Jennifer O'Loughlin<sup>1</sup>

<sup>1</sup>École de santé publique, Université de Montréal Canada

**Background and Objective:** Schools are ideal settings to promote mental health and well-being in youth, but not all schools offer mental health-promoting interventions (MHPs). Our objectives were to identify school context correlates of MHP availability in elementary schools, and to characterize MHPs implemented in study schools according to alignment with evidence-based practices.

**Methods:** Data were collected in structured telephone interviews with school principals participating in PromeSS, a cross-sectional study of 171 public elementary schools in Quebec, Canada (2016-19). We examined the association between each of 17 variables related to school context and MHP availability in multivariable logistic regression models. Cross-case analysis of a convenience sample of 25 MHPs was used to classify interventions into one of 6 groupings based on a combination of high/moderate/low alignment with the Health Promoting Schools (HPS) framework (i.e., a whole-school approach in conjunction with changes to school culture and environment) and high/low adaptation to school context. Effective implementation practices (formal team, guidelines, training, process and outcome evaluation) were described for each grouping.

**Results:** Of 171 schools, 41% reported  $\geq 1$  MHP in the past year. Seven factors were associated with MHP availability: higher student body socioeconomic status, English language of instruction, mental health issues perceived as important in the school, higher scores for parent/community engagement with the school, and high teacher turnover. Only four (16%) MHPs were categorized as high alignment with HPS, but three of these were external interventions with low adaptation to school context. Although most other MHPs had high adaptation to school context, few used a whole-school approach or aligned with evidence-based implementation practices.

**Conclusion:** MHP availability is uneven across schools and is associated with social inequalities and school culture. Future research should investigate how to strengthen school capacity to identify and implement MHPs that are aligned with evidence-based practices.

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### Measuring the sustainability of health systems using absorptive capacity: Imbibing sustainable processes and outcomes

Shubham Gupta<sup>1</sup>, Vikas Choudhry<sup>1</sup>, Kultar Singh<sup>1</sup>

<sup>1</sup>Sambodhi Research and Communications Private Limited India

Evidence on the sustainability of outcomes has been quite minimal, limited to post-hoc evaluations. Such evidence is even scarcer in terms of sustainability of processes and the generation of evidence on what makes programs sustainable becomes crucial in resource-constraint contexts. This paper considers the case of the Technical Support Unit (TSU) in the state of Uttar Pradesh, India to showcase how absorptive capacity can be used as a mechanism to build sustainability of the processes as well as outcomes. The purpose of this Paper is to utilize the findings

of TSU evaluation to posit that building 'Absorptive Capacities' of stakeholders is an important mechanism to build sustainability of interventions. The paper also discusses how 'Absorptive Capacities' were defined and implemented in the context of health system evaluation.

The evaluation study employs a pre-post multi-method design with the district as the unit of analysis. Mixed method approach with semi-structured interview schedules were conducted with public health officials at the state, district and block level. Further, these are aided with the organizational assessment survey. The analyses are guided by the Absorptive Capacity (ACAP) framework to assess absorptive capacity at the individual and system level.

The agenda of the evaluator in most evaluations has been on demonstrating impacts throughout funding of a program based on the theory of change. The preoccupation should not be on the initial theory of change but on an emergent theory of change that includes some reflection on post-funding dynamic supports. The findings build the case for understanding the sustainability of processes and outcomes through the ACAP framework. This thinking about the sustainability of processes and outcomes will require a focus on capacities, capabilities and absorptive capacities of "permanent" actors, like the state, and actors who have the potential of mainstreaming the intervention after the funding runs out

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### Profile comparison of Brazilian and haitian pregnant women and their newborn babies in pato branco, Brazil, from 2015 to 2019

Debora Galvan<sup>1</sup>, Raphaela Rodrigues<sup>2</sup>

<sup>1</sup>Centro Universitário de Pato Branco Brazil, <sup>2</sup>Centro Universitário de Pato Branco

**Background and objective:** In the last decade, there was an intense migratory flow of Haitians to Brazil. In addition, Brazil ensures the access to the Unified Health System (SUS) to all Brazilian citizens and immigrants who live in the country. Therefore, considering that SUS offers prenatal care, pregnant Haitian women can use this service as well as Brazilian pregnant women.

This study researched information about the pregnant women (Brazilians and Haitians) who live in Pato Branco, Brazil: the pregnancy itself; birth and newborn information (Brazilian and Haitian's babies) from 2015 to 2019. Concerning mothers information, this research reached color, race and marital status. Information about pregnancy itself were the average length of gestation and number of prenatal visits. Birth information was the delivery method and birthday. Regarding the newborn we were interested in color and race.

**Methods:** We conducted a cross-sectional study using data provided by the Paraná Secretary of Health.

**Results:** The results showed 6.443 live birth babies between 2015 and 2019. Those births, 88 were Haitian children. Of the 88 pregnant Haitian women, 87.5% attended seven or more doctors appointments. Of these, 11.4% women attended four to six doctors appointments. One woman did not attend any prenatal visit. When we consider all the pregnant women, information showed that 91.49% of pregnant women attended seven or more prenatal visits, while only 0.74% of the women did not attend any prenatal visit. Finally, 59.26% of the babies were delivered by cesarean section; meanwhile 40.70% were delivered by vaginal birth. About Haitian's babies, 54.5% were delivered by vaginal birth and 45.5% were delivered by cesarean section.

**Conclusion:** Despite the good numbers and results within what the Ministry of Health recommends for a good prenatal care, the indexes are lower for Haitian women than for Brazilian women.

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### Implementing a community led health systems strengthening intervention in sierra leone to address shocks, increase inclusivity, accountability and trust, and support health system resilience

Haja Wurie<sup>1</sup>, Lansana Kallon<sup>2</sup>, Giuila Loffreda<sup>3</sup>, Sophie Witter<sup>4</sup>

<sup>1</sup>University of Sierra Leone ReBUILD for Resilience Consortium "College of Medicine and Allied Health Sciences PMB New England Ville" Sierra Leona,

<sup>2</sup>College of Medicine and Allied Health Sciences Ayesha Satta Idriss College of Medicine and Allied Health Sciences ReBUILD for Resilience Consortium Sierra Leona,

<sup>3</sup>Institute for Global Health and Development, Queen Margaret University, UK ReBUILD for Resilience Consortium United Kingdom, <sup>4</sup>Institute for Global Health and Development, Queen Margaret University, UK

**Background and objectives:** Community engagement (CE) with the relevant stakeholders is recognised as core to resilient health systems and is essential and instrumental in promoting accountability and trust. This is particularly important in Sierra Leone, a context often characterized by mistrust in the health system.

This study aimed to provide insights into the current CE strategies in response to issues in Sierra Leone through an inclusivity and accountability lens and test approaches to support and improve engagement, ownership and leadership and to develop resilience capacities of the health system.

**Methods:** The study was a prospective participatory action research (PAR) cycle, involving four research phases, in two districts in Sierra Leone: Phase 0 mapping the current situation, Phase 1 participatory power mapping with different community leaders through a gender, equity and social inclusion lens, Phase 2 identifying leverage points and co-creating an action agenda with community stakeholders; Phase 3 implementing actions, reflecting and documenting processes, adapting and learning. The results presented are based on data collected from inception to October 2022.

**Results:** A CE pathway to change that encompassed several context-driven PH interventions was co-created by the identified key community stakeholders and the research team, supporting an embedded approach to CE and community ownership. An intervention informed by this was piloted, designed to harmonize different CE initiatives, encompassing the One Health platform, nutritional programs, and maternal and child health interventions, among others. The study design, based on several phases and cycles, allowed to embed feedback loops for effective communication.

**Conclusions:** Communities should be directly involved in developing CE programs for HSS interventions. In this regard, PAR is a well-suited research method to design effective strategies to respond to local health needs. CE is a central element of comprehensive primary health care, promoting social change, increasing accountability, and building community health systems.

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### **Erivcal cancer screening and hpv vaccination: strategies for increasing vaccination coverage in women aged 25 to 45 in asp of catania (sicily)**

Enrica Esposito<sup>1</sup>, Enrica Esposito<sup>2</sup>, Cristina Mauceri<sup>3</sup>, Gabriele Giorgianni<sup>4</sup>, Mario Cuccia<sup>4</sup>, Renato Scillieri<sup>3</sup>

<sup>1</sup>University of Catania Italy, <sup>2</sup>University Of Catania Italy, <sup>3</sup>U.O.C. Prevenzione malattie cronico degenerative-screening oncologici - Dipartimento di Prevenzione ASP Catania Italy, <sup>4</sup>UOC Sanità Pubblica, Epidemiologia e Medicina Preventiva -Dipartimento di Prevenzione Asp Catania Italy

**Background and Objective:** Since 2017 HPV vaccination is free in Sicily for women up to 45 years old; screening is free for women aged between 25 and 64. HPV vaccination coverage in Sicily decreased during the COVID-19 pandemic. Consequently, the letter of screening invitation was updated inserting indications to book vaccination.

The aim of the study is to evaluate vaccination coverage in women of the Province of Catania aged 25 to 45, after sending the updated letter for screening.

**Methods:** Women aged between 25 and 45 tested for cervical cancer in 2021 was extracted from software used for screening. The anti HPV vaccination coverage in above mentioned age group was provided by Epidemiology Service. The screening invitation letter was updated including the HPV vaccine booking methods.

A vaccination coverage monitoring plan has been defined since the start of the involvement of target population through the updated letter.

**Result:** In 2021, n. 8616 screening test were performed in women aged 25 to 45. Data from Epidemiology Service ASP Catania shows a low HPV vaccination coverage in women aged 25 to 45.

During 2023, cross-reference through tax code between unvaccinated women invited for screening and vaccination registry will be provider for evaluate the effectiveness of updated invitation letter in promoting vaccination. The crossing will be carried out after 6 and 12 months from the first sending of the letter.

**Conclusion:** More information on free HPV vaccination program are needed in women up to the age of 45, also providing counselling on HPV vaccine with screening.

Updated letter could improve HPV vaccination and further investigations will be needed to verify changes in vaccination coverage.

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### **Did the use of HTPs help people to stop smoking?**

Marise Sabato<sup>1</sup>, Martina Antinozzi<sup>1</sup>, Teresa Bonarrio<sup>1</sup>, Sara Merli<sup>1</sup>, Francesco Mondera<sup>1</sup>, Francesco Rosiello<sup>1</sup>, Martina Antinozzi<sup>1</sup>, Maria Assunta Donato<sup>1</sup>, Maria Sofia Cattaruzza<sup>1</sup>

<sup>1</sup>Sapienza University of Rome Department of Public Health and Infectious Diseases, Sapienza University of Rome, Rome, Italy

**Background and objectives:** In the past decade there has been a surge in the

promotion of health and prevention of smoking in young people. Unitab, the tobaccology unit of sapienza university of rome (Italy), frequently organizes different awareness-raising campaigns aimed at increasing awareness on tobacco related issues, encouraging young people to stop smoking. The main objective of this qualitative study was to have a deeper understanding of young people's perception of the risks of new tobacco products and their use.

**Methods:** A questionnaire was administered to young women on the occasion of world women's day, the 8th of march 2022. The questionnaire was divided in 2 sections: the first contained 8 different questions addressed to everyone; the second consisted of 14 questions specifically addressed to smokers and former smokers regarding past use of tobacco products and whether they tried new products.

**Results:** 331 women were recruited. out of these 63.5% were non smokers (10% former smokers), 36.5% smokers. 52,9% only used traditional tobacco products, 21,5% htps and traditional products, 16,5% only smoked htbs and 9,1% used electronic cigarettes or other tobacco products. 69,43% tried htbs, mostly out of curiosity (34,94%), 33,73% believed htbs were less harmful. interestingly, only 28% said they tried htbs in order to reduce smoking/quit. 63,27% have tried to quit smoking; 27% succeeded at the first try, 21,53% the second and 11,81% needed three or more attempts.

**Conclusions:** There is a great need for new prevention methods as there is a wide misconception that new tobacco products are less damaging than the established products. Further studies are needed in order to understand the risks of new tobacco products to counteract misleading information.

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### **Hospital Staff Morale Boosting Program - Focusing on the Health Promoting Hospital (HPH) Activities & Responses of Participants**

Jaekyung Lee<sup>1</sup>, Kyoung Song<sup>2</sup>

<sup>1</sup>Snu-smg Boramae Medical Center MD. PhD Health Care Center, Boramae Medical Center, 15th floor, Specialized Construction Hall 15 Boramae-ro 5-gil, Dongjak-gu, Seoul, Republic of Korea (07071) Korea, Republic Of Hye-Min Choi Snu-smg Boramae Medical Center, <sup>2</sup>Snu-smg Boramae Medical Center MD. PhD Department of Emergency Medicine SNU-SMG Boramae Medical Center 20, Boramae-ro 5-gil, Dongjak-gu, Seoul, Republic of Korea (07061) Korea, Republic Of

Since February 2020, there has been a gradual mitigation of responses as the COVID-19 pandemic has lengthened. However, the burden of COVID-19 operation in hospital coexists according to seasonal characteristics and virus variants, and quarantine policies of each government changes. Therefore, it is becoming more important to boost the morale of medical personnel, to maintain mental and physical health, and to promote satisfaction, stability, and a sense of belonging. We had done Health Promoting Hospital (HPH) activities over a decade, developing and applying various programs to enhance physical and mental health for patients, staff, and the community. While we are still with minimum protective equipment due to COVID-19, we tried to offer our staffs to get practical and psychological rewards and to inspire employee morale through HPH activities. In particular, as a municipal hospital with intensive care unit for COVID-19, there had been times when inhospital activities were not free. In response, the hospital executive department reorganized the structure into a field system to mobilize personnel into departments where demand and work are concentrated. Coming up with this trend, our HPH activities had also been transformed. For individual workers, initial meeting and progress report, online or non-face-to-face activity methods were used, or the risk factors of HPH activities were hedged and through small grouping of activity projects. Surprisingly, in the course of the various programs, participants responded that Simple and Fun is Beautiful. There were also experiential and training-type activities longer than a month with communication and feedback with managers. But, short experiences that arouse interest, small groups where meals and refreshments are prepared, etc., evoked a more explosive and immediate response. We would like to share and review our recent experience in the aspect of health care workers work-place well-being and enforcement of morales.

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### **Effectiveness of invitation methods in cancer screening programmes targeting the general population: a systematic literature review**

Sonia Pinto<sup>1</sup>, Alessandro Durbano<sup>2</sup>, Giulia Barbera<sup>3</sup>, Maria Grazia<sup>4</sup>, Ilaria Accastello<sup>5</sup>, Silvia Barbero<sup>5</sup>, Giacomo Scaioli<sup>5</sup>, Giuseppina Moro<sup>5</sup>, Fabrizio Bert<sup>5</sup>, Roberta Siliquini<sup>5</sup>

<sup>1</sup>Università degli Studi di Torino Department of Public Health Sciences, University of Turin, Italy Via Santena, 5 bis, Torino 10126 Italy, <sup>2</sup>Università degli Studi di Torino Italy, <sup>3</sup>University of Turin Italy, <sup>4</sup>Vari University of Turin Department of Public Health Sciences, University of Turin, Italy, <sup>5</sup>University of Turin Department of Public Health Sciences, University of Turin, Italy

Background: Although cancer screenings can identify an early onset of cancer, adherence in Italy in 2019 is less than 23%. Therefore, this study aimed to test the effectiveness of invitation methods in cancer screening programmes to improve adherence to practices that could save lives and increase quality of life of potential patients.

Methods: The research consisted in an overview conducted in August 2021. All studies focused on the effectiveness of invitation methods in cancer screenings performed worldwide (e.g. leaflet, letters, doctors advice) between January 2010 and July 2021 and involving only the general population suited for the screenings available in Italy (cervical, breast and colorectal cancer). The outcome was to list and summarize the different invitation methodologies studied over the last 10 years and to highlight their effectiveness.

Results: 5513 records were screened by two authors and data extraction is ongoing. The selected papers consisted of 29 systematic reviews (37.93% colorectal, 27.59% breast, 17.24% cervical screenings): 93.1% were European, 3.45% American, and 3.35% oceanic. In particular, 20.69% of the studies compared sending an invitation letter versus letter and reminder letter, 13.79% letter versus letter and brochure, 13.79% letter versus two or more methods of contact, 10.34% letter versus letter and sms, 10.34% letter versus phone call, 2.69% letter or brochure versus medical counseling. Phone calls, medical advice and brochures increased the adherence of the screening (61.11% had a proven effectiveness); sending a second letter in close proximity to the screening test was not worthwhile (63.63% was ineffective or had no significant results).

Conclusions: The population was more inclined to adhere to screening if receiving an individual and personal contact rather than a second letter, or a text message or a brochure sent at home.

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### Habits and lifestyles among medical students: smoking status as a possible risk factor

Maria Assunta Donato<sup>1</sup>, Martina Antinozzi<sup>1</sup>, Brigid Unim<sup>2</sup>, Marco Santini<sup>1</sup>, Maria Sofia Cattaruzza<sup>1</sup>

<sup>1</sup>Sapienza University of Rome Department of Public Health and Infectious Diseases - Sapienza University of Rome Piazzale Aldo Moro 5, Roma Italy, <sup>2</sup>Istituto Superiore Di Sanità, Italy Viale Regina Elena 299 - 00161 Roma Italy

Background and objective: Literature suggests that some habits (e.g., smoking and drinking) are more common among students with specific lifestyle patterns. This study aims to assess habits and lifestyles in a sample of second-year medical students at Sapienza University of Rome.

Methods: Perceived Stress Scale (PSS-10), Cigarette Dependence Scale (CDS-5), Fagerstrom Test for Nicotine Dependence and Morningness-Eveningness Questionnaire (MEQ) were administered to students online and face-to-face. Questions on sedentary lifestyle, consumption of energy drinks (tea, coffee, energy drink) and binge drinking were also included.

Results: A total of 218 students (mean age=22.4, females 61.5%) took part in the survey. Possible associations between smoking status and lifestyles were investigated; 23.4% of the students were smokers. PSS-10 did not show significant differences for smoking status, while the mean number of energy drinks used was 3.3 (SD= 1.7) for smokers and 2.4 (SD= 1.6) for non-smokers ( $p<0.001$ ). 43.1% of the sample drank 3+ energy drinks a day, (38.3% smokers and 58.8% non-smokers;  $p<0.01$ ). Binge drinking behaviors was observed in 50.9% of participants and significant differences emerged between smokers (72.5%) and non-smokers (44.3%) ( $p<0.001$ ). Regarding physical activity, 60.6% of participants were sedentary, especially smokers (68.0%). In the multivariable analysis, after adjusting for age and sex, binge drinking (OR =3.15, 95%CI 1.54-6.44,  $p<0.001$ ) and use of energy drinks (OR =3.33, 95%CI 1.02-10.95 for 2 energy drinks a day and OR = 4.19, 95%CI 1.33-13.20 for 3+ energy drinks a day;  $p<0.001$ ) were associated with smoking.

Conclusion: The preliminary results of this study underline smoking status as a potential risk factor for unhealthy lifestyles among young medical students. Further research on unhealthy lifestyles is needed to increase health awareness and health promotion among medical students, motivating them in becoming health models for their patients.

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### Are avoidable hospitalizations associated with the primary healthcare governance model? a public health perspective

João Magalhães<sup>1</sup>, Joana Pestana<sup>2</sup>, António Pereira<sup>3</sup>, André Biscaia<sup>3</sup>

<sup>1</sup>Public Health Unit, Vale do Sousa Norte, Portugal Rua Rainha D. Leonor, 107 4590-612 Paços de Ferreira Portugal, <sup>2</sup>NOVA School of Business and Economics, <sup>3</sup>Family Health Unit, Unidade de Saúde Familiar Prelada, ACES Porto Ocidental, Portugal PHC - Commissioning Department, Northern Regional Administration of Health, Portugal; CINTESIS@RISE - Center for Health Technology and Services Research, Faculty of Medicine, University of Porto, Porto, Portugal

Introduction: Primary healthcare (PHC) mission is to provide first level continuity of care and act as health system (HS) gatekeeper. Avoidable hospitalizations (Avh) are recognized as a sensible PHC performance measure. A governance model centred on general practitioner (GP) public or self/company delivery have found mixed results on Avh, while there is a large performance variation between HS. Therefore, the study aims to assess how PHC governance models determine Avh, as well as how interacts with the HS public model, considering GP availability and outpatient coverage.

Methods: An ecological study was conducted and countries were the observation unit. Data for GP employment type (public and self or company) and 2019 asthma and chronic obstructive pulmonary disease (COPD) and diabetes Avh was collected from Organisation for Economic Co-operation and Development health statistics. Eurostat database and Health in Transition reports were also used as sources. A three-step regression analysis was conducted based on population characteristics, PHC coverage and HS models.

Results: The study included 26 countries, 13 public-employee and 13 self/company-employed. For Asthma and COPD Avh, the first two models registered negative coefficients ( $p(M0) = -4.256$  [CI 95% -75.1;66.6] and  $p(M1) = -4.746$  [CI 95% -84.7;75.2]), while after interaction with HS models a positive coefficient ( $p(M2) = +23.815$  [CI 95% -157.1;204.7]). In diabetes Avh, all the models registered a positive and increasing coefficient ( $p(M0) = +35.551$  [CI 95% -26.7;97.8],  $p(M1) = +37.128$  [CI 95% -32.4;106.7] and  $p(M2) = +43.873$  [CI 95% -32.4;106.7]).

Discussion

This study creates evidence and hypotheses that GP public-employed might provide more quality of continuity care, particularly for diabetes management. The main limitations are the mix of PHC and HS models in most countries, the co-burden of disease variations and individual level demand for out-of-pocket services. In addition, these results show that PHC and HS models might influence how population access different levels of care.

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### Rethinking the Italian healthcare network. Community Healthcare Centers, Community Hospitals and Local Operative Centres: From the functional aspects md 77/2022 to the metaproject with the spatial features and performance requirements to be guaranteed

Maddalena Buffoli<sup>1</sup>, Marco Gola<sup>1</sup>, Stefano Capolongo<sup>1</sup>, Domenico Mantoan<sup>2</sup>, Alice Borghini<sup>2</sup>, Federica Riano<sup>2</sup>

<sup>1</sup>Design & Health Lab, Politecnico di Milano Italy, <sup>2</sup>AGENAS Italy

Introduction: COVID-19 highlighted the significant criticalities of the NHS and recently the Italian Government approved the NRRP to relaunch its economy and at the same time promote health, sustainability and digital innovation. Specifically, M6C1 provides for the introduction of Community Healthcare Centers (CHCs), Community Hospitals (CHs) and Local Operative Centres (LOCs) with the aim of strengthening the healthcare services. Starting from MD 77/2022, a group coordinated by AGENAS and POLIMI developed the Metaproject for the CHCs, CHs and LOCs with the aim of supporting decision makers in defining the spatial features and the performances to be guaranteed.

Methods: For the elaboration of the general strategies of the CHCs, CHs and LOCs starting from the MD 77, the study was divided into: a) a survey in which the current national and international scenario regarding the territorial healthcare; b) a survey in which all the national and regional regulations have been analysed; c) a data analysis in which the inputs from the first two phases for the development of the Metaproject have been processed.

Discussion

For the definition of the Metaproject, the functional program has been translated in a spatial one accompanied by the functional layouts. The various services have been organized by functional macro-areas and the definition for each of them in a synoptic framework which shows the performance approach and their features. Specifically, the different functions have been classified into homogeneous macro-areas by type of function to be provided with their functional layouts and the list of all the environmental units.

Conclusions: The study conducted aims at supporting the planning of these facilities in relation to the catchment area and their sizing. It will be necessary to define the location by evaluating the possibility of setting them up within existing hospitals

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### Optimizing the primary health care workforce to achieve timely healthcare that meets the population's needs: Romania's human resource in primary care

Diana Nemeş<sup>1</sup>, Marius-Ionuț Ungureanu<sup>1</sup>, Monica Brînzac<sup>1</sup>

<sup>1</sup>Department of Public Health, Faculty of Political, Administrative and Communication Sciences, Babeş-Bolyai University, Cluj-Napoca, Romania  
 Center for Health Workforce Research and Policy, Faculty of Political, Administrative and Communication Sciences, Babeş-Bolyai University, Cluj-Napoca, Romania Pandurilor 7 Street, Cluj-Napoca, Romania

Introduction: To contribute to universal health coverage and achieve the highest possible standard of health, health systems can only function with health professionals' cooperation. The importance of primary care must be reemphasized, the infrastructure must be revitalized, and the delivery of care and payment models must be redesigned. Currently, the maldistribution of health workers in Romania and the unfavorable working circumstances provide significant issues for Romania's health workforce. As a result, more and more people cannot access timely healthcare that meets their needs.

This study aims to investigate the Romanian healthcare workforce using the framework for the health labor market.

Methods: We triangulated secondary data from policy documents and other pertinent reports with data from the annual report on the Activity of Healthcare Facilities from 2009 to 2021.

Results: The overall number of physicians has grown since 2009, and there's a trend toward an aging workforce. In 2021, the number of physicians aged 65 and above increased three times compared to 2009 (from 1,386 doctors to 4,306 doctors). In contrast, the proportion of doctors aged 25 to 34 increased 1.6 times in 2021 (from 14,428 doctors in 2009 to 23,454 in 2021). Regarding family medicine, it can be observed that in an interval of 13 years, the number of family doctors not only stagnated but even decreased, varying from 12,735 family physicians in 2009 to 12,430 family physicians in 2021, showing a decrease in the attractiveness of the family medicine specialization. In 2021, the discrepancy between the number of family doctors in urban and rural areas was substantial. Out of the total of 12,430 family physicians throughout the country, 8297 practiced in urban areas, while in the rural areas, their number decreased by half.

Conclusion: Further efforts are needed to improve primary care workforce distribution and planning throughout the country.

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### Identification of priority action areas for improving Romanian family doctors' satisfaction and performance

Diana Nemes<sup>1</sup>, Daniel Enescu<sup>2</sup>, Vlad Chelaru<sup>3</sup>, Razvan Chereches<sup>4</sup>, Sandra Alexiu<sup>5</sup>, Marius Ungureanu<sup>1</sup>

<sup>1</sup>Department of Public Health, Faculty of Political, Administrative and Communication Sciences, Babeş-Bolyai University, Cluj-Napoca, Romania  
 Center for Health Workforce Research and Policy, Faculty of Political, Administrative and Communication Sciences, Babeş-Bolyai University, Cluj-Napoca, Romania Pandurilor 7 Street, Cluj-Napoca, Romania Romania,

<sup>2</sup>Daedalus Medical, Bucharest, Romania, <sup>3</sup>Iuliu Hațieganu University of Medicine and Pharmacy, Cluj-Napoca, Romania Victor Babeş 8 Street,

Cluj-Napoca, Romania Romania, <sup>4</sup>Department of Public Health, Faculty of Political, Administrative and Communication Sciences, Babeş-Bolyai University, Cluj-Napoca, Romania Pandurilor 7 Street, Cluj-Napoca, Romania, <sup>5</sup>Association of Family Doctors Bucharest-Ilfov, Romania

Background and objective: Family doctors are the backbone of the Romanian health care system. As gatekeepers, they are the first point of contact for patients in need of preventive and curative health services. This research aims to provide an overview of their specific professional and personal needs and identify priority action areas.

Method: WE COLLECTED DATA FROM 305 Family Doctors based on a 20 minutes self-administered online survey in June-July 2022. The sample was balanced by region and urbanization degree.

Results: Overall, the family doctors rated their health as good and their work-life balance decent, and 83% of family doctors feel satisfied with their patient relationship. Nevertheless, these aspects tend to be eroded by the high frequency

of stressful situations and by the administrative burden, both of them correlated (negatively) with their work satisfaction. We have identified four areas of priority based on the attributes that are important but generate high dissatisfaction among Family Doctors: (1) The importance given to Family Doctors in the health system; (2) The efficiency of current rules and regulations, with direct impact on the time spent on administrative tasks and the amount of work required; (3) The payment for the services performed; and (4) The relationship with the authorities: the usefulness and frequency of required reporting, and the feedback received.

Conclusion: Family Doctors feel unheard and disrespected by the authorities, their job is pushed towards insignificance by the current laws while the existing rules and regulations generate a big deal of administrative burden. Initiating a real dialogue by the authorities would be a first step to improve existing situation.

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### Factors associated with the implementation of an improved community health fund in the Ubungu Municipality Area, Dar es Salaam Region, Tanzania

Goodluck Mselle<sup>1</sup>

<sup>1</sup>Ubungu Municipal Council, Dar es Salaam, Tanzania

Community-based health insurance schemes help households to afford healthcare services. This paper describes healthcare facilities and community factors that are associated with the Improved Community Health Fund (iCHF) scheme in the Ubungu district of Tanzania. A cross-sectional descriptive study was conducted using online questionnaires that were completed by healthcare providers and community members in public-owned healthcare facilities in the Ubungu Municipal Council district of Dar es Salaam, Tanzania, between October and November 2021. The data were analyzed using descriptive statistics and the chi-squared test of association. We found a statistically significant relationship between income level and satisfaction with the iCHF scheme. For community-related factors, income level was statistically significant in the level of involvement in iCHF implementation among local leaders. Further, income level was statistically significant in relation to community behavior/culture toward the iCHF. Occupation was statistically significant in iCHF implementation, iCHF premiums, and iCHF membership size. A statistically significant relationship was also found between income, iCHF membership size, and iCHF premiums. Moreover, people would be willing to pay the required premiums if the quality of the healthcare services under the iCHF scheme improves. Therefore, the government should allocate resources to reduce the challenges that are facing iCHF implementation, such as the preference for a user fee scheme over the iCHF, the issues that are faced by enrollment officers, and inadequate iCHF premiums and membership size.

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### Dynapenic abdominal obesity and sociodemographic, clinical and nutritional factors in individuals with chronic kidney disease on hemodialysis

Monica Cattafesta<sup>1</sup>, Letícia Souza<sup>2</sup>, Edson Neto<sup>3</sup>, Luciane Salaroli<sup>4</sup>, Cleodice Martins<sup>4</sup>

<sup>1</sup>Graduate Program in Nutrition and Health, Universidade Federal do Espírito Santo, Brazil, <sup>2</sup>Department of Health Integrated Education, Universidade Federal do Espírito Santo, Brazil, <sup>3</sup>Collective Health, Universidade Federal do Espírito Santo, Brazil, <sup>4</sup>Nutrition and Health, Universidade Federal do Espírito Santo, Brazil

Background and Objectives: Dynapenic abdominal obesity (DAO) is an important marker for assessing nutritional status. Therefore, the aim of this study was to determine the prevalence of DAO and to investigate its association with sociodemographic, clinical and nutritional factors in individuals with chronic kidney disease on hemodialysis.

Methods: Cross-sectional study with 940 individuals undergoing hemodialysis in a metropolitan region in southeastern Brazil. DAO was defined by the combination of the presence of abdominal obesity indicated by the waist-to-height ratio and the reduction in muscle strength measured by handgrip strength. Binary logistic regression was performed to calculate the odds ratio (OR) and their respective confidence intervals (95% CI).

Results: DAO was present in 45.4% of the study population. It was found that adult (OR = 3.17; 95% CI 2.35, 4.28; p < 0.001) and overweight individuals (OR = 2.58; 95% CI 1.92, 3.47; p < 0.001) have more chances to present DAO. However, those who had the habit of having their meals outside at home (OR = 0.63; CI 95% 0.47,

0.85;  $p = 0.003$ ) and who had preserved adductor pollicis muscle thickness (OR = 0.52; 95% CI 0.38, 0.71;  $p < 0.001$ ) have less chance to develop DAO.

Conclusions: DAO can be an important tool for assessing the nutritional status of individuals with chronic kidney disease on hemodialysis.

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### Facilitating policy, systems, and environment changes through community-based micro-funding in West Virginia, USA

Kathryn Burnham<sup>1</sup>, Diana Yuh<sup>2</sup>, Nancy Tompkins<sup>3</sup>

<sup>1</sup>West Virginia University Research Corporation, United States, <sup>2</sup>West Virginia Prevention Research Center, West Virginia University Research Corporation, United States, <sup>3</sup>Prevention Research Center, West Virginia University Research Corporation, United States

**Background:** Creating policy, systems, and environment changes (PSEs) is an evidence-based health promotion strategy supported by public health research. However, issues in facilitating understanding of PSEs have caused challenges with implementation. PSEs are crucial in West Virginia (WV) where only 50% of residents have access to physical activity opportunities, 12% are food insecure, and 10.2% have limited access to health care due to cost. In this case study, the WV health agency used micro-funding to encourage community-based organizations and health care systems to implement PSEs. This study reports the number of PSEs implemented and the extent grantees accurately identified their activities as PSEs.

**Methods:** The study sample is 61 grantees that received micro-funding. Resources and technical assistance (TA) processes were created to increase the capacity of grantees to implement and report PSEs. In one year, grantees were provided self-guided resources, and, in another year, grantees were provided self-guided resources and tailored TA. In their end-of-year evaluation reports, grantees were asked to identify their activities as P, S, or E. Study investigators independently coded reported activities and resolved discrepancies through consensus. Comparisons between the two years were made to determine the extent to which grantees accurately described their PSEs. Additionally, responses from 11 grantees who received funding in both years were analyzed to determine capacity to identify PSEs.

**Results:** Eighty-two percent of the activities implemented were identified as PSEs by the study investigators; the average cost per PSE was \$941. Grantees receiving self-guided resources and tailored TA correctly classified activities as PSEs more frequently than those receiving only self-guided resources. Roughly half of the 11 repeat grantees increased the percentage of correctly identified PSEs.

**Conclusions:** Micro-funding can be a cost-effective way to increase the PSE implementation. To build capacity for reporting, a combination of self-guided and tailored TA provides better results.

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### Macrostructural processes and their impact on the interprofessional proposal in mental health: a study in a city in the state of São Paulo, Brazil

Giulia Peruzzo<sup>1</sup>, Marina Bertagnoli<sup>1</sup>, Ingrid Battisti<sup>1</sup>

<sup>1</sup>University of São Paulo, Brazil

**Background and Objective:** Interprofessionality has been identified as a way to achieve integrality in the Brazilian unified health system (sus), promoting specialties integration and complementarity of care in health teams, with special qualification in mental health and strengthening service's governance. However, its operationalization is threatened by macrostructural processes. Thus, the objective of this study was to analyze the influence of these processes in the implementation of practices aimed at interprofessionality's exercise, investigating its potentialities and challenges as a strategy for promoting integrality in health.

**Methods:** This study derives from qualitative research, with the perspective of hermeneutic-dialectic. Data was obtained by two individual interviews, with mental health and primary care coordinators, and two focus groups, one with six professionals from a psychosocial care center (caps) and the other with three professionals from the family health support center (NASF) in a municipality in the state of São Paulo. Data analysis was performed using thematic analysis.

**Results:** Data observed lack of financial, structural and human resources. This influences the team work process, making it difficult to carry out reflective practices and the possibility of integrated teamwork practice. The policies fragility that guarantee these practices feasibility and the management role on planning and evaluating strategies aimed at an integrated practice were also observed. Finally, the health crisis caused by the covid-19 pandemic exacerbated the difficulties previously faced, with the aggravation of population increased demand.

**Conclusions:** Results reinforce macrostructural aspects relevance in policies implementation in health teams routine, indicating that policies fragility, lack of resources and management planning impasses make it difficult to implement the integrality proposal. It is also concluded that the effects of the covid-19 pandemic exacerbated problems that were already present.

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### 2022 Recovering beneficiary health follow-ups from the public welfare program Auxílio Brasil in a southern Brazilian state: strategies and results

Lauren Silva<sup>1</sup>, Raquel Canuto<sup>1</sup>, Maísa Pedrosa<sup>2</sup>, Maria Lantmann<sup>2</sup>, Deise Vetromila<sup>2</sup>

<sup>1</sup>Universidade Federal do Rio Grande do Sul, Brazil, <sup>2</sup>Secretaria Estadual da Saúde do Rio Grande do Sul, Brazil

**Background and Objective:** In 2003, the Brazilian government created the public welfare program "Bolsa Família", currently called "Auxílio Brasil", which enables impoverished families to access governmental financial aid. Nonetheless, to receive the aid, the beneficiaries must attend a primary care unit to receive vaccination, anthropometry, and prenatal care. Thereupon, a greater number of follow-ups furthers public primary health care access of lower-income Brazilians. The study aimed to analyze health conditionality follow-ups from 2011 to the first half of 2022 in the Brazilian state of Rio Grande do Sul.

**Methods:** The data regarding the "Auxílio Brasil" Program execution was extracted from a Brazilian open access health care database, e-Gestor. The percentage of program beneficiaries who accessed health follow-ups was analyzed, from 2011 to June, 2022. Additionally, the justifications for lack of follow-ups were summarized for analysis.

**Results:** The percentage of beneficiaries that accessed the health follow-ups in the state increased 8% from 2011 to June, 2022. However, there was a significant decrease in follow-ups to 47,1%, in 2020. The follow-up percentage increased in 2021 (63%) and in the first half of 2022 (70,8%), reaching a 23,7% increase since 2020. The most frequent justifications for the lack of follow-up were: incorrect information registry, difficulty to access a primary care center, and lack of capacitated health professionals in these services.

**Conclusions:** The "Auxílio Brasil" Program, beyond conceding financial aid to socially vulnerable Brazilians, enables a greater access to public primary health care, improving, among other things, vaccination and prenatal care rates. Considering that the access to healthcare relies on health follow-ups, it's necessary to ascertain the reasons why beneficiaries aren't being followed-up, thereby taking precise action to guarantee the access to primary health care among the most vulnerable.

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### Qualitative analysis of the use of the "evaluation of siderail use" instrument in a public emergency hospital

Teresa Ferreira<sup>1</sup>, Rosimere Santana<sup>2</sup>, Denise Diniz<sup>3</sup>, Noângela Nascimento<sup>1</sup>, Teresa Vannucci<sup>1</sup>

<sup>1</sup>Municipal Health Department of Rio de Janeiro, Brazil, <sup>2</sup>Federal Fluminense University, Rio de Janeiro, <sup>3</sup>National School of Public Health, Oswaldo Cruz Foundation (Fiocruz), Rio de Janeiro, Brazil

**Background and Objective:** The study is a partial result of a masters research in which an instrument was translated and cross-culturally adapted for one of the patient safety goals – risk of falls, whose protocols guide the use of siderails as safety devices in the prevention of falls among adults and the elderly hospitalized. The pre-test stage was analyzed, by nurses of a municipal hospital of the Unified Health System/Brazil. **Methods:** In the pre-test, 30 nurses applied the version approved to 57 hospitalized patients distributed across the internal medicine, cardiology, neurology, and orthopedics wards, 29 of whom were male, aged between 41 and 69 years. Each nurse carried out a subjective assessment of the indication for the use of side rails, followed by the indication using the translated instrument.

**Results:** Neuropathies were the largest sample of patients to whom the questionnaire was applied (43.9%) followed by orthopedic patients (22.8%). The main subjective indication for the use of rails by nurses was "four" rails for 66.7% of cardiac/clinical patients and 48% of neuropathic patients. The highest proportion of indication for "four rails" was for women and the patients who had the lowest indication were polytrauma patients (0%), followed by general surgery patients (0%). **Conclusions:** When measuring the agreement between what the nurse judged subjectively and the patients preference for the use of rails, the highest correlations were presented in the item "no rail is indicated" and in the

patients choice of "no rail". The study shows that independent patients with mobility and the ability to get out of bed agreed with the nurses assessment that no railing was necessary. However, patients with cognition and mobility restriction are difficult choices and require the use of an instrument for evaluation such as the one in the study. Keywords: Patient Safety, Sidedrails, Accidental Fall.

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### Quality and patient safety: experience report in the management of hospitals in the municipality of Rio De Janeiro

Noângela Nascimento<sup>1</sup>, Teresa Ferreira<sup>2</sup>, Teresa Navarro<sup>3</sup>, Marta Cortes<sup>3</sup>, Alynne Martins<sup>3</sup>, Cintia Ferreira<sup>3</sup>

<sup>1</sup>Municipal Health Department of Rio de Janeiro, Brazil, <sup>2</sup>Municipal Health Department, Rio de Janeiro, Brazil, <sup>3</sup>Municipal Health Department of Rio de Janeiro, Rio de Janeiro, Brazil

**Background and Objective:** Risk management is the systemic and continuous application of policies and behaviors in the identification, analysis, evaluation, communication and control of risks and adverse events that affect the patient. Implementation strategies range from drafting protocols to implementing incident surveillance and monitoring systems. In this context, Ordinance 529 of the Ministry of Health (MS) regulates the Implementation of Patient Safety Centers (NSP) in the hospital environment. The NSP must promote and support the implementation of actions aimed at patient safety, guided by International Safety Goals, which serve as alerts for the prevention of major health incidents. The objective of this study is to report the experience of the Implementation of Clinical Governance, focusing on risk management in Emergency Hospitals of the municipal health network of Rio de Janeiro. **Methods:** After diagnosis, the management model to be implemented in the Emergency Hospitals of Rio de Janeiro was defined – Care Centered on the Patient and Family with Risk Management; defined and structured the specialized human resource for strengthening the NSP and risk assessments; Forums were held to support the implementation of quality tools; applied Risk Mapping in the Hospital environment; implemented management support processes, such as the Safety Hudle; carried out periodic follow-up visits for the Continuous Improvement Cycle.

**Results:** In 06 months of implantation, 100% of the Units with registered NSP/MS are noted; Increased number of reports of adverse events and near misses; better performance in operational and care indicators, culminating positively in the patients journey in the hospital. **Conclusions:** The implementation of this Model could guide hospitals in building a safety culture, creating an educational environment that encourages patient care with fewer incidents and damage. Care risk management must be a basic premise, regardless of the mandatory rules and regulations. **Descriptors:** risk management, patient safety, health public

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### Net Promoter Score (NPS) in the primary health care services in Brazil

Luiz Pinto<sup>1,2</sup>, Carolina Fabricio<sup>3</sup>, Marcelo Gonçalves<sup>4</sup>, Otávio D'Avila<sup>5</sup>, Erno Harzheim<sup>6</sup>

<sup>1</sup>Primary Care Post-Graduate Program, Universidade Federal do Rio de Janeiro (UFRJ), Brazil, <sup>2</sup>Municipal Secretary of Health of Rio de Janeiro, Brazil, <sup>3</sup>Municipal Health Secretariat, Rio de Janeiro, Dental Surgeon in Public Health Researcher at Municipal Secretary of Health of Rio de Janeiro, Brazil, <sup>4</sup>Universidade Federal do Rio Grande do Sul (UFRGS), <sup>5</sup>Dentistry, Universidade Federal de Pelotas (UFPel), Brazil, <sup>6</sup>Epidemiology Post-Graduate Program, Universidade Federal do Rio Grande do Sul (UFRGS), Brazil

**Background and Objective:** User satisfaction is an important indicator of primary health care (PHC) services. The Net Promoter Score (NPS), originally proposed by Reichheld in 2003, has been adapted for use in health services in several countries around the world. The Brazilian Institute of Geography and Statistics (IBGE) used it for the first time to evaluate primary health care services in the Unified Health System (SUS).

**Methods:** IBGE used the reduced version for child users of the Primary Care Assessment Tool (PCAT) created by Starfield and Shi and validated by the Brazilian Ministry of Health and included NPS. Random cluster sample (n = 4,973 children) allowed comparing the overall PCAT score with NPS. NPS is a single metric that quantifies the response to the question: How likely are you to recommend this service? Three categories are identified and classified as 'promoters' (those who would definitely recommend and use the service again), 'passives' (who are broadly happy, but would not actively promote the service) and 'detractors' (who actively discourage others to experience the service). The Results of calculating

this indicator ranges from -100 to +100. NPS can be classified as: (i) critical zone (-100 to 0), (ii) improvement zone, between 1 and 50; (iii) quality zone, between 51 and 75; (iv) excellence zone, between, 76 and 100.

**Results:** For all regions of Brazil, the NPS estimated by the IBGE is in the improvement zone, with important intra-regional differences in the Brazilian states. The higher the PCAT score, the greater the proportion of promoters in the NPS.

**Conclusions:** Due to its simplicity of implementation in PHC services in Brazil, NPS could be incorporated in assessing user satisfaction.

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### Sex education: determining factor for the intention to use the male contraceptive (Vasalgel)

Vanessa Jimenez<sup>1</sup>, Gerardo Rivera<sup>2</sup>, Josue Dominguez<sup>2</sup>, Natalia Cruz<sup>3</sup>

<sup>1</sup>School of medicine, Universidad del Valle de Mexico, Mexico, <sup>2</sup>Universidad Veracruzana, Mexico, <sup>3</sup>School of Medicine, Universidad del Valle de Mexico, Mexico

**Background:** Vasalgel is a new proposal in temporary contraceptive methods for men that shows clinical advantages in its use compared to female hormonal methods. **Objective:** To determine the factors associated with the intention to use Vasalgel. **Methods:** A cross-sectional, prospective study was carried out between August and December 2021, men residents of Veracruz aged between 20 and 34 years were included. The sexual machismo scale (Cronbach 0.91) and the Questionnaire on knowledge of responsible sexuality in young people (KR-20 = 0.57) were applied through Google Forms®. SPSS v22 software was used for data analysis, X2 test with Odds Ratio (OR) and 95% confidence interval (95%CI) and MannWhitney U test. assigning statistical significance with p<0.05.

**Results:** 446 men were included, 52.2% with a high level of knowledge about responsible sexuality; 41.3% knew about the "Vasalgel" method, after explaining about this method, 74.9% showed a positive intention to use it. The factors associated with the intention to use Vasalgel (OR/95%CI) were having a bachelor's degree or higher (OR 5.9 / 95% CI 3.5-9.9), being an atheist (2.6 / 1.1-5.9), having a girlfriend (2.7 / 1.5-5.0), having had two or more sex education courses (3.6/2.0-6.3), not having children (10.0/5.7-17.3), using condoms without methods by the partner (3.0/1.8-5.1), knowledge of responsible sexuality high (5.0/2.8-9.0), medium (0.02/0.003-0.1) and low (0.1/0.01-1.9), living with your partner (0.2/0.01-0.4), and sex education courses only in high school (0.1/0.04) all with p<0.05. The participants with the intention of using vasalgel obtained lower points on the sexual machismo scale, likewise, the patients with more sexual education obtained lower scores on the sexual machismo scale (p<0.05). **Conclusions:** The level of knowledge about sexuality and machismo represent changes in the attitude of patients to favor the intention of using Vasalgel, as well as the sources where this knowledge is generated.

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### Reception in urgency and emergency services: ethical-political technology in the management of health care networks

Marta Côrtes<sup>1</sup>, Noângela Nascimento<sup>2</sup>, Teresa Ferreira<sup>2</sup>, Teresa Vannucci<sup>3</sup>, Denise Diniz<sup>4</sup>

<sup>1</sup>Municipal Health Department of Rio de Janeiro, Brazil, <sup>2</sup>Municipal Health Department, Rio de Janeiro, Brazil, <sup>3</sup>Municipal Health Department of Rio de Janeiro, Rio de Janeiro, Brazil, <sup>4</sup>Instituto de Medicina Social Hesio Cordeiro, Universidade do Estado do Rio de Janeiro, Brazil

**Background and Objective:** The urgency and emergency services are submitted to heavy pressure due to the great demand and speed inherent to the care of acute conditions, generating criticism due to the difficulty of access and lack of information, where the relationships between users and workers are experienced in a scenario of precariousness of bonds and solidarity. In order to promote transformations in the quality of care, since 2009, the Municipal Health Secretary of Rio de Janeiro has bet on the "Reception" - one of the guidelines of the National Humanization Policy - as an important ethical component for the development of a network that aims to enhance life and human relationships, expressing attitude and action of inclusion towards the construction of mechanisms for access to services, ensuring care and quality of assistance. **Methods:** This work aims to report and analyze its implementation in the municipal hospitals, using the "analyzing flowchart" tool, the developed access indicators, and the results of the survey with relational technologies, sharing of care practices, and health management. **Results and Conclusions:** It is considered that the strategies and instruments used contribute significantly to guarantee the continuity of care and to qualify the health care network. **Keywords:** embracement, production of care, health management, flowchart

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### **Workplace health promotion initiatives for Italian healthcare workers demonstrate an investment for workers, the organization and the society in the context of total worker health**

Salvatore Zaffina<sup>1</sup>, Reparata Prinzi<sup>1</sup>, Maria Vinci<sup>1</sup>, Vincenzo Camisa<sup>1</sup>, Annapaola Santoro<sup>1</sup>, Giorgia Bondanini<sup>1</sup>, Bianca Ceresi<sup>1</sup>, Guendalina Dalmasso<sup>2</sup>, Massimiliano Raponi<sup>2</sup>

<sup>1</sup>Occupational Medicine Unit, Bambino Gesù Children's Hospital, Rome, Italy,

<sup>2</sup>Health Directorate, Bambino Gesù Children's Hospital, Rome, Italy

The aging workforce must deal with work-related alterations such as new organizational options (e.g., agile work), psychological difficulties (e.g., COVID-19-related distress), and new technology. Individual employee happiness has an indirect impact on the company's bottom line (e.g., personnel turnover, restrictions on fitness-to-work, occupational injuries and diseases, labor law disputes). Workplace Health Promotion Initiatives (WHPs) can successfully assist in addressing these labor-market difficulties. An Italian hospital has implemented a workplace strategy to improve the professional performance of healthcare personnel (HCWs). A multidisciplinary team directs WHPs such as "Disability Management" (DM), which addresses developing impairments (e.g., chronic degenerative illnesses, oncological diseases), and "Help Point" (HP), which provides psychological support to overburdened HCWs. We provide Findings about the economic effect of these two WHPs. From July 2017 to December 2019, 131 HCWs were enrolled in DM and 35 HCWs in HP (September 2016-June 2019). Sickness absence days (SADs) in the 12-month period preceding and after WHPs. Return on Investment (ROI) was calculated as the ratio of net profit to investment cost for the WHPs management using SAD reduction accounting for profit. SADs dropped by 67% and 60% for DM and HP respectively, resulting in ROIs of 27.66 and 2.73 (p values: 0.001, and 0.05). Given the limited sample sizes, the results must be interpreted with care. Because of their instructional value, WHPs constitute a "win-win" strategy for employees, businesses, and society. Public health policies should raise worldwide knowledge of the economic benefits of investing in improving employee's well-being for the benefit of society as a whole, toward the global horizon of occupational salutogenesis.

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### **Evaluation of health promoting activities by a culturally adapted "Self-Review Tool" in a Bulgarian university**

Klara Dokova<sup>1</sup>, Petya Boncheva<sup>2</sup>, Klara Dokova<sup>3</sup>

<sup>1</sup>Department of Social Medicine, Faculty of Public Health, Medical University Prof. Dr. P. Stoyanov, Varna, Bulgaria, <sup>2</sup>Department of Social medicine, Faculty of Public Health, Medical University Prof. Dr. P. Stoyanov, Varna, Bulgaria, <sup>3</sup>Department of Social medicine, Faculty of Public Health, Medical University "Prof. Dr. P. Stoyanov", Varna, Bulgaria

**Background and Objective:** The "Health Promoting University" initiative is still unknown in Bulgaria. There is no higher education institution with a strategy for health promotion with clear goals and objectives, officially embracing the principles of health promotion and implementing the initiative. The aim of the present study is to clarify the available conditions and scope of health promotion activities in a concrete Bulgarian university, applying an established tool for self-assessment of health promoting universities. **Methods:** The study was conducted in three phases at a medical university setting. The Self-Review Tool, a resource of the Healthy Universities network, was culturally adapted to the Bulgarian linguistic and cultural context, in the first phase. The opinion of students, academic and administrative staff on selected statements applicable to the target groups, was sought in the second phase. In the third stage representatives of the academic leadership and the students Council reached a consensus with a Delphi method on how to complete the self-review tool on behalf of the university community, after familiarization with the "voice" of the respondents from the second phase. **Results** In total 673 respondents took part, representing 10% of all groups: 570 students, 77 academic staff, 21 employees, three members of Student Council and two university leaders. According to the final assessment, the university performed excellent in most of the criteria, except: stakeholder engagement (73%), food (73%) and corporate engagement with the health promotion principles (67%). **Conclusions:** The university has demonstrated capacity and real health promotion action, without the presence of an officially accepted policy at the institutional level and without the label "Health Promoting University". Strategy, policy, leadership involvement are important factors but their absence is not an insuperable obstacle for health promotion action.

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### **Theoretical derivation of a telephone-based health coaching intervention**

Angeli Gawlik<sup>1</sup>, Yeliz Nacak<sup>2</sup>, Jens Kleinert<sup>1</sup>, Uwe Konerding<sup>3,4</sup>, Frank Vitinius<sup>2</sup>

<sup>1</sup>Department of Health and Social Psychology, Institute of Psychology, German Sport University Cologne, Germany, <sup>2</sup>Department of Psychosomatics and Psychotherapy, Faculty of Medicine, University Hospital Cologne, University of Cologne, Germany, <sup>3</sup>Trimberg Research Academy, University of Bamberg, Germany, <sup>4</sup>Department of Psychology and Psychotherapy, Witten/Herdecke University, Germany

**Objective:** Physical activity and healthy nutrition can reduce the progression of type 2 diabetes mellitus and coronary heart disease. Accordingly, copious interventions to increase such behavior have already been presented. However, such interventions are usually poorly described and there has not been much public scientific Discussion regarding their theoretical derivation. To promote such a Discussion, the theoretical derivation of a telephone-based health coaching (TBHC) intervention for patients with type 2 diabetes and coronary heart disease and the resulting intervention are presented.

**Methods:** The intervention is conceived as a combination of (1) the interaction between coaches and patients and (2) measures to ensure the quality of this interaction. The interaction between coaches and patients consists of (1) the style and (2) the contents of this interaction. The style of the coach-patient interaction is derived from Self-Determination-Theory and concretized using Motivational Interviewing techniques. The contents of the coach-patient interaction are derived from the Health Action Process Approach and concretized using Behavior Change Techniques.

**Results:** Material for guiding the coach-patient interaction has been produced. This material consists of 16 tools to be applied in the coaching sessions and guidelines for selecting the appropriate tool for each session. The quality assurance measures consist of a coach training program before and supervision sessions during the TBHC.

**Conclusions:** The theoretical derivation yielded an operable intervention. Both the process of derivation and the resulting intervention could prove useful for researchers designing similar interventions. The project upon which this abstract is based was funded by the Innovation Fund of the Federal Joint Committee under the funding code 01NVF18033.

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### **Factors influencing exclusive breast feeding among children born to HIV positive mothers attending public health facilities in Western Ethiopia**

Elias Roro<sup>1</sup>, Elias Merdassa<sup>1</sup>, Ejigayehu Bultum<sup>1</sup>, Ilili Regasa<sup>1</sup>

<sup>1</sup>Wollega university Department of Public Health, Institute of Health Sciences Wollega University, Oromia region, Nekemte town, Ethiopia

Human immunodeficiency virus (HIV) positive women report confusion about the best feeding methods. Exclusive Breastfeeding (EBF) practices in HIV-positive mothers are sub-optimal in Ethiopia. This study aimed to identify the main factors influencing EBF among HIV-positive breastfeeding mothers.

A facility-based cross-sectional study was carried out from September 01, 2017, to June 30, 2018, among HIV-positive mothers with infants aged 6-23 months. Thirteen public health facilities (seven health centres and six hospitals) that provided anti-retroviral treatment (ART) and Prevention of mother-to-child transmission (PMTCT) services, found in three districts of Oromia, were randomly selected. Respondents were recruited by systematic random sampling techniques from these facilities using client registers as a sampling frame.

EBF is an outcome variable. Data were collected using face-to-face interviews with a pre-tested questionnaire and analysed using SPSS Version 20 for windows. Associations were declared at P < 0.05 by assuming Confidence Intervals did not cross 1 with corresponding 95%.

A total of 218 HIV-positive mothers were included in this study. Only 122 (56.0%) practised EBF in the first six months. The proportion of respondents who initiated EBF within the first hour of delivery was 134 (61.8%). The mean age of study participants was 28.6 years with SD + 4. Mothers' having received advice on EBF [AOR 3, 95% CI (1.2-6.7)], disclosure of HIV status to someone close to them, including their husband [AOR 6, 95% CI (1.2-29.6)] and believing HIV can be transmitted during delivery [AOR 5.2, 95% CI (1.1-24.0)] were found to increase the likelihood of EBF practices among the study participants (P-value < 0.05).

In this study, only half of the mothers practised EBF for the first six months. Care providers should continue encouraging mothers to practice EBF in the first six months. Practices should be in place to curb the risk of HIV/AIDS transmission

during delivery.

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### Health education in primary care in Brazil and the social production of knowledge

Ana Fittipaldi<sup>1</sup>, Gisele O'Dwyer<sup>1</sup>, Patrícia Henriques<sup>2</sup>

<sup>1</sup>FIOCRUZ Brazil, <sup>2</sup>Federal Fluminense University, Brazil

The Brazilian Unified Health System is the largest public health policy in the country, and offers every Brazilian citizen full, universal and free access to health services throughout the national territory. Its principles are universalization, integrality and equity. Primary Health Care is the first level of health care and a gateway to the health system. The goal of this research is to analyze and comprehend the experiences and expectations of primary health care users related to health education. It is a qualitative research held in two Primary Healthcare Centers in the city of Rio de Janeiro/Brazil. Participant observation of educational activities and semistructured interviews were used as research techniques. The analysis of the interviews featured Bardin's content analysis as theoretical framework, in accordance with Bourdieu's theory of social action, which encompasses concepts of habitus, symbolic capital, field and symbolic power. Twelve interviews were conducted and three analytical categories were identified: autonomy and vulnerability: the agent's social trajectory; extended health care: meanings and tensions experienced from symbolic capitals; and bonding, trust and affection: the network of social support. The collective actions opened space for dialog and appreciation of everyone's ideas to develop critical and reflective thinking. The respondents' background of vulnerability was considered limiting to their capability of developing autonomy and self-care. For the respondents the collective actions represent a therapeutic practice that is complementary to the clinical care as well as a start of a social support network. The articulation of Bourdieu's theory of social action with health education contributed to the understanding of users' experiences, interests and motivations. Contribution to the field of health education is expected by proposing effective and transforming actions through dialog and interaction with the dynamics of the lives of the common people.

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### Training of public school students in the district of Conceição de Jacareí, Mangaratiba, Rio de Janeiro/Brazil as multipliers and protagonists in the dissemination of relevant topics in oral health

Leandro Avila<sup>1</sup>, Milene Machado<sup>1</sup>

<sup>1</sup>SESC/RJ, Brazil

**Introduction:** The OdontoSesc Mobile Units are an itinerant project of the Social Service of Commerce that offer free dental treatment and health promotion activities to the general population. **Objective:** it was proposed the development of training work for students of a public school in order to make them multipliers and disseminators of relevant topics related to oral health in Conceição de Jacareí, District of Mangaratiba, Rio de Janeiro/Brazil.

**Methodology:** A health fair model presentation was chosen. For the elaboration of the event, there was a selection of students, who were divided into groups and each one was assigned a theme: evolution of caries; periodontitis; dental trauma; dental prosthesis and oral self-examination. The training of the students was conducted by the health team with weekly meetings for the practical and theoretical development of the themes.

**Result:** The health fair provided the students involved with the transmission of knowledge to other students and the population in general, about the knowledge acquired by promoting the autonomy of self-care.

**Conclusion:** the development of health fairs is an important tool for the transmission of knowledge. A legacy is left and empowerment is generated regarding the knowledge acquired in favor of the well-being of the community.

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### Cadmium exposure and hypertension: a systematic review and a dose-response meta-analysis

Vincenzo Giuliano<sup>1</sup>, Marco Vinceti<sup>2</sup>, Tommaso Filippini<sup>2</sup>

<sup>1</sup>University of Modena and Reggio Emilia, Environmental, Genetic and Nutritional Epidemiology Research Center (CREAGEN), Department of Biomedical, Metabolic and Neural Sciences, Medical School - University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>University of Modena and Reggio Emilia, Italy

**Background and Objective:** Cadmium (Cd) is a silvery white, malleable metal present in trace amounts in the Earth's crust, air and water. Its name derives from

that of the city of Cadmo, near Thebes, where it was extracted in antiquity. This heavy metal reacts easily with zinc and to a lesser extent with lead forming various compounds. The main routes of exposure for humans are diet and inhalation. Breathing low levels of Cd for many years (e.g. smokers) or consuming food and water contaminated at levels normally present in the environment (chronic exposure) can cause its accumulation in the body and lead to various pathological conditions, including hypertension. Our aim is to quantify the increase in blood pressure following chronic Cd exposure.

**Methods:** The protocol of the review has been submitted in PROSPERO. The literature search has been carried out on 3 different databases: PubMed, Web of Science and Embase. We used as mesh-terms: "hypertension", "cadmium" and "blood pressure". We defined the following inclusion criteria according to PICOS statement: P = healthy adult population, I = exposure to cadmium, C = subjects not exposed to cadmium, O = variation of arterial blood pressure in relation to the cadmium dose to which one is exposed, S = observational studies (cohort, cross-sectional or case-control). We also plan to perform a dose-response meta-analysis whenever possible.

**Results:** We found 678 articles, of which 95 duplicates. After removing these duplicates, we are scanning the abstract and full-text of the remaining 583 papers. **Conclusions:** The study is currently ongoing and its results will be presented at the Congress.

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### People's attitudes and health behavior based on their habits and experience versus scientific evidence

Aušra Beržanskytė<sup>1</sup>, Brigita Bikaitė<sup>1</sup>

<sup>1</sup>Vilnius University Faculty of Medicine Institute of Health Sciences Vilnius university Čiurlionio 21, Vilnius Lithuania

**Background and Objective:** The pandemic years demonstrated huge overload of different information as well as misinformation about health. This enlightened people's confusion in their approaches and health behavior which is the key determinant of human health. In order to select the most optimal actions in changes of unhealthy behavior the analysis of human reasoning is particularly relevant. The objective - to reveal the importance and influence of daily habits, experiences vs scientific evidence on health behavior.

**Methods:** In this qualitative study the data were collected from eleven participants using semi-structured interviews lasting in average of 40 minutes. The main guidelines were prepared and informants were asked to tell in general about the daily behaviour and its impact on the health, pros and cons, the reasoning of changing unhealthy habits, awareness and application of scientific evidence, recommendations from health professionals. Data were analysed using inductive thematic analysis according to Braun and Clarke (2013).

**Results:** The analysis revealed several themes. The personal sensory experiences are key determinants of human health behavioral choices. They can lead to both positive and negative health behavior. Habits are very important for choosing and changing health behaviors. They encourage repeated return to both negative and positive health behaviors. Habits are difficult to change. Pleasurable health behaviors, whether positive or negative, become habitual, sometimes addictive. People may not be fully aware of the role of habits in their health behavior choices. Changing health behaviors is challenging, especially in the long term. Scientific evidence has little relevance to health behavior. It can have an impact when the individual is ready to change behavior. The recommendations from health professionals and health policy makers are accepted if they are shared in an appropriate way.

**Conclusions:** Peoples health choices are more influenced by their habits and experiences than by scientific evidence.

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### A better lifestyle favors the adoption of integrative and complementary therapies: the Brazilian national health survey

Thiago Matias<sup>1</sup>, Thiago Matias<sup>2</sup>, Leticia de Almeida<sup>1</sup>, Marcus Lopes<sup>1</sup>, Julianne alves<sup>1</sup>, Gislaïne nienov<sup>1</sup>

<sup>1</sup>Federal university of santa catarina Brazil, <sup>2</sup>Federal university of santa catarina rua desembargador pedro silva 2100 Brazil

**Background and objective:** Physical activities, diet, and sedentary behavior are essential predictors in understanding the binomial lifestyle-health outcomes. Thus, a poor lifestyle may be associated with the demand for health services such as integrative and complementary therapies. This study aimed to investigate the association between clusters of lifestyle behaviors and adherence to integrative and complementary therapies in a representative sample of Brazilians.

**Methods:** A cross-sectional study with secondary data analysis from the 2019 National Health Survey. 90,814 Brazilians over 15 years of age were analyzed. Independent variables were lifestyle domains; the dependent ones were the adoption of adherence to integrative and complementary therapies in primary health care. Data were obtained through questionnaires and analysis by descriptive and inferential statistics. A Two-step cluster analysis was used to identify the populations lifestyle profiles. The Rao-Scott chi-square test and logistic regression models were used for the inferential analysis.

**Results:** Three clusters were observed: the "Active-green diet" (26.73%; CI95%: 26.22 - 27.26), the "Inactive-health diet" (42.15; CI95%; 41.59 - 42.72), and the "At-risk" (31.11; CI95%; 30.54-31.69). Sedentary behavior was high to very high for cluster profiles. Individuals with an "Active-green diet" were more likely to adhere to integrative and complementary therapies (OR = 1.55; CI95%: 1.34 - 1.81).

**Conclusion:** A healthier lifestyle favor Brazilians choice for integrative and complementary therapies in the primary health care system. New studies are needed to understand whether there are inequities in access to complementary therapies in Brazil.

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### Analysis of medicines provided by court order in a children's hospital in Rio de Janeiro, Brazil

Nathália Alvarez<sup>1</sup>, Miriam Ventura<sup>2</sup>

<sup>1</sup>FIOCRUZ Brazil, <sup>2</sup>Universidade Federal do Rio de Janeiro

**Background and objective:** The Brazilian Federal Constitution confers on health the status of a fundamental right of the citizen and duty to the State, marking an advance in the field of Public Health in the country and taking the first steps towards the creation of the Unified Health System (SUS). However, it's in the interpretative divergences about how SUS managers must comply with the duties established in the laws that the judicial demand against public entities arises. The phenomenon of judicialization of health can be defined as the search for the Judiciary to ensure access to medicines and other health benefits not foreseen or unavailable in SUS. The analysis of the effects of this judicial demand on the hospital environment is still understudied. The objective of this work is to analyze the medications resulting from court warrants administered by the Institute of Pediatrics Martagão Gesteira, a university hospital in Rio de Janeiro, from May 2021 to May 2022.

**Methods:** This is a retrospective cross-sectional descriptive study carried out in the form of documentary research using as data sources the documents available in the hospital about the drugs administered in the period studied.

**Results:** Five drugs provided by court order were found, where flow analysis pointed to challenges for responsible health professionals and the need for specific knowledge. The analysis of the characteristics related to the drugs pointed to failures of management of high-cost drugs available in SUS, motivating the lawsuits. All drugs found are used for treatment of rare diseases, evidencing the scarcity of medicines destined for these diseases.

**Conclusion:** The research allowed the discussion about judicialized drugs and the particularities of the pediatric hospital environment. Furthermore, the research showed the need for education of health professionals responsible for these drugs and the demand for health public policies.

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### Equally improving human, animal, plant, and environmental health through 'One Health' approaches in the LMICs

Madhumita Dobe<sup>1</sup>, Arista Lahiri<sup>2</sup>, Sweety Jha<sup>2</sup>

<sup>1</sup>Foundation for Actions and Innovations Towards Health Promotion, India,

<sup>2</sup>Dr. B. C. Roy Multi-Speciality Medical Research Centre, Indian Institute of Technology Kharagpur, India

The 17th World Congress on Public Health coincides with a time when the COVID-19 pandemic revealed the complex interconnectedness and interdependence of all living species in a shared environment. The pandemic was a wake-up call for the urgency to pay much more attention to the root causes of global risks and find new ways of mitigating threats, including the spread of new and re-emerging diseases. This is perhaps most important in the context of low- and middle-income countries (LMICs). Heading into an uncertain future, Public Health policy reforms and enabling actions to address societal impacts (socio-economic, political, environmental), including climate change, emerging and re-emerging infections, and other risks, are essential. The focus is now to integrate human and animal health with environmental health and climate issues into One Health. With the theme being A world in turmoil: Opportunities to Focus on the Publics Health, the Congress provides a timely and unique opportunity for the global

health community to work together, dismantling disciplinary and professional silos for interdisciplinary and transdisciplinary collaboration and capacity building to generate solutions in the Publics Health through the One Health approach. Foundation for Actions and Innovations Towards Health Promotion (FAITH), jointly with One Health for One Planet Education International (1HOPE) and the Indian Institute of Technology Kharagpur (IIT Kharagpur), would like to propose a workshop in the form of a debate on the topic: "Is One Health really about equally improving the health of humans, animals, and the environment?" The debate will be between two teams, one for and one against the motion. Each team member of each side will speak for five minutes, thus allowing 10 minutes for each group. This will be followed by a rebuttal of 5 minutes per team. A 20 minutes Discussion period, "open cross-examination" time will follow, and then a 10-minute wrap-up. The teams will consist of experts in public health, Veterinary health, and social sciences/ Anthropology with geographical representation across world regions with the majority of speakers from low-middle income countries. Gender and age balance with appropriate representation of young professional and female speakers are also ensured. Specific Aims/ Objectives: 1. To raise awareness regarding the difficulties for equally improving human, animal, plant, and environmental health through synergistic and holistic One Health approaches, particularly in the context of the LMICs. 2. To discuss the ethical dilemmas that originate from policies and One Health strategies in zoonotic disease control, antimicrobial resistance, etc., focusing on the LMICs. 3. To suggest possible roadmaps in advocacy and capacity building for moving forward and addressing the problems in implementing One health approaches, particularly in LMICs. Key questions that the workshop will address: 1. Can the One Health approach be applied synergistically and holistically to tackle existing and future health challenges in LMICs? 2. What ethical dilemmas originate from policies and One Health strategies in zoonotic disease control, antimicrobial resistance, etc., in LMICs? 3. How can we move forward and address the problems of One Health in LMICs in an equitable manner?

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### Developing a critical global public health agenda for traditional, complementary and integrative health care

Jon Wardle<sup>1</sup>, Alana Gall<sup>1</sup>, Daniel Gallego<sup>2</sup>, Peter James<sup>1</sup>, Jon Wardle<sup>1</sup>

<sup>1</sup>Southern Cross University Australia, <sup>2</sup>University of North Carolina Chapel Hill, United States

**Background:** A wide range of practices not historically associated with biomedicine constitute traditional, complementary and integrative health care (TCIH) and are prevalent in all cultures across the globe. The 2018 Declaration of Astana on primary health care acknowledges the need to include traditional and complementary medicine knowledge and technologies in the delivery of primary health care. The World Health Assembly has also called member states to integrate TCIH into national healthcare systems, providing the base for the development of international frameworks such as the World Health Organization's Traditional Medicine Strategy, the framework on integrated, people-centred health services and self-health care, among others. The inclusion of TCIH of international agreements governing public health is significant, however member states have noted difficulties in implementation and insufficient guidance to assist appropriate integration of TCIH into their national health services, while ensuring its quality, safety and efficacy. This is compounded by the fact that to date there has been little attention on developing a public health agenda around TCIH. TCIH holds many potential challenges and opportunities for addressing current and future public health concerns at local, regional and global levels. This workshop will facilitate an inclusive debate amongst all participants regarding the necessity and benefits of advancing a critical public health agenda focused upon TCIH. Maximizing the potential of TCIH approaches, minimizing risks, and understanding how they can synergistically intersect with biomedical perspectives is required to ensure the sustainability of health systems and the achievement of the Astana Declaration's goals and SDG Goal 3. The workshop will follow an innovative mix of brief introductory presentations and town-hall style discussions/Q & A format whereby presenters will introduce brief overviews of multi-disciplinary perspectives upon this topic on issues such as recognition and regulation of traditional knowledge, medical pluralism, regional perspectives from Africa and Latin America, and Indigenous and migrant health perspectives. Participants will be able to question and discuss the various disciplinary perspectives, opportunities and next steps for the public health agenda of TCIH.

**Objectives:** The workshop aims to help instigate and advance critical public health thinking around TCIH, how it can contribute to our understanding of pressing global health challenges, and how issues of TCIH safety, quality, equity and effectiveness can be addressed. Workshop participants will have learned the essential features

of a critical public health approach to TCIH as well as being introduced to the fundamental issues, opportunities and challenges of investigating this topic at the local, national, regional, and global levels.

Key questions: \* What are the key and emerging areas of focus for developing a critical public health agenda on TCIH for health promotion and maintenance, disease management, and rehabilitation that manifest? \* What multidisciplinary approaches and multilevel collaborations are needed to achieve a critical public health agenda for TCIH? \* What collaborative platforms, such as the creation of a TCIH Working Group at the WFPHA, are fundamental to advance a global critical public health agenda, facilitate dialogue, exchanges, and collaboration among stakeholders of the several world regions to ensure safety, quality and efficacy when integrating TCIH?

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### Plumbing poverty, plumbing violence: water security, gender based violence, and SDG 6

Susan Elliott<sup>1</sup>, Abraham Nunbogu<sup>2</sup>, Maurice Dogoli<sup>3</sup>

<sup>1</sup>Department of Geography & Environmental Management, University of Waterloo, Canada, <sup>2</sup>Department of Geography and Environmental Management, University of Waterloo, Canada, <sup>3</sup>Department of Geography and Environmental Management, University of Waterloo, Waterloo, Canada

This paper asserts achieving health and wellbeing for all by 2030 (SDG 3) is not possible without first attaining universal access to safe water and adequate sanitation (SDG 6) and neither is possible without SDG 5 (empowering women). Access to water, sanitation, and hygiene (WaSH) is recognized as an important pathway to health and wellbeing. Despite progress made in Low-and Middle-Income Countries (LMICs), inequities exist across space and place. Furthermore, inequalities in WaSH access heighten women's vulnerability to violence when meeting their WaSH needs. Several methods were used to address this research problem (international document review; systematic literature review; in-depth interviews with immigrants to Canada from Ghana - one of the poorest and water stressed areas of sub-Saharan Africa - to explore perceptions of WaSH experiences over the lifecourse). The policy review revealed virtually no mentions of protection of women and girls from GBV in the context of water security. The systematic review of the literature informed a taxonomy of four types of GBV related to water security: physical, sexual, psychosocial and structural. The interview Results revealed participants' perceptions and experiences of water-related GBV are socially and context-dependent, organized around the four dimensions of water-related violence. These dimensions are not mutually exclusive and are experienced through multiple scales of gender and power relations from the household to the community level. These relationalities are important determinants of WaSH inequities and influence the extent to which women's bodies are subjected to violence or protected from it. Expressions of violence in the search for adequate WaSH represents a significant barrier to achieving the Sustainable Development Goals. The global community of WaSH practitioners, policymakers, and public health actors has yet to adequately address women's vulnerability; there is much work to be done across all spatial scales, from the local to the global.

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### Effectiveness of household measures for the disinfection of water for human consumption in the context of Santarém, Pará, Amazônia, Brazil

Marina Meschede<sup>1</sup>, Francisca Jesus<sup>2</sup>, Valéria Bentes<sup>2</sup>, Susana Segura-Muñoz<sup>3</sup>

<sup>1</sup>Institute for Collective Health, Western Pará Federal University, Brazil, <sup>2</sup>Western Pará Federal University, Brazil, <sup>3</sup>Maternal-Child and Public Health Department, Ribeirão Preto College of Nursing, University of São Paulo, Brazil

Background: In the Amazon region, cities like Santarém, state of Pará, still lack water treatment plants to serve the entire population. In these cities, the water is collected from wells and distributed to the population without treatment. There are also places where the drinking water comes from the Tapajós River on the surface. In this context, disinfection measures for domestic water are important to preserve its potability and avoid undesirable health effects.

Objective: The present study experimentally evaluated the effect of household measures on the elimination of *Escherichia coli* (E.coli) in water samples. The techniques evaluated for this work were: (i) 2.5% sodium hypochlorite; (ii) boiling; (iii) ceramic filter and (iv) sun exposure. The samples were tested, combining different concentrations of E.coli (between 03 and 100 colony forming units/100 mL).

Results: The results showed that the household disinfection measures were effective in eliminating E.coli, with the exception of the ceramic filter, where even after filtration, the water samples were positive for E.coli growth.

Conclusions: Considering that the distribution of treated water does not reach the majority of the population living in Santarém and also in peri-urban areas such as quilombos and riverside communities, the use of measures such as 2.5% sodium hypochlorite, boiling and sun exposure can favor health promotion and decrease the occurrence of outbreaks of waterborne diarrheal diseases.

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### What happened to the M.chimaera contamination of the heater cooler units? An underestimate risk

Benedetta Tuvò<sup>1</sup>, Tommaso Cosci<sup>1</sup>, Sara Bracaloni<sup>1</sup>, Martina Ioppolo<sup>1</sup>, Giulia Gemignani<sup>2</sup>, Maurizio Petrillo<sup>3</sup>, Michele Guarino<sup>4</sup>, Sara Semplice<sup>5</sup>, Beatrice Casini<sup>1</sup>

<sup>1</sup>Department of Translational Research, N.T.M.S., University of Pisa, Pisa, Italy, <sup>2</sup>Medical Direction, University Hospital of Pisa, Italy, <sup>3</sup>Fondazione Toscana "Gabriele Monasterio", Massa, Italy, <sup>4</sup>Unit of Clinical Perfusion, Fondazione Toscana "Gabriele Monasterio", Italy, <sup>5</sup>Unit of Clinical Perfusion, University Hospital of Pisa, Italy

Background: A global outbreak of invasive *Mycobacterium chimaera* infections has occurred since 2015 in patients undergoing open chest cardiac surgery. Currently, 15 cases has been reported in Italy. The Ministry of Health issued in 2019, the document contain the recommendations for the prevention of M.chimaera infection, including clinical surveillance and microbiological monitoring of HCUs. In Decree 3822/2019, the Tuscany Region issued recommendations for microbiological surveillance by applying both the cultural and biomolecular methods in order to detect early contamination by M. chimaera

Aim: verify the use of a PMA-Real-Time PCR technique, to assess the efficacy of the disinfection procedure applied to the HCUs and to evaluate the presence of viable but non-culturable state of M.chimaera after water treatment.

Methods: In two Tuscan cardiac surgery centers, water samples collected from HCUs were analyzed according to the regional protocol. All samples were treated by BLU-V Viability PMA kit (Qiagen Germantown, MD, USA), according to manufacture instruction. The extraction and Real-Time was performed using QIAamp DNA Mini Kit a QuantiNova PCR kit (Qiagen), respectively, to amplify a sequence of the ITS1 region.

Results: From November 2018 to July 2019, 24 HCUs were monthly sampled (n.11 3T and n.3 1T LivaNova, n.1 TCM-Sarns Terumo and n.9 HCU40 Maquet) for a total of 82 samples. M.chimaera was detected in 12/82 (15%) (strain CP015272.1). From 2020-2022, with the replacement of all HCUs Livanova with HCUs Maquet, 100% (102/102) of the samples resulted negative by culture method, but 20.5% (21/102) of which were positive by PMA-Real Time PCR.

Conclusions: The presence of VBNC state in disinfected HCUs Results in an overestimation of the disinfection efficacy and the resuscitation/regrowth of the VBNC in the HCU water system could further increase the infection risks in patients undergoing open chest cardiac surgery.

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### The shape of water - preliminary data from a cluster of patients infected by *Mycobacterium saskatchewanense* in Haemodialysis setting in Emilia-Romagna, Northern Italy

Eleonora Ferrari<sup>1</sup>, Elena Vecchi<sup>2</sup>, Giovanna Mattei<sup>2</sup>, Gian Belloli<sup>3</sup>, Giuseppe Diegoli<sup>3</sup>, Paola Monte<sup>4</sup>, Antonio Santoro<sup>5</sup>, Alessandra Palma<sup>4</sup>, Nicola Amadori<sup>6</sup>, Patrizia Falcone<sup>7</sup>, Melania Patuelli<sup>7</sup>, Lucia Palandri<sup>8</sup>, Marco Vinceti<sup>1</sup>, Elena Righi<sup>1</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neurological Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>Collective Prevention and Public Health Sector, Directorate General for Personal Care, Health and Welfare, Emilia-Romagna Region, Italy, <sup>3</sup>Emilia-Romagna Region, Collective Prevention and Public Health Sector, Directorate General for Personal Care, Health and Welfare, <sup>4</sup>Policlinico di Sant'Orsola, Bologna University Hospital (IRCCS), Italy, <sup>5</sup>University of Bologna, Italy, <sup>6</sup>Directorate General for Personal Care, Health and Welfare, Collective Prevention and Public Health Sector, Emilia-Romagna Region, Italy, <sup>7</sup>Directorate General for Personal Care, Health and Welfare, Emilia-Romagna Region, Italy, <sup>8</sup>University of Modena and Reggio-Emilia, Italy

Background and Objective: Nontuberculous mycobacteria (NTM) are common environmental contaminants and, as opportunistic pathogens, they can colonize/infect immunocompromised patients. Our work Aims to report the

main features of a cluster of haemodialysis patients infected by *Mycobacterium saskatchewanense*, and to describe the infection prevention and control (IPC) strategies implemented accordingly.

**Methods:** We conducted a descriptive analysis of data coming from the infectious diseases data stream of the Emilia-Romagna Region. Spectrometric and DNA-sequencing analyses in ultrafiltered liquid were done in the regional reference laboratory, while blood cultures were performed in the local hospital laboratory.

**Results:** Between 04/01/2022 and 18/07/2022, a cluster of 6 patients (3 males and 3 females, median age 63.5 years) with positive blood culture for *Mycobacterium saskatchewanense* was reported in two HUB hospitals of the Region Emilia-Romagna, Northern Italy. All patients underwent online haemodiafiltration before the symptom's onset; water samples from the dialysis machines' ultrafilters also tested positive. The key clinical features reported were varied, including weight loss, asthenia, gastrointestinal symptoms, cough, night sweats, recurrent fever of unknown origin. In addition, common Findings were cytopenia, increased blood levels of systemic inflammation markers, splenomegaly, osteo-medullary granulomas, and pulmonary pathologic imaging.

**Conclusions:** The application of the best IPC strategies (clinical and environmental surveillance, switch to traditional haemodialysis and heat disinfection...) is currently supervised by a regional interdisciplinary team, and preliminary data indicate positive outcomes. As a precaution, considering the extreme fragility of haemodialysis patients, a constant epidemiological monitoring based on clinical and diagnostic criteria is still in place, and regular environmental sampling is being performed.

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### The water safety plan for the control and prevention of waterborne diseases in a hospital of Southern of Italy

Valentina Spagnuolo<sup>1</sup>, Valentina Spagnuolo<sup>1</sup>, Osvalda Giglio<sup>2</sup>, Marilena D'Ambrosio<sup>1</sup>, Carla Leone<sup>3</sup>, Maria Caringella<sup>3</sup>, Fabrizio Fasano<sup>2</sup>, Francesca Apollonio<sup>2</sup>, Francesco Lisena<sup>4</sup>, Anna Minicucci<sup>4</sup>, Enrico Veschetti<sup>5</sup>, Lucia Bonadonna<sup>5</sup>, Luca Lucentini<sup>5</sup>, Maria Montagna<sup>2</sup>

<sup>1</sup>Department of Precision and Regenerative Medicine and Ionian Area (DiMePRe-J), University of Bari Aldo Moro, Italy, <sup>2</sup>Interdisciplinary Department of Medicine, University of Bari Aldo Moro, Italy, <sup>3</sup>U.O.C Hygiene - Environmental and Food Hygiene Laboratory, Bari Policlinico University Hospital, Italy, <sup>4</sup>Health General Management, A.O.U. Policlinico of Bari, Italy, <sup>5</sup>Department of Environment and Health, Istituto Superiore di Sanità (ISS), Rome, Italy

**Background and Objective:** Water Safety Plan (WSP), introduced by the WHO in 2004, represents an integrated approach and a control system based on site-specific risk analysis extended to entire water chain. It marks a fundamental step to improve the quality of water and protect human health according to the new Directive (EU) 2020/2184 on the quality of water intended for human consumption. The aim of our study was implementing a WSP in order to guarantee safety and good water quality in the internal distribution networks of the biggest University hospital in the Apulia region (Southern Italy).

**Methods:** From January 2020 to March 2022, a microbiological monitoring programme was carried out in the water network (hot and cold water) of two hospital pavilions (A and B). Overall, a total of 3.677 water samples was analyzed for *Legionella pneumophila* and *Pseudomonas aeruginosa* detection. The results were compared with those obtained before, during and after the WSP implementation.

**Results:** The verification monitoring revealed a progressive increasing of compliant samples for *Legionella pneumophila* from 76.6 up to 99.5% and from 66.4 up to 98.9% for Pavilion A and B respectively. After the water system renewal, the number of positive samples for *Pseudomonas aeruginosa* increased from 3.6% to 13.6% and from 3.1 to 48.7% for Pavilions A and B, respectively, with a load higher than the initial one. This contamination was totally removed by local treatments of the internal water distribution system.

**Conclusions:** In both pavilions, the WSP brought to a reduction of *Legionella pneumophila* risk, thanks to the control measures adopted, removal of dead branches and constant flushing at terminal points. The presence of *Pseudomonas aeruginosa* was probably caused by the manipulation of water network and the detachment of the biofilm, removed subsequently by hyperchlorination and flushing treatments at the water terminal outlet points.

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### India's achievement towards sustainable development goal 6 (Ensure Availability and Sustainable Management of Water and

### Sanitation for All) in the 2030 agenda

Sourav Biswas<sup>1</sup>, Sourav Biswas<sup>2</sup>, Biswajit Dandapat<sup>3</sup>, Asrafal Alam<sup>4</sup>, Lakshminarayan Satpati<sup>4</sup>

<sup>1</sup>International Institute for Population Sciences India, <sup>2</sup>International Institute for Population Sciences Govandi Station Road, Deonar, Mumbai, Maharashtra 400088 India, <sup>3</sup>Ravenshaw University, <sup>4</sup>University of Calcutta India

**Background:** Clean water and sanitation are global public health issues. Safe drinking water and sanitation are essential, especially for children, to prevent acute and chronic illness death and sustain a healthy life. The UN General Assembly announced the 17 Sustainable Development Goals (SDGs) and 169 targets for the 2030 Agenda on 25 September 2015. SDG 6 is very important because it affects other SDG (1, 2, 3, 5, 11, 14 and 15). The present study deals with the national and state-wise analysis of the current status and to access deficiency of India's achievement towards SDG 6 (clean water and sanitation for all) for the 2030 agenda based on targets 6.1, 6.2, 6.4, 6.6 from 2012 to 2020.

**Materials and Methods:** Data of different indicators of SDG 6 are collected from different secondary sources - NSS 69th (2012) and 76th (2018) round; CGWB annual report 2018-2019 and 2016-2017; NARSS (2019-20); SBM-Grameen (2020). To understand overall achievement towards SDG 6 in the 2030 agenda, the goal score (arithmetic mean of normalised value) has been calculated.

**Major Findings**

According to NSS data, 88.7% of Indian households had enough drinking water from primary drinking water sources throughout the year, while 79.8% of households had access to toilet facilities in 2018. As per the 2019-2021 goal score for States and UTs in rural India based on SDG 6 indicator, SDG 6 achiever States and UTs (100%) are Sikkim, Himachal Pradesh, Andaman and Nicobar Islands.

**Conclusion:** Drinking water and sanitation for all ensure a healthy life. It is a matter of concern for the government, policymakers, and people to improve the condition where the goal score and indicator value of SDG 6 are low.

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### Healthcare associated infections in a neonatal intensive care unit before and during COVID-19

Antonio Sciurti<sup>1</sup>, Mariateresa Ceparano<sup>1</sup>, Antonio Sciurti<sup>1</sup>, Claudia Isonne<sup>1</sup>, Valentina Baccolini<sup>1</sup>, Giuseppe Migliara<sup>1</sup>, Maria De Blasis<sup>1</sup>, Valentin Imeshtari<sup>1</sup>, Vincenzo Cammalleri<sup>1</sup>, Alessandra Romano<sup>1</sup>, Rosa Bellomo<sup>1</sup>, Maria Assunta Donato<sup>1</sup>, Carolina Marzuillo<sup>1</sup>, Fabio Natale<sup>1</sup>, Gianluca Terrin<sup>1</sup>, Paolo Villari<sup>1</sup>

<sup>1</sup>Sapienza University of Rome Department of Public Health and Infectious Diseases Piazzale Aldo Moro 5, 00185 Rome Italy

**Background and Objective:** Healthcare-associated infections (HAIs) are a frequent complication in neonatal intensive care units (NICUs). Hospital policies caused by COVID-19 pandemic may have played a role in HAIs development. The aim of this study was to describe and characterize over time the occurrence of HAIs in a NICU at the Policlinico Umberto I in Rome both before and during the COVID-19 pandemic.

**Methods:** All infants of all birth weight (BW) classes with > 2 days in the NICU, admitted from January 2018 to December 2021, were included. To assess the effect of the pandemic, we compared surveillance data from 2018-2019 with those from 2020-2021. Infections were defined using standard Centers for Disease Control and Prevention definitions.

**Results:** We included 513 infants, 274 admitted in 2018-2019 and 239 between 2020-2021. NICU stay in days was similar in the two periods (14.4 and 15.3 respectively) but the number of patients who died in 2018-2019 (N=13) was almost double that of 2020-2021 (N=7). Overall 27 infections were recorded in the post-pandemic period compared to 9 recorded in the previous period, mainly central line-associated bloodstream infections (7' vs 3.0', p=0.043), followed by ventilator-associated pneumonias (3.0' vs 0.4', p=0.019). The incidence density of device-associated infections was higher in patients with lower BW class in both periods analyzed. Multivariable analysis showed that the year of hospitalization, 2020 and 2021, respectively, was the main risk factor associated with the occurrence of an HAI episode in the NICU (2020, aHR: 9.21, 95' CI: 1.41-60.41; 2021, aHR: 9.30, 95' CI: 1.45-59.53).

**Conclusion:** Results indicate that patient management may have influenced the occurrence of HAIs during the pandemic. This reinforces the importance of the HAI surveillance protocol in the NICU, which monitors microbiologic isolates and medical device use for all BW classes of infants.

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### Identification and management of a toxic anterior segment syndrome hospital cluster

Dario Olobardi<sup>1</sup>, Dario Olobardi<sup>1</sup>, Francesca Butera<sup>1</sup>, Marisa Alberti<sup>1</sup>, Marinella Fulgheri<sup>1</sup>, Isabella Degirolamo<sup>1</sup>, Marina Scabini<sup>1</sup>, Francesco Calcagno<sup>1</sup>, Maria Cristina<sup>2</sup>, Gaddo Flego<sup>1</sup>

<sup>1</sup>Ospedale Evangelico Internazionale, Italy, <sup>2</sup>Unige - DISSAL, Italy

**Background and Objective:** Toxic anterior segment syndrome (TASS) is a sterile inflammatory syndrome with uncertain etiology, following cataract surgery. From October to December 2021 we observed a TASS cluster in our eye surgery department.

To prevent further cases and understand the cause, a multi-level intervention was planned, based on environmental hygiene monitoring, personnel reeducation and a checklist-based data collection, investigating the major variables of the procedure.

**Methods:** Both data from the checklist and medical records were gathered. A case-control statistical analysis, searching for significant correlations between variables and the subsequent onset of TASS cases, was carried out by calculating the binary logistic regression, using IBM SPSS on the data thus obtained. A p-value < 0.05 was accepted as significant.

**Results:** All environmental monitoring, including surfaces and climatic variables such as air temperature, humidity, airflow and air exchange, fell within the range of the normative standards.

Between cases (17) and controls, 131 records were consulted. The variables related to operators and patients showed no correlations with the onset of TASS, whilst, among the instrumental and procedural variables, the logistic regression highlighted the use of an enzymatic detergent in the sterilization procedure as the main risk factor (aOR= 9.47; 95% IC 1.06 – 84.28)

**Conclusion:** Following this analysis, the enzymatic detergent was removed from the surgical tools sterilization process. One year later, no other cases of TASS were registered alongside no ocular infections following the procedure.

The limited sample size and the need to find a quick solution for the cluster are the main issues of the study, since the multiple levels of intervention may have had overlapping effects. On the other hand, this can prove the effectiveness of a real-world, evidence-based, multi-level approach and give further evidence on this syndrome management.

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### Artificial intelligence vs conventional models to predict risk contamination of Legionella in the water network of an Italian hospital pavilion

Osvalda De Giglio<sup>1</sup>, Marilena D'Ambrosio<sup>2</sup>, Valentina Spagnuolo<sup>3</sup>, Fabrizio Fasano<sup>4</sup>, Carla Leone<sup>5</sup>, Maria Caringella<sup>6</sup>, Marco Lopuzzo<sup>3</sup>, Francesco Lisena<sup>7</sup>, Anna Minicucci<sup>7</sup>, Maria Montagna<sup>4</sup>

<sup>1</sup>University of Bari Aldo Moro, Bari, Italy, <sup>2</sup>Interdisciplinary Department of Medicine, University of Bari Aldo Moro Piazza G. Cesare 11, 70124 Bari, Italy., <sup>3</sup>University of Bari Aldo Moro, Bari, Italy, Department of Precision and Regenerative Medicine and Ionian Area (DiMePRE-J), Italy, <sup>4</sup>University of Bari Aldo Moro, Bari, Italy, Interdisciplinary Department of Medicine, University of Bari Aldo Moro, Italy, <sup>5</sup>A.O.U Policlinico of Bari, Italy, <sup>6</sup>A.O.U Policlinico of Bari, Italy, U.O.C Hygiene - Environmental and Food Hygiene Laboratory, Bari Policlinico University Hospital, Italy, <sup>7</sup>A.O.U Policlinico of Bari, Italy, Health General Management, Bari Policlinico University Hospital, Italy

**Background and Objective:** Periodic monitoring of Legionella in hospital water network allows to take preventive actions to be taken to avoid legionellosis risk of patients and health professionals. The aim of study was to verify the effectiveness of innovative vs conventional model to predict Legionella contamination risk in a hospital water supply.

**Methods:** In the period February 2021- October 2022, water samplings for Legionella spp were carried out in the rooms of a hospital pavilion (89.9%), located in Apulia region, southern Italy. Fifty-six different parameters regarding structural aspects, water supply points, network maintenance, sampling method, atmospheric temperature were collected. Machine learning and Poisson regression models were tested, in order to predict water network contamination by Legionella. Models were built with 70% of the dataset and tested with the remaining 30%, evaluating accuracy, sensitivity and specificity. All models have been developed with R program.

**Results:** Overall, 1,053 water samples were analysed and 57 (5.4%) resulted positive for Legionella. Among different tested machine learning models, the most efficient had an input layer (56 neurons), a hidden layer (30 neurons), and an output layer (2 neurons). The accuracy was 93.4%, sensitivity 43.8%, and specificity 96%.

Regression model had accuracy 82.9%, sensitivity 20.3% and specificity 97.3%. Combination of the models resulted in 79.1% accuracy, 22.4% sensitivity, 98.4% specificity. The combination models included 79% of the "really" positive samples in prediction of Legionella presence. The most important parameters influencing the model resulted: type of water network (hot/cold), replacement of valve filters and atmospheric temperature.

**Conclusion:** Tested models gave excellent results of accuracy and specificity, with low sensitivity. The combination of models have a good reliability in setting controls of the hospital water network. Future studies are required to extend the dataset including analysis in other pavilions of the hospital, in order to improving model's performance.

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### Outbreak of omphalitis cases in new-borns in a tertiary hospital in Madrid. Epidemiological multiple case study

Marta Russo Sanjuanbenito<sup>1</sup>, Marta Russo Sanjuanbenito<sup>1</sup>, Yolanda Fuentes Rodriguez<sup>1</sup>, Beatriz Pelaez Ros<sup>1</sup>, Jose Mariano Lazaro<sup>1</sup>

<sup>1</sup>Hospital Clínico San Carlos, Spain

**Background objective**

On the 17/10/22, the Neonatology Service alerted the Preventive Medicine Service of a subjective increase in cases of omphalitis in new-borns since the beginning of September. An epidemiological investigation was carried out to confirm the existence of an epidemic outbreak, determining the risk factors and indicating control measures.

**Methods:** The cumulative incidence of omphalitis during the epidemic period (September-October 2022) was compared with that of the same period in 2021 (control period). A descriptive study of the cases, a hygienic review and an environmental microbiological study (equipment, antiseptics, surfaces, water) including hand-prints were carried out.

**Results:** The incidence of omphalitis in the epidemic period (5.6% IC: 2.28%-11.2%, 7 cases) was higher than the incidence in developed countries (0.7%), detecting a statistically significant difference (p-value 0.004) with that observed during the control period (0.45% IC: 0.01%-2.5%, 1 case).

All cases occurred in new-borns without perinatal risk factors for omphalitis and during the first 6 days from birth. The most frequently isolated microorganisms were faecal and urinary flora.

During the epidemic period there were no changes in techniques, antiseptics, procedures, equipment, materials, personnel, infrastructure and organization of the Obstetrics Service except for the use of a new model of diaper.

Incorrect hand-prints sample amounted to 19 (95% IC: 75.1%-99.9%) while there were 76 correct environmental samples (88.6% IC: 79.7%-94.3%).

No new cases were registered since the hygienic education carried out to correct the detected deficits.

**Conclusion:** Our research suggests that poor adherence to hand hygiene protocols and inappropriate use of the new diaper may have contributed to an increased incidence of nosocomial omphalitis.

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### A new efficient antibacterial nanohybrid obtained by direct conjugation of titania and silver nanoparticles

Francesca Ubaldi<sup>1</sup>, Ilaria Fratoddi<sup>2</sup>, Martina Mercurio<sup>2</sup>, Farid Hajareh Haghighi<sup>2</sup>, Giusy Lofrano<sup>1</sup>, Sara Cerra<sup>2</sup>, Federica Valeriani<sup>1</sup>, Vincenzo Romano Spica<sup>1</sup>

<sup>1</sup>Department of Movement, Health and Human Sciences, University of Rome "Foro Italico", Italy, <sup>2</sup>Department of Chemistry, Sapienza University, Rome, Italy. Italy

**Background and Objective:** The COVID-19 pandemic highlighted the urgent need to find sustainable systems for disinfection, reducing biocides pollution. Titania nanoparticles (TiO<sub>2</sub>NPs) and their hybrids with inorganic metals, such as silver, revealed antimicrobial activity. TiO<sub>2</sub>NPs are excellent candidates against bacteria due to their photocatalytic properties: reactive oxygen species are generated in the presence of light. Silver nanoparticles (AgNPs) lead disinfection by releasing Ag<sup>+</sup> ions. In the present work, a new nanohybrid through TiO<sub>2</sub>NPs-AgNPs conjugation was obtained and studied as a combined and synergic antibacterial nano-platform. With this aim, at first, 50 nm TiO<sub>2</sub>NPs were functionalised with a bifunctional linker, (3-mercaptopropyl)trimethoxysilane (TiO<sub>2</sub>NPs-MPTMS), through Ti-O-Si bond; subsequently, AgNPs-3MPS (3-mercaptopropyl-propanesulfonate) were prepared in situ and directly attached to the free -SH groups of TiO<sub>2</sub>NPs-MPTMS surface to form the final TiO<sub>2</sub>NPs-MPTMS-AgNPs-3MPS nanohybrid.

**Materials and Methods:** In vitro, antibacterial properties of TiO<sub>2</sub>NPs-MPTMS@

AgNPs-3MPS were performed under controlled conditions on a gram-negative bacterium, *Escherichia coli* (105 CFU/mL), and a gram-positive one, *Staphylococcus aureus* (104 CFU/mL), exposed for 25 minutes in the presence of visible light and in the dark.

Results: Spectroscopic and morphology characterisations demonstrated the successful silanisation of commercial TiO<sub>2</sub>NPs and AgNPs decoration, supporting their coating on different materials. The synthesized nanohybrids stability, size, morphology, and chemical composition were also demonstrated. In vitro, studies on TiO<sub>2</sub>NPs showed over 70% reduction in bacterial load. TiO<sub>2</sub>NPs-AgNPs showed over 99.9% reduction (p=0.05) for both strains, even at a 3 logs dilution of the compounds and regardless of light.

Conclusions: Photocatalytic systems based on the combination of TiO<sub>2</sub>NPs with noble metals represent a novel strategy to generate matrices or surfaces with an antimicrobial activity enhanced by light without the need for biocides accumulation. The preliminary results by using TiO<sub>2</sub>NPs-AgNPs are promising and support further studies to evaluate and optimize kinetics at catalyst desirable concentrations.

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### Healthcare personnel compliance with World Health Organization five moments of hand-hygiene at the university hospital of Modena in 2022

Alessandro Poggi<sup>1</sup>, Giuseppe Brancato<sup>2</sup>, Giliola Bianchini<sup>3</sup>, Michela Di Nuovo<sup>3</sup>, Enrico Ricchizzi<sup>2</sup>, Patrizia Scannavini<sup>3</sup>, Patrizia Albinelli<sup>3</sup>, Stefania Paduano<sup>1</sup>, Annalisa Bargellini<sup>1</sup>, Loretta Casolari<sup>3</sup>, Ottavio Nicastrò<sup>3</sup>

<sup>1</sup>University of Modena and Reggio Emilia Italy, <sup>2</sup>University Hospital of Modena, <sup>3</sup>University Hospital of Modena Italy

Background and Objective: A higher compliance of healthcare personnel with hand-hygiene corresponds to a lower incidence of nosocomial infections. Since 2013, the Hospital Hygiene Service of the University Hospital of Modena (Modena Polyclinic and Baggiovara Hospital) has developed the "Hand-Hygiene Project": observation at time 0, room training, on-field feedback, data return. The aim of the study was to carry out a standardized observation of the healthcare personnel's compliance with WHO Five Moments of Hand-Hygiene in the University Hospital of Modena in 2022.

Methods: Adherence to hand-hygiene (4 categories per WHO-moment: "1-rub" and "2-wash": correctly rubbing hands with hydroalcoholic gel or washing with soap and water; "3-incorrect use of gloves" or "4-none", the operator does not sanitize his hands) was assessed collecting the data in the WHO survey forms and recording it on the regional MAppER platform. Observations were conducted on 219 physicians (89 trainees), 303 nurses/midwives and 110 nursing assistants in 13 wards between 24-3-2022 and 30-11-2022.

Results: Out of a total of 4097 WHO moments observed, hand-hygiene compliance was found to be 69.7%. Adherence to moments 1, 2, 3, 4, 5 was respectively 61%, 60%, 74%, 80% and 70%. Overall adherence was 66.2% for doctors (out of 1194 observations), 71.6% for nurses/obstetricians (2229), 69.7% for nursing assistants (669). Adherence was 94.9% in the Intensive Care Unit (ICU), 84.7% in pediatric wards and 74.8% in medical wards. With the project, participation has increased from 54% to 80% in the Baggiovara Hospital and from 36% to 73% at the Modena Polyclinic.

Conclusions: Adherence to hand-hygiene was good, rather uniform among healthcare professionals (doctors were slightly lower-rated) and clearly growing with the adoption of the "Hand Hygiene Project". The extraordinary adherence observed in the ICU is also related to a previous project involving a focused training of four operators per ward.

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### Enhanced terminal disinfection of high touch surfaces in hospital critical settings using an automated UV-C emitting device

Alessandro Daole<sup>1</sup>, Benedetta Tuvo<sup>1</sup>, Michele Totaro<sup>1</sup>, Federica Badalucco<sup>1</sup>, Federico Vannini<sup>1</sup>, Beatrice Casini<sup>1</sup>, Angelo Baggiani<sup>1</sup>

<sup>1</sup>Department of Translational Research and the New Technologies in Medicine and Surgery, University of Pisa (Italy) Italy

Background and Objective: Healthcare-associated infection (HAI) is a major global issue for patient safety and public health. The role of environmental contamination (especially high-touch surfaces) is well established and there are strong recommendations to improve cleaning and disinfection protocols, considering the utilization of no-touch automated systems. The study evaluated the effectiveness of an automated mobile UV-C radiation device to reduce environmental contamination in addition to standard protocols in critical settings.

Methods: A 2-month prospective cross-over study was performed at the Cardiovascular and Thoracic Surgery ward of Pisa teaching hospital (Italy) from April 14th to June 16th 2021. 160 high-touch surfaces were sampled for total microbial load three times: before and after performing standard cleaning and disinfecting protocol and after UV-C treatment in 2 Surgery rooms (Sr), 1 ICU room (ICUr) and 1 Patient room (Pr) occupied by 1 patient colonized by carbapenemase-producing *Klebsiella pneumoniae*.

Results: After Standard Protocol we observed a reduction of the number of contaminated surfaces (Sr: -25%, ICUr: -12%; Pr: -5%) and a reduction of the mean microbial load (Sr: -45%, ICUr: -63%) except for Pr (+130%).

After UV-C treatment, the number of contaminated surfaces (Sr: -66%, ICUr: -75%, Pr: -100%) and the mean microbial load (Sr: -83%, ICUr: -86%, Pr: -100%) decreased further in every setting.

The 95% of surfaces received a dose >200 mJ/cm<sup>2</sup>, the rest received a dose >50 mJ/cm<sup>2</sup>.

Globally, standard protocol in association with UV-C treatment reduced the number of contaminated surfaces (Sr: -74%, ICUr: -78%; Pr: -100%) and the mean microbial load (Sr: -91%, ICUr: -95%, Pr: -100%).

The pair-matched analysis data using Sign test showed a relevant reduction of microbial load after UV-C treatment (p<0,0005).

Conclusion: UV-C confirmed its effectiveness in reducing microbial contamination on high-touch surfaces and could represent a valid method to improve cleaning and disinfecting protocols.

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### Evaluation of correct hand hygiene for preventing healthcare associated infections: A study among healthcare workers at A.O.R.N. cardarelli

Flora Ascione<sup>1</sup>, Raffaele Sarnelli<sup>2</sup>, Annalisa Napoli<sup>3</sup>, Marco Livigni<sup>4</sup>, Filippina Onofaro<sup>5</sup>

<sup>1</sup>AORN Cardarelli Italy Gaetano D'Onofrio A.O.R.N. Cardarelli Italy, <sup>2</sup>Università degli Studi della Campania "Luigi Vanvitelli" Via S.M. Costantinopoli n. 104, Napoli Italy, <sup>3</sup>Università degli Studi della Campania "Luigi Vanvitelli"

Via S.M. Costantinopoli 104, Napoli Italy, <sup>4</sup>Università degli Studi della Campania "Luigi Vanvitelli" Dipartimento di Medicina Sperimentale Via S.M. Costantinopoli n. 104, Napoli Italy, <sup>5</sup>AORN Cardarelli Italy Maria Pia Mannelli AORN Cardarelli Italy Paola Saturnino AORN Cardarelli Italy

Background and Objective: "World Hand Hygiene Day" focuses attention on the importance of correct hand washing, useful for preventing healthcare associated infections (ICA) and antibiotic resistance. This year the Healthcare Related Infections Committee of the AORN Cardarelli of Naples organized the Day Corporate hand washing, with the aim of verifying the correct procedure with the "pedagogical box" which, through the use of fluorescent gel, allows to evaluate the correct adherence to the procedure.

Methods: The study was carried out between June and October 2022 using an evaluation form self-administered by participants. The questions were asked about socio-demographic information, presence of long and/or painted nails, any jewels worn, quantity of gel taken, rubbing time, disinfected parts (fluorescent) and non (dark). The study population consisted of 463 subjects (medical doctors, nurses and social health operators) in 30 Operating Units of the AORN Cardarelli of Naples. At the end of the training event, material relating to the hands' washing procedure was distributed.

Results: The unsanitized parts were mostly back and thumb. 49% of participants were nurses, 27% has long and lacquered nails, 37% wore bracelets/rings, 90% disinfected within the proper time. Overall only 27% carried out the correct method and management of hands. The majority of participants who have applied the correct method were male, the average age was 50-65 years, most were nurses. According to the WHO the minimum standard of expected consumption is equal to 450 litres/month e at least 20 litres/1000 days of hospitalisation. In the AORN Cardarelli, gel consumption in 2021 was 571 liters per month and 25 litres/1000 days of hospitalization, indicative values for the control of infections.

Conclusion: Public health efforts and education campaigns regarding the importance of hand hygiene are needed to prevent the transmission of infections and contrast antibiotic resistance.

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### The impact of covid-19 pandemic on healthcare associated infections in intensive care units: findings from the spin-uti project

Martina Barchitta<sup>1</sup>, Andrea Maugeri<sup>1</sup>, Giuliana Favara<sup>2</sup>, Roberta Magnano San

Lio<sup>2</sup>, Antonella Agodi<sup>1</sup>, SPIN-UTI network<sup>3</sup>

<sup>1</sup>University of Catania Department GF Ingrassia; GISIO-SItI Italy, <sup>2</sup>University of Catania Department GF Ingrassia Italy, <sup>3</sup>GISIO-SItI Italy

**Background and Objective:** Although Healthcare associated infections (HAIs) pose per se extraordinary burden on Public Health, the impact of COVID-19 on healthcare is still on debate. Here, we aim to describe national trends of HAIs in Intensive Care Units (ICUs) from 2006 to 2021, and to compare clinical characteristics and outcomes of patients with or without COVID-19.

**Methods:** We analyzed personal and clinical data of patients participating to the "Italian Nosocomial Infections Surveillance in Intensive Care Units" (SPIN-UTI) project, who were admitted to Italian ICUs for more than 48 hours. In addition, data about diagnosis, clinical conditions, therapy, treatments and outcomes of COVID-19 patients were collected.

**Results:** On a total of 21523 patients from 2006 to 2021, 3485 (16.2%) presented at least one HAI. Overall, we observed an increasing trend for both the incidence of patients with HAI and the incidence density of HAIs (p-trend<0.001). Compared to the pre-pandemic period, the incidence density of HAIs increased of about 15% in 2020-21, with pneumoniae (PN) that mostly contributed to this increase (from approximately 9 to 13 infections per 1,000 patient days). Moreover, incidence of HAIs was higher in ICUs dedicated to COVID-19 patients (p<0.001), who showed a greater risk of HAIs and death than patients without COVID-19. Accordingly, the mortality in ICU increased and doubled during the pandemic (p-trend<0.001). Notably, co-infected patients had a higher mortality than in those with COVID-19 infection or HAI alone (66.2% and 39.9%, respectively) and those without any infection (23.2%).

**Conclusion:** Our analysis provides useful insight on whether and how the COVID-19 pandemic influenced HAI incidence and death in Italian ICUs, highlighting the need of evaluating the long-term effect of the pandemic.

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### **Persistence of the SARS-CoV-2 virus on the surfaces of CoViD-19 departments before and after sanitization interventions with a) hydrogen peroxide and silver ions b) after nebulization with active chlorine**

Cristina Genovese<sup>1</sup>, Daniele Maisano<sup>2</sup>, Rosaria Cortese<sup>2</sup>, Smeralda D'Amato<sup>2</sup>, Federica Denaro<sup>2</sup>, Giovanna Visalli<sup>2</sup>, Ioselita Giunta<sup>2</sup>, Giuseppe Panto<sup>2</sup>, Antonino Privitera<sup>2</sup>, Roberto Venuto<sup>2</sup>, Caterina Rizzo<sup>2</sup>, Vincenza Fauci<sup>2</sup>, Raffaele Squeri<sup>2</sup>

<sup>1</sup>AOU G.Martino Messina University of Messina Via Consolare Valeria, 1, 98124 Italy, <sup>2</sup>AOU G.Martino Messina Italy

**Background and objective:** Despite the development of effective vaccinations, the SARS-CoV-2 disease continues to have a high impact on society, due to the presence of variant of concerns of which a probable route is the indirect one. It is therefore essential to identify the possible presence of the virus on surfaces, evaluate its environmental persistence and possible ways of elimination. Our aim was to identify the presence of SARS-CoV-RNA on environmental surfaces in non-COVID and COVID wards and its elimination after sanitization with hydrogen peroxide and silver ions or with nebulization of active chlorine, both pre-sanitization and post-sanitization methods.

**Materials and methods**

The sampling was performed with rayon swabs pre-moistened with sterile water on a surface of 25 cm<sup>2</sup> and processed within 24 hours of sampling with the LAMP technique (ICGENE Enbiotech S.r.l.®). Statistical analysis was performed with R software.

**Results:** 114 surfaces were sampled (50% belonged to the healthcare area, 38% were represented by devices and 12% to the remaining area). 67.6% of the samples were carried out on surfaces belonging to CoViD-19 wards. The sampled surfaces were sanitized with a) hydrogen peroxide and silver ions in 23.5% of the cases b) with active chlorine in 76.5% of the cases. They were positive in 44% after nebulization with active chlorine and 0% after nebulization with hydrogen peroxide and silver ions with the finding of a pvalue less than 0.01.

**Conclusions:** SARS-CoV-2 RNA detected by RT-PCR can be found on surfaces from hours to days, depending on the environment and surface type. Despite the finding of this contamination, there aren't specific studies that have directly demonstrated indirect transmission. It remains essential to identify the most appropriate sanitization method to avoid possible transmissions through indirect contact. Nebulization with hydrogen peroxide and silver ions is a valid alternative to classic sanitization.

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### **Resveratrol reverts tolerance and restores susceptibility to chlorhexidine and benzalkonium in gram-negative bacteria, gram-positive bacteria and yeasts**

Antonella Migliaccio<sup>1</sup>, Maria Stabile<sup>2</sup>, Maria Bagattini<sup>1</sup>, Maria Triassi<sup>1</sup>, Rita Berisio<sup>3</sup>, Raffaele Zarrilli<sup>4</sup>

<sup>1</sup>University of Naples "Federico II" Department of Public Health, University of Naples, "Federico II" Via S. Pansini 5, Naples, Italy, <sup>2</sup>University of Naples "Federico II" 2Department of Chemical Sciences, University of Naples, "Federico II" Via Cintia 4, Naples, Italy, <sup>3</sup>Institute of Biostructures and Bioimaging, National Research Council, CNR Naples, Italy; Italy, <sup>4</sup>Eliana De Gregorio

**1. Introduction:** The spread of microorganisms causing health-care associated infection (HAI) is contributed by their intrinsic tolerance to a variety of biocides used as antiseptics or disinfectants. The aim of the study was to: (i) analyze the susceptibility to CHX and BZK biocides in a panel of reference strains and clinical isolates of Gram-negative bacteria, Gram-positive bacteria and yeasts; (ii) identify non-toxic compounds, which can restore susceptibility to CHX and BZK in the above pathogens.

**2. Materials and Methods:** MIC (mg/L) and MBC (mg/L) values of CHX and BZK were determined by a broth microdilution method. In vitro combination studies were carried out using the checkerboard method. The combined effects were determined by calculating the fractional inhibitory concentration (FIC) index.

**Results:** The natural monomeric stilbenoid resveratrol (RV) from 32 to 256 mg/L decreased dose-dependently CHX MIC and MBC in 33 selected strains, while not restored CHX susceptibility in *Klebsiella pneumoniae* ATCC 700603, all *Pseudomonas aeruginosa* and *Candida* spp. strains. RV up to 128 mg/L decreased dose-dependently BZK MIC and MBC, but not restored BZK susceptibility in 3 *Burkholderia* spp., *Enterocobacter cloacae* ATCC 13047, *K. pneumoniae* ATCC 700603, *Stenotrophomonas maltophilia* K279 and all *P. aeruginosa* strains. Furthermore, CHX and BZK combination in the presence of RV at 64 mg/L restored CHX or BZK susceptibility in all strains and showed a synergic in 20 out 21 strains and additive effect in 1 out 21 strains.

**4. Conclusions:** A synergic microbicidal effect was observed when the two biocides were combined with RV in a panel of Gram-negative bacteria, Gram-positive bacteria and yeasts. RV reverts tolerance and restores susceptibility to CHX and BZK in the majority of microorganisms. The combination of RV, CHX and BZK may represent a useful strategy to maintain susceptibility to biocides in several nosocomial pathogens.

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### **Pre-post study on the microbiome profile of a water network treated with hydrogen peroxide in an italian hospital**

Stefania Paduano<sup>1</sup>, Isabella Marchesi<sup>1</sup>, Federica Valeriani<sup>1</sup>, Eugenia Carluccio<sup>2</sup>, Gianluca Gianfranceschi<sup>3</sup>, Giuseppina Frezza<sup>1</sup>, Sara Turchi<sup>1</sup>, Carlo Leo<sup>2</sup>, Vincenzo Spica<sup>3</sup>, Osvaldo Maiorano<sup>4</sup>, Paola Borella<sup>1</sup>, Annalisa Bargellini<sup>1</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>Medical Direction, Hospital "Vito Fazzi", Lecce, Italy, <sup>3</sup>Department of Movement, Human and Health Sciences, Public Health Unit, University of Rome "Foro Italico", Rome, Italy, <sup>4</sup>Medical Directions, ASL Lecce, Italy

**Background and Objectives:** A range of on-site physical and chemical treatments for secondary disinfection have been proposed with the aim of controlling microbial water contamination, differing in effectiveness, application methods (in continuous and shock), costs and management. Each method can modify the composition of the bacterial community of water systems. Nowadays, Bioinformatics and Next Generation Sequencing (NGS) technologies offer high-throughput, rapid and accurate methods of determining all cultivable and non-cultivable bacteria within a water distribution system. Our study aims to characterise the microbial community pre-post introduction of a continuous hydrogen peroxide disinfection system applied in the hot water network of an Italian hospital for Legionella control.

**Methods:** pre-post study is performed. The main building includes 10 blocks fed by the same water plant. Municipal cold water, cold and hot hospital water before treatment and after 1, 6 and 12 months are analysed for microbiome characterization by 16S amplicon sequencing. Here, we present the pre-treatment and post-one-month results.

**Results:** A total of 32 samples was collected: 14 cold water and 18 hot water samples (9 before treatment and 9 after 1 month). Cold water bacterial profiles at genus level did not vary significantly between the two sampling sessions. On the contrary, the hot water profiles differed between pre-treatment and post-one-

month treatment samples. Before treatment the two most abundant genera were *Sphingorhabdus* and *Thermus*, while after one month were *Borphyrobacter* and *Blastomonas*.

**Conclusion:** Determining the microbial profiles of hospital water networks through 16S amplicon sequencing is a promising approach for Public Health. Important strength of our study is the pre-post treatment approach to investigate the possible modifications of bacterial community due to hydrogen peroxide disinfection. Moreover, over time monitoring allows to evaluate microbiome stability in the treated water.

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### Water, sanitation, and behavioral education strategies for neglected infectious diseases in the amazonian indigenous context: a scoping review

Juan Martínez<sup>1</sup>, Sebastian Patiño<sup>2</sup>, Jovana Ocampo<sup>2</sup>, Andres Sierra<sup>2</sup>

<sup>1</sup>Universidad de los Andes Cra 50 N 127 d 19 Colombia, <sup>2</sup>Universidad de los Andes Colombia

**Background:** Neglected infectious diseases (NIDs) are a group of conditions prevalent mainly in tropical areas, where they mostly affect impoverished communities and disproportionately affect women and children. The implementation of strategies for the control of these diseases is too costly for health systems such as the Colombian one. Therefore, empowering indigenous communities in the Amazon could help to improve the control of these diseases in the region.

**Objective:** To identify the different educational and pedagogical strategies that could be implemented in the Amazonian indigenous context to achieve the best results in the teaching of the BEST framework, WASH water, and basic sanitation and diagnosis and treatment of NIDs.

**Methods:** Following PRISMA ScR guidelines, the search was oriented in three competencies: a) Knowledge of the WASH strategy b) Knowledge of the BEST framework c) Appropriate diagnosis and treatment for trachoma, geohelminthiasis and ectoparasites. The protocol was registered in the OSF DOI:10.17605/OSF.IO/Z2XQ9. Five databases were used. The selection criteria were 1) Component related to health education strategies; 2) Indigenous communities; 3) Amazon region; and 4) They were oriented in one of the three related competencies.

**Results:** 8 articles met the inclusion criteria; 2 were referred to the BEST Framework, 4 articles to WASH, and 2 to the diagnosis and treatment of NIDs.

**Conclusion:** There is insufficient information related to educational or pedagogical strategies in the Amazonian indigenous context for the BEST framework, WASH water and basic sanitation, and diagnosis and treatment of IIDs. The educational strategies related to the BEST framework assume the existence of theoretical bases but no practical implications. Concerning WASH, water, and basic sanitation, the most used educational strategy was the talking map and the co-creation of a community newspaper. While concerning the diagnosis and treatment of NIDs there was no related information for the Amazonian indigenous context.

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### Airborne microbiological contamination: are there too many people in operating rooms?

Lorenzo Dragoni<sup>1</sup>, Gabriele Messina<sup>2</sup>, Raffaele Iannaccone<sup>3</sup>, Davide Amodeo<sup>1</sup>, Gabriele Cevenini<sup>1</sup>, Nicola Nante<sup>3</sup>, Maria De Marco<sup>4</sup>

<sup>1</sup>University of Siena Post Graduated School of Public Health, University of Siena, Italy, <sup>2</sup>University of Siena Post Graduated School of Public Health, University of Siena, Italy; <sup>3</sup>Department of Molecular and Developmental Medicine, University of Siena, Italy, <sup>4</sup>University of Siena, <sup>5</sup>Santa Maria alle Scotte Teaching Hospital, Siena, Italy Hygiene and Epidemiology Unit, <sup>6</sup>Santa Maria alle Scotte Teaching Hospital, Siena, Italy

**Background and objective:** Adequate operating room ventilation and air filtration are essential measures to prevent surgical site infections and reduce hospital stays and healthcare expenditures. In addition, the number of operators present and adherence to procedures regarding door opening also have a bearing on the level of air contamination in the room. The aim of our study is to assess how much the number of operators and the opening of doors during surgery affects airborne microbiological contamination.

**Methods:** The data were extrapolated from reports of operational controls conducted in the operating rooms of the Santa Maria Alle Scotte Polyclinic from 2018 to 2021. The number of colonies incubated at 22°C and 36°C, collected with SAS (Surface Air System) samplers, was related by Pearson's linear correlation to the number of operators in the rooms and the number of air changes. T-test was used to assess the difference between the mean of colonies detected with doors

closed and with doors open.

**Results:** The number of colonies incubated at 22°C was correlated only with air changes (R=-0.33; P=0.001). In contrast, those incubated at 36°C were correlated with air changes (R=-0.40; P0.05). In contrast, the difference was statistically significant for those incubated at 36° (P=0.040).

**Conclusion:** The number of operators and the air changes have emerged to be important factors for the contamination of the hospital theatres. Further analysis, including other variables such as the type of ventilation (laminar or turbulent) and pressure gradients (between indoor and outdoor environments), are in progress to better describe the level of contaminations.

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### A case report of 3 saprochaete clavate disseminated infections in hematological patients at irccs ospedale policlinico san martino, genoa, liguria, north-west Italy

Rosa Amato<sup>1</sup>, Rosa Amato<sup>2</sup>, Riccardo Borghesi<sup>2</sup>, Maria Sgariglia<sup>2</sup>, Lucia Massolo<sup>2</sup>, Oriana Ferrante<sup>2</sup>, Angela Battistini<sup>3</sup>, Roberto Ziffero<sup>3</sup>, Sesilja Vyska<sup>4</sup>, Lucia Arata<sup>5</sup>, Andrea Orsi<sup>6</sup>

<sup>1</sup>Dipartimento di Scienze della Salute (DiSSal), University of Genoa, Genoa, Italy Via A. Pastore 1, 16132, Genoa (GE), Italy, <sup>2</sup>Dipartimento di Scienze della Salute (DiSSal), University of Genoa, Genoa, Italy, <sup>3</sup>Hygiene Unit, Ospedale Policlinico San Martino IRCCS Genoa, Genoa, Italy, <sup>4</sup>Risk Management Unit, Ospedale Policlinico San Martino IRCCS Genoa, Genoa, Italy, <sup>5</sup>Medical Direction, Ospedale Policlinico San Martino IRCCS, Genoa, Italy, <sup>6</sup>Dipartimento di Scienze della Salute (DiSSal), University of Genoa, Genoa, Italy; Hygiene Unit, Ospedale Policlinico San Martino IRCCS Genoa, Genoa, Italy, Italy

**Background:** Saprochaete clavate is a rare emerging pathogen causing invasive fungal infections in immunocompromised patients. More than 90% of these infections have been reported in patients with hematological malignancies and are associated with high mortality rates (about 60%) in vulnerable patients. The transmission isn't defined, but the available literature describes orofecal transmission as the most common source of infection (ext. contaminated medical devices, dishes, dairy products). Here we report 3 cases of fungal infections due to *S. clavate*, observed in 3 patients admitted to hematopoietic cell transplantation and cell therapies Unit of IRCCS Ospedale Policlinico San Martino, Genoa, Liguria, north-west Italy, between July and September 2022.

**Methods:** We created an Excel database with positive patients for *S. clavate*: we investigated the clinical characteristics of the subjects, the details of the hospitalization, the transplant date and the date of infection.

**Results:** Three positive cases for *S. clavate* were observed in a 50-day period in three hematological patients (mean age 60), all undergoing allogeneic stem cell transplantation during hospitalization. Two cases tested positive for *S. clavate* in blood culture and died within an average of 9 days of detection. The discharged patient presented positivity only to nasopharyngeal swab. All patients had persistent neutropenia and two of them had been treated with cytarabine and two of them had mucositis. The patients had been treated with micafungin and levofloxacin in the period prior to testing positive. The recovery rooms were single and distant from each other.

**Conclusions:** It's important to investigate the emerging *S. clavate* as healthcare associated infection because of its dangerousness in vulnerable patients, to understand the mechanisms of transmission and infection and to implement interventions that limit its spread. Currently, the available literature is very small; therefore, it's necessary to increase communication among international stakeholders about a pathogen which seems to be emerging as a public health problem.

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### Environmental factors associated with recreational water quality

Johanna Sanchez<sup>1</sup>, Ian Young<sup>2</sup>, Binyam Desta<sup>1</sup>, Cole Heasley<sup>1</sup>, Jordan Tustin<sup>2</sup>

<sup>1</sup>Toronto Metropolitan University Canada, <sup>2</sup>Toronto Metropolitan University

Poor recreational water quality poses a risk of acute gastrointestinal illness (AGI) to beach goers engaging in water activities. Internationally, concentration of *Escherichia coli* (*E. coli*) is regularly monitored to make risk management recommendations about beach water quality conditions. Laboratory processing times results in a delay in the availability of water sample results. As such, decisions about whether to post a beach as safe for swimming are based on previous day data. In Canada, these decisions are made by local public health units. Beach *E. coli* concentrations are influenced by several environmental and climatic factors, which can result in changes to water quality conditions in a short

period. A greater understanding of these factors could assist in timely decision-making processes.

We examined water quality data collected by public health authorities during the recreational bathing season from beaches across Canada, including freshwater beaches in Toronto, Niagara Region, and Manitoba, and marine beaches in Vancouver, and linked environmental data from federal and provincial weather stations. The first objective aimed to determine the environmental predictors of water quality in each region, as indicated by *E. coli* concentration. The second objective used this information to develop predictive models using a novel Bayesian network approach.

Bayesian networks have potential for high predictive power, require few assumptions, can be easily updated, present results in an intuitive format, and could be more cost-effective for routine use by public health and environmental authorities.

This presentation will discuss the environmental factors associated with recreational water quality in the Canadian setting and present the Bayesian network predictive models. The results of this project are relevant to recreational beaches worldwide as we provide insight on both marine and freshwater settings and may be used to inform beach monitoring programs and reduce the burden of water-borne disease.

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### Health care waste management at a university hospital in Tunisia: Is there a gap between knowledge and practice?

Souha Ben Ayed<sup>1</sup>, Imen Mlouki<sup>1,2,3</sup>, Fatma Ben youssef<sup>1</sup>, Faouzia Chebbi<sup>1</sup>, Nejla Rezg<sup>1</sup>, Aida khouildi<sup>1</sup>, Sana El Mhamdi<sup>1,2,3</sup>

<sup>1</sup>Department of Preventive and Community Medicine, University Hospital Tahar Sfar Mahdia, Tunisia, <sup>2</sup>Research laboratory "Epidemiology Applied to Maternal and Child Health" 12SP17, Tunisia, <sup>3</sup>Department of Community Medicine, Faculty of Medicine of Monastir, Tunisia

**Background and Objective:** Infectious Health Care Waste (HCW) could induce nosocomial infections, putting the health of medical staff and patients at risk. Proper HCW management should therefore be strictly followed as part of a comprehensive and systematic approach to hospital hygiene and infection control. We aimed at evaluating HCW management among health workers on both sides: knowledge and practice.

**Methods:** We performed a cross sectional study on September 2021 at all departments of the University Hospital Mahdia (Tunisia). We used an evaluation grid to assess the accessibility of resources and the property of practices. A self-administered questionnaire, validated by the Regional Office for Nosocomial Infection Control in France was used to assess HCW management knowledge.

**Results:** A total of 160 health workers responded to the on-site separation questionnaire with a mean age of 32.3±7.9. Most of them were practicing at medical departments (56.9%). For ordinary waste, 94.4% of professionals knew how to manage source segregation. Professionals with less than 20 years of experience had significantly better knowledge of on-site sorting of ordinary HCW (96.6% vs 66.7%, p=0.002). Regarding septic waste, 84.4% of health workers had good level of knowledge. After binary logistic regression we found that doctors had lower level of knowledge about the on-site sorting comparing to paramedical staff (34.1% vs 65.9%, OR=0.4, 95%CI=0.171-0.966). To evaluate resources and practices, we observed 59 sites at 24 units. Over all compliance rate of resource's accessibilities was 88.1%. Sharp containers were unavailable in 39% of sites. However, compliance rate of good practice was 6.8%. In 44.1% of observations health providers placed infectious waste in general HCW containers.

**Conclusions:** Our study revealed a gap between knowledge and practices of HCW among health care workers. A comprehensive waste management plan is needed for safe and efficient waste management.

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### The importance of supervision practice in applying an operational plan to prevent Legionellosis in a hospital

Maurizio Gimigliano<sup>1</sup>, Manuela Colosimo<sup>2</sup>

<sup>1</sup>Azienda Ospedaliera Pugliese-Ciaccio, Catanzaro, Italy, <sup>2</sup>Azienda Ospedaliera Pugliese Ciaccio, Italy

**Background:** This study aimed to demonstrate the importance of supervision practice in applying an operational plan to prevent legionellosis according to the I.S.S. 2015 guidelines. The protocol must be applied to hospital. There is the need for active surveillance corroborated by a rapid response when conditions of potential infections occur. So, monitoring contaminations with two different analytical methods (cultural and molecular biological) allowed prompt

interventions finalized to restore normal conditions quickly. Furthermore, it was possible to determine the importance of water treatment upstream of the water distribution. **Materials/methods:** Pugliese-Ciaccio is a general hospital with 450 beds plus 58 beds in the oncology unit. The hospital adopted a protocol for preventing legionellosis, but it was not being fully implemented so far. Therefore, the followed protocol was applied, water was periodically sampled at a series of specific control points along the distribution system. An Ultra Violet (UV) lamp probed with electromagnetic spectrum UVC coupled with chemicals H2O2/Ag+ ions anti-corrosive product (phosphosilicates) was supplied to the water. Those parameters, in the emergency, were varied in concentration depending on the laboratory data. In addition, an additional UV lamp was installed at the return point of the hot water before entering the boilers.

**Results:** During the period in which there was no complete monitoring of the procedures, the concentration of legionella had risen to very hazardous values beyond the consent upper limit. Thanks to our integrated actions, it was possible to bring them back into the safe environmental range shortly. About 1000 samples were taken during the study period at the various points at risk.

**Conclusions:** A combined safety action amongst consultant, analysis laboratory and safeguarding made it possible to avoid potentially lethal infections for patients or staff. Furthermore, the quarterly frequency of sampling in the departments at risk has allowed for economic, fruitful, and effective management of the plants and security.

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### Seroepidemiological study of Caprine Toxoplasmosis in public health

Blima Fux<sup>1</sup>, Letícia Pedrini<sup>2</sup>, Lauany Damiani<sup>3</sup>, Marcus Beltrame<sup>2</sup>, Rosângela Barros<sup>1</sup>, Rosáilda Lopes<sup>4</sup>, Ricardo Vitor<sup>4</sup>

<sup>1</sup>Departamento de Patologia, Universidade Federal do Espírito Santo, Brazil, <sup>2</sup>Universidade Federal do Espírito Santo, Brazil, <sup>3</sup>Ciência Animal, Universidade Vila Velha, Brazil, <sup>4</sup>Departamento de Parasitologia, Universidade Federal de Minas Gerais, Brazil

*Toxoplasma gondii*, the etiological agent of toxoplasmosis, is described as a potential cause of abortion in goats, causing major economic impacts. For public health, the consumption of animal foods can be a source of transmission of *T. gondii*. The objective of this work was to estimate the prevalence of goats infected by *T. gondii*, in different cities from Espírito Santo state, Brazil, and identify the infection risk factors. Immunoglobulins of the IgG Class was evaluated by the Indirect Immunofluorescence Reaction. The presence of IgG anti-*T. gondii* was 46.6% (68/146). The risk factors observed were female sex (OR= 2.81 95%CI 1.03 - 7.61), age group over two years old (OR= 3.5 95%CI 1.21 - 10.1), water from the public supply network (OR= 7.92 95%CI 1.77 - 35.47), storage of food and supplies in an open and unprotected place (OR= 11.13 95%CI 3.77 - 32.8) and presence of a domestic cat on the property (OR= 8.1 95%CI 2.65 - 24.71). The study found that goats domiciled in Espírito Santo, Brazil had a high prevalence of infection and there are risk factors that can trigger *T. gondii* infection in goat herds. This is the first seroepidemiology study of caprine toxoplasmosis conducted in the State of Espírito Santo, Brazil, and emphasizes the public health importance of food as a source of infection in humans. By identifying failures in animal management, it is possible to implement strategies to reduce infection rates. Control and prevention measures can reduce the sources of infection in herds and, consequently, provide safer animal products for human consumption.

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### Access to water, sanitation and hygiene for homeless population: experiences from São Paulo city during the COVID-19 pandemic

Geysa Santos<sup>1</sup>, Maria Razzolini<sup>2</sup>, Denise Veiga<sup>3</sup>

<sup>1</sup>Center for Research in Environmental Risk Assessment, School of Public Health, University of São Paulo, Sao Paulo, Brazil, <sup>2</sup>School of Public Health, University of São Paulo, Sao Paulo, Brazil, <sup>3</sup>Center for Research in Environmental Risk Assessment, Sao Paulo, Brazil

On 31 January 2020, the WHO declared the COVID-19 outbreak a Public Health Emergency of International Concern (WHO, 2020). In Brazil, the city of São Paulo, the richest capital in the country, was the epicentre of COVID-19 cases. In the pandemic context, some measures addressed to people in street situation were intended to minimize the risk of transmission of the disease (GARCIA et al. 2020). Among these measures, the installation of community sinks and drinking water fountains were carried out, whose location was places to outreach this specific population who lives in streets. Yet these set of actions has been important to lower the impact of the COVID-19 transmission on this population, some other

aspects must be studied related to health risks prevention due to the multi-usage of these devices such as water- and foodborne diseases. Thus, for improving these actions and to promote health we must consider to verify the quality of the water distributed by these devices. Right now, our aim is to design a plan to evaluate the microbiological quality of water from these devices. Firstly, we set criteria for selecting public water distribution devices according to their location in the city, circulation of people and the number of device users and, also their level of social and health vulnerability. Further, we will carry out the assessment of drinking water quality has based on the Brazilian legislation for water potability (BRASIL, 2021). There were nine points that were selected for a one-year followed up. In addition, it has been carried out a photographic exploration of the use of the devices with the authorization of the users. The study, is still under development but we observed a variety of usages. Preliminary data indicate that these public facilities are essential for the population, but not sufficient for health promotion.

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### **Surgical site infections: 10-year prevalence trend (2012-2021) and risk factors in a Tunisian university hospital**

Sana Bhiri<sup>1,2</sup>, Emna Hariz<sup>1</sup>, Hela Ghali<sup>1,2</sup>, Imene Mlouki<sup>4</sup>, Rania Bannour<sup>1</sup>, Aroua Kamel<sup>3</sup>, Fatima Ezzahra Khouya<sup>3</sup>, Arwa Nafetti<sup>1</sup>, Sofien Aidan<sup>3</sup>, Souhir Ayadi<sup>3</sup>, Salwa Khefacha<sup>1</sup>, Mohamed Ben Rejeb<sup>1,2</sup>, Asma Ben Cheikh<sup>1,2</sup>, Houyem Said Latiri<sup>1,2</sup>

<sup>1</sup>Department of Prevention and Security of Care, Sahloul University Hospital, Sousse, Tunisia, <sup>2</sup>Faculty of Medicine of Sousse, University of Sousse, Sousse, Tunisia, <sup>3</sup>Family Medicine, Faculty of Medicine of Sousse, Sousse, Tunisia, <sup>4</sup>Department of Preventive and Community Medicine, Taher Sfar, Academic hospital Mahdia, Tunisia

**Background and Objective:** Surgical site infections (SSIs) represent a real public health burden, given their individual and economic repercussions. Several risk factors are involved in its occurrence. Our study aimed to describe the trend in the prevalence of surgical site infections in subjects operated at the Sahloul University Hospital Centre between 2012 and 2021 and to identify the associated risk factors. **Methods:** A descriptive cross-sectional prevalence study was carried out on patients operated on at Sahloul University Hospital with a single visit on a given day per department. All patients, operated on in the 30 days preceding the visit and/or for whom a prosthesis had been fitted during the year preceding the visit were collected. Socio-demographic and clinical data were collected using a synoptic form prepared from the medical records of the patients under study. **Results:** A total of 1111 operated patients were identified. The mean age was 48.9 ± 22.3 years with a male predominance and a sex ratio of 1.57. The median length of stay was 10 days [5 - 19]. In our sample, the number of SSIs was 70, giving an average prevalence rate of 6.3%. The prevalence of SSIs in this sample showed a linear significant upward trend. Analysis by site showed 49 superficial and 21 deep infections. The occurrence of a surgical site infection was significantly associated with the placement of a prosthesis ( $p < 10^{-3}$ ), length of hospital stays of 7 days or more ( $p < 10^{-3}$ ), and ASA score greater than or equal to two ( $p = 0.023$ ). **Conclusions:** In the light of these results, the high rate of SSIs underlines the importance of strengthening prevention and control measures by tailoring a program targeting the suggested risk factors.

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### **Identifying determinants to Sewer Connection uptake Lusaka Zambia**

Nobutu Muttai<sup>1</sup>, Jenala Chipungu<sup>1</sup>, Anjali Sharma<sup>1</sup>, Samuel Bosomprah<sup>1</sup>, Jennifer Lamb<sup>2</sup>, Ruth Kennedy-Walker<sup>3</sup>, Sophie Ayling<sup>3</sup>, Lusungu Nyirenda<sup>4</sup>, Nshamba Muzungu<sup>4</sup>, Mwansa Mukuka<sup>3</sup>, Robert Dreibelbis<sup>2</sup>

<sup>1</sup>Centre for Infectious Disease Research in Zambia (CIDRZ), Lusaka, Zambia, <sup>2</sup>London School of Hygiene and Tropical Medicine (LSHTM), London, United Kingdom, <sup>3</sup>The World Bank Group, Washington, DC, United States, <sup>4</sup>Lusaka Water Supply and Sanitation Company (LWSC), Lusaka, Zambia

**Background and Objective:** More than half of the Zambian population living in urban areas use basic onsite sanitation facilities, most of which are deplorable, with only one-eighth of households relying on safely managed sanitation facilities. We explored the determinants of sewer connection uptake among customers in two communities where the local commercial water utility made the service available.

**Methods:** Between February and December 2021, we conducted surveys with landlords ( $n=150$ ) in two peri-urban communities to understand their knowledge of sewer connection services, the multi-level determinants, and willingness to connect to a sewer line in the context of COVID-19. Interviews with landlords

( $n=18$ ) supplemented the quantitative data by how convenience, cost, affiliation, and trust affected their choice to upgrade to a sewer connection.

**Results:** Of 81% of respondents that reported knowing about the available sewer connection service, 76% reported not knowing how much it costs, and 61% reported having insufficient knowledge. The individual, social and structural drivers for having a sewer connection were 1) the perceived health benefits, convenience and affordability in installation and maintenance service costs; 2) the perceived social status and belief that sewer connections work for others in their community and 3) the provision of sufficient information and reassurance of consistent water supply and maintenance services in cases of blockages from the water utility respectively. 27% of respondents said they would no longer connect to a sewer line as their income had reduced due to COVID-19. Of the four personas presented in the interviews, the perceived high service cost and distrust in the utility were the most common reasons that hindered landlords from connecting to the sewer line.

**Conclusions:** Insufficient knowledge of sewer connection services, the lack of trust in the water utility, community support and COVID-19 affected the willingness of landlords to connect to a sewer line.

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### **Surveillance of the consumption of alcohol-based handrub in hospitals in Piedmont, Italy: an observational study, 2017-2021**

Claudia Gastaldo<sup>1</sup>, Antonino Russotto<sup>1</sup>, Edoardo Rolfini<sup>2</sup>, Giovanni Paladini<sup>1</sup>, Costanza Vicentini<sup>1</sup>, Carla Zotti<sup>1</sup>

<sup>1</sup>Department of Sciences of Public Health and Pediatrics, University of Turin, Turin, Italy, <sup>2</sup>University of Turin, Turin, Italy

**Background and Objective:** Hand hygiene (HH) is one of the most important measures to prevent healthcare-associated infections (HAIs). During the COVID-19 pandemic, there has been increased attention to infection prevention and control (IPC) practices, particularly regarding hand hygiene. The objective of this study was to evaluate the impact of the pandemic on alcohol-based handrub consumption (AHC) in the region of Piedmont, in Northern Italy.

**Methods:** Data on AHC were collected as part of a wider regional IPC program, promoted annually by the Regional Health Department, which requires all public trusts to report data on indicators of IPC activities. However, in 2020-2021, data were requested directly by the Istituto Superiore di Sanità (ISS) and Ministry of Health. AHC data were collected annually from 25 hospitals/trusts for the years 2017-2021, overall and according to department type: medicine, surgery and intensive care (IC). AHC was expressed as liters per patient-day (l/pd) per year. Trends in AHC were investigated and the median for the three-year period 2017-2019 (pre-COVID) was compared with the median of the years 2020 and 2021, during the pandemic period.

**Results:** Median AHC doubled in 2020 compared to the pre-COVID three-year period (14 vs 29.9 l/pd). In the medicine departments, consumption tripled (10.6 vs 30.3 l/pd) while in surgery and IC it doubled (10.3 vs 22.5 l/pd and 41.8 vs 92.9 l/pd, respectively). In 2021, AHC decreased (overall 22.1 l/pd, medicine 20.6 l/pd, surgery 19.1 l/pd and IC 60.6 l/pd), however still remaining higher than in the pre-COVID three-year period.

**Conclusions:** There was a strong increase in 2020 in AHC in all three types of ward considered in the analysis, but this trend was not maintained in 2021 despite the persistence of the pandemic context. Further efforts must therefore be directed towards maintaining awareness of IPC practices, regardless of COVID-19.

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### **Burden of healthcare-associated infections in Europe: a systematic literature review**

Ada Maida<sup>1</sup>, Fabio Pattavina<sup>2</sup>, Roberto Ricciardi<sup>3</sup>, Floriana D<sup>1</sup>, Anna Nistico<sup>4</sup>, Giovanna Calabro<sup>4</sup>

<sup>1</sup>Università cattolica del sacro cuore, Section of Hygiene, University Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>2</sup>Fondazione Policlinico Universitario A. Gemelli IRCCS, <sup>3</sup>Vihtali-Università cattolica del sacro cuore, Vihtali (Value In Health Technology and Academy for Leadership & Innovation), Spin-Off of Università Cattolica del Sacro Cuore, Rome, Italy, <sup>4</sup>Università

**Background & Objective:** Healthcare Associated Infections (HAIs) are a serious public health issues that contribute substantially to the global burden of mortality and morbidity. Their trend is constantly growing in Europe, with a severe impact also in terms of additional costs for health systems. In Europe HAIs affect about 4 million patients/year, with 16 million additional hospital days and over 37.000 deaths. The study aim was to assess through a systematic literature review (SLR)

the epidemiological burden of HAIs in Europe.

**Methods:** A SLR was performed querying two databases (Pubmed, Web of Science) from 2012 to 2022. All studies in English language and focused on the epidemiological burden of HAIs in Europe were included.

**Results:** Overall, 66 studies were included. It was described a range of HAIs prevalence (4.6–49.3%) in the general population. In the adult population, the prevalence varied from 0.44% to 51.7%, most frequently with surgical site infections (1–84.3%), urinary tract infections (0.58–70.5%), bloodstream infections (0.1–46.6%) and respiratory tract infections (0.5–45.1%). Instead, in the pediatric population the HAIs prevalence varied from 2.45% to 6.9%, with a higher burden in the first year of life and a higher frequency of bloodstream infections (3.1–44.6%). The most isolated pathogens were *Pseudomonas aeruginosa*, *Escherichia coli*, *Klebsiella pneumoniae*, methicillin-resistant *Staphylococcus aureus* and *Candida* spp. The associated risk factors, in addition to advanced age and patients' clinical conditions, were the invasive devices use and prolonged hospital stays.

**Conclusion:** The current epidemiological situation imposes the necessity for constant HAIs control. In order to increase efficiency of prevention and control measures, there is a need for the careful design of interventional studies to figure out the most efficient single or bundle of preventive measures. In addition, it is necessary to implement the surveillance systems and to encourage greater safety training for patients, visitors and healthcare professionals.

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### Does protecting ourselves also protect others?

Chiara

Salini<sup>1</sup>, Barbara Innocenti<sup>2</sup>, Gabriele Messina<sup>3</sup>, Nicola Nante<sup>3</sup>

<sup>1</sup>University of Siena, Post Graduate School of Public Health, Italy, <sup>2</sup>Arezzo Hospital, <sup>3</sup>University of Siena, Department of Molecular and Developmental Medicine, Italy

**Background:** The SARS-CoV-2 pandemic has increased the use of Personal Protective Equipment (PPE) in hospitals. Within departments with SARS-CoV-2 infected patients, staff often use the same PPE between patients since they are infected with the same microorganism. We present a case report of an *Acinetobacter baumannii* outbreak that occurred within a COVID-19 department.

**Methods:** The case presented is based on an experience in May 2021 in the Intensive Care Unit for COVID-19 patients of Arezzo Hospital, Italy. Within the hospital, there is an active surveillance system for rapidly spreading microorganisms or multi-resistant bacteria to prevent their transmission and reduce the risk of outbreaks. Following the case, an audit was conducted to focus on the problem and prevent it from recurring.

**Results:** In the department under consideration, 6 cases of *Acinetobacter baumannii* infection occurred within 9 days after the first infection. Following the event, a meeting was conducted with all department staff. It was found that due to the shortage of PPE caused by the emergency period and because all patients were admitted for the same infection, the same PPE (coveralls, visor, gloves, mask) was used during care activities; thus, the *A. baumannii* infection was spread from the first infected but asymptomatic patient to all others.

**Conclusion:** When we safeguard ourselves, we let our guard down because we feel "protected", but the same PPE that makes us feel protected may instead be "dangerous" to others. Hospitalized patients may carry more than one infection. During current or future pandemics, it is critical to implement common contact precautions and change or sanitize PPE even if we are caring for patients with the same ongoing infection because our PPE can act as a vehicle for further over-infection and the spread of multi-resistant bacteria.

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### Legionella spp contamination and infections associated with thermal waters: a systematic review

Luigi Tommasi<sup>1</sup>, Stefania Paduano<sup>2</sup>, Isabella Marchesi<sup>1</sup>, Carmela Palazzi<sup>3</sup>, Sara Turchi<sup>2</sup>, Giuseppina Frezza<sup>1</sup>, Annalisa Bargellini<sup>1</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy,

<sup>2</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy,

<sup>3</sup>Library of Medical Faculty, University of Modena and Reggio Emilia, Modena, Italy

**Background and Objectives:** Thermal waters are used for therapeutic or recreational purposes as baths, inhalation, irrigation and mud therapy. Their peculiar properties, i.e. temperature, pH and concentration of salts, can create habitats suitable for survival and multiplication of opportunistic pathogens such

as *Legionella* spp. To date, there has been no systematic synthesis of literature on *Legionella* spp. contamination or legionellosis events related to thermal water. This study aims to evaluate the *Legionella* spp. presence in thermal waters and cases or outbreaks of legionellosis associated with exposure to these waters.

**Methods:** PubMed/EMBASE/Scopus/Web of Science/CINAHL were searched for primary studies on *Legionella* spp contamination in thermal water and on associated cases/outbreaks of legionellosis. Studies were searched up to 12 December 2022. Two PubMed search strategies have been performed: - (*legionella* OR *Legionellaceae*), first part for *Legionella* spp. contamination; - (*legionella* OR legionellosis OR "Pontiac fever" OR "Legionnaires' disease") AND (case\* OR cluster\* OR outbreak\* OR infection\* OR investigation OR surveillance), first part for legionellosis cases or outbreaks; - AND ("recreational water" OR spa OR pool OR "hot tub" OR whirlpool OR bath OR "turkish bath" OR Jacuzzi OR "natural spa" OR "hot spring" OR "thermal spring" OR "warm spring" OR spring OR thermal OR mineral waters[mesh] OR hot springs[mesh]), second part for both searches. These search strategies have been adapted for each included database.

**Results:** A total of 495 articles for *Legionella* spp contamination in thermal waters and 394 articles for legionellosis cases/outbreaks associated with these waters were retrieved from PubMed. The search in the other databases is still being carried out.

**Conclusion:** Our results will provide a synthesis of the current evidence on *Legionella* presence and infections associated with thermal waters, useful to evaluate infection risk and possible treatments to control contamination of these resources preserving their characteristics and healing properties.

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### Microbiological assessment of drinking water around lake atitlan, guatemala

Preet Gandhi<sup>1</sup>, Marc Verhougstraete<sup>2</sup>, Frank von Hippel<sup>2</sup>, Sandra Rodriguez<sup>2</sup>

<sup>1</sup>University of British Columbia Canada, <sup>2</sup>University of Arizona United States

**Background:** Lake Atitlán is one of the most important lakes in Central America. The Atitlán watershed is home to approximately 260,000 people, the majority of whom are Mayan. The communities rely on subsistence agriculture, and use the lake for drinking water, transportation, and as a protein source through fisheries. Previous studies in the Lake Atitlán region established the presence of toxic metals and metalloids, pesticides, and indicator bacteria in drinking water and within the lake. Additionally, these communities experience a high prevalence of diarrheal diseases, childhood stunting, chronic illnesses, and various other adverse health outcomes.

**Objective:** This pilot project was designed to assess water quality in the Atitlán watershed. Additionally, in connection with a partnered study, breastmilk samples were collected from four towns in the watershed to correlate water contamination with maternal and infant health outcomes.

**Methods:** Over a 6-week period in June and July of 2022, 24 water samples were collected from drinking and freshwater sources in the towns of Panajachel, Santiago, San Juan, and San Pedro. Local hotels, restaurants, and community water taps were sampled and analyzed for the presence of *E. coli* and total coliforms via portable AquaGenX Water Testing Kits.

**Results:** Areas with unsafe water contamination were found in each of the four towns. The World Health Organization's standard for *E. coli* in drinking water (0 *E. coli*/100 ml) was exceeded in 83% of samples. The most pronounced water contamination was found in Panajachel, where all samples (n=12) had measurable *E. coli* and 67% of samples contained *E. coli* concentrations above 100 CFU/100ml. **Conclusion:** The data within this pilot study provide sufficient evidence of contamination to warrant further inquiry into hot-spots of contamination around Lake Atitlán, and the development of collaborative policy actions with local stakeholders.

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### The disinfection power of ag ions & zeolite, effectiveness of a new technology for high-touch spots

Valerio Peruzzi<sup>1</sup>, Davide Amodeo<sup>2</sup>, Nicola Nante<sup>3</sup>, Gabriele Messina<sup>3</sup>

<sup>1</sup>University of Siena Post Graduate School of Public Health, University of Siena, Siena, Italy via Aldo Moro 2 Italy, <sup>2</sup>University of Siena, <sup>3</sup>University of Siena Department of Molecular and Developmental Medicine, University of Siena, Siena, Italy

**Background:** Disinfection of contact surfaces has become common practice since the two-year COVID-19 pandemic. The transmission of microbial agents has long been the focus of public health and hygiene awareness campaigns. Indeed, the development of new disinfection technologies and approaches is attracting

considerable interest in the scientific community. Mixed plastic powders with antimicrobial properties and silver ions can compromise the metabolism of microorganisms. We aimed to evaluate an inorganic antimicrobial agent (IAA) based on Ag ions and zeolite mixed in a resin.

**Methods:** This experimental study was carried out at the University of Siena, Italy. Different objects were produced in two versions: i) with an IAA mixed in plastic resin; ii) with a standard plastic mixture. To the eye, the two versions were indistinguishable and were randomly contaminated with the hands of several operators. After the hand contamination, T0, we sampled the objects using RODAC plates at T1 (1h) and T2 (6h), incubating at 36°C for 48 hours. Comparisons of the biocidal effect were made at T1 and T2. Statistical analysis was carried out with Stata.

**Results:** The mean level of contamination of the objects made with standard plastic were, respectively 50 CFU (SD 36.5) at T1 and 20 CFU (SD 13.6) at T2. In comparison, the objects made with IAA resin showed a mean level of contamination of 10 CFU (SD 5.9) at T1 and 6 CFU (SD 3.6) at T2. The objects made with IAA resin have shown a mean percentage reduction of contamination of 79.5% at T1 and 78.3% at T2.

**Conclusion:** IAA resin reduced contamination on objects that came into contact with hands. Antimicrobial plastic blends, are a valuable aid in counteracting the spread of infection related to contact with surfaces and fomites. The public health system could support and raise awareness for using these innovative materials

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### Measures to reduce plastic waste in the ulss-6 euganea local health trust in padua (Italy)

Suada Tikvina<sup>1</sup>, Davide Bonaldo<sup>2</sup>, Antonella Ruffatto<sup>3</sup>, Monica Varotto<sup>4</sup>, Enrico Pinton<sup>5</sup>, Vania Zamboni<sup>6</sup>, Maria Zaramella<sup>6</sup>, Emanuela Azienda<sup>7</sup>

<sup>1</sup>Department of Cardiac, Thoracic, Vascular Sciences and Public Health, University of Padua, Italy <sup>2</sup>Department of Cardiac, Thoracic, Vascular Sciences and Public Health, University of Padua, Italy, <sup>3</sup>ULSS 6 Euganea, Padua, Italy <sup>4</sup>Hospital Board of Directors, Hospital of Cittadella, ULSS 6 Euganea, Padua, Italy <sup>5</sup>Via Casa di Ricovero 40, Cittadella (Padua) Italy, <sup>6</sup>ULSS 6 Euganea, Padua, Italy <sup>7</sup>Waste Manager, Hospital of Cittadella, ULSS 6 Euganea, Padua, Italy <sup>8</sup>Via Casa di Ricovero 40, Cittadella (Padua) Italy, <sup>9</sup>ULSS 6 Euganea Infection control and disease service, Hospital of Cittadella, ULSS 6 Euganea, Padua, Italy <sup>10</sup>Via Casa di Ricovero 40, Cittadella (Padua) Italy, <sup>11</sup>Azienda ULSS 6 Euganea Chief Nursing Officer, Hospital of Cittadella, ULSS 6 Euganea, Padua, Italy <sup>12</sup>Via Casa di Ricovero 40, Cittadella (Padua) Italy, <sup>13</sup>ULSS 6 Euganea Hospital Board of Directors, Hospital of Cittadella, ULSS 6 Euganea, Padua, Italy <sup>14</sup>Via Casa di Ricovero 40, Cittadella (Padua) Italy

**Background and Objective:** In the last two decades plastic consumption has grown considerably putting at risk our planets overall health. Understanding the elements of plastic production, distribution and waste management is crucial to help control this alarming health threat. Healthcare services use plastic in various ways and are responsible for a great part of single use plastic waste. In the past year, ULSS-6 Local Health Trust in Padua has taken important measures to reduce the usage of single use plastics within the hospital settings.

**Methods:** Various meetings were held among healthcare workers to present a code of conduct regarding plastic management. Mindful usage of plastic and adequate plastic recycling were encouraged, especially regarding single-use water bottles given that in the first 6 months of 2022 approximately 478,531 water bottles were used. Hospitals catering services were also reviewed aiming to reduce the plastic distribution in the healthcare facilities.

**Results:** In the second half of 2022, plastic cups were replaced with paper water cups. Given that most of the plastic water bottles are used by the hospital healthcare professionals, personal reusable water bottles are being distributed for each staff member. Over the next few months, water dispensers will be placed in each ward and in the hospitals coffee stations. Important effort has also been made to increase plastic collection points to promote adequate plastic recycling. The initial results show significant reduction in plastic bottle waste (nearly 45% in comparison with the first 6 months) but further improvement is expected in the following months.

**Conclusion:** Plastic waste management can be very challenging, especially in healthcare settings. Plastic cost, versatility and sanitary conditions make it difficult to completely eliminate its usage. Replacing single-use plastic containers with more sustainable materials represent small but significant steps to control plastic pollution.

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### Prevention of legionella infections in medical facilities : specific indications to use of point of use filters (pou) in the preventive plans

Simone Latorre<sup>1</sup>, Mattia Latorre<sup>1</sup>, Federica Zedda<sup>2</sup>, Antonello Campagna<sup>3</sup>

<sup>1</sup>Italian Ministry of Health, Liguria Health Port Authority Via Ribotta 5, Roma Italy, <sup>2</sup>Italian Ministry of Health, Liguria Health Port Authority, <sup>3</sup>Italian Ministry of Health, Liguria Health Port Authority via ribotta 5, Roma (Italy) Italy

**Results:** This study also contains data of efficacy and performance specifications (field evaluation on a Legionella point-of-use filter that is 0, 2 µm (Pall Q Point®) and is available for faucets and showers.

Microbiological challenge tests (bacterial retention of *Cyrobacter Koseri*) were performed in accordance with the ASTM standard F838-15a in March 2021 at the Hygiene Laboratory of the Department of Translational Research University of Pisa).

Further validation tests included: 1. microbiological challenging tests with *Brevundimonas diminuta*, *Legionella pneumophila* sg 1, *Pseudomonas aeruginosa*, *Escherichia coli*, *Mycobacterium gordonae* and *Cryptosporidium parvum*, and 2. microbiological challenging tests with a combination of *Legionella pneumophila* sg1 and *Aspergillus fumigatus*

**Conclusions:** The point-of-use filters when they are used in synergy with the others prevention methods can play an important role, cost-benefits ratio positive, to minimize the risk of growth and spread of Legionella and other waterborne pathogens

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### Healthcare-associated infections in hospital settings: New perspectives and strategies for prevention and control

Cèline Paudice<sup>1</sup>, Pietro Vernaci<sup>1</sup>, Demetrio Cescutti<sup>2</sup>, Alice Sgueglia<sup>1</sup>, Anna Odone<sup>1</sup>, Carlo Signorelli<sup>3</sup>, Francesco Auxilia<sup>1</sup>, Giacomo Vigezzi<sup>1</sup>

<sup>1</sup>Università degli Studi di Pavia Department of Public Health, Experimental and Forensic Medicine Italy, <sup>2</sup>School of Medicine, Università Vita-Salute San Raffaele, Italy, <sup>3</sup>Università Vita-Salute San Raffaele School of Medicine & ASPHER Italy

Healthcare-associated infections (HAIs) are the most common and severe healthcare-associated complications and a major public health issue because of the impact on morbidity, mortality, and quality of life and of the economic burden on healthcare systems worldwide. Yet, most HAIs are preventable and can be reduced by up to 70% through effective Infection Prevention and Control (IPC) measures. New strategies and perspectives in IPC are needed to counteract antimicrobial resistance and reinforce HAIs prevention, through high-quality evidence-based care in the context of universal health coverage. This intensive workshop will explore innovative approaches through the implementation at the facility level of protocols, digital technologies and tools. It will be structured as follows.

First, data on the prevalence study on HAIs and antibiotic use, conducted at Humanitas Mater Domini Hospital Castellanza (Italy) in April 2022, will be presented. The study followed the ECDC Point Prevalence Survey protocol and involved 103 patients. 26% of included patients had an infection, and 62% were undergoing antibiotic therapy. The tool allowed the identification of non-conformities and the improvement of HAIs management, through antibiotic use awareness and stewardship.

Secondly, to explore the incidence and management of methicillin-resistant and methicillin-sensitive *S. Aureus* (MRSA and MSSA) infections, a prospective observational multicentre study conducted among patients undergoing elective arthroplasty surgery at the Clinical Institutes of Pavia and Vigevano (Italy) will be introduced. The analysis was performed between March and November 2022: out of 737 patients, 7 (0.9%) resulted positive for MRSA and 142 (19.3%) for MSSA. Early identification of MRSA/MSSA infections with active screening proved to be a reliable measure for targeted preventive antibiotic treatment in order to avoid surgical site infections.

The third presentation will open up with an outbreak of *Acinetobacter baumannii*, and Carbapenem-resistant *Klebsiella pneumoniae* that occurred in April 2022 within the intensive care unit of IRCCS Fondazione Policlinico San Matteo, Pavia (Italy), affecting 9 patients. Thanks to the swift strategy provided by the Medical Directorate, which resulted in initiatives based on the specific biological characteristics of micro-organisms survival, the outbreak ended on May 29th. This experience shows the key role of standard precautions and infection prevention and control measures in providing high-quality care.

The fourth panellist will talk about the implementation of a motivated request form for the prescription of antimicrobials through Electronic Health Records

(EHR) in 2022 at the IRCCS Policlinico San Donato, San Donato Milanese (Italy). Reviewing 55 motivated requests for meropenem, daptomycin and caspofungin, we compared the delivered doses with the administrations on the EHR. Overall, 24 requests for 97,560 milligrams of drugs were delivered but not administered; € 2,016 were subsequently lost. The introduction of EHRs allowed direct monitoring of requests' appropriateness.

The workshop, bringing together experts with topic knowledge on IPC, will provide answers on how to design a culture for HAI prevention. In the end, we will engage in a fruitful discussion with the audience on the data presented and practical public health implications, exploring how they can inform critical policy debates addressing evidence-based prevention strategies.

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### Multilateral collaboration between Italy-Lombardy and Sierra Leone: an effective collaboration to boost COVID-19 vaccine coverage in the country.

Thea Scognamiglio<sup>1</sup>, Roberto Moretti<sup>2</sup>

<sup>1</sup>Johns Hopkins Bloomberg School of Public Health, Baltimore, United States, <sup>2</sup>Agenzia di Tutela della Salute (ATS) Bergamo, University of Geneva, Italy

**Materials and methods:** The Sierra Vax team of AREU Lombardy (Regional Emergency Agency) carried out five missions in Sierra Leone: 1. Planning and starting vaccination activities, creating a series of collaborations, 2. training and motivating 31 vaccination groups for a total of 134 people. AREU modeled the project on a "settings approach" model and "Results-based" payment Methods. To improve the follow-up process, we implemented a system of rapid daily reporting of just the number of doses administered and the names of the teams to follow the process. An AREU logistician cross-checked the data reported with paper registers of the local facilities, ensuring the accuracy of the reported data. **Results:** Considering the Results of the first three months (about 7000 vaccinations per week) and the limited budget, we estimated that 100000 inoculations would be achievable by the end of May 2022. The project worked very well, reaching 153000 doses (53% more than the expected). **Conclusions:** The reporting system, combined with a system of monetary incentives via smartphone, multiplied the number of vaccinations per day for each team, going from 3 in the last weeks of December to 67 in May. The increase in vaccinations carried out by the 31 groups supervised in the presence of the AREU Sierra Vax team is a notable achievement, given the local context barriers and limitations.

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### Evaluation of the IDSR surveillance system in The Gambia Armed Forces, 2017 - 2021

Musa Corr<sup>1</sup>

<sup>1</sup>Gambia Field Epidemiology Training Program, Gambia Armed Forces, Banjul, The Gambia

**Background:** Integrated Diseases Surveillance and Response (IDSR) strategy was adopted in most countries in Africa since 1998. The Gambia adopted its first IDSR Technical Guidelines in 2003 but has never had it evaluated. The aim of this study is to determine whether Gambia Armed Forces (GAF) IDSR is meeting its objective and to evaluate the attributes of the system. **Methods:** A cross-sectional study was conducted among health care workers in GAF on IDSR surveillance system using a structured questionnaire. The updated CDC guidelines on surveillance system evaluation were used to access the attributes of the GAF - IDSR using the kobocollect and excel version 2010 were used to analyze. Five attributes; usefulness, acceptability, simplicity, data quality & completeness were used to achieve objectives. Attribute were summed up scores for all questions for each attribute and divided by the number of questions and multiplied by 100. Each attribute is described as good/simple/timely/complete/has quality/has good acceptability with scores >50% and vice versa if scores are <50%.

**Results:** The study reveals that 52.9% (9/17) of participants are between aged 21-30 years, 35.3% (6/17). 64.7% (11/17) of the study participants spent between 10-15 years in services. 64.7% (11/17) conduct only out-patient. On the level of training, 52.9% (9/17) of the participants are trained nurses. From the study usefulness score was 25.0%, simplicity was 19.2%, acceptability was 17.6%, stability was 14.9%, Data quality was 12.4%, and timeliness and completeness each were 11.8%. None of the attribute scores met the cutoff point. **Conclusions:** The IDSR surveillance system in GAF in The Gambia was not useful, not simple, not timely in submitting complete report not flexible and unstable. Training was a gap that was identified during the study as only three among the study participant and in the whole institution is trained on IDSR and disease surveillance.

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### Assessment of the readiness and response toward the dengue fever outbreak in Sudan: a qualitative exploration

Abdulla Bagahizel<sup>1</sup>, Sir Elkhatim<sup>2</sup>

<sup>1</sup>Hadramout University, Yemen, <sup>2</sup>University of Medical Science and Technology, Sudan

**Background and Objective:** The mosquito-borne viruses are considered as a major public health problem in Sudan, predominantly in Kassala state during the last 10 years. The preparedness and response to the outbreak especially in the decision-making at the country or state levels need further description and consideration, due to the absence of any previous assessment studies. Therefore, this study aimed to qualitatively assess the level of readiness and response toward the 2019 dengue fever outbreak in Kassala - Sudan at the federal and state level of the ministry of health. **Methods:** This exploratory descriptive cross-sectional study involved the key informant personnel from the main four dimensions affecting the readiness and response (Surveillance, vector control, outbreak management, and health promotion). In-depth interviews were conducted to fill the open-ended questions and checklists developed by WHO and relative literatures. The interviews' contents were extensively analyzed and texted that strengthened or weakened each dimension were extracted from the key informants' interviews. **Results and Discussion:** Sudan outbreak was spotted by passive surveillance and 51 samples were tested during the outbreak period, and the private clinics and labs were not included in the surveillance system. According to the WHO checklist of outbreak readiness and response, the surveillance system and Public health laboratory in Kassala got the least score.

**Conclusions:** This study's outbreak readiness and response could be considered as below standard, mainly in the surveillance system and laboratory diagnostic facilities, due to absence of the intersectoral collaboration with a regulatory framework in terms of financial and operational participation.

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### Public health and clinical medicine need to work in partnership in the US

Sangeeta Saxena<sup>1</sup>, Thomas Godfrey<sup>2</sup>

<sup>1</sup>Department of Public Health, School of Health and Health Professions, Coastal Carolina University, United States, <sup>2</sup>Department of Public Health Sciences, Pennsylvania State University, Hershey, United States

**a) Introduction:** The US was ranked first in terms of health security in 2019, yet it became the epicenter of the Corona virus disease pandemic in 2020, threatening its fundamental leadership in matters of world health, polarizing an already deeply divided society, rife with disparities and inequalities in access to care and medical outcomes. Even before the pandemic, the US had worse outcomes and higher healthcare costs than its contemporaries. **b) Methods:** Document analysis using READ approach, qualitative interviews and a networks framework were utilized to study the landscape of adoption of DIT. **c) Results:** The US is the only developed country without universal health coverage. The Affordable Care Act (ACA) was introduced in 2010 to make health insurance affordable and accessible to everyone. Implementation has been partial, and nearly 28 million people remain uninsured and another 18 million have inadequate health insurance. These deprived sections of society already have mortality higher than the general population, higher rates of mental and chronic illnesses, substance abuse and delayed diagnoses. They present to the health system later in the course of a disease when treatment costs are higher and outcomes less satisfactory. This is the results of a long-standing divide between clinical healthcare and public health, inadequate financing of public health, bureaucratic turf protection, partisan politics and distrust of government within the populace. Correction requires a health systems redesign by instituting changes in the structure of public health, health care delivery and medical education, increasing population health literacy, and integrating preparedness for national healthcare challenges. Details of the structure of the US health system, lapses and way forward will be elaborated. **d) Conclusions:** Public health and clinical medicine must function as a seamless continuum with public health at the forefront to ensure all Americans have access to affordable preventive and promotive healthcare.

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### Comparing health systems readiness for integrating services for domestic violence services: a multi-country synthesis

Manuela Colombini<sup>1</sup>, Satya Shrestha<sup>2</sup>, Stephanie Pereira<sup>3</sup>, Prabash

Siriwardhana<sup>4</sup>, Amira Shaneen<sup>5</sup>, Loraine Bacchus<sup>1</sup>

<sup>1</sup>London School of Hygiene and Tropical Medicine, United Kingdom,

<sup>2</sup>Kathmandu University, Nepal, <sup>3</sup>Sao Paulo University, Brazil, <sup>4</sup>University of Peradeniya, Sri Lanka, <sup>5</sup>An Najah National University, Palestinian Territory, Occupied

Background: Domestic violence (DV) is a global health issue leading to adverse health consequences. Still, health systems are often unprepared to address it.

Methods: A health systems readiness assessment was conducted using multiple mixed-methods data sources including qualitative interviews, focus-group discussions, structured facility observations, and survey with providers. A cross-country synthesis and comparison across the multiple sources was conducted using a framework thematic approach.

Results: Common readiness gaps include unclear and limited guidance on DV, unsupportive leadership structure coupled with limited training and resources. Providers felt unprepared and lacked guidance on how to deal with DV cases, and felt unsupported and unprotected by managers and the organisation. Such organisational and service delivery challenges, in turn, also affected how health providers responded to DV cases leaving them less confident, less knowledgeable and unsure about their roles. Furthermore, providers' personal beliefs and values on DV and gender roles also impacted on providers' motivation and their ability to respond prompting some to become 'activists' while others reluctant to intervene and prone to blame women. Our synthesis also pointed to a disconnection between women and health services as women had low trust in providers being able to protect confidentiality, feared of being judged, or did not think health services would deal with DV (as it was not a traditional health issue).

Conclusions: Our study has shown the importance of having policy clarity on roles and responsibilities for both health managers and clinicians. It also highlighted the need to engage the leadership across every system to reframe challenges, and strengthening routine practices to encourage staff engagement in responding to DV. Future research should also determine the ways in which women, community or organisational preparations are related to later implementation success and how these interact with clients and communities.

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### Barriers of West African women scientists in their research and academic careers: a qualitative research

Ndeye Sougou<sup>1</sup>, Oumy Ndiaye<sup>2</sup>, Farah Nabil<sup>3</sup>, Morenike Folayan<sup>4</sup>, Samba Sarr<sup>5</sup>, Elhadji Mbaye<sup>6</sup>, Guillermo Perez<sup>3</sup>

<sup>1</sup>Department of Preventive Medicine and Public Health, University of Cheikh Anta Diop, Dakar, Senegal, <sup>2</sup>Faculty of Economics and Management, University Cheikh Anta Diop, Dakar, Senegal, <sup>3</sup>Faculty of Health Sciences, University of Zaragoza, Zaragoza, Spain, <sup>4</sup>Obafemi Awolowo University, Ile-Ife, Nigeria, <sup>5</sup>Ministry of Health and Social Action, Dakar, Senegal, <sup>6</sup>Institut de Recherche en Sante', de Surveillance E' pide' miologique et de Formation, Diarniadiou, Senegal

Background and Objective: In 2016, the percentage of women researchers was 34% in Africa, but this figure hides great disparities according to the African Development Bank. Francophone West Africa remains one of the regions with the greatest gender disparities in the education sector. This study aims to identify barriers to the professional advancement of women researchers in West Africa.

Methods: This was a descriptive, observational, cross-sectional qualitative study conducted between June and September 2020 in five West African countries (Ghana, Senegal, Burkina Faso, Niger and Mali). Interviews were conducted with 21 female and 9 male health researchers by video call. After transcription, the data was thematically analysed using an inductive process.

Results: Four themes associated with barriers to women's careers development were identified. First was family- and environmental-related barriers. Gender norms that assign domestic tasks and responsibilities to women reduced the time they were able to dedicate to research. Second was gender insensitive organisational culture and institutional policies that deepened gender disparities and made it more difficult for women to attain leadership positions. Third was the need for women in research to undergo emancipation programs to strengthen their resilience and ability to make critical decisions as strategic approaches to address the challenges faced by women in the academia were a lot more focused on addressing their relationship with their spouse. Fourth, was the individual intermediate perception of professional and personal success which for many women, they perceive themselves as competent as their male counterparts and should not be subject to the gender discrimination they experience.

Conclusions: This work has highlighted the influence of family and social life on the professional lives of West African women researchers. The study could help contribute to the development of gender equality interventions for the career

development of women researchers in West Africa.

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### Adaptation and implementation of the healthcare responding to violence and abuse intervention in Nepal, Sri Lanka, Brazil and occupied Palestinian territory: a comparative analysis and lessons learned

Loraine Bacchus<sup>1</sup>, Stephanie Pereira<sup>2</sup>, Ana d'Oliveira<sup>2</sup>, Beatriz Kalichman<sup>2</sup>, Tharuka Ushani<sup>3</sup>, Prabash Siriwardhana<sup>3</sup>, Thilini Rajapakse<sup>3</sup>, Poonam Rishal<sup>4</sup>, Pusp Bhatt<sup>4</sup>, Smirti Luitel<sup>4</sup>, Samita KC<sup>4</sup>, Nagham Joudeh<sup>5</sup>, Amira Shaheen<sup>5</sup>, Gene Feder<sup>6</sup>, Claudia Moreno<sup>7</sup>, Manuela Colombini<sup>8</sup>

<sup>1</sup>London School of Hygiene and Tropical Medicine, London, United Kingdom,

<sup>2</sup>University of Sao Paulo, Brazil, <sup>3</sup>University of Peradeniya, Sri Lanka,

<sup>4</sup>Kathmandu University, Nepal, <sup>5</sup>An-Najah National University, Occupied

Palestinian Territory, <sup>6</sup>University of Bristol, United Kingdom, <sup>7</sup>World Health Organization, Switzerland, <sup>8</sup>London School of Hygiene & Tropical Medicine, United Kingdom

Background: Health systems have a critical role in a multi-sectoral response to domestic violence against women, but the evidence is skewed toward high-income countries, and lessons learned are not easily transferred to low-and-middle-income countries due to social, cultural and economic differences. The intervention strengthened the healthcare response to VAW through training for healthcare providers and managers and a care pathway for women experiencing domestic violence. The synthesis aimed to explore what factors promoted or inhibited the translation of HERA's intended goals into a 'real world' set of activities. Methods: Data sources include: qualitative interviews with health care providers and managers and women who disclosed violence; clinic data on cases of domestic violence and referrals; and the Provider Intervention Measure which assessed changes in attitudes and behaviour. Thematic analysis was used to analyse qualitative data and descriptive statistics were used to analyse quantitative data. Results: The intervention increased disclosure of violence from a negligible baseline in clinical settings, but there was little acceptance of further referral for services among women. Although obstacles varied between countries, some Findings were ubiquitous: the impact of the COVID-19 pandemic; poor inter-sectoral coordination; lack of engagement with communities; and a disconnection between what the care pathway could offer and the diverse needs of women. There was inconsistent recording of violence, compounded by multiple documentation systems; uncertainty about role of health care vis-à-vis perpetrators of violence; and poor understanding of VAW as a priority policy issue across sectors.

Conclusions: Fundamental research is needed to surface local understandings of how best to support women and children. Community engagement and community health workers have a critical role in building community trust in the health system response. Active leadership, management and institutional support is crucial to implementation.

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### A decade of national ambulances services in India: learnings and way forward

Kalpna Pawalia<sup>1</sup>, Himanshu Bhushan<sup>2</sup>

<sup>1</sup>National Health Systems Resource Centre, New Delhi, India, <sup>2</sup>National Health System Resource Center, Munirka, India

Background and Objective: Referral transport is an indispensable part of health care delivery system of any country. A decade has passed since the launch of National ambulance services and over these years the country has witnessed a significant change in its referral mechanism. India being the second most populous country in the world fought the pandemic with its limited resources and preparedness and utilised the existing referral transport system for managing the COVID affected patients. This paper analyses the existing ambulance care delivery system in the country, highlights the steps and strategies taken by the Government in augmenting the capacity of the referral transport system in the wake of COVID 19 and the learnings thereafter. Methods: It is a qualitative descriptive study. Secondary data has been collated and analysed from various government portals, published guidelines and articles. Field visits reports and inputs based upon experiences have also been documented. The analysis was simply done on Microsoft excel.

Results: While the accessibility and affordability for referral services have improved over the years, a gap in the timely and assured deployment, along with the quality of services still exists which calls for further strengthening of the existing referral transport system in the country. Conclusions: While the pandemic is still lingering around in different forms and variants across the

world, a sustainable health system strengthening approach and preparedness is necessary to prevent any public health emergency in future. The country needs an integrated model which is responsive to the needs of the population for meeting their medical, surgical, accidental, and other emergencies along with assured transport with a trained technician. The paper highlights upon the specific areas which needs strengthening of the existing ambulances system, along with the proposed plan to experience a robust emergency and referral care delivery system in the country.

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### The impact of COVID-19 pandemic on the Albanian healthcare system

Martina Giusti<sup>1</sup>, Vieri Lastrucci<sup>2</sup>, Maria Caldes<sup>3</sup>, Niccolò Persiani<sup>1</sup>

<sup>1</sup>Department of Experimental and Clinic Medicine, University of Florence, Florence, Italy, <sup>2</sup>Department of Health Science, University of Florence, Italy, <sup>3</sup>Centre of Global Health of Tuscany Region, Italy

During the COVID-19 pandemic national health emergency networks have been stressed at worldwide level. The responses of each network were different according to the models of the national healthcare system and the adopted strategies. This research aims to investigate the impact of the COVID-19 pandemic in the transitional countries. Albania was selected as representative among the transitional countries for its territorial and cultural proximity of Europe. The methodology of national case study was chosen. The analysis of the country was conducted both with interviews to the top managers of National Centre for the Health Emergencies 127 and the National Institute of Insurance, and with the desk analysis of the documents received by the same. Data showed that the number of calls to 127 increased by 47% in 2020, 56% in 2021 and 31% in 2022 (compared to 2019) for COVID-19. The requests were predominantly managed by telephone medical counselling (+243% in 2020, +89% in 2021 and +25% in 2022). This resulted in a strong containment of the growth in the number of missions (+15% in 2020, +22% in 2021 and +5% in 2022). In particular, the missions were completed more on site (+21% in 2020, +30% in 2021 and +7% in 2022) that with a transport in hospital (+12% in 2020, +17% in 2021 and +3% in 2022). This led to a reduction of access to health emergency departments of -25% in 2022 and -9% in 2021. However, hospital expenditure on emergency grows only by 22% in 2020 and 22% in 2021 in the face of higher costs for the management of patients affected by COVID-19. The strategy of the Albanian Healthcare System to manage COVID-19 positive patients at home has contained the impact the outbreak on costs of hospital emergency departments.

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### Private healthcare and economic commodification of health are creating equity and inclusivity issues for healthcare systems in India

Mahesh Bhatt<sup>1</sup>

<sup>1</sup>MMBSHS Trust, Dehradun, India

**Background and Objectives:** COVID-19 exposed the equity and inclusivity issues of healthcare systems globally. This study aimed to understand the commodification of healthcare and equity, inclusivity issues, and privatization of healthcare in a diverse country of 1.3 billion people, India.

**Methods:** We analyzed the increase in population between 2011 and 2020, data provided by government agencies, NGO reports, and media regarding expenditure on healthcare by the government, healthcare resources, health services utilization, and gaps in rural and urban healthcare.

**Results:** While the population of India increased by 13.25% from 2011 to 2020, health expenditure only grew by 0.39%. Three-fourths of the population relies on private healthcare and out-of-pocket spending, so the finance commission recommended increasing healthcare spending to 2.5% of GDP by 2025, which appeared difficult with current budgetary trends and political conditions. 80% of doctors work in urban areas where only 30% of the population lives, resulting in the vacant posts of doctors in rural and semi-urban areas. Unnecessary tests, procedures, unwarranted surgeries, and over-medicalization of healthcare are due to over-commercialization. The system forces doctors to decide on their employers' business interests, neglecting ethics. Market-driven healthcare inflation increases the vulnerabilities of vulnerable sections of society multiple times, pushing 50-55 million Indians below the poverty line every year.

**Conclusions:** The nudging of strong market-driven forces on healthcare policy frameworks of India is apparent in the PPP model implementation and insurance. Big hospitals, diagnostic facilities, and pharmacies have business interests in urban middle and upper-middle-income households. They are least interested in

Primary Health Care and less lucrative National Health Mission (NHM) activities, which are necessary for universal health coverage (UHC), equity, and inclusivity in healthcare. Privatization is increasing commercialization, creating a vicious cycle of commodification and over-medicalization of health, widening the service gaps, and losing confidence in public healthcare.

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### Barriers and facilitating strategies to implementing social prescribing in primary care settings in Lisbon: a qualitative study to explore key stakeholders' perceptions

Sónia Dias<sup>1,2</sup>, Louise Hoffmeister<sup>1,2</sup>, Ana Gama<sup>1,2</sup>

<sup>1</sup>National School of Public Health, NOVA University of Lisbon, Lisbon, Portugal, <sup>2</sup>Comprehensive Health Research Center (CHRC), Campo Mártires da Pátria, Lisbon, Portugal

Social prescribing (SP) is an intersectoral strategy of integrated care involving a link worker and multiple stakeholders to address users social, economic and emotional needs through the activation of community assets. SP can contribute to improve individuals' health and well-being and strengthen health systems responsiveness and efficiency. Gaps remain about challenges and influencing factors of SP implementation process. This study assessed perceived barriers and facilitating strategies of implementation of a SP project in two Family Health Units in Lisbon. Semi-structured interviews were conducted with 9 stakeholders (family doctors, social workers and community partners involved in SP), exploring barriers and facilitators to SP planning and implementation. Data were analysed through content analysis technique based on the Consolidated Framework for Implementation Research domains. The main challenges in SP implementation described by participants were the insufficient human resources, lack of time from the link workers, lack of available community responses, and reduced user awareness and adherence to the intervention. Key facilitators of the intervention included knowing the community resources available and having the professionals qualified for the role of link worker. Strong engagement of general practitioners, health authorities and technicians from community sector, frequent communication between stakeholders, and physical presence of link workers at health services were also identified as facilitators. Furthermore, having a national commitment towards SP and the support of a trustworthy research team to monitor and evaluate SP implementation were highlighted. The settings specificities are crucial for the success of the SP, but they directly depend on both organisational and individual factors that change across contexts. Priority actions for effective implementation should focus on investments in training of health professionals and community partners and promotion of user adherence. These actions may contribute to maximising the SP benefits for improved integrated care, multisectoral collaborations, and health system strengthening and sustainability.

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### Prevention as a model for taking charge of the chronic and multichronic patient

Vicenzo Gaudio<sup>1</sup>, Adele Sarcone<sup>2</sup>, Arrigo Palumbo<sup>3</sup>, Rossella Zucco<sup>4</sup>

<sup>1</sup>PREVENTION DEPARTMENT ASP COSENZA, <sup>2</sup>Università degli Studi "Magna Græcia", Italy, <sup>3</sup>Department of Medical and Surgical Sciences, Magna Græcia University, Catanzaro, Italy, <sup>4</sup>APS Cosenza, Public Health Unity, Prevention Department, Cosenza, Italy

**Introduction and Objectives:** The project in question is part of various interventions already defined at national and regional level regarding the management of chronicity and multichronicity. Chronic pathologies are progressively growing and, requiring continuity of assistance for long periods of time as well as a strong integration with social services, they use up a large part of the resources of the SSR. Chronic-degenerative diseases weigh on the daily lives of four out of ten Italians.

**Methods:** The criteria for monitoring the evolution of the severity of the state of health will be defined and innovative tools will be defined that are useful for identifying the chronic population in a condition of serious frailty that requires greater social-health care. The system will have to make it possible to modify the diagnostic therapeutic assistance approach according to the seriousness of the social context in which the patient has fallen through pathology-specific integrated assistance programs - Disease management programs - based on the Chronic Care Model (CCM), developed for partially obviate the financial and organizational fragmentation of the health service and try to bridge the gap between the abundance of resources employed, services provided and the relative shortage of health outcomes.

**Conclusions:** 1. The project idea that we intend to present concerns the

implementation of a modern telemedicine system aimed at patients suffering from chronic diseases. The telemedicine module is of fundamental importance, as it allows remote clinical screening of all those patients with chronic and multichronic pathologies, in order to avoid hospitalization of the patients themselves. 2. This project also involves the use of an Augmented Reality Device that allows you to interact with holograms in the physical environment. With this approach, the way of thinking about telemedicine changes completely.

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### Multi-sectoral approach in health sector: focusing on public-private partnership under the National Health Mission in India

Upasana Mohanty<sup>1</sup>, Anushka Sahu<sup>2</sup>

<sup>1</sup>Kalinga Institute of Industrial Technology (KIIT), School of Law, Odisha, India, <sup>2</sup>School of Law, Kalinga Institute of Industrial Technology (KIIT), Odisha, India

**Background:** Public-private partnership (PPP) has remained an integral part of health reforms in India and is persisting to be an essential component of the National Health Mission (NHM). India being a welfare state has invariably emphasized the public delivery of services. However, due to concerns about underfunding in the public sector, the private sector stepped into the health sector and identified their roles and responsibilities for the effective implementation of health services and programmes. They have been mutually dependent and there has been a history of successful collaborations. The goal of this paper is to look at evidence on the performance of PPPs in health care services, and identify the challenges and give recommendations for a robust system.

**Methods:** The authors have systematically reviewed peer-reviewed literature, specifically from the SCOPUS database. Data have been retrieved from the official archives of the Government of India online portals to provide us with significant information regarding the characteristics of the PPP model and other relevant evaluative studies.

**Results:** The findings demonstrate that the majority of PPPs are based on contractual models. In the recent decades, the private sector has rapidly diversified its scope in the health sector and contributes > 70%. Emphasis needs to be given in the governance structure, monitoring framework, and redressal mechanism.

**Conclusions:** It is important to provide a conducive environment in building the capacities of the states in administering PPP that will eventually help to establish a transparent, long-term, and sustainable public health system. From the capacity building of all actors involved in the partnership to assess the functioning, it becomes important to frame policies, legal and institutional frameworks to engage the private players.

**Keywords:** public-private partnership, National Health Mission, health policy, healthcare sector

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### Working from home made possible in a health care facility - the experience of a tertiary hospital during the first COVID-19 wave

Avi Magid<sup>1,2</sup>, Netanel Horowitz<sup>3,4</sup>, Avi Magid<sup>3,5</sup>, Ronit Almog<sup>1,4</sup>, Yael Shachor-Meyouhas<sup>1,4</sup>, Avi Weissman<sup>1,4</sup>, Michael Halbertal<sup>1,4</sup>, Michal Meke<sup>1,6</sup>

<sup>1</sup>Rambam Health Care Campus, Haifa, Israel, <sup>2</sup>The Max Stern Yezreel Valley College, Emek Yezreel, Israel, <sup>3</sup>Management, Rambam Health Care Campus, Haifa, Israel, <sup>4</sup>The Ruth and Bruce Rappaport Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel, <sup>5</sup>The Max Stern Emek Yezreel Valley College, Israel, <sup>6</sup>The Ruth & Bruce Rappaport Faculty of Medicine, Technion-Israel Institute of Technology, Haifa, Israel

**Background and Objective:** In recent years working from home (WFH) has become more common worldwide. In spite of its advantages, its prevalence worldwide before the outbreak of the COVID-19 pandemic was relatively low. The outbreak of COVID-19 pandemic enforced millions of employees to switch to WFH. Unlike other work domains, data regarding the efficiency of WFH in health systems are sparse. The objective of this study was to describe the experience of WFH in a tertiary care center during the first wave of COVID-19, and to evaluate its efficiency as perceived by employees and managers.

**Methods:** WFH for one day a week was permitted to selected hospital employees according to predefined criteria. A cross-sectional online survey was distributed to all employees to evaluate the experience, including the perceived efficiency and satisfaction while WFH. Descriptive analyses were used to describe the WFH characteristics.

**Results:** Out of 611 employees who answered the survey, 26% were managers, and 42% were permitted to WFH. Most managers were able to evaluate the employees' work efficiency (98%), had good communication with the employees while WFH

(96%), and evaluated the employees' work performance as satisfactory (100%). Most WFH employees worked in a private setting (85.7%) during fixed hours (84%). Only 43.1% combined home tasks with WFH. Almost all WFH employees reported meeting their working goals (98.7%), and perceived WFH as efficient (98.7%) with high quality (97%).

**Conclusions:** Our experience during the COVID-19 pandemic demonstrated that partial WFH can be successfully implemented in a large tertiary hospital with satisfaction of both employees and managers. WFH may now be gradually implemented to routine times without compromising work goals and objectives.

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### Which sectors should be involved in public health emergency preparedness, response and recovery?: a RAND modified consensus procedure among European union national experts

Sandra Kamga<sup>1</sup>

<sup>1</sup>National Institute for Public Health and the Environment (Netherlands) Netherlands

**Background and objective:** There is a clear need for a better understanding of optimal configurations and timing of multisectoral collaboration during public health emergencies (PHE). With this study, we aim to gather European national experts' views on which sectors should be involved in public health emergency (PHE) preparedness, response and recovery.

**Methods:** The study was designed based on the RAND modified consensus procedure, consisting of three consecutive steps. Firstly, a questionnaire was conducted amongst European national experts involved in the COVID-19 pandemic, to collect views on (1) sectors that should be involved in PHE preparedness, response, and recovery, and (2) recommendations on how to improve national PHE to include multisectoral collaboration. Secondly, a hybrid expert meeting took place to discuss the inclusion or exclusion of sectors and recommendations for which consensus was not met in the first questionnaire. Lastly, a second questionnaire was conducted with the aim of reaching consensus for the items discussed during the meeting.

**Results:** According to the 26 national experts from 12 countries that participated, the following sectors should be involved in all PHE phases: (1) Agriculture, forestry, fishery and the environment, (2) Human health industry, (3) ICT service activities, (4) (Human) Transportation and Points of entry, (5) Education and training, (6) Energy and water supply, sewerage and waste management, (7) Media and communication, (8) Governmental institutions, (9) Experts, (10) Civil Society, (11) Veterinary activities, and (12) Chemical industry. Additionally, the sector "Personal service, administrative support and security investigation activities" should also be included in the response phase. All 10 suggested recommendations on how to improve national PHE plans to include multisectoral collaboration were accepted. **Conclusion:** This study provides guidance on sectors to consider when designing and/or evaluating national PHE plans, as well as recommendations on how to integrate multisectoral collaboration in preparedness and response plans.

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### One health community-based systems for prevention and preparedness to vector-borne diseases: a situation analysis of the MediLabSecure network

Maria Dente<sup>1</sup>, Claudia Robbiati<sup>1</sup>, Alessia Milano<sup>1</sup>, Silvia Declich<sup>1</sup>

<sup>1</sup>Istituto Superiore di Sanità - Italian National Institute of Health, Italy

**Background and Objectives:** Vector-borne diseases (VBDs) are on the surge due to global and climate changes. The "Global Vector Control Response 2017–2030" strategy calls for community engagement and inter- and intra-sectoral action, as exemplified by the One Health (OH) approach. Evidence needs to be gathered about how countries are engaging communities for VBDs OH prevention and preparedness.

**Methods:** The MediLabSecure project ([www.medilabsecure.com](http://www.medilabsecure.com) [1] - European Commission/NDICI THREATS FPI/2021/427-564) aims to prevent VBDs by promoting OH approaches to emerging arboviruses within an international network of 22 countries across the Mediterranean, Black Sea and Sahel Regions. A situation analysis, including an online survey and a workshop, were promoted within the network to explore to what extent the countries engage communities for arbovirus prevention and preparedness with a OH approach.

**Results:** Within the MLS network around half of the countries national VBDs plans or strategies include community engagement and 15 countries have community systems for arbovirus prevention and preparedness, mostly involving vector and disease surveillance. These systems embrace at least two sectors (human health, entomology or animal health), and most of them share data with institutional

surveillance systems. Countries not mobilising communities deem this as feasible and identified the main barriers in the lack of financial support and the difficult integration with the institutional systems. To support the implementation of VBDs OH community-based prevention and preparedness an enabling financial and policy framework, evidence about design, implementation and effectiveness of community systems are necessary.

Conclusion: The survey and the workshop identified community-based systems in place within the MLS network and areas for improvement. Decision-makers would be supported in the co-design of OH community-based systems for arbovirus and VBDs prevention and preparedness, integrated with institutional systems. This case-study could be replicated in other countries to support them in the identification of opportunities to improve community engagement. Links:-----[1] <http://www.medilabsecure.com>

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### Using community-university partnerships to implement WHO's Intersectoral Global Action Plan on epilepsy and other neurological disorders (IGAP) 2022-2031: an example focusing on mental health in children with epilepsy and their parents

Kathy Speechley<sup>1</sup>, Karen Bax<sup>2</sup>, Klajdi Puka<sup>3</sup>, Mary Secco<sup>4</sup>, Michelle Franklin<sup>5</sup>, Karina Tassiopoulos<sup>3</sup>, Alyssa Mueller<sup>6</sup>

<sup>1</sup>Western University, Paediatrics and Epidemiology & Biostatistics, Children's Hospital, LHSC, 800 Commissioner's Road East, London ON, N6A 5W9, Canada, <sup>2</sup>Western University, <sup>3</sup>Western University, Epidemiology & Biostatistics, 1465 Richmond Street, London, ON, N6G 2M1, Canada, <sup>4</sup>Epilepsy SouthWestern Ontario, International Bureau for Epilepsy, 797 York St, Unit 3, London, ON, N5W 6A8, Canada, <sup>5</sup>Epilepsy SouthWestern Ontario, <sup>6</sup>Western University, Psychology, 1465 Richmond St, London, ON, N6G 2M1, Canada

Background/Objective: In 2022, WHO's Member States approved The Intersectoral Global Action Plan on Epilepsy and other Neurological Disorders (IGAP), endorsing a comprehensive, coordinated, intersectoral response to reduce gaps in epilepsy knowledge and treatment. Given the importance of IGAP implementation, we aim to illustrate how partnerships between community agencies and academic researchers can accelerate uptake of evidence-based programming to enhance quality of life in people with epilepsy.

Methods: Academic researchers were approached by a community epilepsy agency about the need for a new approach to reduce stress and manage emotions and behaviors among children with epilepsy and parents. Together we delivered and evaluated a mindfulness-based parent and child program designed to improve mental health. We assessed feasibility of interactive online delivery by agency staff to enable scaling up delivery across our region and beyond.

Results: We executed a randomized controlled feasibility trial with 73 child-parent dyads. Benefits and challenges were documented from the perspectives of community agency and researchers. We identified two key mutual benefits: our research directly addresses a community-identified need to foster mental health in children with epilepsy and parents, and funding is easier to secure due to our effective partnership. Challenges for the community partner include time required to learn and execute research processes. Challenges for researchers include innovation and flexibility required to design interventions for integration into agency operations given limited resources. We will present specific lessons regarding key facilitators for success.

Conclusion: This intersectoral partnership between a community epilepsy agency and an interdisciplinary team of researchers demonstrates one example of implementing the IGAP's Strategic Objective 5: Strengthen the public health approach to epilepsy. We articulate specific facilitators to overcome barriers to achieve IGAP's "148 (d) conduct implementation research, including the dissemination of lessons learned to accelerate the scale-up of successful strategies to strengthen epilepsy services".

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### Success of systems thinking in prevention - community perspectives

Tiana Felmingham<sup>1</sup>, Elizabeth Hoban<sup>1</sup>, Kathryn Backholer<sup>1</sup>, Steven Allender<sup>1</sup>

<sup>1</sup>Deakin University, Australia

Background and Objective: Systems thinking is increasingly being used in communities to address some of the world's most complex public health challenges. A method within systems thinking, community-based system dynamics, helps communities visualise factors and interconnections of complex problems from the community's perspective, identifying potential action and

empowering communities to lead community change. While there are numerous descriptive examples of community-based system dynamics in the literature, there are fewer examples documenting evaluation. This study aimed to understand success of community-based system dynamics in public health practice and implementation factors that influence success, from the perspective of practitioners (health professionals) and participants of community-based system dynamics approaches.

Methods: Semi-structured, in-depth interviews were conducted with health professionals, organisational public health leadership and community members that took part in community-based system dynamics case studies in rural Victoria, Australia. Interview questions were derived from the constructs of Community Coalition Action Theory and Complexity Theory.

Results: Inductive thematic analysis was used to group and theme data from interviews. Themes related to success and implementation drew on constructs of Community Coalition Action Theory (stages of development; community context; lead agency or convening group; coalition membership; processes; leadership and staffing; structures; member engagement; and pooled member and external resources) and Complexity Theory. The outcomes of the analysis identified interactions between descriptors, feedback loops and unintended consequences. Conclusion: This study helps us to understand success of community-based system dynamics in practice, including implementation factors that influence success. More evaluation examples of community-based system dynamics are needed. These findings advance systems thinking practice in public health by informing evaluation and measurement of effectiveness in the community setting. This study helps us understand how and why existing practice influences outcomes in the community.

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### The Comprehensive Sexuality Education - Adolescent Reproductive Health (CSE ARH) Convergence: a multi-sectoral service delivery intervention integrating homes, schools, and communities

Jeffrey Lorenzo<sup>1</sup>, Maria Murga<sup>2</sup>, Algin Gultia<sup>3</sup>, Lucille Galicha<sup>4</sup>

<sup>1</sup>Johns Hopkins Center for Communication Program, USAID ReachHealth Project, F. Ortigas Jr. Road, Ortigas Center, 1600 Pasig City, Metro Manila, Philippines, <sup>2</sup>Johns Hopkins Center for Communication Program, <sup>3</sup>Johns Hopkins Center for Communication Program, JHU CCP, F. Ortigas Jr. Road, Ortigas Center, 1600 Pasig City, Metro Manila, Philippines, <sup>4</sup>RTI International, USAID ReachHealth Project, F. Ortigas Jr. Road, Ortigas Center, 1600 Pasig City, Metro Manila, Philippines

USAID ReachHealth project conducted a Human-Centered Design study with over 200 teens and their influencers to understand teenage pregnancy in the Philippines. Key insights led to the development of the Comprehensive Sexuality Education - Adolescent Reproductive Health (CSE-ARH) Convergence. This is an inter-sectoral and multilateral network of government agencies and organizations that seeks to harmonize strategies, share resources, and implement collaborative activities to strengthen the referral pathways of school-based interventions to increase the utilization of adolescent friendly health information and medical services.

The CSE-ARH Convergence has five components: A. Setting up - 1) Endorsement and Partnership, 2) SBC Tools and Materials Consolidation and Development, 3) Building Capacities of Schools and Communities. B. Delivery of Programs and Services - 4) Provision of Quality FP-ARH Information and Services. C. Cross-cutting - 5) Monitoring, Evaluation and Learning. Each component has its own features, level of collaboration, and designed tools. The Convergence model recognizes the social determinants of teenage pregnancy and tackles this on multiple levels - from helping teenagers themselves access accurate FP-ARH information, to building the capacities of parents, teachers, health service providers, and students; to strengthening in-schools health services and establishing functional referral links between schools and health facilities certified as adolescent friendly. The on-going implementation has already shown some results: government commitments established through policies and budget plans issued; national teen campaign launched and rolled out; students engaged as peer health navigators; psychosocial assessments being provided in pilot schools; referral links established with health facilities certified as adolescent friendly. More lessons will be shared in the next few months.

The convergence model can unlock the full power of partnership as it serves as a platform for collaboration, resource sharing, meaningful engagement of key stakeholders especially the teens, and sustaining efforts on family planning and adolescent reproductive health in the Philippines.

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## Multisector Collaboration Model for COVID-19 Diagnostics in the Philippines

Angeli Comia<sup>1</sup>, Jacqueline Momville<sup>2</sup>

<sup>1</sup>Zuellig family foundation, Philippine society of public health physicians (PSPHP), Block 3 lot la residencia virginia subdivision, majada out, calamba city, Philippines 4027, Philippines, <sup>2</sup>Provincial health office of agusan del sur

**Background and Objectives:** The fragmentation and unpreparedness of the healthcare system for the management of the COVID-19 pandemic led to high local transmission and mortality. Due to the lack of testing facilities for COVID-19, the local government of Agusan del Sur depended on national and regional molecular laboratories with a turnaround time of 5 to 10 days. Hence, the late detection of COVID-19 resulted to further spread and overwhelmed the local health system capacity. This study aimed to determine the effectiveness of establishing a molecular laboratory through a multisector collaboration.

**Methods:** Applying the Health Change Model by the Zuellig Family Foundation, the leaders received training, coaching, mentoring, and technical assistance with an increased sense of urgency to establish and institutionalize effective and efficient testing for COVID-19 to cater to the people of the province and the nearby areas in northeastern Mindanao. The empowered leaders of the province collaborated with different public agencies, civil society organizations, and the private sector to contribute expertise and valuable resources to establish their own molecular laboratory for faster COVID-19 detection.

**Results:** The proactive and collaborative approach in the province of Agusan del Sur to institutionalize its own testing capacity resulted in a significant reduction in turnaround time from 5-10 days to less than 24 hours and even less than 4 hours for stat samples in emergency cases.

The expanded testing capacity made a huge contribution in identifying, isolating, and managing SARS-CoV-2 positive individuals, facilitating biosurveillance activities and research

**Conclusion:** The empowered leaders exemplified the Health Change Model in engaging stakeholders to share accountability and prioritize the building of reliable and sustainable diagnostic testing for COVID-19 and for other infectious diseases. Early detection of COVID-19 effectively controlled and rapidly reduced the infection and subsequent mortality in the community.

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## A systems approach to strengthening health service delivery in catastrophic injury related disability

Chebiwot Kipsaina<sup>1</sup>, Angelita Martini<sup>2</sup>

<sup>1</sup>Brightwater Care Group Brightwater Research Centre, Brightwater Care Group, Inglewood, Australia; Curtin Medical School, Curtin University, Bentley, Australia; Brightwater Research Centre Brightwater Central 2A Walter Road West Inglewood WA 6052, Australia, <sup>2</sup>Brightwater Care Group Brightwater Research Centre, Brightwater Care Group, Inglewood, Australia; The University of Western Australia, Crawley, Australia Brightwater Research Centre, Brightwater Central, 2A Walter Road West Inglewood WA 6052, Australia Australia

**Background and Objectives:** Despite widespread application of the systems approach to tackle several public health problems -tobacco control, obesity, and chronic diseases, its application in injury related disability is limited. This study will describe a systems approach to disability and health service delivery derived from the World Health Organisation (WHO) Health Systems Strengthening framework for use by practitioners. The premise of the proposed health system framework is that an effective systems approach to public health issues such as disability, is a result of continuous interaction and interconnectedness of the building blocks, namely - service delivery, financing, governance, the health workforce, information systems, and supply management systems.

The study aims to develop an injury related disability service delivery model that applies systems approach for desired health outcomes and with the potential to strengthen the health systems.

**Methods:** Based on pilot work conducted in 2019, current study will synthesise diverse insights from injury related disability service delivery experiences and observations, review of the literature and the findings of the pilot study.

**Results:** Informed by the WHO framework for strengthening health systems and the nine key areas of the framework for implementation of the WHO Ouagadougou Declaration on primary health care and health systems, the study will present findings under the key elements required to underpin optimal delivery of injury rehabilitative service: (i) Leadership and governance; (ii) Service delivery; (iii) Workforce; (iv) Financing; (v) Technical equipment and supplies (Health

technologies); (vi) Health information; (viii) Community participation; (viii) Social determinants of health; (ix) Partnerships (xi) Co-designed research.

**Conclusion:** The Service Delivery Model is a tool which will deliver a base of evidence, quality measures and innovation to guide practitioners and policy makers in planning, developing, and implementing an integrated approach to strengthening health systems for delivery of injury and disability related rehabilitative services.

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## Strengthening team building and capacity development for data quality: the case of hiv program in delta state, Nigeria

Tommy Umukoro<sup>1</sup>, Paul Marcus<sup>2</sup>, Uparegh Imoter<sup>3</sup>, Oko, Okpanachi<sup>3</sup>, Olanrewaju Olayiwola<sup>2</sup>

<sup>1</sup>Caritas Nigeria Plot 459 Cadastral Zone B2, Durumi 1, Garki, Abuja Nigeria, <sup>2</sup>Caritas Nigeria, <sup>3</sup>Caritas Nigeria 1 Durumi 1, Garki, Plot 459 Cadastral Zone B2, Abuja Nigeria

**Background:** Improving human resource management and capacity building to improve health service delivery is critical for a cohesive workforce and quality reporting in any program. Our HIV program intervention in Delta state was hampered by insufficient capacity among program and team members, which hampered the turnaround time for quality and timely reporting of program activities. The purpose of this study is to assess the efficacy of the approaches used to improve data collection, analysis, and dissemination, which resulted in improved data quality and reporting.

**Method:** Observational studies and questionnaires were used to assess each team members capacity gaps. The result of this studies were analyzed. Each team were mentored for 6 -12 months based on their identified training needs. Regularly virtual training were provided with personal development opportunities like individual courses to help them broaden their skills and knowledge. Each teams progress was tracked over time, and feedback was provided through spot checks and capacity reviews. Identify areas for improvement and deal with problems that are affecting team performance. Individual and team performance awards were used as incentives to promote healthy competition and team motivation.

**Results:** Over the course of two years, 73 team members were trained. Program reporting and report completion increased from 24% at the start of the project to 100%. In 2022, the number of team members who completed a learning resource increased from 13 to 83. In Delta state, the number of HIV patients receiving treatment increased from 14,000 in 2017 to 72,000 by 2022.

**Conclusion:** Encouraging the exchange of ideas, skills, competencies among team members helps in team building and is an effective method to capacity building. Gaps in data quality and reporting timeliness can be filled by increasing team members capability through online courses and improving communication between team members and their supervisors.

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## Management of a west Nile virus case in the province of catania: A one health approach

Milena Nardi<sup>1</sup>, Giuseppe Mangano<sup>2</sup>, Rosario Vinci<sup>3</sup>, Mirella Basile<sup>4</sup>, Francesco Mancusa<sup>5</sup>, Mario Cuccia<sup>6</sup>, Gabriele Giorgianni<sup>6</sup>, Melissa Gullotta<sup>3</sup>

<sup>1</sup>Università degli studi di Catania via cristoforo colombo 28 Italy, <sup>2</sup>Università degli studi di Catania, <sup>3</sup>Università degli studi di Catania Italy, <sup>4</sup>Dipartimento di prevenzione veterinaria, asp CT Italy, <sup>5</sup>Dipartimento di prevenzione veterinaria, asp CT, <sup>6</sup>Dipartimento di prevenzione, SEMP, asp CT Italy

**Background and Objective:** Vector-borne infectious diseases (VBDs) are a major public health concern worldwide. West Nile virus (WNV) was first reported in Europe in 1958. The Minister of Health, since 2002, has activated the National Surveillance Plan for WND. In 2022, 588 confirmed cases of infection in humans were reported in Italy, including 295 neuro-invasive forms and 37 deaths. In Sicily, 3 cases have been reported, 2 in Trapani and 1 in Catania. In October, a case of WND was confirmed in a woman in Ramacca (CT), in an area already under surveillance for previous cases in equines.

**Methods:** After the human case, the veterinary prevention department of the ASP of Catania enforced clinical and entomological surveillance in stables within a 10-kilometer radius. The equids with nervous symptomatology were notified in SIMAN, and all animals in place were serum sampled for ELISA-IgM test and blood sampled with EDTA for RT-PCR. Anatomopathological examination was performed on the two deceased animals. An information campaign started involving mayors and breeders of Paternò and Ramacca municipalities.

**Results:** The clinical surveillance revealed 2 outbreaks confirmed in equids, one in Ramacca (3 cases) and the other Paternò (21 cases). Laboratory findings for the deceased horse in the outbreak in the municipality of Paternò resulted in the

isolation of WNV Lineage 1. On entomological surveillance, no mosquitos (*Culex pipiens*) were positive for WNV.

Conclusions: Climate change could determine the increase of *Culex pipiens* circulation, promoting the possible spillover of WNV, which is usually present only in 1-2% of circulating mosquitoes. Therefore, it's not surprising, despite the presence of the virus in 24 equids and the human case, the virus could not be isolated in entomological samples. In conclusion, only a multidisciplinary, one-health approach could contain WNV spread and the risk of human transmission.

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### Understanding Consumer Perspectives to Improve the Local Food Environment and Healthy Eating Behaviors

Rachael Dombrowski<sup>1</sup>, Alyssa Beavers<sup>2</sup>, Bree Bode<sup>1</sup>, Winona Bynum<sup>3</sup>, Dazmonique Carr<sup>4</sup>

<sup>1</sup>California State University San Marcos 333 S. Twin Oaks Valley Road ELB 507 United States, <sup>2</sup>Wayne State University United States, <sup>3</sup>Detroit Food Policy Council, <sup>4</sup>Detroit Food Policy Council United States

Detroit residents experience an abundance of health inequities and poor health outcomes. Rates of obesity are 44 percent among youth and 70 percent among adults. Nearly 40 percent of Detroit families live in poverty and 30 percent of families do not have access to reliable transportation. The Detroit Grocery Coalition has collaborated with consumers over the past five years to create the Great Grocer Project (GGP), which assists local, independent grocers in improving their healthy food offerings, increasing access to high-quality healthy foods and promoting positive health outcomes and economic vitality for local communities. Intercept surveys among consumers (N=166) were completed within 43 stores and assessed consumer awareness of the GGP activities, healthy eating behaviors, food security and other health outcomes. Focus groups were also conducted within seven Detroit neighborhoods (n=38) to assess consumer perspectives of their local food environments. Survey and focus group participants were African American (78%) and female (53%) with half utilizing SNAP. Participants used personal vehicles for their grocery shopping (68%). Thirty percent of participants reported shopping in chain grocers within five minutes of their home. Only 12% of Detroit consumers met the Recommended Dietary Intake (RDI) for fruit, 8% reported meeting RDI for vegetables and 12% met RDI for intake of sugary drinks. Most focus group participants discussed a need to improve the quality of healthy foods sold in their local stores and wanted to assist local store owners in making those improvements. Improving quality of healthy foods would enable greater consumption of these foods according to reports from focus group participants. Community perceptions of the local food environment present ample opportunity for improving the availability of healthy options, improving healthy behaviors and reducing chronic disease. Consumers reported preference in utilizing a neighborhood store for their groceries, as long as stores are clean and welcoming.

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### The World Bank and Health Systems: A Policy Process Analysis

Amitabha Sarkar<sup>1</sup>

<sup>1</sup>Global Health Centre, Geneva Graduate Institute Indian Public Health Association Office: Bureau P2-718, Maison de la Paix, Chemin Eugène-Rigot 2, 1202 Geneva Mailing address: CP 1672, 1211 Geneva 1, Switzerland Switzerland

Background: The health systems is a domain of policy-based lending for development financing institutions (i.e. the World Bank) to improve the health of the population in the low and low-middle income countries. The aim of this research is to explore the instrumental role of the Bank's health systems policy. It is a policy process analysis to understand how the Bank's health systems policy gets formed and formulated (at the international-level of the macro system), then adopted and modified (at the national-level of the meso system) and finally implemented and operated (at the regional-level of the micro system).

Methods: This policy process analysis has been conducted by using three methods at various levels of the policy; discourse analysis (formation-formulation), situation analysis (adoption-modification), institutional and context analysis (implementation and operation).

Results: The World Bank has been active in the formulation of health systems policy for the last four decades by developing various health systems approaches (such as, basic health care, health systems development, health systems strengthening). The analysis finds that the Bank's health systems policy content at the macro level (international) has always been determined by the interactions between global economic governance and global health governance. At the meso system (India as a case study), the health systems policy with the help of policy

tools (Country Assistance Strategy) and instruments (research and lending) forge alliance with the existing national health plan to further percolate down to the state level. Finally, the health systems policy as health systems approach (in programmatic form) gets implemented and operated at the micro system by often using the decentralization structure of governance (Karnataka as a case study). Conclusion: The economic management of health care and not epidemiological reasoning is getting primacy in policy defining (macro-level), designing (meso-level) and programming (micro-level) decisions. This adversely affects the policy outcomes.

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### Partnership between public health and the police – needed more than ever

John Middleton<sup>1</sup>, John Middleton<sup>1</sup>

<sup>1</sup>ASPHER Avenue de Tervueren 153, 1050 Brussels Belgium

Joint working between police and public health professionals is essential, for example, in emergency preparedness and response; safeguarding children and vulnerable adults; responses to acute mental health problems, problems of addiction and domestic violence; accident prevention; offender management and rehabilitation; and preventing racial violence. In the UK community safety partnerships continue to be the overarching bodies representing local authorities, the police, health services and public health, fire services, community and minority representatives and charged with planning to prevent crime and violence at local administrative level. Knowledge of the epidemiology of violence and crime, and evidence-based interventions have increased. There is growing recognition of the impact of adverse childhood experiences and the need for trauma-informed interventions by police and health services. The development of partnerships between police and public health requires enthusiasm, expertise, mutual respect and commitment by senior officers and officers working at the frontline.

Joint training is essential. Co-location is beneficial where joint decision making in real time is necessary as in children's safeguarding and mental health responses. Progress in partnerships has been undermined by austerity policies, political indifference, and disruptive service reorganisations. This paper will describe my experiences over 40 years of working with the police at local, national and international levels. In the age of pandemics and populism, it is more vital than ever that public health and police forces work together and develop effective partnerships, for the safety and health of the communities they serve.

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### Development of a national human rights survey using equal explanatory power - flipping the picture in the collection of national survey quantitative data honouring indigenous populations

Emma Patu<sup>1</sup>, Kerri Kruse<sup>2</sup>, Emma Patu<sup>3</sup>

<sup>1</sup>World Federation of Public Health Associations PHANZ 81b Maraetai School Road Auckland 2018 New Zealand, <sup>2</sup>Human Rights Commission New Zealand New Zealand, <sup>3</sup>World Federation of Public Health Associations PHANZ New Zealand

The Human Rights Commission is the NATIONAL HUMAN RIGHTS INSTITUTION FOR NEW ZEALAND. We work across New Zealand to increase human rights standards in law, policy and practice. As a national human rights institution we work for a free, fair, safe and just New Zealand, where diversity is valued and human dignity and rights are respected. In New Zealand we work to uphold te Tiriti o Waitangi, the foundational document that upholds the rights of all New Zealanders and acknowledges the partnership relationship between Maori, the Indigenous people, and the British Crown. New Zealand is working hard to understand its contemporary responsibilities to this document and to uphold, authentically the rights of Indigenous New Zealand as it has not done since it was signed in 1840. The HRC is developing a unique quantitative national survey honouring this important document and partnership relationship. It is the first time a national survey has been developed to acknowledge an Indigenous population as a Population Group in its own right rather than as a minority. Equal Explanatory power is being used to collect a data sample that reflects this treaty partnership in action in quantitative research. This project demonstrates how to work in authentic partnership in the development of such a project from the design, leadership and decision making at all levels and includes an advisory group that also reflects that partnership by ensuring that at least half is comprised of Indigenous Academics and advisors. This is a unique opportunity to share this ground breaking methodology and approach and demonstrate to others how ideas of co-governance, shared decision making and authentic partnerships

with Indigenous peoples can be utilised to strengthen human rights practice, and ultimately the health outcomes of populations by gathering large scale quantitative data to inform Human Rights practice and mechanisms globally.

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### **Intersectorality as an instrument to improve unified health system (sus) performance: mapping the intersectoral agendas of the ministry of health of Brazil**

Jamyle Grigoletto<sup>1</sup>, Jessica Quadros<sup>2</sup>, Jessica Lopes<sup>2</sup>, Iara Quirino<sup>2</sup>, Priscila Carvalho<sup>2</sup>, Everton Silva<sup>2</sup>

<sup>1</sup>Ministry of Health - Brazil SQNW 311 bloco d 515a Noroeste Brasília-DF Brazil, <sup>2</sup>Ministry of Health - Brazil Brazil

Intersectorality as an instrument of public health policy provides efficiency, effectiveness, and efficacy of actions, enabling the resolution of complex problems. This study describes the mapping of the intersectoral agendas of the MOH of Brazil between September and December 2022. It was carried out an exploratory descriptive situational diagnosis with a quali-quantitative approach to raise and characterize intersectoral action involving MOH. The research developed bibliographic surveys regarding the intersectorality, strategic concepts about health policies/programs, and main normative acts that guide the intersectoral action. The data was collected using a standard instrument together with the technical areas and document analysis. It registered the participation of 100% of the technical areas requested, namely 398 in collegiate bodies and 116 in intersectoral instances. The main findings consist of confirmation the strong relationship between the health sector and Social Assistance, and citizenship; Human rights; Science and technology; Justice and public safety; Environment; Work and income; and Education, as an expression of the social determination of the health-disease process. Despite a polysemic understanding of the concept of intersectorality, it can be inferred that this is a reality in terms of MOH actions, being presented as a guideline in the policies and programs mapped. However, it is a challenge, as the intersectoral organization demands the combination of different and complex knowledge, powers, practices, goals, resources, and joint monitoring. It is suggested the institutionalization of mapping as well as its recognition as an instrument that promote knowledge, provide transparency to the universe of intersectoral public policies, provides social collaboration and control, synergy between internal and external actions, minimizes overlaps, and enhances the performance of the MoH concerning other sectors. It attempts to pursue synergy between public policies to improve the populations health and the performance of the Unified Health System (SUS).

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### **An indigenous-centered methodology for health systems strengthening research and practice: Storytelling, relational accountability, and sovereignty**

Christina Ore<sup>1</sup>

<sup>1</sup>Seven Directions, UW United States

Background: After the 2005 United Nations Millennium Development Goals report revealed limited progress, decision-makers and researchers put their attention to "health systems strengthening" to increase access, use and responsiveness of national health systems for health equity. Inequities persist and were illuminated by disparities in mortality and morbidity due to COVID-19. Indigenous systems of governance and healing represent Indigenous knowledge, strength, resilience, and resistance. These systems continue to serve their communities. Yet, they are omitted from global and national public health initiatives. This is a qualitative study of the health system that serves the Yaqui Tribe in Sonora, Mexico to inform Yaqui-centered public health. It was co-created with elders under Traditional Authority approval of the Yaqui Tribe in Sonora, AZ. Design and Methods: This participatory study using a qualitative design, took place from 2012 – 2014. Eleven community health workers and healers participated in open ended interviews. Findings: Development of a viable and ethical methodology, with emphasis on Indigenous ways of knowing and being (i.e., inherently a "culture of health" and "health in all policies"). The methodology is visualized as a spiral, where connections and relationships build over time. For each point there is 1) a translation and interpretation of the point's descriptor; 2) a description of the research process; and 3) a story that supports this aspect of the Indigenous-centered methodology. Conclusion: This approach may be used in the future collaborative studies that have meaning and use by tribal health systems within tribal nations and Indigenous communities globally. This study deconstructs existing public health concepts and supports health initiatives and public policy development. This approach is being applied at Seven Directions, we anticipate it

will contribute to an increase in access, use, and delivery of culturally relevant and effective services and programs by and for Indigenous communities in México, U.S., and abroad

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### **"Within whose remit it should be?": Views of multisectoral experts on the institutionalisation of blue-green prescribing in Scotland's healthcare system**

Julius Alejandro<sup>1</sup>, Katherine Irvine<sup>2</sup>, Dr Chastin<sup>3</sup>, Karin Helwig<sup>3</sup>

<sup>1</sup>Glasgow Caledonian University Glasgow Caledonian University, Glasgow, Scotland, United Kingdom United Kingdom, <sup>2</sup>The James Hutton Institute, <sup>3</sup>Glasgow Caledonian University Glasgow Caledonian University, Glasgow, Scotland, United Kingdom

Background and objective: Blue-Green Prescribing (BGP) is a healthcare approach that uses nature-based social prescribing and eco-directed medicines prescribing to reduce pharmaceutical pollution and promote planetary health. Due to its novelty, its institutionalisation requires consultation with practitioners and policymakers from health, environment, and water sectors. This study explored key sector experts' views on the factors that could influence the institutionalisation of BGP in Scotland.

Methods: This qualitative study is part of an exploratory mixed-methods research. Using snowball sampling and a semi-structured topic guide, we interviewed key experts from health, environment, and water sectors. Interview data underwent hybrid coding and codebook thematic analysis with audit trail. To account for the complexity, interrelationship, and behaviours of key experts, we also used systems and behaviour change lenses in data analysis.

Results: Scotland's natural resources and existing BGP-related pilot interventions offer opportunities for BGP institutionalisation. There is an increasing awareness on the health benefits of nature and the impact of pharmaceuticals on the environment translated to high interest and commitment from health, environment, and water sector experts on the institutionalisation of BGP. However, these opportunities are challenged by limited local evidence on the effectiveness of BGP-related interventions on patients; limited skills, tools, and capacities of healthcare professionals; and the need for policy changes on health human resource, environmental management, and sectoral collaboration.

Conclusion: Highlighting the need for nature-based social prescribing and reducing pharmaceutical pollution in NHS Scotland's Climate and Sustainability is an essential first step in institutionalising BGP. Despite a relatively siloed approach to sectoral interventions related to BGP, there is an existing collaboration between health, environment, and water sectors that could be strengthened. Moreover, challenges in developing an acceptable and appropriate BGP in the context of the Scottish healthcare system need to be resolved.

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### **Intersectorality: getting our joint work straight**

Evelyne Leeuw<sup>1</sup>

<sup>1</sup>Healthy Urban Environments Collaboratory, Australia

The proliferation of intersectoral terminology has coincided with similar developments in policy development and administrative and political science scholarship. Partly sponsored by global think tanks such as the World Bank and the international aid industry there was a call for, variously, 'Whole of Government' (WoG), 'Joined-up Government' (JUG) and horizontal, integrated or coordinated policy making. In recent years, these streams of consciousness seem to have coalesced in calls for Health in All Policies (HiAP). Several reviews and glossaries have endeavoured to transcend the evangelical approach to HiAP and its conjoint predecessor Healthy Public Policy. These reviews and glossaries purportedly show what is required to develop and maintain coherent society-wide actions, policies and governance for health. However, the terminology associated with intersectorality is not always unequivocal. The fact that multiple meanings may exist in multiple contexts does not necessarily enable a focused, and practically or scholarly sound, developmental strategy to achieving such goals. This is becoming a more acute challenge with the increased, and prominent, recognition that health is both an endpoint of a multitude of reciprocating dynamics, as well as an input for individual, social and global change. This is evident in agendas set by the Sustainable Development Goals and, for instance, planetary health paradigms. An appropriate clarification and distinction of terms and their meaning around intersectorality is sensible—it would advance coherent scholarship and practice of this essential area of health and health equity development. Based on consensus mechanisms, this presentation will offer clarity on the suite of concepts associated with intersectorality.

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### Reducing social inequalities in health: assessing organizational contexts for implementing integrated access for people with severe mental illness

Sofie Mejsner<sup>1</sup>, Viola Burau<sup>2</sup>, Michael Fehsenfeld<sup>2</sup>

<sup>1</sup>Department of Public Health, Aarhus University, Aarhus, Denmark,  
<sup>2</sup>Department of Public Health, Aarhus University, Denmark

**Background and Objectives:** Social inequalities in health are complex and vulnerable people often experience higher unmet needs and lacking coherence when seeking healthcare. They therefore require cross-sectoral initiatives. Literature argues that healthcare organization is an important but overlooked determinant of social inequalities in health, as health systems buffer or amplify structural and individual health determinants. The Flexible Assertive Community Treatment (FACT) model offers integrated healthcare access to people with severe mental illness, through interprofessional teams across health and social services. This study aimed to assess the organizational contexts that shape the implementation of this model of integrated care.

**Methods:** The study includes a document analysis of political and administrative documents, and semi-structured interviews of managers and healthcare professionals in three municipalities. The study applied the theory of the Organizational Fields to assess the organisational contexts in implementing the FACT model.

**Results:** Implementing FACT was challenged by the co-existence of different contexts across health and social care and across national and regional levels, for example by having conflicting legislation in the health and social field. These contexts make conflicting demands on intersectoral coordination, where person centered care is for instance bound by different norms and values at each level. Therefore, the successful implementation of FACT comes to depend on strong local cultures of collaboration that translate and transfer these demands into an integrated, local organisation of FACT. These collaboration cultures however differed across the municipalities, and some therefore appeared more successful in implementing FACT than others.

**Conclusions:** Implementing an integrated care model as FACT might become challenged by the complex and different organizational contexts vertically, at each level, and horizontally, e.g., between municipalities. The assessment of these contexts is key to identifying possibilities and limitations for a successful implementation. This knowledge may in turn reduce social inequalities in health by providing more accessible and coherent care.

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### Flow of regulation of elective hospital care in dentistry in the State of Ceará, Brazil: building processes based on the constitutional principles of the SUS

Oliveira Patrícia<sup>1</sup>, Sousa Natália<sup>2</sup>, Costa Guilherme<sup>2</sup>, Sousa Juliana<sup>2</sup>

<sup>1</sup>Institute for Collective Health, Secretary of Health of the State of Ceará, Brazil,  
<sup>2</sup>Secretary of Health of the State of Ceará, Brazil

Organize demand in an equitable, transparent and secure manner, with a focus on the user; developing health care protocols aligned with the access regulation process, through a computerized network and having a body of trained professionals should be objectives of the regulation centers throughout Brazil. The experience of building the work processes of the sector of regulation in hospital care in dentistry of the secretariat of health of the state of Ceará is reported. The work does not require approval by the research ethics committee, as it is a documentary research. The insertion of a professional dental surgeon in the regulatory sector of the secretary of health of the state of Ceará took place in May 2021 and remains until the present day. The first skills included bringing the levels of care closer together, mediating and facilitating communication with the oral health care unit and the network regarding flows, access and use of the regulation system, managing the supply of specialized dental consultations for specialties of oral and maxillofacial surgery and traumatology and patients with special needs. For the assessment of priorities, situations involving cases related to fractures, injuries, patients with special needs at high surgical risk, patients with microcephaly and cleft lip and palate, who only with the exception of patients with special needs, do not shows a queue. At present, the elective hospital offer has tripled, there is frank agility in scheduling specialist consultations, the maximum absenteeism of 63% with a waiting list has declined, reaching levels of 29%, in conditions of a tight waiting list. The need to register successful experiences is evident, focusing the work on the demands of the patient, user of a service committed to the resolution and completeness of his actions.

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### The public-private partnership in health care settings: a multiple case study analysis

Stefania Simoni<sup>1</sup>, Salvatore Russo<sup>2</sup>, Stefania Simoni<sup>3</sup>, Salvatore Russo<sup>2</sup>

<sup>1</sup>Department of Law, University of Salento, Lecce, Italy, <sup>2</sup>Department of Management, University of Venice, Venezia, Italy, <sup>3</sup>Department of Law, University of Salento, Monteroni di Lecce, Italy

**Background:** The economic crisis disrupted traditional models based on market mechanisms and state funding, allowing the proliferation of alternative forms of cooperation that could respond to new social needs. Over the years, public-private partnership, in its various forms, has become strategically important in areas where, in the past, only public companies operated. In particular, management experiments aimed at introducing project financing in the management of public health authorities have been activated.

**Aim:** The purpose of this research was to analyze the effectiveness of public-private partnership in healthcare in order to examine strengths and weaknesses and to highlight best practices adopted.

**Methodology:** To pursue the research objectives the multiple case study methodology was chosen. The cases were developed through information collected by literature review; desk analysis of documentation provided by corporate managements and private partners and by conducting semi-structured interviews with actors involved in decision-making processes. Interviews were conducted with the general manager, the medical director and the project manager (RUP) of both public health companies. In the private companies, the chief operating officer was interviewed as the coordinator of the project financing.

**Results:** The analysis of the projects revealed very different management models. The present analysis made it possible to highlight the main critical issues of project financing: information asymmetry, inadequacy of specific skills and extreme profit orientation. Through the analysis it was also possible to identify the strategic choices that permitted to achieve better results from a social, economic and financial point of view.

**Conclusions:** The evidence collected will enable to make more effective and efficient choices in the design of future projects between private subjects and public authorities.

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### Travel medicine as an instrument of sanitary surveillance of the international health regulations: a scoping review

João Dionísio<sup>1</sup>, Maria Ana Santos<sup>2</sup>, Carina Castro Silva<sup>3</sup>, Vanessa de Melo Ferreira<sup>4</sup>, Márcia Cardoso<sup>5</sup>

<sup>1</sup>USP Baixo Mondego Portugal, <sup>2</sup>ACES Pinhal Litoral Portugal, <sup>3</sup>USP Espinho/Gaia, <sup>4</sup>USP Alto Tâmega Barroso Portugal, <sup>5</sup>ACES Baixo Mondego Portugal

**Background:** In the last few decades we've seen an explosion in the number of travelers around the world, not only for tourism but also in search of a better life. With greater globalization came changes in diseases epidemiology and new and old pathogens threaten to up-end the balance of travel. Travel medicine and the International Health Regulations (IHR) are both part of this equilibrium, but there is little literature linking them both to global health. The purpose was to review both concepts and analyze its contact points and impact.

**Methods:** We based this scoping review on the Joanna Briggs Institute framework on scoping review methods. The Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) were used as a guide in reporting. We used four major electronic databases (Medline, World of Science, SCOPUS and Google Scholar), and included studies published in English or with English versions easily accessible and grey literature.

**Results:** A total of 21 articles were included. In terms of data extraction and search, the inclusion was done in broad categories within IHR and travel medicine. the most common applications referenced were vaccines, of those, covid-19 and yellow fever were the most frequently cited. We decided on a narrative approach to results synthesis.

**Discussion**

There is sparse literature about travel medicine and its role as an integrated part of the IHR. One issue is the lack of standardization in evaluating IHR impact. Few connections are made directly from clinical practice into the legal framework creating an abstraction from practitioners and their impact on global health. Future research should focus on creating new methods to gather this evidence and to pass it along to practitioners before new threats emerge.

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### Primary health care vital signs profile for Malaysia

Rachel Koshy<sup>1</sup>, Nazrila Nasir<sup>2</sup>, Samsiah Awang<sup>2</sup>, Kamaliah Noh<sup>2</sup>

<sup>1</sup>Ministry Of Health Malaysia "Family Health Development Division Ministry of Health 8th Floor, Block E10, Kompleks E Precinct 1, PUTRAJAYA" Malaysia, <sup>2</sup>Ministry Of Health Malaysia

Background and Objective: Malaysia collaborated with PHCPI (Primary Health Care Performance Initiative) to develop the Primary Health Care (PHC) Vital Signs Profile (VSP). The VSP is a measurement tool and provides an innovative picture of the primary health care system by assessing finance, capacity, performance and equity. The profile identified strength, weakness, challenges and priority areas for improvement.

Methodology: VSP was developed by global experts and is based on the PHCPI Conceptual Framework. In Malaysia, this assessment was done in two phases: first phase was to populate finance, performance and equity domains followed by the second phase on capacity using the progression model.

Results: Data was available from multiple sources including the Health Information Management System, Malaysian National Health Accounts and National Health and Morbidity Surveys. The VSP showed that PHC spending was 35% of the current health expenditure. The access index indicates that 98% of the population have access to health care and 84% of the clients received quality PHC service in public health facilities. The equity domain showed no major gap in the under five mortality occurring in the urban and rural areas. PHC capacity was strong in the drug and supplies category as well as the funds management. The strength was also identified in the information system, facility infrastructure and workforce. The PHC system was weak in the empanelment of the population.

Conclusion: Strengthening PHC depends on analysis of existing health data, accepting gaps in the system and the need for further surveys. The VSP has information and evidence on performance of the PHC and provide opportunities for policy makers and stakeholders to develop strategies to enhance the current primary health care system in Malaysia.

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### Engaging police in public health: critical issues and perspectives

Melissa Jardine<sup>1</sup>

<sup>1</sup>Nossal Institute, School of Population and Global Health, University of Melbourne, Australia

The public health community has long been aware of the central role of the law in creating healthy physical and social environments, and in responding to public health challenges. However, the critical role of the law enforcement and justice sector in achieving a multitude of public health goals has been neglected or ignored. This sector includes police, public prosecutors, magistrates, and coroners. Globally, no Master of Public Health course teaches comprehensively of the role of police in achieving public health goals, a major oversight given their ubiquitous involvement. Unfortunately, cultures of police misogyny, racism, brutality and oppression exist in many jurisdictions. There also remains a severely limited understanding of the critical nexus between law enforcement and public health both in the legal community and the public health community. The actual and potential role that engaging police in the public health enterprise can have in both police reform and in achieving public health goals is also underestimated. Although the security sector is a key partner in many public health programmes, its identity as an important part of the public health endeavour is rarely recognised. This absence of recognition has resulted in a generally inadequate approach to research and investigation of ways in which law enforcement can be effectively engaged to actively promote and protect public health as part of a broader multisectoral public health effort. This is true of police at both operational and strategic levels. There are many police officers in all jurisdictions seeking alternative ways to achieve their goals of community safety and wellbeing. They are interested to collaborate, including at the most senior level, once the issues are understood from their perspective. Many police officers are leading innovation, keen to share their initiatives, e.g. with trauma-informed approaches, domestic violence prevention and response, responses to mental health crises, suicide prevention and even harm reduction and safe sex promotion. These opportunities also contribute to the professionalization of police services – a virtuous circle. The international conference series on Law Enforcement and Public Health (LEPH) was begun in 2012 to bring together the different sectors to explore joined-up approaches to common public health issues currently criminalized or over-policed, and to find common values and goals underlying disparate cultures and languages. The Global Law Enforcement and Public Health Association (GLEPHA) grew from the conferences in 2017, to create a venue where the different sectors – often in silos or even conflict in daily life – could come together in a safe environment to build understanding and capacity for respectful partnership

approaches to complex societal issues. This workshop will: 1. Provide case studies of innovative partnership approaches to complex societal and public health issues that have been criminalized or over-policed, 2. Present learnings about effective and sustainable police and public health partnerships in achieving optimum community safety and wellbeing at all levels, in all jurisdictions, 3. Propose an agenda for future research program

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### Resilient health systems: Mapping of the Health Information Systems in the EU, their resilience and preparedness to join the European Health Data Space

Miriam Saso<sup>1</sup>, Petronille Bogaert<sup>2</sup>, Neville Calleja<sup>3</sup>, Michael Peolsson<sup>4</sup>, Elena Petelos<sup>5</sup>, Shona Cosgrove<sup>1</sup>, Irène Kesiosoglou<sup>1</sup>, Miriam Saso<sup>1</sup>, Marika Borg<sup>3</sup>

<sup>1</sup>Sciensano, Belgium, <sup>2</sup>Sciensano, Brussels, Belgium, <sup>3</sup>Ministry for Health, Malta, <sup>4</sup>Swedish e-Health Agency, Sweden, <sup>5</sup>University of Crete and University of Maastricht, Greece

Outline

Health Information Systems (HIS) are key pillars for generating knowledge for evidence-based decision making, and consequently, contribute to better health of the population. The COVID-19 pandemic further emphasised the importance of having robust and resilient HIS and the need for digital solutions to improve their efficiency and effectiveness.

To assess the functioning of the different HIS in Europe, mapping exercises are conducted across three different EU wide projects, namely the Population Health Information Research Infrastructure (PHIRI) project, the Joint Action Towards the European Health Data Space (TEHDAS), and the Health Emergency Preparedness Response Authority (HERA) IT project. These mapping exercises provide insights on the state-of-play, the components, strengths and weaknesses of the national health information systems and their health data management in more than 19 European countries.

During the workshop, results of the PHIRI, TEHDAS and HERA mapping exercises will be showcased, including key findings and recommendations to promote resiliency in HIS. The methodology of the mapping exercise is based on the support tool to assess health information systems, developed by the WHO regional office for Europe. PHIRI conducted assessments to map the HIS that monitor the effects of COVID-19 on population health in 9 European countries. Concurrently, the TEHDAS conducted 12 country visits to map the state-of-play of health data management systems and their preparedness to join the European Health Data Space (EHDS), one of the key components of the European Health Union. Moreover, plans to extend the experiences of the mapping exercise in the framework of the HERA IT project will be shared which will focus on digital epidemiological surveillance and health emergency preparedness.

Throughout the session, the exchange of knowledge, experiences and opinions with the audience will be fostered by the moderator and by using Slido. This will ensure key messages will be assimilated by the participants.

Aims/objectives

Sharing strengths and weaknesses of HIS functioning during the COVID-19 pandemic, showcasing best practices and promoting resilience Present readiness of different countries to join the EHDS, the barriers identified within their HIS to sharing and reusing health data and their needs and expectations from the EHDS. Outline key recommendations from the experience during the mapping exercises, contributing to capacity building across Europe Create an opportunity for engagement and knowledge exchange, offering a space for the audience to voice their views on the topics discussed

Key questions

HIS mappings serve as a catalyst and are the starting point to strengthen HIS in various perspectives. The workshop will bring together experts in the field of HIS, highlighting the key findings from different mapping exercises conducted by PHIRI and TEHDAS and give the future perspective of upcoming mapping for HERA. The workshop will also foster a discussion between the audience and the speakers on the resilience of HIS in different European countries, the preparedness of HIS to deal with future crises, as well as the challenges and capacity building needs and tools required for countries to develop their health data management systems and join the EHDS for secondary use.

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### Breaking the health silos - once and forever?

Jolanta Bilinska<sup>1</sup>, Marta Lomazzi<sup>2</sup>, Sara Perazzi<sup>3</sup>, Lwando Maki<sup>4</sup>, Marta Lomazzi<sup>5</sup>

<sup>1</sup>ICN Switzerland, <sup>2</sup>World Federation of Public Health Associations,

Switzerland, <sup>3</sup>International Hospital Federation, Switzerland, <sup>4</sup>Public Health Association of South Africa South Africa, <sup>5</sup>World Federation of Public Health Associations Switzerland

Silos in health are detrimental to patients and society. They inhibit the effective use of the workforce, hinder collaboration, limit coordination and lead to high costs and poor outcomes for the patients and the society. Healthcare workers are very often not trained in communication and teamwork, thus amplifying the silos effect and making relations with patients, the community and the media, very complex. This silo mentality does not only apply to the care environment, but also to public health: to provide a stronger and healthier future generation, it is crucial to ensure that every individual has access to the public health and care they need and that social inequalities that contribute to ill health are addressed. This workshop, organized by the World Federation of Public Health Associations (WPHFA), the International Hospital Federation (IHF), the South African Medical Association and the World Patients Alliance (WPA), is part of a broader debate on the need to rethink health, prevention, public services and justice. With members worldwide, these four organizations will discuss how to co-design a new framework and advocate for a better use of the workforce beyond sectors to promote health, patients' outcomes and reduce health inequalities. During the workshop, panelists from the four organizations will share their experiences and vision to create a more equitable health system that meets the needs of patients and communities.

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### How sharp are your health security arrangements against cross-border health threats? Attend the sharp joint action workshop to find out exactly that

Anna Kratz<sup>1</sup>, Milena Vasic<sup>2</sup>, Nikolaos Bitsolas<sup>1</sup>, Giri Shankar<sup>1</sup>

<sup>1</sup>Finnish Institute for Health and Welfare Finland, <sup>2</sup>Serbian Institute of Public Health, Serbia

Strengthening International Health Regulations and Preparedness (SHARP [www.sharpja.eu](http://www.sharpja.eu) [1]) in the EU Joint Action (JA) was launched in 2019. This is a €10 million, four-year collaborative action of 26 countries and 61 partners that focuses on cross-border health threats. The need for this JA is based on strengthening implementation of Decision 1082/2013/EU on serious cross-border threats to health and the International Health Regulations (2005). The aims of this JA are in line with the new EU Global Health Strategy [1] [2], which recognises monitoring, early warning, preparedness, and response measures as essential elements to combat serious, cross-border threats to health.

Despite a high level of preparedness for health emergencies of biological, chemical, environmental and unknown origin across Europe, gaps do exist across member states and European countries.

This JA specifically address four key priorities:

- \* Cross-sectoral capacity building, exchange of knowledge and best practices – focused on the gaps in basic IHR core capacities identified through member state reporting in relation to Article 4 of Decision 1082/2013/EU

- \* Enhancing monitoring and evaluation of actions under Decision 1082/2013/EU in alignment with the WHO IHR monitoring and evaluation framework

- \* Enhancing the health and security interface and preparedness and response to chemical incidents

- \* Laboratory strengthening through a consolidated laboratory practice

The project is organised across 6 technical work packages (WP), supported by 4 horizontal WPs:

WP Number

Work Package Title

1 Coordination

2 Communication and dissemination

3 Evaluation of the action

4 Integration in National Policies and Sustainability

5 IHR core capacity strengthening and assessment

6 Preparedness and Response planning

7 Laboratory preparedness and responsiveness

8 Training and local exercises, exchange of working practices

9 Chemical safety and chemical threats

10 Case management and infection prevention and control preparedness

This workshop provides an opportunity for delegates to hear of the key outputs of SHARP JA and how the actions can be implemented in member countries going forward. It will also allow for a deeper exploration of specific actions of SHARP. These include:

- \* IHR core capacity strengthening and assessment

- \* Strengthening the capacity for IHR implementation for serious cross-border health threats through cross-sectoral, basic and advanced training

- \* How project's progress monitoring by evaluation methodology and procedures can continuously improve the effectiveness and efficiency of collaborative joint action?

- \* How to utilise communications tools, understanding of health policies and the challenges to dissemination to achieve effective visibility, awareness and impact for the work on multiple stakeholders?

- \* Identifying the sectors that should be involved in public health emergency preparedness, response and recovery

- \* Case management and infection prevention and control preparedness

The workshop will share key insights, best practices, encouraging discussion and knowledge exchange with delegates who represents a global, public health professional audience. Delegates can build on this valuable work to facilitate the improvement of their country plans for more harmonised and effective preparedness and response measures and plans.

[1] [3] EU Global Health Strategy ([europa.eu](http://europa.eu)) [4] Links:-----[1] <http://www.sharpja.eu>[2] <http://events.decoperate.ca/#ftn1>[3] <http://events.decoperate.ca/#ftnref1>[4] <https://ec.europa.eu/commission/presscorner/detail/en/ip227153>

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### Potentially traumatic experiences pre-migration in women of childbearing age among Somali-and Kurdish-origin women in Finland

Satu Majlander<sup>1</sup>

<sup>1</sup>Finnish Institute for Health and Welfare (THL), Helsinki, Finland

Background: Across Europe there are increasing numbers of migrant origin women who are of childbearing age. Especially those who have left the country as refugees, may have been victims of serious mental and physical violence. Migrant origin women are at risk of poorer pregnancy outcomes. This study examines the prevalence of potentially traumatic experiences (PTE) pre-migration and female genital mutilation/cutting (FGM/C) and their associations with adverse reproductive outcomes among migrant women of Somali- and Kurdish-origin who have been pregnant in Finland.

Methods: Survey and register data from the Finnish Migrant Health and Wellbeing Study, conducted in 2010–2012, were used. Women from 18 to 64 years of age, 185 Somali- and 230 Kurdish-origin, who had at least one pregnancy or birth in Finland were included in the analysis. Survey data were linked to the Finnish Medical Birth Register, the Register of Induced Abortions, and the Care Register for Health Care until 2018. For each outcome, logistic regression was used and adjusted for age, body mass index, time lived in Finland, and the number of births. Results: Among the women included in this study, a total 67 percent of Somali-origin and 71 percent of Kurdish-origin women had experienced PTE pre-migration and 64 percent of Somali- and 32 percent of Kurdish-origin women had undergone FGM/C. In Kurdish-origin women, complications during pregnancy (e.g. bleeding in the first trimester, known or suspected fetal abnormality, other problems) were significantly more common among women without trauma (70%) than for women with trauma (48%). No associations between trauma or FGM/C and other adverse reproductive outcomes were observed in Somali- or Kurdish-origin women.

Conclusions: Past trauma is common among Somali- and Kurdish-origin women but we found no association between previous trauma and adverse reproductive outcomes. Women who have experienced trauma need culturally-competent, trauma-informed care to address women's psychosocial needs.

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### Misconception and effect of menstruation (Chhaupadi) and delivery on women's health in Bajura, district Nepal

Chetraj Pandit<sup>1</sup>

<sup>1</sup>Nepal Public Health Association, Kathmandu, Nepal

Background: Chhaupadi is the old unscientific system in mid and far Western parts of Nepal. Reproductive age women were considered unclean during the menstrual and delivery period. Invisible cultural taboos and practices were prevailing in each and every household. The objective of the study is to assess the associated factors affecting during Chhaupadi and delivery practice with their health outcome. Methods: The cross-sectional descriptive study was conducted amongst 175 reproductive age women in Bajura districts of Nepal, by using multistage random sampling. Both qualitative and quantitative methods was used. All the data were entered in Ms excel and exported into SPSS 16.0. The necessary descriptive and inferential statistics was used for quantitative analysis and thematic analysis was done for qualitative analysis.

Results: More than one third (38.9%) of the participants were in the age group 20-29 years. Almost all the participants were from Hindu religion. The majority (91%) of participants know about the Chhaupadi system. Almost (74%) of the participants were staying in the Chhaupadi hut during menstruation. Similarly, (78.3%) of the respondents were mentioned, they did not like the Chhau system and never like to continued. There is a significant association between health effect in women and the Chhaupadi system ( $p < 0.031$ ). Conclusions: We conclude that the larger proportion of women in Bajura district still believes in old unscientific tales and Chhaupadi practices which lead to the different health problems.

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### Grandparents' feeding practices: Implications for child diet quality

Michelle Jongenelis<sup>1</sup>

<sup>1</sup>Melbourne Centre for Behaviour Change, The University of Melbourne, Australia

**Background and Objective:** With their increasing provision of childcare, grandparents are playing an important role in shaping the nutrition environment and eating behaviours of their grandchildren. Despite this, research assessing the feeding practices of grandparents and their association with the dietary quality of the food consumed by grandchildren is limited. Such research is needed to inform the development of interventions that provide tailored guidance to grandparents on adaptive ways of interacting with their grandchildren in the context of mealtimes. Accordingly, the present study sought to examine the feeding practices adopted by grandparents and the association between these feeding practices and grandchild consumption of healthy and unhealthy foods.

**Methods:** In total, 1076 grandparents (60% female; average age = 65.07 years) who reported providing regular childcare to at least one grandchild aged 3 to 14 years were recruited. They completed an online survey assessing a variety of constructs including their feeding practices and the frequency with which their grandchild consumes specific foods and beverages while in their care.

**Results:** Grandparents reported using positive feeding practices such as 'encouragement of balance and variety' more frequently than negative feeding practices such as 'control over eating'. Positive feeding practices were found to be more important correlates of diet quality than negative feeding practices, with the provision of a healthy food environment and limit setting emerging as the most important practices associated with healthy eating.

**Conclusions:** Grandparents are having a demonstrable impact on the dietary behaviours of their grandchildren and should be considered in initiatives promoting healthy lifestyle behaviours in young children. To prevent poor diet and support consumption of fruit and vegetables, grandparents should be encouraged to increase the availability of healthy foods in their home and set limits on unhealthy foods.

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### An exploratory study on understanding the use of food labels among adolescents in India

Neha Rathi<sup>1</sup>

<sup>1</sup>Department of Community Medicine, Banaras Hindu University, India

**Background and Objective:** Food labelling is identified as a key population-centric approach that can facilitate consumers to make informed food decisions by providing essential information about the food or beverage on the packaging. In the Indian context, where adolescent obesity and the resultant diet-related chronic degenerative diseases are rising, it is imperative to understand the perceptions of adolescents regarding unhealthy packaged foods and food labels. This can potentially inform the development of nutrition and health promotion interventions to facilitate healthy eating in Indian adolescents.

**Methods:** A convenience sample of 44 adolescents (aged 10-19 years; 29 boys, 15 girls) were recruited from rural Varanasi, India through professional networks. Face-to-face semi-structured interviews were conducted in Hindi between December 2021 and February 2022. Interviews were digitally recorded, transcribed verbatim, and translated to English. Informed by Template Analysis Technique, the narrative data were analysed thematically using the NVivo Software Program.

**Results:** A number of themes emerged during data analysis. These included: (i) Frequent consumption of packaged food (e.g. potato chips, biscuits, deep-fried Indian snacks; noodles, chocolates) both at school and home; (ii) Lack of awareness about the harmful effects of consuming unhealthy packaged foods; (iii) Reasons for consuming packaged food – tasty, unadulterated; (iv) Date of expiry, price, and brand name were often read by the adolescents; (v) Lack of knowledge about other components (e.g. nutrition information) of the food label; (vi) Difficulty in understanding the food label, as it was written in English; (vii) Food

labels should be written in Hindi for easy comprehension.

**Conclusions:** Overall, the study sample was not well-informed about the implications of consuming unhealthy packaged foods as well as the food labels. This highlights the need to develop school-based nutrition education programs which will assist Indian adolescents in making healthy food choices.

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### Women of reproductive age with intellectual disability in Bangladesh: an insight into sexual reproductive health needs

Fouzia Hoque<sup>1</sup>

<sup>1</sup>Bangabandhu Sheikh Mujib Medical University (BSMMU), Bangladesh

Disability is a major social and economic phenomenon in Bangladesh. Sexual and reproductive health services are yet to achieve in Bangladesh and people still attach to stigma, environmental barriers, social and cultural factors related to SRHR. It is mandatory for women of reproductive age with intellectual disabilities to get accurate, accessible, and understandable information about sexual reproductive health and services regarding contraception and reproduction in lower middle income countries like Bangladesh. The aim of the study is to understand and synthesize sexual and reproductive health needs for women of reproductive age with mild to moderate intellectual disability (ID) in Bangladesh, in order to create awareness in the community, and health care professionals as well as inform public policies and programs supporting women with ID and their families in Bangladesh. A literature review of the published literature in the last 20 years was carried out with an adjusted conceptual framework of sexual reproductive health. This study found that there is a lack of significant data in Bangladesh regarding this issue. But other neighboring countries indicated that women of reproductive age with ID have many issues and needs regarding SRH including pregnancy, contraceptions, periods, and sexual behaviors. In addition to this, health care providers do not have enough knowledge and understanding about the extent of disabilities and SRH for women with ID due to lack of training, no guidelines, and inadequate access to resources. Besides, environmental barriers, lack of awareness among women with ID, and self-stigma are also putting obstacles to get access to SRH services for women with ID. This study will play an important role to talk about sexual reproductive health needs and services for women of reproductive age with ID in Bangladesh.

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### Antenatal coverage and quality in secondary-care hospitals of Punjab province, Pakistan

Faheem Anwar<sup>1</sup>

<sup>1</sup>Manawan Hospital, Indus Hospital and Health Network, Wagha, Pakistan

**Background:** Antenatal care (ANC) can avoid the majority of adverse maternal and perinatal outcomes in LMICs. A closer examination reveals that only one in every two women in Punjab has the required number of ANC 4+ visits. This study was conducted to assess the coverage and quality of ANC at secondary care hospitals in Punjab.

**Methods:** In this retrospective descriptive study, the data provided through the Annual Report on DHIS 2021 and the Electronic Medical Record (EMR) available at TMH were analyzed. The quality of antenatal care was assessed against the criteria of the essential package described in the Punjab Ministry of Health's Minimum Standards of Service Delivery.

**Results:** The monthly average ANC-1 visits per THQ were 420 and 905 at TMH. TMH recorded 114,467 follow-up visits with an average of 3.5 visits per parturient and a referral rate of 10.46%. The dropout rate at THQ Hospitals was 33.52%, while 16.41% at TMH. Normal vaginal delivery and caesarean section rate were 83% and 17% at THQ hospital whereas 49.76% and 50.23% were for TMH respectively. The EMR gives evidence on history taking, questions about stillbirths, assisted deliveries, abortions, headaches/blurred vision, swelling, and fever. Highlights include, baby movement feeling (96%) Findings of the breast examination (83), measurement of blood pressure (100%), counselling on breastfeeding and Tetanus Toxoid vaccination (78%) and prescriptions for anti-malarial, iron, and folic acid (100%).

**Conclusions:** The advantages of TMH over THQ hospitals include accessibility, adherence to policies and the EMR, front desk services, the availability of skilled staff, diagnostics, medication, patient education, counselling, and safety. It is proposed that data on ANC follow-up, the average number of ANC visits per parturient, the dropout rate, and referral from health facilities be included in the DHIS report to improve the study of ANC coverage and quality.

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### Therole of the built environment in mental health in childhood: Results from a street audit tool

Eirini Flouri<sup>1</sup>

<sup>1</sup>University College London, Loondon, United Kingdom

**Objectives:** To explore the role of the built environment, measured by both Objective and subjective data for the neighbourhood, in children's trajectories of mental health and cognition from the early years until the end of primary school in the general population. **Background:** The extant research on this has produced mixed Findings. One reason may be its focus on a single aspect of the built environment. Here, it was measured in a variety of ways, using both Objective and subjective measures of the neighbourhood. We also controlled for indoor home environment and both neighbourhood and family socioeconomic disadvantage. **Methods:** We used data from the Millennium Cohort Study, a large general-population cohort study in the UK. The built environment was measured in various ways, including by direct observation of the immediate neighbourhood by interviewers. It was also measured by administrative data on socioeconomic disadvantage and urbanicity as well as Objective data on greenspace and air pollution. We also controlled for the home's physical and social environment, measured by both parent report and third-party assessments. Child outcomes (mental health and cognition) were measured across ages 3 to 11 years. Mental health was measured with the Strengths and Difficulties Questionnaire, and cognitive ability with the British Ability Scales. We fitted growth curve models and accounted for confounding.

**Results:** Neighbourhood disorder, as measured by third-party observation, was associated with emotional symptoms and conduct problems at age 3 years and with the trajectories of cognitive ability from ages 3 to 11 years. These effects were robust to adjustment for confounders. Greenspace, urbanicity and air pollution did not have any effect on our outcomes after adjustment.

**Conclusions:** Our Findings shed light on the role of the built environment in children's mental health and cognition, but also on the importance of its appropriate measurement.

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### Reducing neonatal mortality in Ethiopia: a call for urgent action! An evidence brief for policy

Tesfaye Weldemariam<sup>1</sup>, Zelalem Kebede<sup>1</sup>, Sabit Ababor<sup>1</sup>, FirmayeBo Bogale<sup>1</sup>, Dagmawit Solomon<sup>1</sup>, Yoseph Gebreyohannes<sup>1</sup>

<sup>1</sup>Ethiopian Public Health Institute (EPHI), Gulale, Ethiopia

**Background:** Neonatal mortality is a core indicator of neonatal health defined as death during the first 28 days of life. About half (47%) of global under-five death is contributed by the death that occur within the first 28 days of life (neonatal death). Though neonatal mortality has reduced by 25% between 2005 and 2016, it has shown an increment between 2016 and 2019. The Ethiopian national average of neonatal death (33 per 1,000 live births) was also higher than sub-Saharan Africa average.

**Objective:** To summarize the best available evidence describing the problem of the worsening neonatal mortality in Ethiopia and potential solutions for addressing the problem.

**Methods:** The preparation of this evidence brief for policy came to our attention for two reasons: 1) While the world has targeted to reduce neonatal mortality to at least 12 per 1,000 live births in 2030, neonatal mortality in Ethiopia is persistently high in the last decade, and 2) there is big gap observed between the current national plans and performances. Electronic databases of systematic reviews (SUPPORT Summaries, Health Systems Evidence, PDQ Evidence, Epistemonikos, the Cochrane Library) were consulted. The final selection of reviews for inclusion was based on a consensus of the authors. **Findings:** The brief identified effective and promising interventions for reduction of neonatal mortality and presented as community based intervention and continuum of care. Community-based intervention packages: 1. Intervention packages consisting of mainly building community-support groups or women's groups probably decrease neonatal mortality by 16%, 2. Intervention packages consisting of mainly building community-support groups or women's groups probably decrease neonatal mortality by 40%, 3. Community mobilization and home-based neonatal treatment probably reduce neonatal mortality. Strengthening continuum of care: Interventions linking pre-pregnancy and pregnancy care probably reduce neonatal mortality by 21%.

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### Factors associated with timely initiation of complementary feeding practice among children aged 6-24 months

Abdikani Jeylani<sup>1</sup>

<sup>1</sup>Horseed International University, Mogadishu, Somalia

**Background:** Complementary feeding is defined as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk, appropriate time is 6-8 month, Malnutrition is responsible, directly or indirectly, for over half of all childhood deaths (Adhikari, Khanal, Kafle, Sah, and Kandel, 2017) [1].

**Objective:** To identify factors associated with timely initiation of complementary feeding among children aged 6-24 Months at Wadajir and Hodan Health Centers in Mogadishu, Somalia.

**Methods:** A community based cross sectional study was done among mothers have children between 6-24 months found at Wadajir and Hodan HCs from August 2021 to May 2022 The sample size of the study was 426. A pre-tested structured questionnaire and interview guide were conducted to obtain the necessary information for this study. The collected data was analyzed using SPSS Version 20.0. Descriptive statistics were calculated to see the distribution of various factors.

**Results:** The study revealed all most half (51%) of the respondents initiated complementary feeding early (before 6 months). Whilst (32%) and (17%) of the respondents introduced complementary feeding appropriate time (6- 8 months) and lately (after 8 months) respectively. Maternal illiteracy, child age, low average income, health seeking behavior and mother's place of delivery were significantly associated with timely initiation of complementary feeding.

**Conclusions:** We found most of the mothers had informal education, most common source of information related complementary foods were from person, most common reason mothers started complementary food was to get nutrition to the child while mostly they giving child potatoes as first food. The second most common reason for early initiation of complementary feeding was lack of enough breast milk having to end exclusive breast feeding early so that they could start early complementary foods. Links:[1] <http://events.decorporate.ca/#page49>

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### Magnitude of quality Antenatal Care Service: a systematic review and meta-analysis

Dereje Demissie<sup>1</sup>

<sup>1</sup>Saint Paul's Hospital, Millennium Medical College, School of Nursing, Ethiopia

**Background:** High quality of antenatal care (ANC) is also associated with improved opportunities to screen for and treat other chronic conditions and non-communicable diseases. **Objectives:** The aim of this study was to estimate the global quality of antenatal care services.

**Methods:** We conducted comprehensive literature research for published and unpublished sources from 2002 to September 08 /2022. All statistical analyses in this study were performed on stata16.0.

**Results:** A total 76 studies with a sample size of 940164 were included with poor quality antenatal care services utilization ranges from 2.5% to 97.47% among pregnant women. The global pooled poor quality of antenatal care services was 64.28% (95%CI: 59.58% - 68.98%) with (I<sup>2</sup>= 99.97%, p=0.001). In the subgroup analysis 70 studies done in low and middle-income countries with a weighted sample size of 861776, and 617031 pregnant women utilized poor-quality ANC services ranges from 23.5% to 97.47%. Finally, 15 studies were conducted in Ethiopia with a weighted sample size of 12031 pregnant women of antenatal care attendants revealed that 7989 pregnant women utilized poor quality ANC services ranges from 50% to 96%. The pooled prevalence of poor Antenatal Care services in Ethiopia was 70.52% (95%CI: 64.55% - 76.48%), with significant heterogeneity between studies (I<sup>2</sup>= 98.37%, p=0.001).

**Conclusions:** and recommendations: The pooled estimate revealed that 64 per 100 pregnant women utilized poor quality ANC services globally. This study revealed regional and country-level disparities, where pregnant women who resided in Asia, Africa, and South American continents had the highest poor quality antenatal care services utilization. Therefore, policymakers and health planners would put a great deal of emphasis on addressing the quality of Antenatal care services.

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### Advanced parental age increased the risk of implantation failure: interactive effect

Jiaqian Yin<sup>1</sup>

<sup>1</sup>Faculty of Education, Health and Well-being, University of Wolverhampton, United Kingdom

**Background:** The average childbearing age in China has been rising because of the

access to tertiary education, competitive pressure and the implementation of the three-child policy. This study aimed to explore the interaction effect of paternal and maternal age on implantation failure in couples following their first cycle of IVF/ICSI treatments. Methods: We examined the data of the Anhui Maternal-Child Health Study (AMCHS). The AMCHS recruited 2042 infertile couples who were physically fit for in vitro fertilisation (IVF) or intracytoplasmic sperm injection (ICSI) treatment at the Reproductive Centre of the First Affiliated Hospital of Anhui Medical University during the period of May 2017 to April 2021. This prospective cohort study analysed the data from 1910 cohort couples. Multivariate logistic regression models were used to identify the effects of male age, female age and their combination on implantation failure.

Results: Advanced maternal age was associated with increased implantation failure ( $P < 0.001$ ); compared to 20-25 years, those aged in 35-40 years had adjusted OR of implantation failure of was 1.38 (1.01-1.89) and in  $\geq 40$  years was 3.91 (2.08-7.36)  $\geq 40$  years. There was evidence of an interaction between maternal age (30-35 and  $\geq 35$ ) and paternal age ( $\geq 35$ ) on implantation failure ( $p < 0.05$ ). When the male was  $\geq 35$  years, increased maternal age was associated with the risk of implantation failure. Conclusion: There was an additive effect on implantation failure with advanced parental age. The delay of childbearing in both men and women will be a serious public issue that may contribute to a higher risk of implantation failure in patients needing ART.

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### Challenges and coping mechanisms, experiences of slum women in seeking abortion services during COVID-19 lockdown in 2020 and 2021: Learning from Agra, India

Chandrima Paul<sup>1</sup>, Siddharth Agarwal<sup>2</sup>, Mayaram Sharma<sup>2</sup>, Chhail Sharma<sup>2</sup>, Kanupriya Kothiwala<sup>2</sup>

<sup>1</sup>International Institute for Population Sciences, Mumbai, India, <sup>2</sup>Urban Health Resource Center, Delhi, India

Introduction: Restricted mobility during the lockdown led to unprecedented challenges related to women's access to reproductive health services. The purpose of this research is to learn about the experiences of women in slums who needed abortion services during the COVID-19 lockdown in Agra, India in the year 2020 and 2021.

Methods: Qualitative interviews in slums were conducted with 35 married slum women in the age group of 19-35 years who underwent induced abortion during the COVID-19 lockdown. Key Informant Interviews were conducted with 7 frontline health workers (ASHAs) and 3 private nurses. Interviews were audio recorded with respondents' consent and thematically analysed.

Results: Demand-side challenges in accessing abortion services included fear of COVID-19 infection, hesitation, ignominy and social ridicule associated with abortion. Results in delayed abortions. Supply-side challenges included unavailability of government and private hospitals providing abortion services, frontline health workers being unsupportive and scared of contracting COVID-19 infection and transportation difficulties owing to lockdown/containment restrictions. Coping mechanisms practiced by women included hastily procuring abortion pills from known chemists without prescription for a secretive, economical and effortless method to abort. Women learnt about abortion pills from friends and neighbours. Women in desperation, availed services from local dais (traditional untrained birth-attendant), private trained nurses, at social franchising reproductive health clinic and services of a traditional healer too. Consequences of inability to receive timely and appropriate abortion services included severe bleeding and intense abdominal pain (both perceived as complications by women), aggravation of pre-existing anemia manifested as weakness, dizziness, headache.

Discussion: Optimal knowledge of the process of abortion will mitigate anxiety, lead more women to the appropriate abortion procedure, minimise delay in care-seeking and reduce risk of incomplete abortion. Government health system should set up emergency RCH services and co-opt private nurses by training them in safe abortion practices.

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### Prevalence of self-medication practice among European pregnant women: a systematic review and meta-analysis

Afaf Bouquoufi<sup>1</sup>, Laila Lahlou<sup>2</sup>, Fatima hadj<sup>3</sup>, Youssef Khabbal<sup>4</sup>

<sup>1</sup>Therapeutic innovation, Translational research and epidemiology, Faculty of Medicine and Pharmacy, Ibn Zohr University, Morocco, <sup>2</sup>Therapeutic innovation, Translational Research and Epidemiology, Faculty of Medicine and Pharmacy, Ibn Zohr University, Morocco, <sup>3</sup>Therapeutic Innovation,

Translational Research and Epidemiology, Faculty of Medicine and Pharmacy, Ibn Zohr University, Morocco, <sup>4</sup>Therapeutic Innovation, Translational Research and Epidemiology, Faculty of Medicine and Pharmacy, Ibn Zohr University, Morocco

Self-medication can be defined as "the act of the subject, to consume on his own initiative a drug without consulting a doctor, and that the drug is already in his possession or that he obtains it in a pharmacy or from another person". The Objective of our study was to estimate the prevalence of European pregnant women towards self-medication during pregnancy a Meta-analysis. We conducted a comprehensive literature search of Pubmed, Science direct, Google Scholar, and Web of Science databases to identify relevant studies available from January 2011 to December 2021. We used COVidence software to select all relevant studies. The pooled prevalence was calculated by a random-effects model. Study heterogeneity was assessed by Cochrane Q test and I2 index. A subgroup analysis was performed. R software was used for statistical analysis and publication bias analysis was performed by begg egger test. A total of 21 studies were eligible. The total sample size analyzed was 12643 pregnant women. The pooled prevalence of self-medication in Europe was 62.73% with a confidence interval of (53.45; 71.17), the I2 test revealed a high statistically significant heterogeneity of 99%. The Results of the subgroup analysis are based on income level, quality of the publication study and sample size. Heterogeneity, as assessed by the I2 statistical test, was high, statistically significant for all subgroup analyses and ranged from 96% to 99%. The funnel plot showed that there was a possibility of publication bias with a highly significant P-value. The Results obtained from this study showed that the prevalence of self-medication among pregnant women is relatively high. We recommend that health professionals consider implementing programs on the risks of self-medication, and strengthening the control and monitoring of over-the-counter sales of drugs.

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### Cascade approach of reaching communities for adolescents through school students and community stakeholders in rural and underserved Indian population

Rahul Bogam<sup>1</sup>, Kalpak Sane<sup>2</sup>

<sup>1</sup>Primary Health Care Corporation, Doha, Qatar, <sup>2</sup>Sane Hospital and Diabetic Care Center, Pachora, India

Background and Objective: Risky substance use, infectious diseases, injuries and mental disorders are some of the identified health problems of adolescents in India. However, health inequalities persist among adolescents with widening disparities in access to quality care, predominantly in rural and underserved populations of India. The research indicates sparse knowledge levels about adolescent health (AH) among school students, grass root level health workers (GRLHWs) and general community people. The current study applied cascade approach to augment the awareness about adolescent health aspects and related health welfare programmes among school students, GRLHWs and general community people. Methods: A pilot interventional study was carried out at one of the rural clusters of one of the districts of Maharashtra State of India. The designed TIV [(Training modules preparation (T), Interactive sessions (I) and Village health meetings (V)] was implemented to educate 168 school students from 8th to 10th class, 110 grass root level health workers and 625 general community people in stepwise manner.

Results: Significant ( $p < 0.001$ ) adolescent health knowledge improvement, active learning and positive perceptions about intervention were reported among all study participants. In addition to knowledge gain, incorporating module framing activity and interactive events were found to be effective to strengthen interpersonal communication, critical thinking, leadership, self-learning abilities and team work skills among school students. Conclusions: This study has potential to build productive and synergistic relationships between students, teachers, families, and community stakeholders to ensure commitment and engagement towards positive health. This study, emphasizing on adolescent health may be extended to address other crucial health challenges in marginalized population like maternal and child well-being, communicable diseases, life style disorders etc. The long-term impact of the current study may be appraised in the form of greater awareness of health needs of rural adolescents as well as significant decline of health problems among them.

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### Behavioral economics-based counseling and mobile phone text educational messages to strengthen family planning services in Jordan: a randomized control clinical trial

Yousef Khader<sup>1</sup>

<sup>1</sup>Eastern Mediterranean Public Health Network (EMPHNET), Amman, Jordan

**Introduction:** Favorable attitudes toward modern family planning methods (MFP) among Jordanian and Syrian women do not always translate into behavioral changes. This study aimed to determine the impact of behavioral economics (BE)-based counseling and personalized mobile phone text messages reminders on the use of MFP among postpartum women. **Methods:** A parallel-group cluster randomized controlled trial was conducted to compare two interventions "behavioral economics (BE)-based counseling" and "personalized mobile phone text messages reminders" aiming to improve the utilization of MFPs among postpartum women over status quo family planning services in comprehensive health centers in north of Jordan.

**Results:** In total, 1032 participated in the study (295 women in the control group, 326 women in the group 1 "BE-based counseling", and 411 women in the group 2 "BE-based counseling and monthly text messages". The rates of using MFPs in the counseling group and the counseling and message group at 3 months (54.7% and 57.1%, respectively), 6 months (50.0% and 51.7%, respectively), and 9 months (49.5% and 52.0%, respectively) were significantly higher than the rates among women in the control group (40.6% at 3 months, 37.6% at 6 months, and 34.3% at 9 months). Overall, 26.8% of women in the control group, 42.1% of women in the counseling only group, and 45.2% of women in the counseling and messages group used MFP continuously for all 9 months. Our BE-influenced revisions to the counseling guide contributed to a 6.3 percentage point reduction in pregnancy rates over the control group, while text messaging appears to have the potential to add to this decline—marginal improvements from text messaging are positive, but statistically insignificant.

**Conclusions:** Simple BE-inspired interventions can be effective methods for increasing the rate of MFP use and reducing pregnancy rate. We recommend scaling up the interventions in all health facilities in Jordan.

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### Teratological effect of Levetiracetam (antiepileptic drug) in utero on the foetus of albino mice

Nilesh Jaybhaye<sup>1</sup>

<sup>1</sup>North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences (NEIGRIHMS), India

**Aims and Objectives:** Teratological effect of newly developed drugs is serious concern of practicing clinicians for pregnant women and as newly introduced antiepileptic drug Levetiracetam with limited teratological data, the respective study was undertaken with Aims of 1. to study effect of Levetiracetam on fetal growth of fetuses of albino mice 2. to study gross teratological effects of Levetiracetam on skeletal system of fetuses of albino mice and placenta **Materials and methods:** 40 female mice were taken for this study and divided into 4 groups with 10 female mice each and Group I is taken as controlled group and administered with distilled water intraperitoneally. Group II, Group III, Group IV administered with escalated doses of Levetiracetam with drug concentration of 600mg/Kg, 1200mg/Kg, 1800mg/Kg respectively, intraperitoneally and then anthropometric measurements of mice fetuses and placenta were taken, skeleton of mice fetuses were studied with Alzerine Red S stain for bone malformations. Findings were analyzed using Anova variance testing and arcsine transformation followed by  $\chi^2$  analysis with a Tukey-type q test and P value was calculated. **Results and observations:** No significant gross external malformations of albino mice fetuses were observed in any of Groups. The Results showed that Fetuses in Groups II were decreased and Group III, IV increased in weight and crown rump length, weight of placenta is increased into Group III, IV but decreased into Group II and all fetuses in all treated groups showed deficient ossification in body of vertebra (coccyx), skull bones, carpal, metacarpal, tarsal and carpal bones. **Conclusions:** Levetiracetam is having teratological effect and adverse outcome on overall growth of fetuses of mice and further investigations, for identification of possible teratological effects of Levetiracetam as an antiepileptic drug is needed for ensuring its safe use in pregnant women in clinical practice.

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### Violence against adolescent girls in India during the covid-19 pandemic: a mixed-method investigation

Janina Isabel Steinert<sup>1</sup>, Hannah Prince<sup>2</sup>, Jessy Ezebuibe<sup>3</sup>, Shruti Shukla<sup>4</sup>

<sup>1</sup>TUM School of Social Sciences and Technology, Technical University of Munich, Germany, <sup>2</sup>Hochschule für Politik, Technical University of Munich, Germany, <sup>3</sup>World Bank, Washington DC, United States, <sup>4</sup>TUM School of Social Sciences and Technology, Technical University of Munich, Germany

**Background:** While the "shadow pandemic" of violence against women during the COVID-19 pandemic is well documented, little is known about its impact on adolescent girls. This mixed-methods study documents effects of the pandemic on multiple forms of violence against girls in India.

**Methods:** 13-18-year-old girls in rural and urban communities and slum pockets in Maharashtra were surveyed between February and April 2022. Quantitative data were collected on health-related and socioeconomic impacts of the COVID-19 pandemic, domestic violence at home, and intimate partner violence (IPV) (for married/partnered girls), using audio- and computer-assisted self-interview techniques. We estimated a multivariable logistic regression to assess how the pandemic affected the risk of violence. Qualitative data were collected via eight focus group Discussions and nine in-depth interviews and transcripts were coded using thematic analysis. **Findings:** 3049 adolescent girls were recruited into the study, of which 277 (9.1%) were married underage. In the previous 12 months, 2003 (65.7%) girls reported at least one form of family violence and 405 (71.7%) partnered girls reported incidents of IPV. Domestic violence risk increased significantly in households who suffered greater economic harms (OR 1.19, 95% CI 1.13 to 1.26) and negative health consequences (OR=1.76, 95% CI 1.54 to 2.02) due to the pandemic. Similarly, greater detrimental health and economic impacts were associated with higher IPV risk. **Interpretation:** The COVID-19 pandemic has substantially increased girls' vulnerability to violence. Concerted and youth-focused policy efforts to extend support services for adolescent violence survivors, are urgently needed.

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### Preconception body mass index and gestational weight gain and behavioural problems children and adolescents: the UK birth cohort study

Berihun Dachew<sup>1</sup>, Akilew Adane<sup>2</sup>, Rosa Alati<sup>1</sup>

<sup>1</sup>School of Population Health, Curtin University, Perth, Australia, <sup>2</sup>Ngangk Yira Institute for Change, Murdoch University, Perth, Australia

**Background and Objective:** Existing evidence in the association between maternal pregnancy and pre-pregnancy weight and behavioural outcomes in children is limited and inconsistent. This study aimed to examine these associations at five developmental time points between ages 3 and 16.

**Methods:** We used data from the Avon Longitudinal Study of Parents and Children (ALSPAC), an ongoing population-based longitudinal pregnancy cohort study in Bristol, United Kingdom (UK). Data on behavioural outcomes were measured at ages 3.5, 7, 9, 11 and 16 years using the Strengths and Difficulties Questionnaire (SDQ). Over 7960 (at 3.5 years of age) and 4400 (at 16 years of age) mother-child pairs were included in the final analysis. Generalised estimated Equation (GEE) and logistic regression analyses were used to examine the associations.

**Results:** Preconception underweight was associated with emotional symptoms in children (OR = 1.38, 95% CI; 1.15 – 1.66). We found an increased risk of peer relationship problems in the offspring of mothers with pre-conception overweight (OR = 1.17, 95% CI; 1.01 – 1.35) and obesity (OR = 1.41, 95% CI; 1.13 – 1.74). Preconception BMI was not associated with hyperactivity/inattention problems and conduct problems. We also found no evidence of the association between gestational weight gain and child behaviour.

**Conclusions:** Our Findings highlight that preconception BMI, but not gestational weight gain, may influence the emotional health of children and adolescents.

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### Predicting low cognitive ability at age 5 - feature selection using machine learning methods and birth cohort data

Andrea Bowe<sup>1</sup>, Gordon Lightbody<sup>1</sup>, Anthony Staines<sup>2</sup>, Mairead Kiely<sup>1</sup>, Fergus McCarthy<sup>1</sup>, Deirdre Murray<sup>1</sup>

<sup>1</sup>INFANT Research Centre, Cork, Ireland, <sup>2</sup>School of Nursing, Psychotherapy, and Community Health, Dublin City University, Dublin, Ireland

**Background and Objectives:** Early life is a crucial period for shaping the developing brain. A failure to achieve early foundational cognitive skills may result in a permanent loss of opportunity to achieve full cognitive potential. Developmental screening programmes which rely on the presence of a delay may miss the opportunity for early preemptive intervention in the period of optimal neuroplasticity. The objectives of this study were to 1) apply the random forest (RF) algorithm to birth-cohort data to train a model to predict low cognitive ability at 5 years of age using maternal, infant, and sociodemographic characteristics 2) to identify the important predictive features and interactions.

**Methods:** Data was from 1,070 participants in the Irish population-based BASELINE cohort. A RF model was trained to predict an intelligence quotient (IQ) score  $\geq 90$

at age 5 years using maternal, infant, and sociodemographic features. Feature importance was examined and internal validation performed using 10-fold cross validation repeated 5 times.

**Results:** The five most important predictive features were the total years of maternal schooling, infant Apgar score at 1 minute, socioeconomic index, maternal BMI, and alcohol consumption in the first trimester. On internal validation a parsimonious RF model based on 11 features showed excellent predictive ability, correctly classifying 95% of participants. Examination of the model revealed important predictive interactions between many features, for example between total years of maternal schooling and maternal alcohol intake in the first trimester. This model provides a foundation suitable for external validation in an unseen cohort.

**Conclusions:** Machine learning approaches to large existing datasets can provide accurate feature selection to improve risk prediction. Further validation of this model is required in cohorts representative of the general population. Predicting later cognitive function has important potential risks which warrant careful attention, but it may provide an opportunity for early preemptive intervention.

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### Effect of Gutka consumption on the birth outcomes of women in Hub Town, Tehsil Hub, District Lasbela

Rabia Baloch<sup>1</sup>, Naseem Zehri<sup>1</sup>, Nighat Shah<sup>1</sup>

<sup>1</sup>Jinnah Sindh Medical University, Karachi, Pakistan

**Introduction:** Tobacco use is one of the main reason of mortality and morbidity all over the globe. Smokeless tobacco (SLT) use is increasing day by day in our country especially in uneducated women of poor socio economic families. Smokeless tobacco (SLT) is used in the form of Gutka, betel quid, chalia, naswar etc. according to a survey 4.6% smokeless users were females. Gutka is a combination of tobacco, areca nuts, and various kinds of chemicals and flavors. The adverse effects of smokeless tobacco are known as it can cause oral and gums problems like carcinoma of gums etc. Its effects on fetus are also being studied and is evidenced that it may cause adverse birth outcomes like low birth weight babies, preterm deliveries and also anemia and folate deficiency in mothers.

**Objective:** To evaluate the impact of Gutka consumption on maternal birth outcomes in tertiary care hospital.

**Methods:** An observational cross sectional study was conducted at Jam Ghulam Qadir Hospital Hub Chowki, Balochistan. When pregnant women came to hospital for delivery, self-administered questionnaire was given. We included 250 women who were using gutka and 250 women who were not using gutka. After delivery we recorded birth outcomes. Sample was divided into 2 groups A consisted pregnant woman who used Gutka and B group comprised of pregnant women who did not consumed Gutka. Then these two groups were compared.

**Results:** The results of this study demonstrated a very high degree of females using Gutka and leading to adverse maternal and fetal outcomes.

**Conclusions:** It is evident that higher usage of Gutka led to a significant decrease in infantile mean birth weight, length, head circumference of infant at birth, gestational length, physical condition of neonate, APGAR scores and any other abnormality such as cleft palate and lip in comparison to Non-Gutka users.

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### Maternal alcohol use disorder before and during pregnancy and the risk of stillbirth and infant mortality in Denmark

Priscilla Lee<sup>1</sup>, Anne Laursen<sup>1</sup>, Ellen Mikkelsen<sup>1</sup>, Jiong Li<sup>1</sup>

<sup>1</sup>Aarhus University, Denmark

**Background and Objectives:** Previous epidemiological studies show that high maternal alcohol intake during pregnancy is related to offspring mortality, however, the association of high maternal alcohol intake before conception with stillbirth and infant mortality is less clear. This study investigated the association of maternal alcohol use disorder (AUD) before and during pregnancy with the risk of stillbirth and infant mortality.

**Methods:** We conducted a nationwide cohort study of 1,995,364 births in Denmark during 1980-2012. AUD diagnoses and alcoholism-related medication were retrieved from the Danish National Patient Registry and the Danish National Prescription Registry, respectively. We categorized women as having either "AUD BEFORE pregnancy only" or "any AUD DURING pregnancy". For women with AUD diagnosed only before conception, we further categorized the recency of diagnosis into 8 years. Stillbirth and infant mortality were identified from The Danish Medical Birth Register and Danish Register of Causes of Death, respectively. We used logistic regression models to analyze the association of maternal AUD with stillbirth and infant mortality.

**Results:** Of 1,995,364 births during 1980-2012, 8663 stillbirths and 9960 infant deaths occurred. Compared with no maternal AUD diagnosis, maternal AUD before conception was associated with 24% [95% confidence interval (CI)=1.00-1.53] and 31% (95%CI=1.10-1.57) higher odds for stillbirth and infant mortality, respectively. Recency of diagnosis before conception presented a monotonic relationship with of stillbirth and infant mortality risk. Compared with women who never had the disorder, women with AUD during pregnancy had an increased risk of having a stillbirth (OR=1.86, 95%CI=0.99-3.47) and experiencing infant mortality (OR=3.17, 95%CI=2.11-4.76).

**Conclusions:** Maternal AUD before and during pregnancy were associated with an increased risk of stillbirth and infant mortality. This study supported that early attention to maternal AUD is a potential way to decrease risk of stillbirth and infant mortality.

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### Investigating the role of friendship interventions on the mental health outcomes of adolescents: a scoping review of range and a systematic review of effectiveness

Tanya Manchanda<sup>1</sup>, Mina Fazel<sup>1</sup>, Alan Stein<sup>1</sup>

<sup>1</sup>Department of Psychiatry, University of Oxford, United Kingdom

Friendships are a crucial component of adolescence, though their role on adolescent mental health remains largely unexplored. This paper presents a scoping review, followed by a systematic review, to assess friendship interventions and their impacts on the mental health outcomes of adolescents aged 12-24. The scoping review intends to map the range of friendship interventions, while the systematic review intends to evaluate and categorise the efficacy of friendship interventions for mental health. Studies were selected using eight databases and screened for inclusion. Studies were included if they incorporated a friend or authentic social group in an intervention dedicated to improving mental health outcomes and well-being. Twenty-four studies were included in the scoping review, and 18 were eligible for the systematic review. Data from 12815 adolescents were analysed; three prominent themes emerged. The most common theme was mental health literacy, followed by supporting help-seeking and, finally, friendship-building and combating isolation. Most studies evaluated the individual who had received the intervention rather than their wider friends who would have been potential recipients of any altered interactions. Of the three included studies focusing on friendship building for mental health support, all had positive short-term outcomes but inconclusive long-term effects. Two studies brought in friends from an individual's authentic social group to, for example, learn how to support their friend better. While the opportunities for improving mental health literacy and help-seeking seem to be strong, friends' role in mental health interventions has only been developed in a few areas. It would benefit from broader domains of influence and mechanisms of action being explored, given how friends are proven to be a key point of contact for many adolescents.

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### In hospital death among under five years children hospitalized with meningitis in the eastern of the Democratic Republic of Congo

Jeanniere Manegabe<sup>1</sup>, Archippe Muhandule<sup>2</sup>

<sup>1</sup>Faculty of Pediatrics, Evangelical University in Africa, Democratic Republic of Congo, <sup>2</sup>Department of Pediatrics, Evangelical University in Africa, Democratic Republic of Congo

**Background:** Meningitis is a major public health problem needing timely diagnosis, appropriate treatment, prevention and control. Despite the advances in diagnosis and treatment of infectious diseases, meningitis is still considered as an important cause of mortality and morbidity, especially in the pediatric population of lower income countries such as the Democratic Republic of the Congo (DR Congo). In this study, we aimed to analyze the fatality aspect of suspected meningitis among children under five years.

**Materials and Methods:** A prospective, descriptive study carried out in the Pediatrics departments of four hospitals in the South-Kivu province in the Eastern part of the DR Congo from April 2021 to March 2022. Of the 1,386 children enrolled, 251 children were suspected of meningitis. This study captures data generated in the framework of routine medical practice, which includes medical history, clinical diagnosis and Results of locally conducted laboratory tests. **Results:** Throughout the study period, a total of 251 patients (18.1%) aged 1 month to 59 months with suspected meningitis were recruited out of 1386 children hospitalized in the Pediatrics. The fatality among hospitalized children with suspected meningitis during the study period was 27.9%, however the mortality

linked to meningitis decreases with age, ranging from 37.5% among children under 2 years to 19.4% among those over 2 years old. Children hospitalized for meningitis with malnutrition as an underlying condition, had a 3.5 times greater risk of dying. The case fatality rate was higher in transferred and not vaccinated children respectively (2.3 and 2.5 times). We observe that the death occurs early within the first 3 days.

**Conclusions:** Our study noted a higher fatality rate in children with suspected meningitis; that could be probably be linked to the gap in vaccination and malnutrition as underline condition.

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### Examining the linkages between maternity services and postpartum modern contraceptive adoption among young women in India: Insights from the 2015-16 and 2019-21 National Family Health Survey

Monirujjaman Biswas<sup>1</sup>

<sup>1</sup>Jawaharlal Nehru University, India

**Background and Objectives:** The adoption of maternity services and postpartum modern contraception are the two most crucial components help to reduce both maternal and infant mortality; still, India is consistently struggling with it. This paper, therefore, aimed to examine the linkages between use of maternity services and postpartum modern contraceptive adoption. **Methods:** The required reproductive calendar data were extracted from the 2015-16 and 2019-21 National Family Health Survey (NFHS) datasets. The assessment was made based on a sample of currently married women aged 15-24 years who had given most recent childbirth in five years preceding the survey. For the analysis, a time-to-event approach was applied using the Kaplan-Meier survival statistic, Log-Rank Chi-square test and Cox-Proportional Hazard (Cox-PH) models.

**Results:** The Results revealed that the proportion of postpartum modern contraceptive uptake among young users increased by only 9%, from 33% in 2015-16 to 42% in 2019-21. The Cox-PH models reported that, in both NFHS waves, the associations between various components of maternity services and postpartum modern contraceptive uptake were strongly significant, even after controlling for selected socio-economic and demographic correlates. **Conclusions:** The Findings of this study reinforced the need for implementing integrated maternal-child health and family planning programs and for boosting effective family planning counselling by health professionals to promote and motivate young women with a desire to early adoption of modern contraception in subsequent months after a recent childbirth.

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### Undernutrition among pregnant adolescent: a scoping systematic review

Adane Tesfaye<sup>1,2</sup>, Dessalegn Tamiru<sup>2</sup>, Tefera Belachew<sup>2</sup>

<sup>1</sup>School of Public Health, College of Medicine and Health Sciences, Dilla University, Dilla, Ethiopia, <sup>2</sup>School of Public Health, College of Medicine and Health Sciences, Jimma University, Jimma, Ethiopia

**Background:** In pregnant adolescents, it is hypothesized that there is 'nutrient partitioning', a competition for nutrients between the still-growing adolescent mother and her rapidly developing fetus Resulting in a compromised nutrition status of both. This scoping review examined the prevalence of undernutrition, associated factors, and outcomes of adolescent pregnancy.

**Methods:** We used a five stages framework of Arksey and O'Malley (2005) to carry out this scoping review. Published articles, reviews, and reports were identified through a complete search. We included articles published in the English language from 2000 to 2020. We summarized the prevalence, associated factors, and health outcomes of pregnancy during adolescence.

**Results:** 25 studies met the inclusion criteria. 32% of the studies are on dietary intake, 20% of them reported nutritional status and associated factors, and 48% of studies discussed the effect of poor nutrition on the outcome of Pregnancy during adolescence. Only 4 of the studies are community-based and 21 are facility based. The magnitude of undernutrition among pregnant adolescent girls ranged from 23.5% to 34%; Social determinants of health such as poor access to antenatal care visits, low educational status of partners, poor dietary intake, early marriage, rural residency, young age and having multiple pregnancies are associated with poor nutritional status. Pregnant adolescents have also more risks of poor pregnancy outcomes compared with pregnant adult women. These include fetal complications like prematurity, low or very low birth weight, and perinatal mortality, major congenital defects; hypertensive pregnancy disorders, abortion, urinary infections, and premature rupture of the fetal membranes.

**Conclusions:** A higher magnitude of undernutrition, less dietary intake, and more risks of poor pregnancy outcomes were observed from reviewed studies. This review demonstrated the absence of comprehensive literature which might be explored through a population-based prospective study.

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### Prevalence of Chlamydia trachomatis and its associated factors among sexually active women in a high HIV-burden region, Western Kenya using Point-of-Care approach

Martha Nyakambi<sup>1</sup>, Anthony Waruru<sup>2</sup>, Adesina Oladokun<sup>3</sup>

<sup>1</sup>Pan African University of Life and Earth Sciences Including Health and Agriculture, Kenya, <sup>2</sup>Centre for Disease Control (CDC), Kenya, <sup>3</sup>University College Hospital, University of Ibadan, Nigeria

**Background:** 7.5% participants tested Chlamydia-positive and were treated. Chlamydia positivity was highest (48.3%) among inconsistent condom users and lowest (10.3%) among non-users. Women in polygamous and low education had higher prevalence (7.3%). The age group 18-25 years had the highest positivity (79%; 5.7%). Factors associated with Chlamydia were: multiple sexual partners, adjusted odds ratio (aOR) 15.7 (95% CI: 2.1, 120); being HIV-infected aOR 4.0 (95% CI: 1.3, 12.5); and having UTI aOR 4.3, (95% CI: 1.8,10.7). Nearly all participants (92%) had no explicit knowledge of the symptoms or effects of Chlamydia. Self-collection of vaginal swabs was highly acceptable (99.7%).

**Conclusions:** Chlamydia infections are prevalent among women with multiple sexual partners, who have other STIs, or inconsistently use condoms. Most women had poor knowledge of symptoms and Chlamydia-associated risk factors; therefore, awareness may ease the STI burden. Using Chlamydia POC diagnostic tests, provision of same-day Results and treatment is feasible.

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### Effectiveness of a pilot school milk scheme in increasing milk consumption among children attending Irish early years settings

Ellen Greene<sup>1</sup>, Celine Murrin<sup>2</sup>

<sup>1</sup>School of Public Health, Physiotherapy and Sports Science, University College Dublin, Dublin, Ireland., <sup>2</sup>School of Public Health, Physiotherapy and Sports Science, University College Dublin, Dublin, Ireland

**Background and Objectives:** Milk consumption among Irish children has decreased over the past decade. As lasting food preferences can be developed in early childhood, intervening to promote a liking for milk before school age may be effective in increasing milk consumption. The EU School Milk Scheme (SMS) provides subsidised milk to schoolchildren, but in Ireland, operates predominantly in primary schools. The aim of this study is to determine whether a pilot of the SMS in Early Years Settings (EYS) is effective in increasing milk consumption and liking of milk among 2 to 5 year-old children.

**Methods:** The two-week SMS pilot included the provision of milk for daily distribution, with accompanying educational resources. Baseline and post-intervention data were collected via parental questionnaire in 12 intervention EYS and eight waitlist control settings, who had not yet received the intervention. McNemar's test was used to test for change in milk consumption (consuming milk daily versus less than daily) and liking of milk from baseline to follow-up among children in the intervention and waitlist control groups.

**Results:** Matched responses were received from 125 parents of 2-5 year-old children (intervention n=66; control n=59). There was a significant increase in daily milk consumption among children attending intervention EYS, from baseline (60.6%) to follow-up (78.8%), P= 0.023. There was not a significant difference in daily milk consumption among children attending control EYS, from baseline (67.8%) to follow-up (72.9%), P= 0.607. There were no significant differences in liking of milk from baseline to follow-up in the intervention or control group (P>0.05).

**Conclusions:** The SMS Early Years Pilot was effective in increasing 2 to 5 year-old children's milk consumption. Further research is necessary to explore the long-term influence of a milk provision and education intervention on preschool children's milk consumption and to determine its effectiveness on a larger scale.

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### Teenagers' mental health problems predict probable mental diagnosis among girls, but what about the boys?

Kristina Carlén<sup>1</sup>, Sakari Suominen<sup>1,2,3</sup>, Lilly Augustine<sup>4</sup>, Maiju Saarinen<sup>5,6</sup>, Minna Aromaa<sup>7,8</sup>, Päivi Rautava<sup>9,10</sup>, Andre Sourander<sup>11,12</sup>, Matti Sillanpää<sup>13</sup>

<sup>1</sup>School of Health Sciences, University of Skövde, Sweden, <sup>2</sup>Department

of Public Health, University of Turku, Finland, <sup>3</sup>Turku University Hospital, Turku, Finland, <sup>4</sup>CHILD, School of Learning and Communication, Jonkoping University, Jonkoping, Sweden, <sup>5</sup>Department of Child Neurology and General Practice, University of Turku, Finland, <sup>6</sup>Turku University Hospital, University of Turku, Finland, <sup>7</sup>Department of Public Health, University of Turku, Turku, Finland, <sup>8</sup>Turku University Hospital, University of Turku, Turku, Finland, <sup>9</sup>Department of Public Health, University of Turku and Turku University Hospital, Turku, Finland, <sup>10</sup>Clinical Research Centre, Turku University Hospital, Turku, Finland, <sup>11</sup>Department of Child Psychiatry, University of Turku, Turku, Finland, <sup>12</sup>Department of Child Psychiatry, Turku University Hospital, Turku, Finland, <sup>13</sup>Departments of Child Neurology and General Practice, University of Turku and Turku University Hospital, Turku, Finland

**Background and Objectives:** Adolescents' mental health is a public health concern. The prevalence of mental disorders is increasing, and there seems to be a gender difference, with girls reporting more mental health problems than boys, especially regarding internalizing problems. Most mental disorders debut early but often remain untreated into adulthood. Therefore, early detection of mental disorders is essential. The study aimed to estimate to what extent teenagers' self-reports of mental health problems predict probable mental diagnoses as they enter adulthood, particularly regarding gender differences.

**Methods:** Self-reported mental health problems, Youth Self-Report (YSR) at 15 years (n = 504) from the ongoing Finnish family competence study (FFC) using modified multivariable Poisson regression analysis for prediction of DAWBA (Development and Wellbeing Assessment) interview outcomes 3 years later.

**Results:** Recently published Results (Carlén et al., 2022) showed that one unit's increase in YSR was estimated to correspond to an increase in the relative risk of a probable DAWBA-based diagnosis by 3.3% [RR (95% CI) 1.03 (1.03–1.04), p < 0.001]. In gender-specific analysis, the Findings applied, particularly to girls.

**Conclusions:** Youth Self-Report (YSR) scores at pubertal age predicted the risk of a probable mental diagnosis at the onset of adulthood, particularly for girls. Further research is needed to explain the lower sensitivity of YSR among boys.

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### Social norms influence on provider provision of contraceptive services to adolescents: baseline evaluation of a vignette-based intervention in Kibra- urban informal settlement in Kenya

Paulie Njoroge<sup>1</sup>, Elsie Sang<sup>2</sup>, Abraham Afeworki<sup>3,4</sup>

<sup>1</sup>Save the Children-Kenya Country Office, Kenya, <sup>2</sup>Save the Children-Kenya Country Office, Nairobi, Kenya, <sup>3</sup>Save the Children, <sup>4</sup>Nairobi, Kenya

Delaying pregnancy among girls and young women can improve maternal and child health outcomes, as well as women's educational outcomes and long-term socioeconomic trajectories. Helping adolescents and youth to delay pregnancy until they are ready starts with improving accessibility, acceptability and quality of Sexual reproductive health and family planning (SRH/FP). Social and gender norms can influence health provider attitudes and behaviors Resulting in key barriers for adolescents seeking SRH/FP services. To inform a social norm intervention addressing providers attitudes and behaviors, we carried out two surveys among health providers, and adolescents and youth seeking services in Kibra informal settlement of Nairobi, Kenya. The Results show that myths and misconceptions regarding FP methods are a key issue among providers, and concerns about FP use Resulting in promiscuity remain high, despite receiving recent SRH/FP trainings. Yet, the majority of providers believe they have a duty to provide services to their young clients. Adolescents and youth seeking services were mostly satisfied with services. However, providers treatment was the most common source of dissatisfaction. Their knowledge of FP methods varied, yet health providers were the most trusted source to seek information on SRH/FP methods. Early pregnancy impedes long-term social, educational and health outcomes of adolescent girls and young women. In Kenya, 18% of adolescent girls have already begun childbearing. Helping adolescents and youth, delay pregnancy requires quality SRH/FP services that are acceptable, accessible and address their age-specific needs and priorities. However, adolescents seeking contraception are often shamed, sent away, or harshly treated by providers. We implemented i. To inform an intervention to address social factors shaping SRH/FP provision of services in Kibra informal settlement of Nairobi, we carried out two baseline surveys among SRH/FP providers, and adolescents seeking services.

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### The clinical characteristics of perineal tears: a study carried out on 14 pregnant women in a tertiary center: case series

Aymar Akilimali<sup>1</sup>

<sup>1</sup>Medical Research Circle, Bukavu, Democratic Republic of Congo

**Background:** The sheer quality of the female genital tract is not always respected at the time of childbirth [1] because no protocol for the management of perineal tears exists in our services these days. The management remains dependent on a gynecologist and obstetrician. The study aimed to describe the characteristics of perineal tears. **Methods:** Our cross-sectional, retrospective, and descriptive study focused on patients admitted for childbirth and hospitalized in the obstetrics department of the Saint Luc Tertiary Clinic for a period from March 2021 to March 2022. During this period, we recorded 111 deliveries with 14 perineal tears.

**Results:** A total of 111 deliveries were recorded with a 12.6% frequency of perineal tears. 64.3% of women aged between 26 and 35 and 71.4% of primiparous women [2] were affected by perineal tears. For delivery, 64.3% of births were eutocic deliveries, with 42.9% of children born with a birth weight greater than 4 kg, and the cephalic presentation [3] delivered 86% of children. For degrees of perineal tears, 64.3% of patients had first-degree perineal tears. For postpartum treatment of perineal tears, analgesics [4] help calm the pain, and antibiotic therapy has been considered. For fourth and third-degree tears, episiotomy [5] was performed as a surgical procedure. **Conclusions:** Perineal tears are the trauma often encountered in obstetrics; the first few suffer from it essentially. The high birth weight of children is often the cause. They require immediate management to prevent or avoid infections. **Links:** [1] <https://www.sciencedirect.com/topics/medicine-and-dentistry/childbirth> [2] <https://www.sciencedirect.com/topics/medicine-and-dentistry/primiparous-woman> [3] <https://www.sciencedirect.com/topics/medicine-and-dentistry/cephalic-presentation> [4] <https://www.sciencedirect.com/topics/medicine-and-dentistry/anodyne> [5] <https://www.sciencedirect.com/topics/medicine-and-dentistry/episiotomy>

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### Maternal and perinatal death surveillance and response in Baluchistan, Pakistan-causes & contributory factors of maternal deaths

Anaam Arif<sup>1</sup>, Muhammad Alam<sup>1</sup>

<sup>1</sup>World Health Organization, Pakistan

Pakistan is the sixth most populous country in the world and is ranked 53rd in the list of countries contributing towards high maternal mortality ratios. According to a recent maternal mortality survey, the current maternal mortality ratio of Pakistan is 186 per 100,000 live births with high disparities among provinces; Balochistan is the highest contributor with MMR of 298 per 100,000 live births. This study specifically focuses on the causes and contributory factors of high maternal deaths in Balochistan based on the evidence generated by the Maternal and Perinatal Death Surveillance and Response system. MPDSR provides the decision-makers with reliable and timely data to take the required action to reduce preventable maternal deaths. Maternal mortality data was collected from the three pilot tertiary health care facilities and data was analyzed using Statistical Package for Social Sciences version (20.0). Out of 40 notified maternal deaths in the period January 2020 till July 2020 around 39 deaths were reviewed and analyzed. This study found that of these 39 maternal deaths around 32% were attributed to hemorrhage, and around 15% and 12% resulted from eclampsia and sepsis respectively. Other major causes of maternal deaths included obstructed labour (10%), embolism (10%), and anesthesia complications (2%) respectively. Non-medical causes of these maternal deaths included shortage of human resource (7.7%), lack of medical equipment (7.7%) and failure to recognize the danger signs earlier (5.1%). The major underlying factors of these maternal deaths included low antenatal visits, underutilization of family planning services, poor referral system, and delays at all levels in the three-delay model. The study concluded that almost all of these maternal deaths could be avoided by undertaking appropriate measures and timely actions.

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### Determinants of mortality in Postpartum Haemorrhage in Mzimba district, Malawi

Monalisa Tembo<sup>1</sup>, Abigail Kazembe<sup>2</sup>, Elizabeth Glaser<sup>3</sup>, Alice Kadango<sup>3</sup>

<sup>1</sup>Ministry of Health, Mzuzu Central Hospital, Malawi, <sup>2</sup>Kamuzu University of Health Sciences, Lilongwe, Malawi, <sup>3</sup>Kamuzu University of Health Sciences, Blantyre, Malawi

**Background:** Severe Postpartum Haemorrhage (PPH) is one of the major complications following childbirth. Many interventions have helped to reduce its impact on maternal outcomes, nonetheless, it remains one of the major causes of maternal mortality. This study, therefore, aimed to determine the factors associated with mortality in severe PPH compared with those women who

survived after experiencing severe PPH in Mzimba District, Malawi. The findings could help to strategize appropriate interventions to manage women at higher risk of mortality from severe PPH.

Methods: A case-control approach using secondary data from women who had severe PPH was used. Stratified random sampling was used to select the cases and controls and Statistical Package for the Social Sciences was used to calculate the odds ratio and chi-squared test.

Results: The factors that were associated with mortality in severe PPH included the age range of 35 years and above (OR=5.69) rural dwelling (OR=3.83), (pre) eclampsia (OR=6.14), gravid 5 and above (OR=3.08), para 5 and above (OR=3.30), cesarean section delivery (OR=3.03) and poor neonatal outcome (OR=10.86) while the protective factors included spontaneous vaginal delivery (OR=0.30), perineal tears (OR=0.27) and uterine atony (OR=0.24).

Conclusions: The finding identifies some of the risk factors associated with mortality in PPH. It, therefore, indicates the need for comprehensive preventive measures and practices among those with risk factors to further reduce the maternal mortality associated with PPH and thereby leading to the achievement of Sustainable Development Goal 3.1.

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### Ethnic minority women's experiences of accessing antenatal care in high income European countries: a systematic review

Shuby Puthusseri<sup>1</sup>, Esther Sharma<sup>2</sup>, Pei-Ching Tseng<sup>2</sup>, Angela Harden<sup>3</sup>, Leah Li<sup>4</sup>

<sup>1</sup>Maternal and Child Health Research Centre, University of Bedfordshire, Luton, United Kingdom, <sup>2</sup>Maternal and Child Health Research Centre, University of Bedfordshire, United Kingdom, <sup>3</sup>School of Health Sciences, City, University of London, United Kingdom, <sup>4</sup>Great Ormond Street Institute of Child Health, University College London, United Kingdom

Background and Objective: Women from ethnic minority background are at greater risk of adverse maternal outcomes. Timely antenatal care is crucial in reducing risks of poor outcomes. The aim of this study was to identify, appraise, and synthesise recent qualitative evidence on ethnic minority women's experiences of accessing antenatal care in high-income European countries, and to develop a novel conceptual access framework based on women's perspectives.

Methods: We searched eight electronic databases in addition to manual searches to identify all qualitative studies published between January 2010 and May 2021. Identified articles were screened in two stages against the inclusion criteria with titles and abstract screened first followed by full-text screening. Included studies were quality appraised using the Critical Appraisal Skills Programme checklist and extracted data were synthesised using a 'best fit' framework.

Results: Thirty studies conducted in 11 European countries were included. Participants in majority of studies were women newly arrived in the host country. Women's experiences covered two overarching themes: 'provision of antenatal care' and 'uptake of antenatal care'. The 'provision of antenatal care' theme included five sub-themes: promotion of antenatal care importance, getting to antenatal care, costs of antenatal care, interactions with care providers and models of antenatal provision. The 'uptake of antenatal care' theme included seven sub-themes: delaying initiation of antenatal care, seeking antenatal care, reaching antenatal care, engaging with antenatal care, previous experiences of interacting with maternity services, ability to communicate and immigration status.

Conclusions: Findings demonstrated multifaceted and cyclical nature of initial and ongoing access to antenatal care for ethnic minority women. Structural and organisational factors played a significant role in women's ability to access antenatal care. Need for research on experiences across different generations of ethnic minority women, taking into account duration of stay in the host country in the host country was evident.

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### National and subnational burden of under-5 mortality in Ethiopia: evaluation of data from three decades using the Global Burden of Disease Study 2019

Gizachew Tessema<sup>1</sup>, Awoke Misganaw<sup>2</sup>, Tezera Berheto<sup>3</sup>, Gavin Pereira<sup>4</sup>, Yohannes Kinfu<sup>5</sup>

<sup>1</sup>Curtin School of Population Health, Curtin University, Australia, <sup>2</sup>Institute of Health Metrics and Evaluation, United States, <sup>3</sup>Ethiopian Public Health Institute, Ethiopia, <sup>4</sup>Curtin School of population Health, Curtin University, Australia, <sup>5</sup>University of Canberra, Australia

Background and Objective: The under-5 mortality rate is a commonly used indicator

of population health and socioeconomic status worldwide. However, as in most resource-limited settings, deaths among children under-5 and in any age group in Ethiopia remain unreported. We aimed to systematically estimate neonatal, infant, and under-5 mortality trends, identify underlying causes, and make subnational (regional and chartered cities) between 1990 and 2019.

Methods: We used the Global Burden of Diseases, Injuries, and Risk Factors Study (GBD 2019) to estimate three key under-5 mortality indicators –the probability of death between the date of birth and 5 years (under-5 mortality rate, U5MR). The causes of death by age groups, sex, and year were estimated using Cause of Death Ensemble modelling (CODEm). Specifically, this involved a multi-stage process that includes a non-linear mixed-effects model, source bias correction, spatiotemporal smoothing, and a Gaussian process regression to synthesise mortality estimates by age, sex, location, and year.

Results: In 2019, an estimated 190,173 (95% uncertainty interval 149,789–242,575) under-5 deaths occurred in Ethiopia, which was over two and a half times fewer 462,195 (427,639–499,980) than the deaths estimated for 1990. Nearly three-quarters (74%) of under-5 deaths in 2019 were within the first year of life, and over half (52%) in the first 28 days. The overall U5MR, IMR, and NMR in the country were estimated to be 52.4 (44.7–62.4), 41.5 (35.2–50.0), and 26.6 (22.6–31.5) deaths per 1000 livebirths, respectively, and differed substantially between regions.

Conclusions: While all regional states in Ethiopia have experienced a decline in under-5, infant, and neonatal mortality rates in the past three decades, the rate of change was not large enough to meet globally agreed-upon Sustainable Development Goals (SDGs) targets. Inter-regional disparities also remain significant, with the biggest differences being in the neonatal period.

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### Utilization of antenatal care services and pregnancy outcomes of women in advanced maternal age in Sri Lanka

Poojani Illangasinghe<sup>1</sup>, Kapila Jayaratne<sup>2</sup>

<sup>1</sup>Family Health Bureau, Ministry of Health, Sri Lanka, <sup>2</sup>Family Health Bureau, Ministry of Health, Rajagiriya, Sri Lanka

Introduction: Childbearing in latter part of reproductive age is a challenge. Adverse pregnancy outcomes increase with advanced (>35 years) maternal age (AMA) and many are preventable. Optimum antenatal care (ANC) is beneficial in minimizing negative outcomes of AMA. Objectives: We aimed to describe characteristics, utilization of ANC and pregnancy outcomes of AMA women delivering at a Teaching Hospital. We also assessed association between utilization of ANC services and selected pregnancy outcomes. Methods: We conducted a descriptive cross-sectional study among 216 women aged >35 years delivered at Colombo North Teaching Hospital selected using a non-probability consecutive sampling method. Women were interviewed within 7 days postpartum inward using an interviewer-administered questionnaire. Selected data were extracted from clinical records. Utilization of ANC was categorized using a scoring system and the association with pregnancy outcomes was assessed by applying Chi-square test.

Results: A total of 216 AMA postpartum women (age range 35–45 years, mean 37.8 (SD=2.4)) were recruited (response rate 100%). Majority (91.7%, n=198) were multiparous. The current pregnancy was planned in 77.8% (n=168) and 52.7% (n=114) experienced antenatal morbidities. Adverse maternal (8.3%, n=18) and newborn (37%, n=80) outcomes were noted. Majority (75.9%, n=164) optimally utilized ANC. Sinhalese (OR=2.98, 95%CI 1.29–6.87, p=0.008), Buddhist (OR=2.53, 95%CI 1.33–4.80, p=0.004) women with intended pregnancies (OR=5.67, 95%CI 2.81–11.43, p<0.001) well utilized ANC. Women educated <10 years of formal education (OR=0.4, 95%CI 1.33–4.80, p=0.027), had contraceptive issues (OR=0.27, 95%CI 0.10–0.74, p=0.007) and had adverse newborn outcomes (OR=0.32, 95%CI 0.16–0.61, p=0.001) reported low tendency to utilize ANC. Conclusions: Many AMA women are multiparous and with planned pregnancies. Presence of adverse maternal & newborn outcomes is substantial. Majority well utilized ANC and it reduced adverse pregnancy outcomes. Effective strategies should be formulated to promote well-planned pregnancies in early reproductive ages of women.

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### Awareness regarding prevention and management of diarrheal disease among mothers of under five children in Central Nepal

Pramila Poudel<sup>1</sup>

<sup>1</sup>Gandaki Medical College, Teaching Hospital and Research Centre, Pokhara, Nepal

Introduction: Diarrhea contributes as a major burden of disease among children in

Low- and middle-income countries. Incidence of diarrhea stands as 500 per 1000 under five children in Nepal. Mothers play a vital role in its prevention and home care management. Objective of the study was to assess the level of awareness regarding prevention and management of diarrheal disease among mothers of under five children in Bara district of central Nepal. Material and Methods: A community-based household survey was conducted during November to December 2020, among 284 mothers of under five children using a semi structured interview schedule through face-to-face interview technique. Collected data was entered and analyzed using SPSS version 18. The probability value of <0.05 was considered statistically significant at 95% confidence level.

Results: Among 284 respondents, (19.6%) reported that their child had at least one episode of diarrhea within the last three weeks of data collection. Among them (9.25%) had taken their child to health center and remaining (10.35%) managed it at home. Furthermore, (69.3%) reported that their child had been in contact with female community health volunteers (FCHVs). Almost all respondent heard about ORS whereas only (43.2%) knew the correct technique to prepare and use ORS. Regarding awareness majority (61.4%) had poor level of awareness. Level of awareness was significantly associated with educational status and number of children of respondents. Conclusions and Recommendations: Majority of respondents had poor level of awareness regarding prevention and management of diarrhea. Strengthening the capacity of FCHVs and conducting various community-based health intervention in the form of teaching, health exhibition and demonstration can contribute in increasing the level of awareness among the community people.

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### Association between a complex community intervention and quality of health extension workers' performance to correctly classify common childhood illnesses in four regions of Ethiopia

Theodoros Zemedu<sup>1</sup>, Solomon Abebe<sup>2</sup>, Mezgebu Yitayal<sup>2</sup>, Lars Persson<sup>3</sup>, Della Berhanu<sup>3</sup>

<sup>1</sup>Institute for Collective Health, Ethiopian Public Health Institute, Ethiopia,

<sup>2</sup>College of Medicine and Health Sciences, Institute of Public Health, University of Gondar, Ethiopia, <sup>3</sup>Department of Disease Control, London School of Hygiene and Tropical Medicine, United Kingdom

Background: Due to low care utilization, a complex intervention was done for two years to optimize the Ethiopian Health Extension Program. Improved quality of the integrated community case management services was an intermediate outcome of this intervention through community education and mobilization, capacity building of health workers, and strengthening of district ownership and accountability of sick child services. We evaluated the association between the intervention and the health extension workers' ability to correctly classify common childhood illnesses in four regions of Ethiopia.

Methods: Baseline and endline assessments were done in 2016 and 2018 in intervention and comparison areas in four regions of Ethiopia. Ill children aged 2 to 59 months were mobilized to visit health posts for an assessment that was followed by re-examination. We analyzed sensitivity, specificity, and difference-in-difference of correct classification in intervention and comparison areas at baseline and endline.

Results: Health extensions workers' consultations with ill children were observed in intervention (n = 710) and comparison areas (n = 615). At baseline, re-examination of the children showed that in intervention areas, health extension workers' sensitivity for fever or malaria was 54%, 68% for respiratory infections, 90% for diarrheal diseases, and 34% for malnutrition. At end-line, it was 40% for fever or malaria, 49% for respiratory infections, 85% for diarrheal diseases, and 48% for malnutrition. Specificity was higher (89–100%) for all childhood illnesses. Difference-in-differences was 6% for correct classification of fever or malaria [aOR = 1.45 95% CI: 0.81–2.60], 4% for respiratory tract infection [aOR = 1.49 95% CI: 0.81–2.74], and 5% for diarrheal diseases [aOR = 1.74 95% CI: 0.77–3.92].

Conclusions: This study revealed that the Optimization of Health Extension Program intervention, which included training, supportive supervision, and performance reviews of health extension workers, was not associated with an improved classification of childhood illnesses.

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### Severe malaria-related disability in African children

Eshetu Engeda<sup>1</sup>, Colleen Davison<sup>2</sup>, Heather Aldersey<sup>3</sup>, Kassahun Gelaye<sup>4</sup>, Nora Fayed<sup>5</sup>

<sup>1</sup>University of Gondar, Gondar city, Ethiopia, <sup>2</sup>Department of Public Health Sciences, Queen's University, Kingston, Ontario, Canada, <sup>3</sup>School

of Rehabilitation Therapy, Queen's University, Canada, <sup>4</sup>Department of Epidemiology and Biostatistics, Institute of Public Health, University of Gondar, Ethiopia, <sup>5</sup>School of Rehabilitation Therapy, Queen's University, Kingston, Canada

Background and Objective: The prevalence of severe malaria among children in African hospital-based studies is nearly 39%, and roughly 53% of children who survive severe malaria develop long-term sequelae. However, these consequences have not been studied from a disability and rehabilitation perspective. Therefore, this study aimed to assess severe malaria-related disability in Ethiopian children from the biopsychosocial perspective. Methods: Three independent but interrelated studies were conducted: (1) a systematic review of the African severe malaria literature in children that summarized the components of disability using the International Classification of Functioning, Disability, and Health (ICF), (2) an interpretive descriptive study of severe malaria-related disability from the perspectives of caregivers, and (3) a qualitative descriptive study that explored the perceptions and behaviors of healthcare providers towards severe malaria-related disability, using the Theoretical Domains Framework. The purposive sampling technique was used in both qualitative studies, and reflexive thematic analysis and directed content analysis were used to analyze data in the second and third studies.

Results: This study identified three integrated findings: (1) physical, psychological, and social functioning are notable components of disability related to severe malaria; (2) various contextual factors interacted with severe malaria and act as either barriers or facilitators of functioning, and (3) healthcare providers were focused on acute care, and they perceived that there were no rehabilitation support systems for severe malaria-related disability. Conclusions: Severe malaria-related disability is associated with impairments, activity limitations, and participation restrictions in African children. However, these children were not included in rehabilitation support and care. Implications: Future research should consider the components of disability identified in this study on a large scale. In addition, policymakers should consider funding post-severe malaria follow-up care and rehabilitation support systems, and rehabilitation professionals should include children with severe malaria-related disabilities in their care and support system.

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### Strengthening community-facility linkage in implementing the World Health Organization (WHO) case management guideline for Possible Serious Bacterial Infection (PSBI) among sick young infants in Western, Kenya

Ombaka Oduor<sup>1</sup>, Meshack Kibitok<sup>2</sup>

<sup>1</sup>Kenya Medical Research Institute, Kenya, <sup>2</sup>Living Goods, Nairobi, Kenya

Background: Follow-up of sick young infants (SYIs) with signs of PSBI by community health workers (CHWs) can be useful in delivering simplified outpatient treatment. We describe how strengthening community-facility linkage increases fidelity, acceptability and sustainability of implementing WHO guideline on case management of PSBI when referral is not possible.

Methods: The research adopted Hybrid II implementation research strategy using a mixed-methods evaluation across 39 primary care health facilities in Migori and Busia County. We trained 395 CHWs on two digital platforms CommCare and smart health to conduct home visits on days 2, 4, and 8, assess infants receiving treatment, encourage treatment adherence, and remind the caregiver to return for follow-up treatment at the facility.

Results: Between August 2021 and May 2022, CHVs assessed 7622 newborns, 896(11.7%) were identified with PSBI danger signs and referred to primary health care facilities (PHCF) for treatment. CHWs completed all planned household visits, assessments, and referrals for SYIs, demonstrating feasibility and acceptability. Fidelity also improved for follow-ups: the proportion of SYIs with PSBI identified in the community, treated, and re-assessed on day 2 at PHCs increased over the same period (peaked at 94%). However, the proportion of PSBI cases followed up on days 4 and 8 remained low (at 29% and 26%, respectively) mainly due to caregivers' reluctance to return to the facility for their baby's re-assessment, citing cost and improvement of baby's conditions.

Conclusions: Digital interventions can potentially improve the identification, referral and tracking of PSBI cases by CHWs and linkage with PHCFs. Combining CHWs efforts with mobile digital strategy improves the acceptability and fidelity of implementing PSBI guidelines during COVID-19 and other similar emergencies.

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### The price women pay: mineral extraction sites and women's safety

Kelly Parsley<sup>1</sup>

<sup>1</sup>Carroll College, United States

Mining areas brim with jobs and prosperity for many rural areas around the world, but they also bring a litany of crime and violence, especially violence against women. To complicate matters, the data is slim. Crisis centers and law enforcement report increased numbers of crimes, but few are tracking the impact the energy extraction industry has on women's safety and even fewer are tracking solutions to the problem. In this session we will review the academic literature on violence against women in energy extraction areas. We will address information about human trafficking, and we will include a discussion of women's safety particularly in rural areas where mineral extraction often takes place. Presenters will also share some strategies that communities have used to measure and limit the violence. In addition, presenters share policies and laws that some communities near mining sites have implemented to limit violence against women.

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### Young people with prior health service contacts have increased risk of repeated alcohol-related harm hospitalisations

Scott Sims<sup>1</sup>

<sup>1</sup>University of Western Australia, Australia

**Introduction:** After a first alcohol-related hospitalisation in youth, subsequent hospitalisations may demonstrate an increased risk of further alcohol-related hospitalisations, but there is no existing data on this. **Methods:** A retrospective longitudinal study between July 1992 to June 2017 using linked hospital administrative data identified 23,464 Western Australian young people (9,009 (38.4%) females and 14,455 (61.6%) males), aged 12-24 years hospitalised for at least one alcohol-related harm (ARH) episode of care. Cox regression was used to estimate hazard ratios (HRs) between risk factors and repeated alcohol-related hospitalisation after the first discharge for ARH. **Results:** Of those admitted for a (n=23,464), 21% (n=4,996) were readmitted for ARH. This high-risk sub-group comprised 46% (n=16,017) of the total alcohol-related admissions (n=34,485). After the first discharge for ARH, 16% (804) of people who experienced an alcohol-related readmission were readmitted within one month, and 51.8% (2,589) were readmitted within 12 months. At increased risk of readmission were Aboriginal people (HR=1.95; 95% CI: 1.81, 2.10) and those with prior health service contacts occurring before their first alcohol-related hospitalisation, including illicit drug hospitalisations (HR=4.40; 95%CI: 4.11, 4.72), mental health contacts (HR=2.37; 95%CI: 2.22, 2.53) and, in a sub-analysis, ED presentations (HR=1.32; 95% CI: 1.24, 1.41). **Discussion and Conclusions:** The probability of a repeated ARH hospitalisation was highest in the first month after initial discharge. There is a high-risk sub-group of young people more likely to have a repeat ARH hospitalisation. This represents an opportunity to provide interventions to those most at risk of repeated ARH.

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### Strengthening public health contributions in youth suicide prevention by reconceptualizing notions of resilience in youth mental health

Katrina Plamondon<sup>1</sup>, Sana Shahram<sup>2</sup>

<sup>1</sup>Faculty of Health and Social Development, School of Nursing, University of British Columbia, Canada, <sup>2</sup>School of Nursing, Faculty of Health and Social Development, University of British Columbia, Kelowna, Canada

Suicide is the second-leading cause of death among youth in Canada and the world, with rates highest among Black, Indigenous, people of colour and LGBTQIA2+ youth. Evidence shows upstream, community-based factors may be more important for promoting youth mental health. Evidence also shows that not all youth present the same (or any) risk factors. Yet, youth suicide prevention efforts conceptualize resilience at the individual level, as an internally-determined response to hardship or trauma and therefore rely on biomedical, episodic interventions targeting high-risk youth. These factors limit the possibilities of primary prevention, reacting to youth in crisis rather than creating conditions for thriving. The CLARITY (Community-Led Actions for Resiliency Important to Youth) Project began in 2018 as a community-driven response to the tragic loss of young people to suicide. CLARITY uses dialogue-based research, convening people in actively co-designing upstream, inclusive, and universally accessible initiatives. This long-term research partnership intervenes on systems and structures that create barriers to resilience and put youth at risk in the first place. The CLARITY project disrupts three long-standing conceptual norms in youth suicide prevention: (1) the emphasis on episodic, downstream, and largely biomedical suicide prevention interventions; (2) the tendency in research, policy and practice to rely on constructs of resilience as an individual characteristic

borne out of surviving hardship; and, (3) the exclusion of youth as experts in their own lives. Reconceptualizing notions of resilience opens possibilities for public health to play an active role in prevention, thereby reducing the reliance on acute-care, biomedical, and individually-focused system that aims to treat, rather than prevent, illness. In this presentation, we will share results from three different CLARITY studies and knowledge mobilizations efforts, inviting participants to look upstream and toward community-building as a meaningful step toward strengthening public health contributions to youth suicide prevention.

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### Prevalence trends of loneliness and associations between loneliness, sociodemographic factors, and subjective health among Norwegian adolescents

Nayan Parlikar<sup>1</sup>, Kirsti Kvaløy<sup>2</sup>, Linn Strand<sup>3</sup>, Geir Espnes<sup>3</sup>, Unni Moksnes<sup>3</sup>

<sup>1</sup>Department of Public Health and Nursing, Norwegian University of Science and Technology, Norway, <sup>2</sup>Department of Public Health and Nursing, Norwegian University of Science and Technology, Levanger, Norway,

<sup>3</sup>Department of Public Health and Nursing, Norwegian University of Science and Technology, Trondheim, Norway

**Background and Objective:** Globally, loneliness is considered a public health concern. Adolescents may be particularly vulnerable to feelings of loneliness because they face unique development challenges. This study investigates the overall changes in the prevalence of loneliness among the nationally representative study populations of 13-19-year-olds in Norway over the last three decades, and whether age, gender, self-rated health (SRH), and mental distress are associated with these changes.

**Methods:** Data was used from the Norwegian population-based Young-HUNT survey in 1995-1997, 2006-2008 and 2017-2019 (N=25,245). Loneliness was measured by the question 'Do you feel lonely?' Mental health was assessed by Hopkins Symptom Checklist-5 for adolescents to measure anxiety and depression (cut-off  $\geq 2$ ). SRH was assessed by a single direct question 'How is your health at the moment?'. Descriptive analyses were stratified by age, gender, SRH, and mental distress over survey year. Logistic regression and interaction analyses were used to analyze the associations and predictors of loneliness.

**Results:** Prevalence of loneliness increased from 5.9% in 1995/97 to 10.2% in 2017/19. An increase of 8.9% in 1995/97 to 16.7% in 2017/19 was observed in girls 16-19 years old. Among mentally distressed adolescents, loneliness prevalence increased from 22.3% in 1995/97 to 32.8% in 2006/08 and lowered to 27% in 2017/19. Similar trends were seen in those with poor SRH. There was a statistically significant interaction effect between age and time point on loneliness.

**Conclusions:** Results indicate increasing levels of adolescent loneliness over the last three decades in Norway corresponding with findings of increasing trends of poor mental health. This highlights the importance of developing interventions for awareness, social integration, and health promotion. Schools may be an especially ideal setting for intervention with the possibility to work on the psychosocial environment, social skills, parental education and early recognition of loneliness and mental health problems.

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### Characteristics of menstruation and the prevalence of dysmenorrhea among Palestinian adolescents living in refugee camps in the West Bank and Jordan: a cross-sectional study

Rula Ghandour<sup>1</sup>

<sup>1</sup>Birzeit University, Occupied Palestinian Territory

**Introduction:** Menstruation is a normal biological process that girls and women experience for the duration of their reproductive years. Normal menstrual cycles during adolescence indicate good current and future reproductive health and general well-being. Dysmenorrhea is the most common menstruation disorder that can be debilitating. This study aims to assess menstruation characteristics among adolescent girls living in Palestinian Refugee Camps in the West Bank of the occupied Palestinian territory and Jordan, estimate dysmenorrhea levels, and assess its associated factors.

**Methods:** A household survey of 15 to 18-year-old adolescent girls was conducted between June and September 2019. Trained field workers collected data on general menstrual characteristics and dysmenorrhea level using the Working ability, Location, Intensity, Days of pain Dysmenorrhea scale (WaLIDD), in addition to demographic, socioeconomic, and health characteristics. The link between dysmenorrhea and other participant characteristics was assessed using a linear regression model.

Results: 2737 girls participated in the study. The mean age and mean age-at-menarche were 16.8±1.1 and 13.1±1.2 respectively. Mean bleeding duration was 5.3±1.5 days, and the average cycle length was 28.1±6.2 days. Around 6% reported heavy menstrual bleeding. High dysmenorrhea levels were reported (96%), with 41% reporting severe symptoms. Higher dysmenorrhea levels were associated with older age, earlier age-at-menarche, longer period durations, and heavier menstrual flow, in addition to skipping breakfast regularly and limited physical activity patterns.

Conclusions: The study reveals regular menstrual patterns in terms of length, duration, and intensity of bleeding, as well as an age-at-menarche that is slightly higher than the global average. Furthermore, it reflects on an alarmingly high prevalence of dysmenorrhea among participants that tends to vary with different population characteristics. This research calls for collaborative responsibilities and efforts to assist adolescent girls with menstrual health issues, such as dysmenorrhea and irregular periods, so that effective recommendations and actions can be achieved.

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### The invisible enemy: maternal smokeless tobacco use as a risk factor for low birth weight

Akanksha Mahajan<sup>1</sup>, Bhawna Gupta<sup>2</sup>

<sup>1</sup>Monash University, Australia, <sup>2</sup>Torrens University, Australia

Low birth weight (<2500 g) is an important public health indicator of both maternal and child health. It increases the risk of neonatal mortality and morbidity, growth inhibition, impaired cognitive development and chronic diseases later in life. Low birth weight is more prevalent in developing countries, where smokeless tobacco use is also common and socially and culturally accepted, as compared to smoking among women. Smokeless tobacco refers to tobacco products such as khat, betel, khaini, gutka, snuff and areca nut; which are consumed by means other than smoking/burning, and can be used nasally or orally. This study systematically reviews evidence on the adverse association between maternal smokeless tobacco use and low birth weight. A systematic search of studies was conducted using electronic databases (PubMed, CINAHL, EMBASE, Scopus), along with reference list searching, with no limitation on language and date of publication. Article selection and data extraction were performed by two independent reviewers. A comprehensive quality assessment of all included studies was performed using the Newcastle Ottawa Scale. Significant associations with smokeless tobacco use were seen in 11 out of the 29 included studies for LBW. However, these results may be limited by confounding and bias. There is also a limited number of studies which evaluate the presence of a dose response relationship between smokeless tobacco use and birthweight. Further research and quality observational studies are needed to strengthen this evidence base. The adverse effects of smokeless tobacco found in this review highlights the need for policies which focus on primary prevention of smokeless tobacco use. Pregnant women should be provided with intensive education, counselling and resources regarding quitting or cutting down smokeless tobacco use to improve both maternal and child health outcomes. However, this is a challenging matter due to the addictive nature of tobacco.

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### A life-course approach to road safety - Findings from the DRIVE study

Rebecca Ivers<sup>1</sup>, Holger Moller<sup>2</sup>, Patricia Cullen<sup>3</sup>, Teresa Senserrick<sup>4,5</sup>, Kris Rogers<sup>6</sup>, Soufiane Boufous<sup>7</sup>

<sup>1</sup>Faculty of Medicine, School of Population Health, University of NSW, Sydney, Australia, <sup>2</sup>School of Population Health, The University of New South Wales, Sydney, Australia, <sup>3</sup>Faculty of Medicine, University of New South Wales, Sydney, Australia, <sup>4</sup>Western Australian Centre for Road Safety Research, Australia, <sup>5</sup>University of Western Australia, Australia, <sup>6</sup>University of Technology Sydney, Ultimo, Australia, <sup>7</sup>Faculty of Science, University of New South Wales, Sydney, Australia

Background and Objective: Despite billions of dollars being spent on road safety each year, road transport crashes remain a leading cause of injury and death worldwide. New approaches to road safety are needed.

Methods: We used data from a 2003/2004 Australian survey of young drivers (n=20 806), linked to police-reported crash, hospital and death data up to 2016. We used generalised linear models to estimate the association between protective and risk factors with car crash.

Results: After adjusting for confounding, drivers of lowest socioeconomic status had 1.90 (95% CI 1.25 to 2.88) times higher rate of crash related hospitalisation

compared with drivers of highest socioeconomic status. Drivers with the highest risky-driving scores had 1.92 times (95% CI 1.13- 3.27) higher rates of hospitalised crashes compared with drivers with the lowest scores. Drivers with three or more driving offences had 3.28 (95% CI 2.28-4.72) times higher rates of single vehicle crashes compared with drivers with no driving offences. Drivers who participated in a youth resilience education program during school had 0.76 (95% CI 0.60-0.96) lower rate of any crash, compared with those who did not participate in such program.

Conclusions: We showed the sustained effect of risk and protective factors during youth and crash later in life. This implies that, in addition to creating safe-systems, injury prevention also needs to consider the intersection of the wider social determinants of health to address the underlying causes. This broader, temporal concept is embodied in a life course approach to injury prevention.

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### Female genital mutilation in West Africa, Senegal: a secondary analysis of the DHS 2019

Ndeye Sougou<sup>1</sup>

<sup>1</sup>Department of Preventive Medicine and Public Health, University Cheikh Anta Diop of Dakar, Dakar, Senegal

Background and Objectives: Female genital mutilation (FGM) continues to exist in Senegal despite the legal prohibition introduced by the government in 1999. Because of its consequences, it remains a public health problem. The aim of this study is to describe and identify the factors associated with FGM in Senegal.

Methods: The analyses in this study had been done on the DHS 2019 data of Senegal. The DHS data included 7498 women aged 15 to 49 years. A multivariate analysis was performed to control for confounding factors. The dependent variable was the existence of female genital mutilation in women. Data were analyzed with STATA 17 software.

Results: Women with FGM represented 29.09% (2181) of women. FGMs were performed in 14.24% of cases before the age of 5 years. Women who thought that FGM was justified by religion represented 13.78% (1033). However, 80.59% of women thought it was a practice that should stop. In most cases, 96.94% of the mutilations were performed by traditional excisers. The protective factors for the occurrence of female genital mutilation were the womans high level of education (secondary ajOR=0.63 [0.63-0.94]), level of wealth (ajOR: 0.62 [0.47-0.82]), belonging to the central region of Senegal, and Christian religion (ajOR:0.029 [0,02-0.83]). Risk factors for female genital mutilation in Senegal were female age 45-49 years (ajOR: 1.29 [1.06-1.56]), rural residence (ajOR: 1.29 [1.06-1.56]), ethnicity, and belonging to certain regions in the northeast and southeast of Senegal.

Conclusions: To combat FGM, interventions should be targeted to certain regions and ethnic groups. Multi-sectoral interventions addressing the raising of womens empowerment.

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### Chagas disease in pregnant women from Amazon region, Brazil and control perspectives to potential vertical transmission

Ana Pinto<sup>1</sup>, Lais Costa<sup>2</sup>, Vera Valente<sup>3</sup>

<sup>1</sup>Instituto Evandro Chagas, Ministério da Saúde do Brasil, Belém, Pará, Brazil, <sup>2</sup>Instituto Evandro Chagas, Ministério da Saúde do Brasil, Brazil,

<sup>3</sup>Instituto Evandro Chagas Ministério da Saúde do Brasil, Brazil

Chagas disease is an anthrozoosis of tropical areas. Brazil, specially in Amazon region concentrates several cases at endemic levels and is an active focus of transmission, increased by environmental disturbances and exposure to vectors. The most frequent transmission, through the oral route provides high parasitic loads facilitating vertical transmission in affected pregnant women and, therefore, increasing the potential to vertical transmission. We describe a series of cases of pregnant women with Chagas disease (CD) and their pregnancy outcomes. This is a descriptive, cross-sectional, case series study in a clinical cohort of follow-up with pregnant women registered as confirmed cases of CD treated in the Chagas Disease Protocol of the Medical Care Department of Instituto Evandro Chagas – IEC during January 2009 to December 2019. Twenty-two pregnant with Chagas disease were included in the study, with two approaches: 36% (8/22) of them were diagnosed in acute phase Group 1-G1) and 64% (14/22) were submitted to serological follow-up after treatment before the pregnancy and, therefore, asymptomatic actually (Group 2-G2). Among the G1 complications of mothers during pregnancy, there was one (1) threatened miscarriage, one (1) diagnosis of acute Chagas heart disease and one (1) mother's death was registered in the 40th week, which was not submitted to necropsy. At the end of the pregnancy, four (4/22; 18,2%) children were diagnosed with congenital

Chagas disease by serological criterion. Comparatively, 75% of children with Congenital infection were born from mothers diagnosed in the acute phase (G1) and one (1) child from mother with asymptomatic infection (G2) was affected. The authors discuss the need to effort new tools for the precocious diagnosis both in pregnant women and their new-borns and immediate access to the treatment with emphasis to pregnant women during acute phase of Chagas disease.

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### Factors associated with dietary diversity among mothers with young children living in urban slums of Dhaka, Bangladesh

Swadesh Gurung<sup>1</sup>, Shaila Nazneen<sup>2</sup>, Sifat Yusuf<sup>2</sup>, Kusum Wagle<sup>2</sup>, Priyanka Gayen<sup>2</sup>, Malay Mridha<sup>2</sup>, Nuzhat Choudhury<sup>3</sup>

<sup>1</sup>James P Grant School of Public Health, Kathmandu, Nepal, <sup>2</sup>James P Grant School of Public Health, Bangladesh, <sup>3</sup>International Centre for Diarrhoeal Disease Research, Bangladesh (icddr), Bangladesh

Mothers living in slums are vulnerable to malnutrition and poor dietary diversity. Dietary diversity plays a crucial role in the fulfillment of both micro and macronutrient requirements. This cross-sectional study aimed to assess the status of and factors associated with dietary diversity. The study included 332 mothers from four slums in Dhaka city. Trained enumerators collected data from 19 November till 1 December 2016. Dietary diversity (DD) was measured by asking questions about the consumption of 10 food groups in the last 24 hours. The mean age of mothers was 23.3 ( $\pm 4.7$ ) years. The mean number of food groups consumed by mothers in the previous 24 hours was 4.54 ( $\pm 1.79$ ) out of 10. The prevalence of poor DD (<5 food groups) was 55.1%. In the multivariable model, staying in the slum for 25-60 months [AOR= 2.3, (95% CI: 1.16, 4.67)], being in the poorest [AOR= 4.8, (95% CI: 1.84, 12.38)] and poorer [AOR= 3.8, (95% CI: 1.41, 10.09)] socio-economic status (SES) quintile and having average nutrition knowledge [AOR= 1.9, (95% CI: 1.01, 3.47)] were significantly associated with mother's poor DD. The predictive model showed differences in the probability of poor DD across SES (poorest=47% and richest=16%) reduced when good nutrition knowledge was introduced in the model. SES and nutrition knowledge is therefore associated with dietary diversity among these mothers with young children. Platforms such as electronic media and slum-based groups could be used to promote nutrition education whereas food subsidies especially for fruits and vegetables could help to enhance dietary diversity among mothers.

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### Increase of depression and anxiety among children and adolescents after the onset of the COVID-19 pandemic in Europe: a systematic review and meta-analysis

Helena Ludwig-Walz<sup>1</sup>, Indra Dannheim<sup>2</sup>, Lisa Pfadenhauer<sup>3</sup>, Jörg Fegert<sup>4</sup>, Martin Bujard<sup>5</sup>

<sup>1</sup>Institute for Collective Health, Federal Institute for Population Research, Germany, <sup>2</sup>Fulda University of Applied Sciences, Germany, <sup>3</sup>Ludwig-Maximilians-University, Munich, Germany, <sup>4</sup>University Medical Center, Ulm, Germany, <sup>5</sup>Federal Institute for Population Research, Germany

**Background and Objective:** Depression and anxiety represented the leading causes for disease burden among children and adolescents. COVID-19 pandemic-related restrictions and school closures have influenced the life for the European youth; however, an up-to-date review how these changes affected mental health is lacking. Therefore, we aimed to determine the change in the share of children and adolescents with depression and anxiety symptoms during COVID-19 pandemic compared to pre-pandemic baselines and evaluate country-related policy impacts. **Methods:** Six databases were searched using a peer-reviewed search string with citation tracking and grey literature searches. Primary outcomes were (1) general depression or anxiety symptoms and (2) clinically relevant depression or anxiety rates. The validated Oxford Stringency Index was used as indicator for pandemic-related restrictions. Screening of title/abstract and full text level was done in duplicate. Two reviewers independently assessed risk of bias and certainty of evidence, using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. Data were pooled using a random-effects model. PROSPERO registration: CRD42022303714.

**Results:** Of 7,422 nonduplicate records, 22 studies for depression symptoms and 18 for anxiety symptoms with data from 1,621,166 participants pre-pandemic and 1,571,062 during pandemic, met inclusion criteria. Moderate certainty of evidence was observed for general depression symptoms (standardized mean difference [SMD], 0.21; 95% confidence interval [CI], 0.12-0.30) and low certainty for clinically relevant depression rates (odds ratio, 1.36; 95% CI, 1.05-1.76). For general anxiety symptoms low certainty of evidence was determined (SMD, 0.34;

95% CI, 0.17-0.51) and very low certainty for clinically relevant anxiety rates (odds ratio, 1.08; 95% CI, 0.98-1.19). Effect estimates were considerable higher, when pandemic-related restrictions were more stringent or school closure occurred.

**Conclusions:** Depression and anxiety symptoms increased in a pre-during-comparison in the COVID-19 pandemic in Europe, whereby pandemic-related restrictions (such as school closures) resulted in an immense effect increase.

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### Socioeconomic determinants of congenital cataract in Kazakhstan

Aliya Kabybekova<sup>1</sup>, Altyn Aringazina<sup>2</sup>, Ardak Auyezova<sup>3</sup>, Lukpan Orazbekov<sup>4</sup>

<sup>1</sup>Kazakhstan Medical University "KSPH", Kazakhstan, <sup>2</sup>Almaty Management University, Kazakhstan, <sup>3</sup>Kazakhstan Medical University KSPH, Kazakhstan,

<sup>4</sup>Kazakh Eye Research Institute, Kazakhstan

**Background and Objective:** Congenital cataract is the one of the leading causes of reversible childhood vision impairment and blindness worldwide. If not being treated properly it negatively affects the emotional, social and economic status of the child, family and society. It was previously reported that families affected by childhood cataracts have a lower socioeconomic status and parental educational background. The objective was to determine socioeconomic status of the parents of children with congenital cataract in Kazakhstan. **Methods:** We conducted this cross-sectional study among the parents of the children with congenital cataracts from September, 2021 till March, 2022. The questionnaire including information of demographic factors, parental employment status, highest attained education, family income per person was created using Google forms. The link to the questionnaire was sent to the parents by WhatsApp messaging application. Telephone numbers were identified using the database of the Statistics Department of the Kazakh Eye Research Institute.

**Results:** Totally 253 parents answered the questionnaire. Median age of the parents was 33 years (IQR = 6 years). Fathers were employed mostly (133(52.6%; 95% Confidence Interval (CI), 46.2%-58.9%)), while mothers were unemployed in most cases (174(68.8%; 95% CI, 62.7%-74.4%)). The highest attained education of fathers was college education in the majority of cases (150(59.3%; 95% CI, 53.0%-65.4%)). The highest attained education of mothers was mostly university education (142(56.1%; 95% CI, 49.8%-62.3%)). Family income per person was < 100 United States dollar (USD) in 80 (31.6%; 95% CI 26.0%-37.8%),  $\geq$  100 USD <200 USD – 80 (31.6%; 95% CI, 26.0%-37.8%),  $\geq$ 200 USD – 93 (36.8%; 95% CI, 30.8%-43.0%). **Conclusions:** Despite the fact that parents mostly have higher level of education, they, especially mothers, seem to face barriers in employment. Also, the income of the family may limit their ability to provide care to child with this condition requiring intensive management.

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### Polymorphisms in miRNA biogenesis genes and the risk of pregnancy-induced hypertension among Jordanian women

Omar Khabour<sup>1</sup>, Sahar Makhlof<sup>1</sup>, Hasan Rawashdeh<sup>1</sup>, Baraa Sakee<sup>1</sup>

<sup>1</sup>Jordan University of Science and Technology, Jordan

**Background and Objective:** Pregnancy-induced hypertension (PIH) includes gestational hypertension and pre-eclampsia. PIH might be associated with severe pregnancy outcomes. Non-genetic factors such as advanced age, high body mass index (BMI), and diabetes are significant risk factors for PIH. At the genetic level, some studies showed that single nucleotide polymorphism (SNP) in miRNA biogenesis genes such as DICER and RAN are associated with PIH. In the current study, the contribution of DICER (rs3742330) and RAN (rs14035) to PIH in Jordan was investigated. **Methods:** A total of 250 Jordanian pregnant women with (n=99) or without (n=145) PIH were recruited into the study. The rs3742330 and rs14035 were genotyped using molecular techniques. Non-genetic factors were examined using a structured questionnaire. Blood measurements were performed on all participants and were correlated with the different genotypes of studies SNPs.

**Results:** The frequency of rs3742330 genotypes among the study sample was 76%, 21%, 2% for AA, GA, GG respectively. The frequency of rs14035 genotypes among the study sample was 59.6%, 35.4%, 5% for CC, CT, TT respectively. An association was found between rs3742330 and PIH (P<0.05). The frequency of G allele and AG/GG genotypes were enriched in the PIH group compared to the control group (P<0.05). On the other hand, no association was found between rs14035 and PIH (P>0.05). With respect to environmental factors, BMI was found to be associated with a higher risk of PIH (P<0.001). None of the examined SNPs were associated with hematological parameters (P>0.05). **Conclusions:** DICER rs3742330 and BMI were associated with PIH among pregnant women in Jordan. These factors should be considered in interventions that target PIH management in the country.

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### Health characteristics, risk factors, and leisure activities of school-age children participating in bullying

Milena Milicevic<sup>1</sup>, Aleksandar Stevanovic<sup>2</sup>, Jovana Todorovic<sup>1</sup>, Dejan Nikolic<sup>3</sup>, Nevena Popovac<sup>4</sup>, Zorica Terzic-Supic<sup>1</sup>, Nenad Bjelica<sup>5</sup>, Ratko Tomasevic<sup>6,7</sup>, Filip Milanovic<sup>8</sup>

<sup>1</sup>Institute of Social Medicine, Faculty of Medicine, University of Belgrade, Serbia, <sup>2</sup>Institute of Social Medicine, Faculty of Medicine, University of Belgrade, Belgrade, Serbia, <sup>3</sup>University Children's Hospital, Faculty of Medicine, University of Belgrade, Serbia, <sup>4</sup>Faculty of Medicine, University Children's Hospital, University of Belgrade, Serbia, <sup>5</sup>Primary Health Care Centre Dr Simo Milosevic, Serbia, <sup>6</sup>Faculty of Medicine, University of Belgrade, Serbia, <sup>7</sup>Department of Gastroenterohepatology, Clinic for Internal Medicine, Clinical Hospital Center Zemun, Serbia, <sup>8</sup>Pediatric Surgery Department, University Children's Hospital, Serbia

**Background and Objective:** School-age children bullied by their peers, about one-third of all, are at risk of developing symptoms of anxiety, depression, and stress. Professionals' role in prevention is to raise community awareness of the common health and behavioural characteristics of children involved in bullying and design effective interventions. The study aimed to examine the prevalence of participation in bullying once and multiple times and the association of school-age children's involvement in bullying with health characteristics, risk factors, and leisure activities.

**Methods:** A secondary analysis of the original data from the 2017 Health Behaviour in School-aged Children Study, covering 3267 children from 64 primary and high schools in Serbia, included the multivariate regression analysis.

**Results:** Compared to their counterparts, children participating in bullying at least once were more likely to feel everyday stomach pain, irritability or bad mood, and nervousness by 1.46, 1.58, and 1.58 times, respectively. However, those involved in multiple bullying were more likely with daily stomach pain, back pain, nervousness, and dizziness by 1.16, 1.62, 1.82, and 1.70 times, respectively. Children who reported watching TV or other media for five or more hours per day and were drunk two-three times, or four or more times in life, were 2.34, 1.53 and 1.74 times, respectively, more likely to be involved in bullying at least once. Those who had nightly meetings or reported being drunk four or more times in the last 30 days and reported playing games five or more times per day were more likely to be involved in multiple bullying by 2.54, 3.47, and 2.70 times, respectively.

**Conclusions:** Early identification of specific health symptoms in the pediatric population is needed. Interventions aimed at reducing alcohol abuse among school-age children should integrate training for health professionals and families of schoolchildren.

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### Prevalence and associated factors of unhealthy diet among adolescents: cross-sectional study among Tunisian high school students

Souhir Ayadi<sup>1</sup>, Hela Ghali<sup>1</sup>, Samia Abdellber<sup>2</sup>, Amal Kochbati<sup>2</sup>, Siwar Bkhairia<sup>2</sup>, Sana Bhiri<sup>2</sup>, Rania Bannour<sup>2</sup>, Enna Hariz<sup>2</sup>, Aroua Kamel<sup>2</sup>, Fatima Khouya<sup>2</sup>, Arwa Nafetti<sup>3</sup>, Sofien Aidani<sup>2</sup>, Salwa Khefacha<sup>2</sup>, Mohamed Rejeb<sup>2</sup>, Asma Cheikh<sup>2</sup>, Houyem Latiri<sup>2</sup>

<sup>1</sup>Family Medicine, Faculty of Medicine of Sousse, Sahloul University Hospital, Tunisia, <sup>2</sup>Sahloul University Hospital, Tunisia, <sup>3</sup>sahloul university hospital, Tunisia

**Background and Objective:** According to World Health Organization (WHO), Unhealthy Diet (UD) is a major risk factor for chronic diseases, including cardiovascular disease, cancer, diabetes and other obesity-related conditions. That's why it's important to study the UD and the factors associated to it. Our study aim to describe the dietary behavior of young high school students and determine its associated factors. **Methods:** A cross-sectional study was carried out among students of seven high schools in center-eastern Tunisia during the academic year 2021/2022. The data collection was carried out in April 2022 by questionnaires distributed at the end of the course session. The questions concerned the socio-demographic characteristics, food habits and physical activity. The UD was defined by WHO as the consumption of less than five fruits and vegetables per day. Data analysis was done using SPSS software.

**Results:** A total of 740 adolescents were included in this study. The mean age was 17±1.16 years with extremes ranging from 14 to 19 years. A female predominance was noted (60%) with sex-ratio at 0.66. Only 37% took breakfast regularly, 19.7% had a full meal at lunch and just 31% had dinner. UD was found among 91.6% of

the study population. UD was significantly associated with not practicing physical activity ( $p < 10^{-3}$ ), not taking breakfast ( $p < 10^{-3}$ ), not having morning snacks ( $p < 10^{-3}$ ), eating cake ( $p = 0.001$ ), eating sweets ( $p < 10^{-3}$ ), eating fried-food ( $p = 0.001$ ) and not passing exams ( $p < 10^{-3}$ ). At multivariate analysis, eating cake (aOR=4.062; CI [1.685-9.795];  $p = 0.002$ ), eating fried-food (aOR=3.239; CI [1.118-9.385];  $p = 0.03$ ) and consuming sweets (aOR=3.263; CI [1.666-6.394];  $p = 0.001$ ) were independent risk factors of UD. In the other hand, regular physical activity (aOR=0.524; CI [0.294-0.936];  $p = 0.029$ ) and having breakfast regularly (aOR=0.523; CI [0.297-0.923];  $p = 0.025$ ) were independent protective factors of UD. **Conclusions:** The prevalence of UD is alarming. That's why it is mandatory to establish effective strategies to support healthy diets and physical activity among adolescents in order to reduce non-communicable diseases related to UD.

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### Risk factors for stunting in children under two years old at the Tanralili health center, Maros, Indonesia

Nurleli<sup>1</sup>, Rahayu Indriasari<sup>1</sup>, Andi Wahyuni<sup>2</sup>, Esse Pawenrusi<sup>2</sup>, Andi Silwanah<sup>1</sup>, Muhammad Zamaa<sup>2</sup>, Elfita<sup>2</sup>

<sup>1</sup>Hasanuddin University, Makassar City, Indonesia, <sup>2</sup>Makassar College of Health Sciences, Makassar City, Indonesia

**Background:** Stunting is a growth disorder due to the accumulation of chronic malnutrition so that children's growth is shorter than their age, and causes permanent, long-term effects and impacts between generations. Stunting is a significant health problem in Indonesia and even in the world. The prevalence of stunting in children aged <5 years globally in 2020 is 22% (149.2 million), while the prevalence of stunting in Indonesia in 2021 is 24.4%, and in Maros Regency, it is 37.5%. This study aims to determine exclusive risk factors, family income, family food security, and the mother's knowledge of stunting in the working area of the Tanralili Maros Health Center. **Methods:** The type of research is an observational study with a case-control study design. The population in this study were infants under two years, totaling 139. The number of samples in this study was 64 respondents with a ratio of 1:1, consisting of 32 cases and 32 controls, taken by random sampling. Data collection using a questionnaire. Univariate and bivariate data analysis, with the Odds Ratio (OR) test.

**Results:** The results of this study indicate that children under two years of age are not exclusive breastfeeding OR = 1.623 (95% CI 0.528 – 4.991), low family income OR = 1.137 (95% CI 0.421 – 3.068), and inadequate family food security OR = 2.113 (95% CI 0.620 – 7.204) and mother's lack of knowledge OR 1.137 (95% CI 0.421 – 3.068) are risk factors for stunting. **Conclusions:** The conclusions from this study indicate that breastfeeding is not exclusive; low family income, inadequate food security, lack of maternal knowledge are risk factors for stunting. Further research is recommended to provide interventions to increase health literacy, especially regarding the use of local food. **Keywords:** stunting, breastfeeding, family income, food security, and knowledge

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### Early-life exposure to ambient PM2.5 and the development of hypertension in later life

Cui Guo<sup>1</sup>

<sup>1</sup>The University of Hong Kong, Hong Kong, China

**Background:** Associations between air pollution exposure and chronic diseases have been well-documented. However, the effects of early-life exposure to fine particulate matter (PM2.5) on adulthood hypertension and their dynamic associations remain unclear.

**Methods:** A total of 4,272 participants with 17,814 medical examinations from 2 ongoing cohorts in Taiwan and Hong were included during the study period from 2000-2018. We used a satellite-based model to assess 2-year average PM2.5 exposure at a resolution of 1 km<sup>2</sup>. A linear mixed model was used to examine the associations with blood pressure. We used a Cox regression model with time-dependent covariates was used to examine the overall association with the development of hypertension in adulthood. Life-course mixed models were used to examine the health effects of PM2.5 exposure at different life stages.

**Results:** For each 10 g/m<sup>3</sup> increase in PM2.5, the overall risk of adulthood hypertension increased by 40% (95% confidence interval [CI]: 8%-80%). The health effects of PM2.5 exposure at different life-stages on incident hypertension were generally independent of each other. In critical model, the risk of hypertension increased 23%, 27% and 55% for each 10 g/m<sup>3</sup> increase in PM2.5 exposure during school age, adolescence and adulthood, respectively. Similar associations were found with blood pressure. Higher level of PM2.5 exposure at different life stages was associated with elevated blood pressure and a higher risk of developing

hypertension in adulthood.

Conclusions: Association between PM<sub>2.5</sub> and adulthood hypertension can be traced back to childhood. Our study suggests that life-course control of air pollution exposure should be implemented to alleviate the burden of adult hypertension.

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### Exploring equitable access for special needs services among children in Klang Valley, Malaysia: a mixed method study

Fariza Fadzil<sup>1</sup>, Idayu Idris<sup>2</sup>, Norazlin Nor<sup>3</sup>, Juriza Ismail<sup>3</sup>, Azmi Tamil<sup>2</sup>, Kamaliah Noh<sup>4</sup>, Noraziani Khamis<sup>5</sup>, Noor Ahmad<sup>6</sup>, Salimah Othman<sup>7</sup>

<sup>1</sup>Advanced Wellbeing Research Centre, Family Health Development Division, Ministry of Health Malaysia, Putrajaya, Malaysia, <sup>2</sup>Department of Community Health, Faculty of Medicine, University Kebangsaan Malaysia, Malaysia,

<sup>3</sup>Department of Paediatrics, Faculty of Medicine, University Kebangsaan Malaysia, Malaysia, <sup>4</sup>Faculty of Medicine, University of Cyberjaya, Malaysia,

<sup>5</sup>Institute for Health Management, Ministry of Health Malaysia, Malaysia,

<sup>6</sup>Institute for Public Health, Ministry of Health Malaysia, Malaysia, <sup>7</sup>Family Health Development Division, Ministry of Health Malaysia, Malaysia

Background and Objectives: Many countries still face difficulties of unequal access to health services and resource limitations. Even for high priority areas like special needs children, basic services' coverage remains low in many countries including Malaysia. This study was conducted to determine the prevalence of missed clinic appointments by income group and their sociodemographic characteristics amongst children attending Child Development Centre at the National University of Malaysia Medical Centre. Methods: An explanatory sequential mixed method study was performed amongst caregivers of children with developmental disabilities aged up to 17 years.

Results: Analysis showed 62 of 197 (31.5%) caregivers had missed clinic appointments, mostly attributed to forgetfulness. Bivariate analysis showed significant differences in missed appointment rates by caregiver gender and follow-up duration. Logistic regression model demonstrated that combined with male caregiver as an independent variable, follow-up duration of more than 6 years increased missed appointment's risk by 2.67 times. Bottom 40% of Malaysian household income (B40) group had missed appointments of 36.8%; not statistically significant different with other income groups, denoting equitable access to our services consistent with other studies on equitable health service access in Malaysia. Sub-analysis demonstrated statistically significant differences by ethnicity and educational level. Non-Malays and those with lower educational level in B40 group demonstrated the highest proportion of missed appointments. Distance was not a risk factor amongst income groups and amongst B40 group, 85.7% who missed appointments lived less than 40KM from the centre. Caregivers' perceived barriers were transportation, caregiver, child and healthcare services issues. Conclusions: While this study did not identify unequal access for the lower income group, supporting factors for accessibility were deemed important by caregivers and future plans should take cognizance of these findings to improve appointment adherence, equity and accessibility to services for special needs children.

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### Global school-based student health survey: country profiles and survey results in the Eastern Mediterranean region countries

Farshid Jahani<sup>1</sup>, Elham Ahmadnezhad<sup>2</sup>, Zhaleh Abdi<sup>2</sup>, Elham Abdalmaleki<sup>2</sup>, Sahand Riazi-Isfahani<sup>2</sup>, Bahar Haghdoost<sup>2</sup>, Sara Saffarpour<sup>2</sup>

<sup>1</sup>Tonekabon University of Medical Sciences, Iran, <sup>2</sup>National Institute of Health Research, Tehran University of Medical Sciences, Iran

Background and Objectives: The increasing prevalence of chronic non-communicable diseases (NCDs) has some major implications on the ability of many countries to achieve universal health coverage. This study aimed to investigate the status of the implementation of Global School-based Student Health Survey (GSHS), which is used to assess the risk factors of NCDs among children and adolescents, by the Eastern Mediterranean Region (EMR) countries. Methods: This study was a meta-analysis and systematic literature review of studies published between 2001-2018. These studies were found by searching PubMed, Google Scholar, WHO, and CDC databases. In this study, the target group was students aged between 13 and 15, and between 13 and 17 years old. GSHS implementation as well as the indicators of tobacco and alcohol use, obesity, overweight, and physical activity were compared across different countries. The random-effect model for meta-analysis was considered at 95% confidence interval.

Results: In the EMR, 19 countries have implemented GSHS at least once following

the survey manual (37 surveys). In total, 201,795 young adolescents aged between 13 and 17 years old from 19 countries covered in the GSHS were included in our analysis. Among the students (13 and 15 years old), the overall estimation of the overweight prevalence rate was 24.5% (20.6-28.8), obesity prevalence rate was 7.3% (5.4-9.5), insufficient physical activity prevalence rate was 82.4% (80.7-84.1), tobacco usage prevalence rate was 14.3% (10.53-18.67), and smoking prevalence rate was 9.6% (8.1-11.3). In those aged from 13 to 17 years old, these rates were estimated as 19.8 (13.2-27.3), 9.7 (6.2-14.0), 86.1 (84.1-87.9), 17.8 (11.8-24.7), and 11.5 (9.4-13.8), respectively.

Conclusions: GSHS has been widely implemented across EMR countries. Using nationally representative data, the results show that more efforts are needed to target the NCDs risk factors among adolescents in the region.

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### Obstetric violence: the perception of black women based on their experiences of pregnancy and childbirth in Portugal

Laura Brito<sup>1,2</sup>, Karla Costa<sup>2</sup>

<sup>1</sup>Center for Social Studies, University of Coimbra, Portugal, <sup>2</sup>SaMaNe Portugal Association, Portugal

In Portugal, knowledge about the sexual and reproductive health of women of colour needs to be deepened, especially concerning the violence suffered in the context of pregnancy, childbirth and postpartum. This communication aims to present black women's perception of obstetric violence based on their experiences of pregnancy and childbirth in Portugal. Those are based on the results of an online questionnaire, conducted between March 2020 and November 2022. The information was collected from 12 questions about the socioeconomic profile of women and their perceptions of obstetric violence. 106 women participated, and the Results show that 56,6% had between 30 and 40 years; 48,11% are from Portugal and 78,3% reside in Lisbon. Regarding education, 63,2% have a degree. 49% have a monthly income between 1000€-3000€. Regarding obstetric violence, 76,4% knew the concept and of these, 54,7% knew it before their first pregnancy, mostly through social networks (55,6%). 33% claimed to have suffered obstetric violence during pregnancy, labour or/and postpartum and 50% of them claimed to have suffered obstetric violence due to their ethnic-racial identity; due to their age (20,58%); due to their weight (3%). The types of obstetric violence identified were performing procedures without consent (3%); excessive use of procedures (5,8%); lack of care by health professionals (17,6%). Although those results, 66% of women declared not to have suffered obstetric violence. The results show that, despite not considering that they had suffered obstetric violence, which may reflect the good conduct of the professional, those who suffered obstetric violence were due to ethnic-racial discrimination. This data shows the presence of racism in the obstetrics context in Portugal and highlights the urgency of approaching women's reproductive health intersectionally to understand the socio-racial dimensions of the reproductive violations suffered by black women.

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### Modelling environmental exposure in relationship with birth outcomes and perinatal pediatric Emergency Department admission: a casual mediation analysis of a three year survey

Valeria Bellisario<sup>1</sup>, Giulia Squillacioti<sup>2</sup>, Federica Ghelli<sup>3</sup>, Emanuele Castagno<sup>4</sup>, Claudia Bondone<sup>5</sup>, Roberto Bono<sup>3</sup>

<sup>1</sup>Department of Public Health and Pediatrics, University of Turin, Turin, Italy, <sup>2</sup>Department of Public Health and Pediatrics, University of Turin,

<sup>3</sup>Department of Public Health and Pediatrics, University of Turin, Italy,

<sup>4</sup>Emergency Department, Regina Margherita Children's Hospital, Città della

Salute e della Scienza di Torino, <sup>5</sup>Emergency Department, Regina Margherita

Children's Hospital, Città della Salute e della Scienza di Torino, Italy

Background and Objective: Gestational and perinatal environmental exposure has been associated with different pregnancy, birth, and early life outcomes, but the processes and timing are still unclear. Historically, applied models neglect the acute and short-term effects of environmental exposure, even more on respiratory and allergic Emergency Department (ED) admission during early life stages. We examined 3-years (2015-2017) newborns in Turin (Italy) with, at least, one respiratory/allergic pediatric ED admission during their first year of life, focusing on the relationship with air pollution (PM<sub>2.5</sub>, O<sub>3</sub>, NO<sub>2</sub>, aeroallergens) and greenness (NDVI) exposure, in the narrow window of a week before delivery and ED admission, and on the causal mediation analysis of other risk factors, elucidating causal mechanisms or effect pathways.

Methods: A tailored Logistic Regression Model, adjusted for seasonality and other possible confounding variables (mothers health and personal conditions,

gestational age of birth, meteorological/non-meteorological factors), was applied. Relative Risk (RR) associated with birth outcomes and respiratory/allergic ED admission was assessed at a time lag between 0 and 7 days prior these events. Results: We analyzed 1177 newborns (56.9%male/43.1%female), with at least one respiratory/allergic pediatric ED admission during their first year of life. We modeled air pollution and greenness exposure in relationship with some birth outcomes (i.e Apgar score, weight) and severity of ED admissions. Preliminary analyses showed direct correlations between increased air pollutant levels and birth outcomes ( $p=0.04$ ) and the severity of ED admissions ( $p=0.002$ ). The spatial and causal mediation analyses are still undergoing.

Conclusions: Environmental exposure may represent adverse or protective pathophysiological connection with birth and early life outcomes, as testified by the effects reported. Further studies are needed to better elucidate such relationship, estimating casual direct/indirect effects on these crucial perinatal outcomes.

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### Policy analysis to assess the impact of inadequate Emergency Obstetric Care (EmOC) services on maternal mortality in Balochistan Pakistan

Tahira Kamal<sup>1</sup>

<sup>1</sup>Government of Balochistan, Quetta, Pakistan

All indicators of women's health and social and economic condition are abysmal in Pakistan. The Pakistan Maternal Mortality Survey (PMMS) 2019 estimates MMR at 186. MMR is a telling indicator of women's status in society and their access to and the quality of healthcare available to them. On the other hand, from family planning, perinatal, antenatal care and childbirth to caring for the newborn, there are now proven interventions available that are simple and cheap at each step. They can ensure mother and child health improvement if effectively and consistently employed. However, maternal health-related targets in Pakistan are falling short of the Sustainable Development Goals (SDGs). One of the key reasons behind this is there is neither priority nor adequate investment by the government in providing EmOC services to poor communities. I used primary and secondary data sources to investigate the impact of inadequate EmOC services on maternal mortality in Balochistan, a disadvantaged province of Pakistan. The analysis shows that one of the factors behind stark inequalities in MMR is inadequate EmOC services in Balochistan compared to other provinces. For example, MMR in Punjab is 157, and for Balochistan province, it is 298. The high mortality correlates with the state of EmOC services in the province, which is inadequate and non-functional and not on the government's agenda. The study revealed that even the availability of basic EmOC services could make a difference in women's and newborns life from safe pregnancy to delivery. The study findings recommend the government should ensure access to EmOC services for women, which is essential to saving their lives. It should be considered an essential component of the healthcare delivery system at all levels of healthcare service delivery. It requires an adequate and functional transport system and hospital equipment to deal with emergency cases.

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### Keep me safe at home! Epidemiological study on domestic injuries among children and risk of hospitalization

Daiana Bezzini<sup>1</sup>, Alessandro Amaddeo<sup>2</sup>, Claudia Bondone<sup>3</sup>, Matteo Calvi<sup>4</sup>, Alessandro Canetto<sup>5</sup>, Alberto Gaiero<sup>6</sup>, Salvatore Grosso<sup>1</sup>, Marcello Lanari<sup>7</sup>, Ilaria Liguoro<sup>8</sup>, Francesca Lombardi<sup>9</sup>, Sergio Manieri<sup>10</sup>, Federico Marchetti<sup>11</sup>, Francesca Parisi<sup>12</sup>, Carmela Raffaele<sup>13</sup>, Antonino Reale<sup>14</sup>, Francesco Silenzi<sup>15</sup>, Davide Silvagni<sup>16</sup>, Irene Schiavetti<sup>17</sup>

<sup>1</sup>University of Siena, Italy, <sup>2</sup>IRCCS Burlo Garofolo, Trieste, Italy, <sup>3</sup>Ospedale Infantile Regina Margherita, A.O.U. Città della Salute e della Scienza, Torino, Italy, <sup>4</sup>Ospedale Papa Giovanni XXIII, Bergamo, Italy, <sup>5</sup>AO Brotzu, Ospedale San Michele, Cagliari, Italy, <sup>6</sup>Ospedale San Paolo, ASL 2 Savonese, Savona, Italy, <sup>7</sup>Ospedale Sant'Orsola, Bologna, Italy, <sup>8</sup>Clinica Pediatrica Udine, ASUFC, Udine, Italy, <sup>9</sup>Ospedale Maggiore, AUSL Bologna, Bologna, Italy, <sup>10</sup>Ospedale San Carlo, Potenza, Italy, <sup>11</sup>Ospedale Santa Maria delle Croci, Ravenna, Italy, <sup>12</sup>AO Santa Maria della Misericordia, Perugia, Italy, <sup>13</sup>UO Pediatria, Ospedale G.B. Morgagni L. Pierantoni, AUSL Romagna, Forlì, Italy, <sup>14</sup>IRCCS Ospedale Pediatrico Bambino Gesù, Roma, Italy, <sup>15</sup>IRCCS Meyer, Firenze, Italy, <sup>16</sup>Azienda Ospedaliera Universitaria Integrata, Verona, Italy, <sup>17</sup>Dip. di Scienze della Salute, Università di Genova, Italy

Background: Accidents are the main cause of injury and even death in children, and more than half events happen at home. In Italy, in 2019, 12.5/1000 children/

adolescents had at least one domestic accident, but only 8% of caregivers are aware of this risk. Objective: This is an Italian, observational, retrospective cohort study which evaluate which factors influence hospitalization outcome, also by considering the effect of COVID-19 lockdown. Methods: Children aged between 3-13 years receiving a visit in emergency departments (EDs) were enrolled in the study. Data were retrieved from 16 Italian paediatric EDs, by considering the period March-June 2019 and 2020.

Results: In total, 8860 ED visits due to domestic accidents in children occurred before (4380) and during (4480) lockdown, of which 6.5% resulted in a hospitalization (4.7% in 2019, 8.4% in 2020). The risk of hospitalisation is influenced by the type of occurred accident, with 4.11-fold higher risk in case of poisoning and 1.75-fold lower risk for stab-wound incidents. In addition, differences were reported in the frequency of hospitalization between the two observed years (OR: 1.94;  $p < 0.001$  for 2020 vs 2019). Males had a 1.45-fold higher risk of hospitalization compared to females ( $p < 0.001$ ), and the risk increased with age (OR: 1.06;  $p < 0.001$ ). Poisoning represented the major risk of hospitalization, although it caused only 1.9% of all ED admissions, and principal causes were drugs (33.5%) and cleaning products (31.1%). Conclusions: The COVID-19 lockdown had a high impact on the risk of hospitalization, although no child enrolled tested positive for SARS-CoV-2. Regarding poisoning, a public health campaign aimed at caregivers would be necessary to minimise possible risks at home. In younger children, the ingestion of drugs may be due to the imitation of adults, while for cleaning products particular attention should be paid to colourful and easy-to-open ones.

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### Feasibility of preconception care services in the Nigerian health system - an exploration of stakeholders' viewpoints

Doyinmola Ojifinni<sup>1</sup>, Latifat Ibisomi<sup>2,3</sup>

<sup>1</sup>School of Clinical Medicine, Faculty of Health Sciences, University of the Witwatersrand, Parktown, South Africa, <sup>2</sup>Division of Epidemiology and Biostatistics School of Public Health, University of the Witwatersrand, Johannesburg, South Africa, <sup>3</sup>Monitoring and Evaluation Department, Nigerian Institute of Medical Research, Lagos, Nigeria

Background and Objective: Preconception care (PCC) services aim to improve reproductive health outcomes through the provision of biomedical, behavioral and social health interventions to women and couples before conception occurs. Policy backing is important to guide PCC provision in the health system. In Nigeria, PCC is poorly developed, often provided in an opportunistic manner with no guidelines providing direction. This study explored policymakers' and health workers' opinions about the feasibility of deploying PCC services in the country. Methods: Using a cross-sectional exploration, 39 in-depth interviews were conducted with policymakers at the federal and state tiers of government as well as health workers at the tertiary, secondary and primary levels of health care. The transcripts were analyzed thematically using a hybrid of deductive and inductive coding.

Results: The main themes identified were – issues around policy for PCC, service integration and collaboration, health system readiness and challenges to PCC service deployment. Noting that the country has no PCC policy, participants identified existing policies into which PCC can be integrated. The participants also described the importance of policy to PCC provision and provided information on existing collaborations for policy development and implementation. Although many participants believed the health system is prepared for PCC deployment, they identified challenges related to policy formulation and implementation that could hinder the process.

Conclusions: The availability of health-related policies into which PCC guidelines can be integrated makes PCC service deployment achievable in the Nigerian health system. Potential implementation challenges need to be identified and addressed as part of the planning process.

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### Demands for sexual health education among middle school students in China

Li Cao<sup>1,2,3</sup>, Shiyu Han<sup>1,2,3</sup>, Qi Zhao<sup>1,2,3</sup>, Chaowei Fu<sup>1,2,3</sup>

<sup>1</sup>School of Public Health, Fudan University, Shanghai, China, <sup>2</sup>NHC Key Laboratory of Health Technology Assessment, Fudan University, Shanghai, China, <sup>3</sup>Key Laboratory of Public Health Safety, Fudan University, Shanghai, China

Objective: According to the World Health Organization, premarital sexuality, unplanned pregnancy, and the spread of sexually transmitted diseases are major problems in adolescent sexual health. In China, adolescents generally lack sexual

health knowledge and contraceptive ability while the sexual health education has long been backward or even stagnant. This study was aimed to understand the demand of sexual health education, and explore appropriate sexual health education strategies among middle school students in China. Methods: A self-designed questionnaire was used to conduct a self-administered anonymous survey in selected six middle schools of Shanghai and Zhejiang Province, China in October 2021. Totally, 1733 students were cluster-sampled.

Results: Among 1733 subjects, 69.4% had received sexual health education before, and it was significantly lower among boys (boys: 66.1% vs. girls: 73.7%,  $P < 0.001$ ). More than half (51.7%) were very satisfied with their received sexual health education, and it was lower among girls (girls: 47.4% vs. boys: 55.4%,  $P = 0.048$ ) and senior high school students (senior: 48.3% vs. junior: 59.7%,  $P = 0.003$ ). Near 2/3 of them believed that they had easy access to sexual health knowledge. Above fifth two wished to learn more about sexual health, and sexual psychology (52.8%), sexual health care (48.1%) and sexual moral law (46.7%) were ranked top 3 in what they wanted. Schools (60.2%) and teachers (51.0%) were the most welcome facility and provider respectively for them. Conclusions: There are great demands for sexual health education among middle school students, and the role of schools and teachers should be enhanced to promote their sexual health, in China.

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### Socioeconomic markers of Congenital Zika Syndrome in Brazil

Enny Cruz<sup>1</sup>, Enny Paixao<sup>1</sup>, Qeren Fernandes<sup>2</sup>, Julia Pescarini<sup>3</sup>, Mauricio Barreto<sup>4</sup>, Maria Teixeira<sup>4</sup>, Maria Costa<sup>4</sup>

<sup>1</sup>London School of Hygiene and Tropical Medicine, United Kingdom, <sup>2</sup>Fiocruz, Brazil, <sup>3</sup>LSHTM, United Kingdom, <sup>4</sup>CIDACS, Brazil

Background and Objective: Socioeconomic markers are associated with a higher risk of arbovirus infections such as dengue, Zika and Chikungunya. However, research on the relationship between socioeconomic factors and congenital Zika syndrome (CZS) remains scarce. In this study we investigated the relationship between socioeconomic markers and CZS in Brazil. Methods: We conducted a cross-sectional population-based study including all registered live births in Brazil (Live Births Information System) from 1 January 2015 to 31 December 2018. To assess CZS status, we linked the live births system with the Public Health Event Record. We used logistic regression models to estimate the OR and 95% CIs of CZS.

Results: We included 11,366,686 live births, of which 3,353 had CZS. Live births of mothers who self-identified as black or mixed race/brown were 1.72 (95% CI 1.47 to 2.01) and 1.37 (95% CI 1.24 to 1.51) more likely to have CZS. Live births from single women compared with married women and those from women with less than 12 years of education compared with those with more than 12 years of education also had higher odds of CZS. In addition, those with fewer prenatal care appointments had increased odds of CZS in the nationwide data. However, in the analyses conducted in the Northeast region (where the microcephaly epidemic started before the link with Zika virus was established and before preventive measures were known or disseminated), no statistical association was found between the number of prenatal care appointments and the odds of CZS. Conclusions: This study shows that live births of the most socially vulnerable women in Brazil had the greatest odds of CZS. This disproportionate distribution of risk places an even greater burden on already socioeconomically disadvantaged groups, and the lifelong disabilities caused by this syndrome may reinforce existing social and health inequalities.

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### Social determinants of inadequate prenatal care utilization in homeless mothers in the Greater Paris area in France

Elodie Richard<sup>1,2</sup>, Elodie Richard<sup>3,4</sup>, Cécile Vuillermoz<sup>5</sup>, Sandrine Lioret<sup>6</sup>, Raquel Berrocal<sup>7</sup>, Emmanuelle Guyavarch<sup>8</sup>, Yann Lambert<sup>9</sup>, Elie Azria<sup>10,11</sup>, Karen Leffondre<sup>12</sup>, Stéphanie Vandentorren<sup>13</sup>

<sup>1</sup>Fédération nationale des associations solidaires d'action avec les Tsiganes et les Gens du voyage (FNASAT-GV), France, <sup>2</sup>Bordeaux Population Health, Centre Inserm U1219, Université de Bordeaux, Bordeaux, France, <sup>3</sup>FNASAT-GV, Paris, France, <sup>4</sup>INSERM Bordeaux Population Health, France, <sup>5</sup>Department of Social Epidemiology, Institut Pierre Louis d'Epidémiologie et de Santé Publique (IPLESP), Sorbonne Université, INSERM, France, <sup>6</sup>Université de Paris, CRESS, INSERM, INRAE, France, <sup>7</sup>École des Hautes Études en Sciences Sociales (EHESS), Centre d'étude des Mouvements Sociaux (CEMS), EHESS/CNRS UMR 8044/INSERM U1276, France, <sup>8</sup>Observatoire du Samu Social de Paris, France, <sup>9</sup>CIC Guyane, France, <sup>10</sup>Maternity Unit, Paris Saint Joseph

Hospital, France, <sup>11</sup>U1153 CRESS, Obstetrical Perinatal and Pediatric Epidemiology Research Team, EPOPE, INSERM, INRA, Université de Paris, France, <sup>12</sup>Bordeaux population health laboratory, University of Bordeaux, Inserm U1219, France, <sup>13</sup>Bordeaux Population Health Laboratory, Santé publique France, University of Bordeaux, Inserm U1219, France

Background: Homeless families face multiple barriers to healthcare use. Few studies have specifically examined perinatal health in homeless mothers or their use of prenatal healthcare. This study aimed to identify social determinants associated with inadequate prenatal care utilization (PCU) in homeless mothers in the Greater Paris area in France.

Methods: The cross-sectional survey ENFAMS was performed on a random representative sample of 801 homeless families living in shelters in the greater Paris area in 2013. The present study analysed data on 121 homeless mothers who had a child less than one year old. In accordance with French guidelines, PCU was deemed inadequate if one or more of the following criteria was met: attending fewer than 50% of recommended prenatal visits, PCU initiation after the first trimester of pregnancy, and fewer than three ultrasounds during the entire pregnancy. The study sample's characteristics and PCU were described. Structural equation modelling was used to identify factors associated with inadequate PCU and to estimate correlations between them.

Results: Homeless mothers in the study sample were socially disadvantaged and most were born outside France. One in five (19.3%) had inadequate PCU. Associated factors were socio-demographic characteristics (young age, primiparous), health status (dissatisfaction with self-perceived general health), and living conditions (housing instability in the second and third trimesters).

Conclusions: This study's results advocate stable housing for homeless pregnant women to ensure they can benefit from optimal PCU.

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### The effectiveness of an integrated community-based visiting program on early childhood development in the West Bank, Occupied Palestinian Territory

Hana Rabadi<sup>1</sup>, Hana Rabadi<sup>2</sup>, Nuha Sharif<sup>3</sup>, Salam Alkhatib<sup>4</sup>

<sup>1</sup>World Vision International - AL Quds University, Bethlehem, Occupied Palestinian Territory, <sup>2</sup>World Vision I, AL Quds University, Jerusalem, Occupied Palestinian Territory, <sup>3</sup>Faculty of Public Health, Al Quds University, Occupied Palestinian Territory, <sup>4</sup>Faculty of Health Profession, Al Quds University, Occupied Palestinian Territory

Background and Objective: Since 2010, World Vision (WV) has trained community health workers (CHWs) in vulnerable communities in Palestine to deliver timed, behavioral change communication on health and nutrition (H&N) for the First 1000 Days to mothers through scheduled home visits. This approach was later enhanced through integrating components on early learning and stimulation to align to World Health Organization framework for nurturing care for early childhood that was issued in 2018. The objective of this research is to test the effectiveness of this enhanced integrated approach on holistic child development. Methods: Twenty-six communities were randomized to control or intervention groups. 238 women were assigned to the Intervention group and received the integrated package and 231 were assigned to the Control group and received only the H&N intervention, an average of 25-30 home visits were delivered by the CHWs to all participating mothers. Data were collected from both groups at baseline and end-line using standardized questionnaires, Ages and staged questionnaires (ASQ) were used to assess child development. Intra-cluster correlation coefficients were calculated for each ASQ domain at each time point. A mixed linear model was also applied. Mean ASQ scores for the Intervention and Control arms for each developmental domain and time-point were adjusted.

Results: At 12 months of age, mean ASQ scores for 4 of the 5 developmental domains were higher in the Intervention Group than Control [Communications 59.5 vs 55.9, Personal Social 88.8 vs 79.0, Problem Solving 58.6 vs 52.8, Fine Motor 57.7 vs 53.1] ( $p < 0.05$ ). The effect sizes of the integrated package on the developmental domains range from 0.4-0.8, whereas those for stand-alone early child development interventions tend to range from 0.2-0.5. Conclusions: The integrated approach is more effective on children's ECD during the first year of life than standalone interventions.

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### The effectiveness of integrated community-based nutrition interventions in improving infant and young child feeding practices in Palestine: a randomized control trial

Nuha Sharif<sup>1</sup>, Hana Rabadi<sup>2,3</sup>, Salam Khatib<sup>4</sup>

<sup>1</sup>Faculty of Public, Al Quds University, Jerusalem, Occupied Palestinian Territory, <sup>2</sup>Faculty of Public Health, Al Quds University, Occupied Palestinian Territory, <sup>3</sup>World Vision Jerusalem-West Bank-Gaza, Occupied Palestinian Territory, <sup>4</sup>Faculty of Health Profession, Al Quds University, Occupied Palestinian Territory

**Background and Objective:** Child nutrition remains an urgent issue in Palestine. Various sources indicate widespread inappropriate family practices, particularly regarding infant and young child feeding (IYCF). Several sources indicate that good nutritional outcomes in infants and young children require maternal support through mental health and psychosocial support (PSS). Therefore, this study aims to test the effectiveness of integrated community-based nutrition-PSS interventions in improving IYCF practices in vulnerable communities in Palestine. **Methods:** A cluster randomization trial was conducted on 26 vulnerable communities in the West Bank. The sample included 469 pregnant mothers, of which 231 were assigned randomly to the control group and 238 were assigned to the intervention group. Data were collected from both groups at the baseline and the end-line of the survey. Pregnant women in the intervention clusters were supported with the integrated package including PSS and nutrition, whereas, pregnant women in the comparison group were supported with stand-alone nutrition intervention.

**Results:** Exclusive breastfeeding for six months was practiced by 70% of mothers in the intervention group (a 30% increase), compared with 55% in the control group. Compared to 59% of mothers in the control group, 76% of mothers in the intervention group offered complimentary meals on time. The minimum meal diversity was introduced to 68% of children in the intervention group, compared with 60% in the control group. Also, 41% of children in the intervention group were introduced to the minimum meal frequency, compared to 10% in the control group. **Conclusions:** Providing PSS to mothers significantly improves IYCF practices more than stand-alone nutrition interventions. Therefore, the implementation of these integrated packages over a longer duration is needed to witness a significant reduction in the prevalence of malnutrition.

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### ADHD symptoms and educational level in adolescents: the role of the family, teachers, and peers

Heiko Schmengler<sup>1</sup>, Margot Peeters<sup>2</sup>, Gonneke Stevens<sup>2</sup>, Catharina Hartman<sup>3</sup>, Albertine Oldehinkel<sup>3</sup>, Wilma Vollebergh<sup>2</sup>

<sup>1</sup>Department of Interdisciplinary Social Science, Faculty of Social and Behavioural Sciences, Utrecht University, Utrecht, The Netherlands,

<sup>2</sup>Department of Interdisciplinary Social Science, Faculty of Social and Behavioural Sciences, Utrecht University, The Netherlands, <sup>3</sup>Interdisciplinary Center Psychopathology and Emotion Regulation, Department of Psychiatry, University Medical Center of Groningen, University of Groningen, The Netherlands

**Background and Objective:** Adolescents with ADHD symptoms tend to have a lower educational level, poorer family functioning, and less social support from teachers and classmates than their peers without such symptoms. Surprisingly, few studies have explored the contribution of these family and school factors to the association between ADHD symptoms and education. Possibly, having more ADHD symptoms contributes to poorer family functioning and less social support, and consequently a lower level of education (i.e., mediation). Moreover, the negative effects of ADHD symptoms on education may be stronger for adolescents with poorer family functioning or less social support from teachers and classmates (i.e., interaction).

**Methods:** Using data of the Dutch TRAILS study (N=2,229), we evaluated associations between ADHD symptoms around age 11 and educational level around age 14, as well as between ADHD symptoms around age 14 and 16 years and subsequent changes in educational level around age 16 and 19, respectively. We assessed the potential mediating role of family functioning, and social support by teachers and classmates, measured around ages 11, 14, and 16, whilst additionally evaluating interactions between ADHD symptoms and these hypothesized mediators. Direct and indirect effects were computed using interventional effects for mediation analysis.

**Results:** ADHD symptoms were robustly associated with poorer family functioning, less social support by teachers and classmates, and lower education throughout adolescence. Yet, no mediating effects were found, because family functioning and social support by teachers and classmates were not uniquely associated with educational level. Furthermore, we found no interactions between ADHD symptoms and family functioning and social support by teachers and classmates. **Conclusions:** Although ADHD symptoms were strongly associated with impairments in key aspects of adolescents' social context, we found no evidence

that family functioning and social support by teachers and classmates contribute to the association between ADHD symptoms and lower education.

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### Abortion among French students: a 2003 to 2018 follow-up

Laurent Gerbaud<sup>1,2,3</sup>, Chloé Bourdet<sup>4,3</sup>, Bruno Chabanas<sup>5</sup>

<sup>1</sup>Institut Pascal, CHU Clermont-Ferrand, SIGMA Clermont, Université Clermont Auvergne, France, <sup>2</sup>CNRS F-63000 Clermont-Ferrand, France, <sup>3</sup>Service Santé Universitaire - UCA, France, <sup>4</sup>Institut Pascal, CHU Clermont-Ferrand, SIGMA Clermont, Université Clermont Auvergne, Clermont-Ferrand, France, <sup>5</sup>Institut Pascal, CHU Clermont-Ferrand, SIGMA Clermont, Service de Santé Universitaire - Université Clermont Auvergne, Clermont-Ferrand, France

**Background and Objective:** In 2003, in France, there was an alert about high levels of abortion of female students, supposedly due to a lack of information on contraception. So, we decided, in our university to create a survey system in order to check the circumstances, modalities and consequences of abortions among our students. **Methods:** Regularly, a medical investigator goes to the public and private abortion facilities. Under the respect of medical secret, we linked the medical records to the presence as student of the University Clermont-Auvergne. **Results:** Abortion rates are stable from 5 to 8,5/1000, the half of the French women rate. The main changes are the increase of medical abortion (from 23 to 43 %). Around 2/3 of abortions are for students without contraception or using only condoms. After abortion, 50% choose contraceptive pill, 23% contraceptive implant, 22% intra uterine device. Only 4% do not choose any efficient contraception. Students from China had higher relative risk (RR = 2,30) which drop down very rapidly thanks to an information strategy. This strategy does not work for students from Northern Africa and sub-Saharan Africa who still have higher relative risks (respectively 4,98 and 9,62). **Conclusions:** The information strategy failed for students from Africa, showing that we need to develop others inquiries to understand their high rates of abortion. Unfortunately, we have now to stop this survey, due to the application of the European General Data Protection Regulation.

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### Impact of COVID-19 on the morbidity and hospitalization of children and adolescents living in the state of Rio de Janeiro, Brazil

Cynthia Boschi-Pinto<sup>1</sup>, João Victor Barreto Costa<sup>2</sup>, José Marques da Silva Filho<sup>2</sup>

<sup>1</sup>ISC/Universidade Federal Fluminense, <sup>2</sup>Medical School, Universidade Federal Fluminense

**Background and Objective:** In September 2022, there were 34.7 million cases of COVID-19 in Brazil, corresponding to 6% of the world total and resulting in a calamity that affected the health and living conditions of millions of Brazilians. The course of the disease in children appears to be milder than in adults. However, severe forms can also occur, often requiring hospitalization and support in intensive care units (ICU). The objective of the study was to analyze morbidity due to COVID-19 and hospitalization due to Severe Acute Respiratory Syndrome (SARS) among children living in Rio de Janeiro state, between March 2020 and December 2021.

**Methods:** Population-based ecological study, using secondary data from the Center for Strategic Information and Response in Health Surveillance (CIEVS-RJ). Incidence rates were calculated according to age group (0-4, 5-9 and 10-19 years) and epidemiological week (Epi Week). Trends were analyzed using the Joinpoint Regression Analysis program.

**Results:** 117,736 cases of COVID-19 were reported; 64.1% of which among 10-19 year olds. Highest incidences occurred after the emergence of the Delta variant in the country, in June 2021. A 385% increase in the proportion of cases among children less than 19 years of age was observed between March 2020 and November 2021. There were 3,476 hospitalizations due to SARS; 39% required utilization of ICU. A 6.8% case-fatality rate was observed, reaching 10.4% among those 10-19 years. After the introduction of COVID-19 immunization in children 12 years and older, there was a significant 15.6% reduction in hospitalizations per Epi Week among children 10-19 years. Decreases in other age groups were less pronounced.

**Conclusion:** Our results should inform the planning for strategies and actions by public health managers as well as encourage recommendations towards the effective implementation of the immunization program among children and adolescents in Brazil.

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**Bullying in private schools in the United Arab Emirates: a cross-sectional study**Alfan Al-Ketbi<sup>1</sup>, Michal Michal Grivna<sup>1</sup>, Ismail Elkonaisi<sup>1</sup>, Iffat Elbarazi<sup>1</sup>, Bayan Abu-Hamada<sup>1</sup>, Aminu Abdullahi<sup>1</sup><sup>1</sup>Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, United Arab Emirates

**Background:** School bullying is a problematic behavior among children and adolescents because it directly impacts school achievements and the psychological well-being of both victims and perpetrators. Bullying may take many forms, including physical, verbal, cyber, and relational. The study aimed to assess students experiences with bullying victimization, perpetration, and witnessing and reviewed students attitudes toward bullying across their schools.

**Methods:** Three private schools were randomly selected in Al Ain city, United Arab Emirates (UAE). Students in cycle 2 (grades 6-9) filled self-reported validated questionnaire. All students present on the day of data collection participated. IBM SPSS version 28.0. was used for statistical analysis.

**Results:** From a total of 321 students, 41% were UAE nationals. The mean age was 12.5 years (SD 1.13); 51% were females. Total of 47% students reported being bullied in the past 12 months; 25% experienced bullying one or more times a day, 37% one or more times a week, and 38% one or more times a month. The classroom was the most common place of bullying (84%), the playground was the second (35%). Verbal bullying was the major form of bullying; "called me bad names 70%", "made fun of me" 69%, and "said mean things behind my back" 66%. Physical bullying also occurred, such as "broke my things" (29%) and "I was attacked" (23%). Most victims stated that the bullying made them feel sad (72%), and 25% did not go to school because of the bullying. 60% of the students witnessed bullying.

**Conclusion:** There is a high prevalence of bullying in private schools in the UAE. The study results fill a major gap in the knowledge of school bullying in the UAE. It can provide useful information to decision-makers to develop national policies against bullying to improve safety at schools.

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**Combining health calendars and cash: building formal financial and health numeracy among poor women in Northern Pakistan**Zohra Lassi<sup>1</sup>, Salima Meherali<sup>2</sup>, Zahra Padhani<sup>3</sup><sup>1</sup>University of Adelaide, Australia, <sup>2</sup>University of Alberta, Canada

**Background:** Pakistan is a country with 60% illiterate population where most of the women are living in abject household poverty, with lack of ability to afford healthcare leading to unsafe birth-practices and serious health implications.

**Objective:** The study implemented the "Calendars and Cash" (C&C) project to equip and empower illiterate, innumerate rural women and adolescent girls with formal numeracy and record-keeping skills to empower them to participate confidently in local economy and healthcare system.

**Methods:** A cross-sectional survey was conducted among a random sample of 162 community-based savings group (CBSG) women residing in Kharmang district of Gilgit Baltistan. The study used the financial numeracy survey tool to test participants' financial and health numeracy skills. Descriptive analysis was conducted and reported in ranges and frequencies, as appropriate. Bivariate analysis, chi-square and Pearson test was conducted to determine the differences between the proportions.

**Results:** The survey included CBSG women of 15-50 years of age. Majority of the women were married with very little/no experience in business. Numeracy and literacy capabilities broadly overlapped, revealing distinctly different profiles. Women who had spent years in school feared/avoided written calculation and acquired few numeracy skills, however women outside the school managed to run a business using mobile banking. Household financial decision-making power was observed greater among women of 25-36 years-old followed by 37-years and older women. Decisions related to child health were completely made by 9.9% of the women, while 49.4% had a major say in these decisions. The study showed no correlation between educational attainment and decision-making power among women.

**Conclusion:** Following the baseline survey, the authors took this project to another level where the authors trained women until they had the ability to confidently engage with formal financial and health systems. The findings of his before-after study will be made available early next year.

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**Effectiveness of treatment of acute malnutrition by community health volunteers: a cluster-randomized controlled trial in Northern Kenya**Calistus Wilunda<sup>1</sup>, Lydia Karimurio<sup>2</sup>, Hermann Donfouet<sup>3</sup>, Teweldeberhan Daniel<sup>4</sup>, Elizabeth Mwaniki<sup>5</sup>, James Njiru<sup>6</sup>, Emily Keane<sup>7</sup>, Lily Schofield<sup>4</sup>, Lucy Maina<sup>4</sup>, Edward Kutondo<sup>4</sup>, Kenya Olivia Agutu<sup>4</sup>, Kenya Peter Okoth<sup>4</sup>, Judith Raburu<sup>4</sup>, Betty Samburu<sup>6</sup>, Bonventure Mwangi, Taddese Zerfu<sup>8</sup>, Jemimah Wekhomba<sup>2</sup>, Pilar Cuellar<sup>2</sup>, Daniel Kavoo<sup>2</sup>, Charles Matanda<sup>2</sup>, Alex Mutua<sup>9</sup>, Grace Gichohi<sup>4</sup>, Martin Chabi<sup>4</sup>, Patrick Codjia<sup>10</sup>, Saul Oteyza<sup>10</sup><sup>1</sup>African Population & Health Research Centre, Kenya P.O. Box 10787-00100, APHRC Campus, Kitisuru, Nairobi. Kenya, <sup>2</sup>Ministry of Health Kenya, <sup>3</sup>UNICEF Chad, <sup>4</sup>UNICEF Kenya, <sup>5</sup>African Population & Health Research Center Kenya, <sup>6</sup>Save the Children International, <sup>7</sup>Save the Children UK, <sup>8</sup>Action Against Hunger United Kingdom, <sup>9</sup>World Health Organization Kenya, <sup>10</sup>UNICEF Headquarters United States

**Introduction:** Treatment of children with acute malnutrition has been less effective because of barriers in continuing to access health facilities after initiating treatment. We evaluated the effectiveness of integrating treatment of acute malnutrition at home by community-health volunteers (CHVs) into the integrated community case management (iCCM) program in northern Kenya.

**Methods:** We conducted a two-arm non-inferiority cluster-randomized controlled trial across 20 community health units (CHUs) in Loima and Isiolo sub-counties. Participants were children aged 6-59 months with uncomplicated acute malnutrition. In each sub-county, 10 CHUs were pair-matched and randomly assigned to the control or intervention group. In the intervention group, CHVs used simplified tools and protocols to identify and treat eligible children at home and provided the usual iCCM package. In the control group, CHVs provided the usual iCCM package only (screening and referral of the malnourished children to the health facilities). The primary outcome was recovery (MUAC  $\geq$ 12.5 cm for two consecutive weeks).

**Results:** Children in the intervention group were more likely to recover than those in the control group [73.3% vs. 50.3%; risk difference (RD) 23.1% (95% CI 11.7 to 34.6) and risk ratio (RR) 1.38 (95% CI 1.14 to 1.67)]. The probability of defaulting was lower in the intervention group than in the control group: RD -19.8% (95% CI -31.2 to -8.3) and RR 0.41 (95% CI 0.24 to 0.69). The intervention reduced the length of stay by about 12 days, although this was not statistically significant. Weight gain was significantly higher by about 1 g/kg/day in the intervention group than in the control group.

**Conclusions:** Integrating the treatment of acute malnutrition by CHVs into the iCCM program led to better malnutrition treatment outcomes. There is a need to integrate acute malnutrition treatment in iCCM and review policies to allow CHVs to treat uncomplicated acute malnutrition.

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**Health literacy levels among pregnant women: the mutaba'ah study**Iffat Elbarazi<sup>1</sup>, Zufishan Alam<sup>2</sup>, Fatima Al-Maskari<sup>1</sup>, Tom Loney<sup>3</sup>, Nasloon Ali<sup>2</sup>, Rami Al-Rifai<sup>1</sup>, Luai Ahmed<sup>4</sup><sup>1</sup>United Arab Emirates University Institute of Public Health, College of Medicine and Health Sciences Tawam Campus, Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, AlAin. Po B0x 15551, AlAin, UAE United Arab Emirates, <sup>2</sup>United Arab Emirates University, <sup>3</sup>Mohammed Bin Rashed University College of Medicine, Mohammed Bin Rashid University of Medicine and Health Sciences, Dubai College of Medicine, Mohammed Bin Rashid University of Medicine and Health Sciences, Dubai, UAE United Arab Emirates, <sup>4</sup>United Arab Emirates University Institute of Public Health, College of Medicine and Health Sciences Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, AlAin, Po Box 15551, AlAin. UAE United Arab Emirates

**Background:** Health literacy is defined as the degree to which individuals can obtain, process, understand, and communicate health-related information required to make informed health decisions. Health literacy among pregnant women may significantly impact maternal and child health, as established through international research. In the United Arab Emirates, no previous studies have investigated the health literacy levels of pregnant women.

**Method:** This study reports the results from baseline cross-sectional data obtained from pregnant women participating in the Mutaba'ah Study. Mutaba'ah is the largest mother and child health prospective cohort study in the UAE, which included the recruitment of around 12,800 expectant mothers between May 2017 and September 2022 from major hospitals in Al Ain city. For the current analysis, data

from self-administered questionnaires during the antenatal visits was used, which collected sociodemographic and pregnancy-related information, including health literacy assessment, using the Brief health literacy questionnaire. Regression models were performed to investigate the associations of sociodemographic and pregnancy related-variables with health literacy.

Results: 2694 responses to the Brief health literacy tool were analyzed. Most respondents reported adequate health literacy levels (71.6%), followed by 22.8% with marginal and 5.6% with limited literacy levels. Participants were more likely to have higher literacy levels if they were more educated [adjusted odds ratio (aOR): 1.80, 95% Confidence Interval (CI): 1.45-2.24], employed [aOR: 1.45, 95% CI (1.14-1.84)], had enough people to count on for social support [aOR: 1.67, 95% CI: 1.19-2.34] and were previously vaccinated [aOR: 1.18, 95% CI: 1.0-1.39]. Participants that expressed worry about birth were less like to have high literacy levels [aOR: 0.75, 95% CI: 0.60-0.93].

Conclusion: Health literacy among Emirati pregnant women is adequate; however, policies should be directed to maintain and improve prenatal health literacy levels for better maternal and child health outcomes.

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### Trends in young adults' sunburn and use of sun-safe behaviours in a high UV outdoor festival environment

Sheleigh Lawler<sup>1</sup>, Monika Janda<sup>1</sup>, Jodie Antrobus<sup>2</sup>, Caitlin Horsham<sup>1</sup>, Stephanie Meciar<sup>1</sup>, Elke Hacker<sup>3</sup>

<sup>1</sup>The University of Queensland, Australia, <sup>2</sup>Queensland Health Australia,

<sup>3</sup>Griffith University Australia

Background and Objective: Queensland, Australia has one of the highest rates of melanoma in the world. Sunburn remains highly prevalent in adolescents and young adults, who report sub-optimal sun-safe behaviours. School leaver festivals or "schoolies" celebrations are common across Australia to mark graduation from high school. In Queensland, "schoolies" occurs on the Gold Coast with numerous high UVR exposure events (outdoor music concerts, beach activities) with over 16,000 attendees each year. Data on sun-safety at "schoolies" was collected in 2019, 2021 and 2022, with the aim to better understand young people's use of sun-safe behaviours, sunburn history, and tanning behaviours.

Methods: Young people (15+) were invited to complete an online survey at the Schoolies Registration Day in 2019, 2021 and 2022. In 2022, upon completion they were offered a) 'Schoolies' bucket hat or b) Cancer Council Australia SPF50+ sunscreen. Participants who complete the baseline survey are asked to complete a follow-up survey (one week later) with questions about sunburn, tanning and sun-safe practices during "schoolies".

Results: 2019 and 2021 response rates were 663 and 826 participants, respectively. There were no observed differences between sun-safe behaviours reported in 2019 and 2021, with low to moderate adherence. Participants reported high sunburn rates in the previous 12 months across both years (89%, 79%, respectively) and two thirds of participants reported attempting to get a tan in both years. In November 2022, 5,500 young people completed the baseline survey, with follow-up data collection due to be completed December 2022 and results will be added to this series.

Conclusion: Young people, when attending an outdoor festival with high UV exposure, fail to practice optimal sun-safe behaviours increasing risk of skin cancer. The addition of 2022 data collection is building our understanding of trends in young people's use of sun safe behaviours and supports intervention efforts.

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### The provision of flu vaccination in pregnant and postpartum women: the experience in Local Health Authority (ASL) Roma 1 during the 2021-2022 and 2022-2023 flu vaccination campaign

Raffaella Mosco<sup>1</sup>, Antonietta Spadea<sup>1</sup>, Sara Ciampini<sup>1</sup>, Aurora Santagata<sup>1</sup>, Marta Marino<sup>1</sup>, Mattia Macino<sup>1</sup>, Laura Anelli<sup>1</sup>, Iolanda Rinaldi<sup>1</sup>, Silvia Franceschetti<sup>1</sup>, Fabiola Valentini<sup>1</sup>, Paolo Maggolini<sup>1</sup>, Valentina Ungari<sup>1</sup>, Anna Zoppegno<sup>1</sup>, Silvia Bracci<sup>1</sup>, Gennaro D'Agostino<sup>1</sup>, Antonietta Spadea<sup>1</sup>

<sup>1</sup>Azienda Sanitaria Locale Roma 1 Italy

Introduction: Pregnant women are a priority target in active vaccination against influenza, whooping cough and COVID-19, which provides maternal-fetal immune protection, reducing the risk of hospitalization, prematurity, cesarean delivery, fetal distress and low unborn weight. It is the responsibility of each ASL to create a dedicated pathway for pregnant women aimed at informing, taking care of and promoting health and vaccination.

Materials and Methods: In 2019, the Birth Pathway was activated in the Family

Consultatories of ASL Roma 1 to take charge of pregnant women, which starts already in the preconceptional phase with the promotion of good practices such as folic acid intake and reduction/abandonment of alcohol and tobacco intake. Obstetric ultrasound scans, testing for early detection of postpartum depression and birth coaching classes are scheduled. The birth pathway includes the promotion and administration of vaccinations, including SARS-CoV-2 vaccination. Training of all consultant professionals (gynecologists, pediatricians, obstetric nurses, social workers and psychologists) was planned to implement this activity. Results: In the 2021-2022 influenza season, 705 pregnant women and 126 in postpartum were vaccinated against influenza out of the total of 2,308 vaccinated throughout the Lazio Region, corresponding to 35.91' and 36.52' of the vaccinations carried out in Lazio and 53.33' and 51.22' of those carried out in the three metropolitan Roman ASLs. The result is particularly positive when compared with the figure of new births in ASL Roma1 compared with births in the three Roman ASLs, which corresponds to 34.5'. In the current flu season 2022-2023, 618 pregnant and 106 postpartum women were vaccinated.

Conclusions: The organization of a dedicated Pathway with a multidisciplinary approach represents a virtuous way of taking charge in the territorial care network and promotes greater adherence by the assisted and conscious and responsible choices also regarding maternal immunization, breaking down cultural and organizational barriers.

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### Morphological patterns of anemia among children aged 6 to 59 months attending Maputo Central Hospital, Maputo City Province, Mozambique

Réka Maulide Cane<sup>1,2</sup>, Youssouf Keita<sup>3</sup>, Luís Varandas<sup>1,4,5</sup>, Isabel Craveiro<sup>1</sup>

<sup>1</sup>Global Health and Tropical Medicine, GHTM, Instituto de Higiene e Medicina Tropical, IHMT, Universidade Nova de Lisboa, UNL, Lisboa, Portugal

<sup>2</sup>Instituto Nacional de Saúde, INS, Ministério da Saúde, MISAU, Maputo,

<sup>3</sup>Mozambique, <sup>4</sup>Independent Consultant, Deutsche Gesellschaft für Internationale Zusammenarbeit, Bamako, Mali, <sup>5</sup>Hospital CUF Descobertas, Lisboa, Portugal, <sup>6</sup>Faculdade de Ciências Médicas|NOVA Medical School, Universidade Nova de Lisboa, Lisboa, Portugal

Background and Objective: Globally, childhood anemia is a public health concern as it leads to poor health, physical and mental growth retardations, and increased risk of morbidity and mortality. This study aimed to access morphological patterns and associated factors of anemia among children aged 6 to 59 months at Maputo Central Hospital, Maputo City Province, Mozambique.

Methods: A cross-sectional health-facility study was conducted from August 2020 to January 2022 among 400 children aged 6 to 59 months attending internal and external Pediatrics consultations at the Maputo Central Hospital. Data from clinical record sheets and child's health cards on sociodemographic factors and clinical history were collected using a structured questionnaire. The cut-off values for anemia based on the mean corpuscular volume (MCV) were: microcytic (MCV 100fL). We performed descriptive analyses and chi-square tests using SPSS 28.0 software.

Results: The magnitude of microcytic, normocytic, and macrocytic anemia was 82.2% (313/381), 17.3 % (66/381), and 0.5% (2/381), respectively. Male children were more affected by microcytic (60.0%; 186/310) and macrocytic (100.0; 2/2) anemia. Children living in rural areas were more commonly affected by microcytic (57.4%, 174/303) and normocytic (59.7%, 37/62) anemia. Children whose caregivers had a secondary education level were commonly affected by microcytic (47.9%, 148/309) and normocytic (47.0%, 31/66) anemia. The child's age was associated with morphological patterns of anemia, with higher rates of microcytic (47.9%, 150/313), normocytic (69.7%, 46/66), and macrocytic (100.0%; 2/2) anemia being observed in children aged 24 to 59 months.

Conclusion: The occurrence of microcytic and normocytic was high among male children, who were living in rural areas, whose caregivers had a secondary education level, and children aged 24 to 59 months. Macrocytic anemia was more common among male children. Helpful interventions include reinforcing the promotion of healthy eating practices and improving the capacity for diagnosing.

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### Parental Knowledge and Perceptions on Prevention of SUID and Infant Care

Dziyana Nazaruk<sup>1</sup>, Ana Palacios<sup>1</sup>, Joseph Telfair<sup>1</sup>, Tilicia Mayo-Gamble<sup>1</sup>, Joanne Chopak-Foss<sup>1</sup>, Nandi Marshall<sup>1</sup>

<sup>1</sup>Georgia Southern University, United States

Background: The U.S. infant mortality rate was 5.9 deaths per 1,000 live infant

births, which placed the U.S. at No. 33 out of 36 countries with the world's largest economy in 2018. The U.S. State of Georgia's IMR in 2018 was 7.6 deaths per 1,000 live infant births, which placed Georgia at No.45 out of 50 states. In 2017, the top ten leading causes of infant death were responsible for 67.8% of all infant deaths in the U.S. Sudden Infant Death Syndrome (SIDS) and death from unintentional injuries were in third and fourth place. The purpose of the current study was to explore the knowledge, perceptions, and confidence of mothers about infant care to reduce the risk of SUID.

**Methods:** Between Dec 2021 to March 2022 Via an online, targeted survey, study participants were recruited using purposeful sampling. Participants were first time mothers with infants under 1 years of age. The data was reported on 3 levels of the Socio-Ecological model, and participants' recommendations to assist in developing a holistic approach to infant care.

**Results:** Most mothers did not feel confident carrying for their infants upon release from the hospital, but the confidence level increased over time. They were knowledgeable about SUID prevention but felt this emotional journey and feeling of loneliness could affect their parental abilities. Participants expressed a need for emotional and physical support and perceived medical providers as the main source of reliable information.

**Conclusion:** Current findings demonstrated interconnectivity between all levels of the Socio-Ecological model. Results suggested that the provided medical services are compartmentalized. To reduce the risk of SUID, healthcare system and communities should provide more emotional, social, and physical support to first-time mothers; a more integrated approach to care before and after birth; and easy access to services at all stages of the process.

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### Maternal phthalate exposure and dietary habits during pregnancy: what do we need to look for?

Maria Scasserra<sup>1</sup>, Domenico Maione<sup>2</sup>, Lucia Palandri<sup>3</sup>, Lisa De Pasquale<sup>4</sup>, Marta Casalucci<sup>4</sup>, Francesco Uguzzoni<sup>4</sup>, Antonio Lorenzon<sup>4</sup>, Fabio Facchinetti<sup>5</sup>, Lorenzo Iughetti<sup>5</sup>, Viola Trevisani<sup>5</sup>, Maria Arletti<sup>6</sup>, Laura Lucaccioni<sup>6</sup>, Elena Righi<sup>1</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>Food Hygiene and Nutrition Service SIAN, Reggio Emilia, Italy, <sup>3</sup>University of Modena and Reggio Emilia, Modena, Italy, <sup>4</sup>University of Modena and Reggio Emilia, Italy, <sup>5</sup>Unit of Obstetrics and Gynecology Mother-Infant Department, University of Modena and Reggio Emilia, Modena, Italy, <sup>6</sup>Department of Medical and Surgical Science, University of Modena and Reggio Emilia, Modena, Italy

**Background and Objectives:** Phthalates are chemical products widely used as plasticizers, potentially harmful, especially for their antiandrogenic effects in specific populations, such as pregnant women and newborns. Ingestion is an important exposure pathway, however specific exposure sources and drivers are mainly unknown. The aim of this study was to evaluate the association between dietary and cooking habits during pregnancy and phthalates exposure at delivery. **Methods:** 197 women were recruited after delivery, in a single-center prospective cohort study at Modena's University Hospital (Italy), from January 2019 to October 2020. Exposure to 6 phthalates was assessed in urine samples and expressed as µg/g of urinary creatinine. Pregnancy, dietary and cooking habits were recorded by ad hoc questionnaire. Descriptive statistics and bivariate analyzes were performed.

**Results:** Overall, exposure resulted widespread in women at delivery. In women usually boiling food, urinary levels of Monobenzylphthalate (MBZP) (3.4±2 vs 4.7±3.3 µg/g) and Mono-2-ethylhexylphthalate (MEHP) (2.3±1.8 vs 5.2±15.2 µg/g) were significantly lower, whereas in women usually frying food, mono-n-butylphthalate (MnBP) appeared significantly higher (23.2±59.6 vs 9.8±11.5 µg/g). Low fruit consumption during pregnancy was associated with higher MnBP concentrations compared to daily consumption (39.3±83.1 vs 10.6±11.5 µg/g). Concentrations of monoethylphthalate (MEP) appeared higher in women who consumed cheese, eggs and fish. Daily consumption of red meat, beef and pork was associated with higher levels of di(2-ethylhexyl)phthalate (DEHP) metabolites. **Conclusion:** No strong association among exposure and dietary habits was observed, even though urinary levels of some phthalates resulted higher in women frequently consuming fat food and lower when consuming fruits or choosing healthier cooking methods. Surprisingly, no correlation appeared with packaged foods and packaging material. Further studies are needed to better elucidate ingestion exposure pathways with a greater focus on alternative sources of contamination such as food production, processing and transportation to better guide evidence-based policy making.

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### Interventions to improve maternity outcomes for migrant women in high-income countries: preliminary findings from a systematic review

Kerrie Stevenson<sup>1</sup>, Kerrie Stevenson<sup>2</sup>, Kemi Ogunlana<sup>2</sup>, William Henderson<sup>2</sup>, Samuel Edwards<sup>3</sup>, Nuria Clemente<sup>2</sup>, Hannah Raymont-Jones<sup>4</sup>, Majel McGranahan<sup>3</sup>, Maria Castaner<sup>5</sup>, Gracia Fellmeth<sup>6</sup>, Serena Luchenski<sup>2</sup>, Fiona Stevenson<sup>2</sup>, Marian Knight<sup>6</sup>, Robert Aldridge<sup>2</sup>

<sup>1</sup>University College London, Institute of Health Informatics, 222 Euston Rd, London, NW1 2DA, United Kingdom, <sup>2</sup>University College London, United Kingdom, <sup>3</sup>Warwick Medical School, United Kingdom, <sup>4</sup>King's College London, United Kingdom, <sup>5</sup>University of Copenhagen, United Kingdom, <sup>6</sup>University of Oxford, United Kingdom

**Background and Objective:** Women who are migrants and who are pregnant are at high risk of poor outcomes due to experiencing numerous stressors including language barriers, social exclusion, and cultural divides in pregnancy care. High-income countries (HICs) are often the target destination for many migrants across the world. Although HIC maternity systems are often well funded, they are not routinely tailored to care for migrant women, and there are a lack of synthesised data on the most effective ways to improve care. This primary aim of this systematic review is to determine what interventions exist to improve maternity outcomes amongst migrant women in high-income countries, and the secondary aim is to assess which interventions are most effective.

**Methods:** PROSPERO: CRD42022380678. We will search the following databases EMBASE via Ovid, Medline via Ovid, CENTRAL, Scopus, CINAHL, PsychINFO, and Web of Science, as well as additional sources from inception up until December 2022 with no language restrictions. We will include randomised-controlled trials and quasi-experimental studies. We will exclude studies with qualitative outcome assessments. Screenin, data extraction, and risk of bias will be completed by two independent reviewers. If appropriate, we will perform random effects meta-analysis.

**Proposed**

**Results:** We will present a summary of the interventions retrieved which, based on our scoping search, is likely to include peer-led initiatives, specialist care services, specialist antenatal and postnatal classes, and doula services. We will create consensus on the most effective interventions to improve maternity outcomes for migrant women in HICs.

**Conclusion:** We expect that there will have been a significant increase in relevant interventions published in the past decade, but that the evaluations of these interventions will be limited. Our findings will help funders and policymakers target the most effective maternity interventions for migrant women, and will inform future research.

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### The effects of COVID-19 disease during pregnancy and childbirth. A systematic review

Josefa Droggett Vidal<sup>1</sup>, Francisca Farr Negrete<sup>1</sup>, María Carroza<sup>1</sup>

<sup>1</sup>University of Chile, Chile

**Introduction:** COVID-19 pandemic has become a great public health issue, having a negative impact above the most vulnerable groups, such as childbearing people. World Health Organization (WHO) has considered this group as high-risk population in case of infection by SARS-CoV-2. Furthermore, the consequences this infection could have in fetuses and newborns are still unknown.

**Objective:** To describe the effects of COVID-19 during pregnancy and childbirth, during a pandemic context.

**Methods:** An article review was performed about SARS-CoV-2 infection during pregnancy, its effects on pregnant people, obstetrics and perinatal outcomes, that had been published between January 1st 2020 and July 5th 2022. We found 245 publications, studying 18.191 pregnant people who had been diagnosed with COVID-19 at some point during their pregnancy.

**Results:** Average age was 30,7 years old, 39% had some pre-existing morbidity, ¼ was obese. 53% of childbearing people were asymptomatic to the disease. Among symptomatic patients, 72% only had mild symptoms, the most frequent were cough (24%) and fever (21%). 4,3% of people from this group needed ICU hospitalization. 12,49% presented some obstetric disease, the most common been gestational diabetes (5,04%). 49,31% of deliveries were cesarean sections, and there were 158 maternal deaths. The mean gestational age at birth was 36,14 weeks, with 16,98% of preterm infants. RT-PCR positivity in newborns was 3,13%, and 0,78% of newborns died during neonatal period.

**Conclusions:** More than half of COVID+ pregnant people presented the infection

asymptomatically, those who had symptoms had a mild disease in more than 2/3 of the cases. Maternal mortality was 4 times higher than the global rate. The number of cesarean sections and premature births also increased, mainly in cases of severe-critical disease. It remains complex to reach conclusions about vertical transmission of the virus, therefore more studies are needed.

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### Sexual and reproductive health of young people in Greece: knowledge, attitudes, practices and sexual health profile of 249 individuals

Maria Papadakaki<sup>1</sup>, Kyriaki Vagionakis<sup>1</sup>, Joannes Chliaoutakis<sup>1</sup>

<sup>1</sup>LaHeRS Lab, Social Work Department, Hellenic Mediterranean University, Greece

**Introduction:** In Europe 25% of adolescents aged 15 are sexually active. The current study aimed at assessing knowledge, attitudes, practices and sexual and reproductive health profiles of young people in a large city of Greece.

**Methods:** A study was conducted in 2019 among a convenient sample of 249 individuals aged 18-30 years, living in Heraklion, Greece. The questionnaire was anonymous and was based on "Illustrative Questionnaire for interview surveys with young people" (WHO) and "Questionnaire on Gender Relations and Sexuality" (Cyprus Institute of Reproductive Medicine).

**Results:** The average age of participants was 22.2 years (SD=3.5) and the majority were female (69.5%) living in urban areas (85.2%). Out of a total of nine knowledge items, the maximum correct answers per individual was five (e.g. "HPVs cause warts on ovaries" (17.0%); "fungi are likely to cause infertility" (26.9%); "high likelihood of pregnancy when sexual intercourse takes place 14 days before the expected period" (n = 102, 48.4%), etc). Although participants considered "medical doctor" as the most important source of information on sexual issues (41.0%), most sought advice from "friends" (38.1%) or "the web" (21.9%). The mean age of first sexual intercourse was 16.8 years (SD3.0). Participants stated that "often" (8.3%) or "occasionally" (4.6%) have sex with people of same sex and 44.9% stated watching sexual explicit material on the web. Condom use was "very often" to "always" reported by 78.0% and "rare" to "never" by 18.3%. A total of 10.8% "had STD in the past" and 52.2% were aware of a girl under 18 years who experienced unwanted pregnancy, with the average age of abortion be at 16.7 years.

**Conclusion:** The study identified utilization of unreliable information sources, high misinformation and risky sexual practices among participants. There is a need to increase knowledge, skills and critical thinking through comprehensive sex education in schools.

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### Socioeconomic condition, mental health and quality of life in children during the COVID-19 pandemic: an intersectional analysis of a population-based study

Elsa Lorthe<sup>1</sup>, Viviane Richard<sup>1</sup>, Roxane Dumont<sup>1</sup>, Andrea Loizeau<sup>1</sup>, Javier Perez-Saez<sup>1</sup>, H el ene Baysson<sup>1</sup>, Maria-Eugenia Zaballa<sup>1</sup>, Julien Lamour<sup>1</sup>, Stephanie Schrempft<sup>1</sup>, R emy Barbe<sup>2</sup>, Klara Posfay-Barbe<sup>2</sup>, Idris Guessous<sup>2</sup>, Silvia Stringhini<sup>1</sup>

<sup>1</sup>UEP, Switzerland, <sup>2</sup>HUG, Switzerland

**Background and Objective:** Children and adolescents are highly vulnerable to the impact of sustained stressors during developmentally sensitive times. Therefore, long-term adverse effects of the pandemic warrant special consideration. However, children are not a homogeneous group: the intersection of social, economic, and demographic characteristics shapes children's daily experiences and outcomes. We investigated how demographic characteristics intersect with socioeconomic dimensions to shape the social patterning of quality of life and mental health in children and adolescents, two years into the COVID-19 pandemic.

**Methods:** We used data from the prospective SEROCOVID-KIDS cohort study of children and adolescents living in Geneva (Switzerland). We conducted an intersectional Multilevel Analysis of Individual Heterogeneity and Discriminatory Accuracy (MAIHDA) by nesting participants within 48 social strata defined by intersecting sex, age, migrant status, parental education and financial hardship in Bayesian multilevel logistic models for poor health-related quality of life (HRQoL, measured with PedsQL), and poor mental health (SDQ).

**Results:** Among participants aged 2-17 years (median 10, IQR7-13), 223/1954 (11.4%) and 100/1991 (5.0%) had poor HRQoL and poor mental health, respectively. We observed substantial between-stratum differences in the predicted proportion of poor HRQoL, ranging from 4.4% for 2-5 years old Swiss-born females with highly educated parents and no financial hardship to 33.3% for 12-17 years old Swiss-

born females with highly educated parents but financial hardship. Strata including adolescents and financial hardship had a significantly higher likelihood of poor HRQoL than their counterparts. Between-stratum variations in the predicted frequency of poor mental health were limited (range 4.2%-6.8%) and mainly explained by low parental education.

**Conclusion:** We found evidence of considerable differences in adverse outcomes across social strata. Interventions to address inequities in HRQoL should focus on specific population sub-groups involving adolescents and families with financial hardship, while those aiming to improve mental health should target all children and adolescents.

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### Why do women not utilize maternal health services at Puskesmas? an explorative qualitative study of healthcare workers in Indonesia

Herwansyah Herwansyah<sup>1</sup>, Stavroula Kalaitzi<sup>2</sup>, Katarzyna Czabanowska<sup>1</sup>, Peter Schr oder-B ack<sup>3</sup>

<sup>1</sup>Maastricht University, Department of International Health, Care and Public Health Research Institute (CAPHRI), Faculty of Health, Medicine, and Life Sciences, Maastricht University, Duboisdomein 30, 6229 GT, Maastricht, Netherlands, <sup>2</sup>Indiana University, <sup>3</sup>University of Applied Sciences for Police and Public Administration in North Rhine-Westphalia, Institute of History and Ethics of Police and Public Administration (IGE), University of Applied Sciences for Police and Public Administration in North Rhine-Westphalia, Dennewartstrasse 25-27, 52068 Aachen, Germany

Maternal health services at the Community Health Center (Puskesmas) are generally underutilized. The importance of service utilization at this healthcare facility is aimed at improving maternal health quality in response to maternal mortality reduction. Sociodemographic factors are primarily associated with low utilization of maternal healthcare services in primary care settings. Many women, including the healthcare women cohort, preferred to visit other healthcare facilities instead of the Puskesmas. The purpose of this study was to explore and describe the reasons why female healthcare workers do not use maternal health services at Puskesmas.

This descriptive explorative qualitative study was conducted in eleven Puskesmas in the Municipality of Sungai Penuh, Indonesia. Eleven Focus Group Discussions (FGDs) were carried out with female healthcare workers from those eleven Puskesmas. The Attride-Stirling's thematic network analysis approach was employed to analyse the data.

Finding suggests that although the participants considered the maternal health services at Puskesmas as one of the essential programs, they preferred seeking the services at other maternity care facilities. The underlying reasons were often conditioned by the women's motivation to obtain services from private clinics or hospitals. They believed that these facilities provide comprehensive maternity care services, which include well-equipped examination tools, the quality of services, and the availability of specialist doctors. Other related reasons include a lack of self-motivation to use the services at Puskesmas due to working conditions. The healthcare workers contended that they have to focus on their responsibilities in their stations without interrupting other staff serving other clients. Hence, they chose other healthcare facilities that open after working hours.

Individual-level factors influence female health workers not to utilize the services. The sociodemographic factors of the participants should be adequately considered in the design of the appropriate interventions to raise awareness of the importance of maternal health service utilization at Puskesmas.

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### How do adolescents see differences in online communication in supporting them to protect the health of their friends?

Lisa Buckley<sup>1</sup>, Wlthanage Perera<sup>1</sup>

<sup>1</sup>The University of Queensland, Australia

**Background and Objective:** Friends can provide early adolescents with protection from harm. Positive support, comfort, or active efforts to prevent harm is evidenced in online bullying but also across other health behaviours. Research typically focuses on individual characteristics of protectors (e.g., empathy, confidence). Guided by a theory of online communication, we examine the features of online platforms as they might affect protecting of friends. Our objectives were to describe adolescents' experience of online communication and how they feel it differs from face-to-face communication and explore factors they identify as increasing the likelihood of acting to protect friends from harm.

**Methods:** We surveyed 216 students (Mean age = 13.72, S.D.=1.2) online during school time about helping and bystander behaviour. We provided an open-ended

text box to have students describe how they felt electronic, differed from face-to-face communication. We also had students rate (strongly disagree-strongly agree) whether key factors (in person and online) were associated with their intervening to stop a friends' risky behaviour (n=13 items).

Results: Qualitative themes of online differences included: cue absence ("can't hug"), synchronicity ("time to respond"), permanence ("people can screenshot"), relieve social anxiety ("respond without being scared"), available ("chat anytime"), and alterations ("filters"). Quantitatively (factor analysis), two factors related to likelihood of intervening: one aligning with online experience (e.g., being recorded, followers) and another more general factor (e.g., a dangerous situation, close friends, with helpful others). Items related to getting into trouble loaded across both factors.

Conclusion: A large part of adolescent communication is online, including the way they protect their friends from harm. From our study, we see that adolescents identify differences with face-to-face communication and, together with understanding the characteristics of those who actively intervene to reduce friends' harm, findings might help better provide health promotion messaging around, 'mates looking out for mates'.

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### "We try to look beyond just [providing] an abortion": exploring healthcare providers' experiences of delivering abortion care at 20 weeks and over in Victoria

Alyce Wilson<sup>1</sup>, Mary Malek<sup>2</sup>, Caroline Homer<sup>2</sup>, Catherine Hannon<sup>3</sup>, Clare McDonald<sup>3</sup>, Paddy Moore<sup>3</sup>

<sup>1</sup>Gippsland Region Public Health Unit, Australia, <sup>2</sup>Burnet Institute, Australia, <sup>3</sup>Royal Women's Hospital, Australia

Background and Objective: Universal access to safe abortion is key to upholding sexual and reproductive health and rights. However, abortions at 20 weeks and over for psychosocial reasons are highly stigmatised and particularly difficult to access. The Abortion and Contraception Service (ACS) at the Royal Women's Hospital is the only service in Victoria, Australia that provides these abortions, and little is known about healthcare providers' experiences in providing this care. This study aimed to examine healthcare provider perspectives and experiences in providing abortion care at 20 weeks and over, and how the quality of care might be improved.

Methods: An exploratory qualitative study was conducted. Healthcare providers of abortion at 20 weeks and over for psychosocial reasons were recruited from the ACS, Royal Women's Hospital. In-depth, semi-structured interviews were conducted with participants from May to June 2022 by researchers experienced in trauma-informed care. Data were analysed by reflexive thematic analysis using NVivo software.

Results: Participants included 13 healthcare providers from medicine, nursing, midwifery, social work and Aboriginal clinical health backgrounds. Four themes were identified: 'Delivering quality care', 'Strengthening the service', 'Being an abortion provider is challenging', and 'Navigating a complex environment'. Participants perceived the care provided as patient-centred and timely, but noted barriers to care including understaffing, difficulty maintaining a sustainable workforce, and the absence of similar services state-wide. Personal challenges faced by participants included the emotional toll and ethical considerations of their work, but they felt well-supported by the wider team.

Conclusion: Further research exploring the care experiences of providers and service users of abortion at 20 weeks and over for psychosocial reasons is required to support these findings. There is an urgent need for supportive policies and frameworks to expand provision of affordable, acceptable and accessible abortions at 20 weeks and over in Victoria, and Australia more widely.

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### Burden of genitourinary tract and parasitic infections in pregnancy in rural Ethiopia

Estifanos Baye<sup>1</sup>, Firehiwot Abate<sup>2</sup>, Kalkidan Yibeltal<sup>2</sup>, Mulatu Derebe<sup>3</sup>, Michelle Eglavitch<sup>4</sup>, Mandefero Mengistie<sup>5</sup>, Ingrid Olson<sup>4</sup>, Workagegnehu Kidane<sup>2</sup>, Sitota Tsegaye<sup>2</sup>, Yunhee Kang<sup>6</sup>, Parul Christian<sup>6</sup>, Blair Wylie<sup>7</sup>, Rose Molina<sup>7</sup>, Grace Chan<sup>8</sup>, Sheila Isanaka<sup>9</sup>, Luke Mullany<sup>9</sup>, Alemayehu Worku<sup>2</sup>, Yemane Berhane<sup>2</sup>, Anne Lee<sup>1</sup>

<sup>1</sup>Brigham and Women's Hospital, Harvard Medical School, United States,

<sup>2</sup>Addis Continental Institute of Public Health, Ethiopia, <sup>3</sup>Amhara Public Health Institute, Ethiopia, <sup>4</sup>Brigham and Women's Hospital, United States,

<sup>5</sup>Felege Hiwot Comprehensive Referral Hospital, Ethiopia, <sup>6</sup>Johns Hopkins Bloomberg School of Public Health, United States, <sup>7</sup>Beth Israel Deaconess

Medical Center, Harvard Medical School, United States, <sup>8</sup>Harvard T.H. Chan School of Public Health, Harvard Medical School, United States

Background: Infections during pregnancy may increase risk of adverse birth outcomes. In many low-income settings, screening of infections in pregnancy is not routinely performed, and treatment is based on an empirical approach. We aimed to describe the prevalence and etiology of genitourinary tract and intestinal parasitic infections among pregnant women in Ethiopia.

Methods: A prospective pregnancy cohort study was conducted in 12 health centers in rural Amhara. At enrollment ( $\leq 24$  weeks gestation), clean-catch midstream urine specimens were collected and urine culture and antibiotic susceptibility testing performed (n=618). Urinary tract infection (UTI) was defined as high-burden bacterial growth ( $\geq 10^5$  colony forming units (CFU)/ml) or intermediate growth [ $10^3$ - $10^5$  CFU/ml] with UTI symptoms. Women provided self-administered vaginal swabs to screen for Chlamydia trachomatis and Neisseria gonorrhoeae (GenXpert, n=628). In a subset of women who reported vaginal symptoms (6.5%), point-of-care diagnostic tests (Diagnositol<sup>®</sup> BVBLUE, OSOM<sup>®</sup> Trichomonas) were performed to test for Bacterial vaginosis (BV) and Trichomoniasis (TRICH). Stool samples were collected in participants who had received a prior presumptive mebendazole dose and examined using wet mount technique (n=319).

Results: The prevalence of UTI was 3.7%, with Escherichia coli (63%) being the predominant uropathogen, followed by Klebsiella pneumoniae and Enterococcus faecalis (8% each). Three-quarters of bacterial isolates were susceptible to nitrofurantoin, and more than one-third were resistant to ampicillin and cotrimoxazole. About 39% (n=125) of women screened had persistent parasitic infections after deworming, and the most common parasites were Entamoeba histolytica (14.4%), Giardia lamblia (13.8%), and Necator americanus (8.2%). Among symptomatic women, 9.8% were positive for BV and 2.6% for TRICH. Only a single case of chlamydia was detected.

Conclusions: In this cohort, the prevalence of intestinal parasitic infection was high despite deworming, while genitourinary tract infections were uncommon. Strengthening of the management of intestinal parasites in pregnancy is needed in this and similar populations.

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### We are open-minded but not liberated: Using Human-Centered Design to hear teenage voices in the Philippines

Maria Murga<sup>1</sup>, Jeffry Lorenzo<sup>1</sup>, Algin Gultia<sup>1</sup>

<sup>1</sup>Johns Hopkins Center for Communication Programs, Philippines

The Philippines declared teenage pregnancy a national social emergency in 2019. Limited accessibility to family planning (FP) commodities and services, mandatory parental consent to access contraception as a minor, and low use of health services are all key factors that contribute to this problem. USAID ReachHealth, a 5-year FP project in the Philippines, used human-centered design (HCD) to ask - How Might We Reduce Unintended Teenage Pregnancy in the Philippines?

The HCD process (Empathize, Define, Ideate, Design and Test/Implement) used participatory methods adapted for adolescents. Youth organizations recruited participants and helped in data collection and analysis. The adults close to teens were also interviewed. They worked in parallel spaces to reduce the influence of power dynamics. The team utilized projective and interactive techniques to keep adolescents engaged and open to sharing sensitive topics. They factored in adolescents' sexual identity, age and language.

The team interacted with 200+ adolescents and adults. This resulted in 12 insights, 281 potential ideas, five complementary prototypes and four implemented interventions. The insights highlight the unique perspective adolescents have compared to their parents and community. They need to be equipped to talk to teenagers about love, sex and relationships without fear that they are corrupting them. Health providers need to provide a safe space for teens so that their experience with health services is a positive one.

Teenage pregnancy is clearly a complex issue that needs to be approached at different levels with teenagers guiding the way. This serves as a comprehensive resource that program managers can use. They also need to invest in preventing the first birth and not just rapid repeat pregnancy. The HCD process highlights how important it is to involve teenagers in programs for them. They have much to say and seek genuine opportunities to weigh in on important health topics.

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### Socio-demographic determinants of primary and secondary infertility in India

Aditi Prasad<sup>1</sup>

<sup>1</sup>International Institute for Population Sciences, Mumbai, Govandi-East,

**Mumbai, India**

**Background and Objective:** Infertility is a global public health issue that remains neglected both in the field of reproductive sciences and also on the social level, even when infertility affects a large proportion of couples worldwide. While there has been much work in the field of medicine, infertility is yet to be closely studied from the social and cultural angles. The objective of this study is to explore the socio-demographic determinants of primary and secondary infertility among currently married women (aged 20-49) in India, as well as the possible consequences of infertility.

**Methods:** This study used the data from the National Family Health Survey (NFHS) - 5 (2019-21) to determine the determinants of primary and secondary infertility. Bivariate and multivariate analyses were conducted to assess the factors affecting primary and secondary infertility among currently married women in India. Furthermore, chi-square tests were conducted to check the association between primary and secondary infertile women and the possible consequences of infertility.

**Results and conclusion**

The age of women, age at first marriage, husband/partner's age, the standard of living, working status of women, and region are some of the variables that significantly affect infertility. Women in urban areas are more likely to have primary and secondary infertility. This could be due to the delayed age of marriage or lifestyle changes. The educational and wealth status of the couple has a negative relationship with infertility, possibly due to better access to information and resources. In the present study, the association of primary and secondary infertility with marital dissolution and domestic abuse is significant. The first step in addressing infertility is to acknowledge that infertility is a problem for which no single cause is known. Thus, there needs to be a targeted approach to address infertility backed by further research and relevant policies.

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**Hygienic menstrual practices among tribal adolescents in India**

Chandan Hansda<sup>1</sup>

<sup>1</sup>International Institute for Population Sciences, India

**Background:** Menstruation is a natural biological process in which blood and other related materials are carried out of the uterus through the vagina. Despite being a normal process, it is seen as dirty and many taboos, misbeliefs, and misconceptions are related to it, which prevents many menstruators across the world from handling it in a healthy, hygienic, and respectful manner. Girls and women, especially in the tribal setting, have restricted access to healthcare facilities despite shifting social and cultural norms and practices. Teenagers, especially young females, are more likely to retain inaccurate beliefs and conceptions due to inadequate, incorrect, and unclear information.

**Method:** The present study is based on secondary data, i.e., National Family Health Survey-5 (NFHS-5), and used suitable statistical tools to explore hygienic menstrual practices among tribal adolescents in India. The total sample of scheduled tribal women aged 15-19 in NFHS-5 is 22,563.

**Results:** The prevalence of hygienic menstrual practices among adolescents aged 15-19 years is 77.55% overall, while among the tribal adolescents, it is approx. 67%. In most states and union territories, the prevalence of hygienic menstrual practices among tribal adolescents is less than that of overall adolescents. The usage of the hygienic method depends on the place of residence, wealth status, educational status, and toilet facility.

**Conclusion:** Interventions should focus on the states where the prevalence of using hygienic methods is less. Government should focus on reaching the community as lack of accessibility, and affordability is the major concern among the tribal communities. Enhancing better menstrual practices in the present helps to enhance women's reproductive health in the future.

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**The causal effect of parent-child interactions on children's language development at 3 and 4 years**

Mary Brushe<sup>1</sup>, Murthy Mittinty<sup>2</sup>, Dandara Haag<sup>2</sup>, Sheena Reilly<sup>3</sup>, Edward Melhuish<sup>4</sup>, Tess Gregory<sup>1</sup>, John Lynch<sup>2</sup>, Sally Brinkman<sup>5</sup>

<sup>1</sup>Telethon Kids Institute & University of Adelaide, Australia, <sup>2</sup>University of Adelaide, Australia, <sup>3</sup>Griffith University, Australia, <sup>4</sup>University of Oxford, United Kingdom, <sup>5</sup>University of South Australia, Australia

**Background:** Inequalities in early language exposure, known as the 'word gap', have been shown to emerge as early as 18 months old. Parent-child interactions, also known as conversational turns, have been proposed as one mechanism for improving later language development. However, research to date has been

limited by small sample sizes and analytical techniques that cannot quantify a causal relationship, limiting the potential for research to inform policy and practice within early childhood.

**Objective:** Estimate the causal effect of parent-child interactions throughout the early years on children's later language development at 3 and 4 years old.

**Methods:** Language in Little Ones is an Australian prospective cohort study (n = 302) that uses speech recognition technology to quantify the number of parent-child interactions children experience over an average day. Data is collected every six months from when the child is 6 to 48 months old. Language development is measured using the standard score on the Clinical Evaluations of Language Fundamentals Preschool-2 at 36 and 48 months. Marginal structural models with inverse probability of treatment weights will be employed to account for time-varying exposures (parent-child interactions) and time-varying confounding (e.g., home activities and parent mental health).

**Results:** Using the counterfactual theory of causation, results of a simulation model will be presented that describes the language development standard score that could be expected had the entire population spoken a specified number of parent-child interactions at each wave of data collection.

**Conclusion:** These findings will advance our understanding of how increases in parent-child interactions could improve language development during the early years. Potential mechanisms influencing parents' ability to engage in high-quality interactions, such as screen time, will also be discussed. This will inform international policies and interventions to close the word gap and ensure all children start school ready to learn.

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**Protocol of a longitudinal population-based study evaluating the impacts of the COVID-19 pandemic on children and adolescents: the SEROCov-KIDS cohort and biobank**

Andrea Loizeau<sup>1</sup>, Elsa Lorthe<sup>1</sup>, Roxane Dumont<sup>1</sup>, Charlotte Verolet<sup>1</sup>, Viviane Richard<sup>1</sup>, Maria-Eugenia Zaballa<sup>1</sup>, Francesco Pennacchio<sup>1</sup>, Julien Lamour<sup>1</sup>, Hélène Baysson<sup>1</sup>, Klara Posfay-Barbe<sup>2</sup>, Remy Barbe<sup>3</sup>, Idris Guessous<sup>4</sup>, Silvia Stringhini<sup>1</sup>, on behalf of the SEROCov-KIDS, study group<sup>1</sup>

<sup>1</sup>Unit of Population Epidemiology, Division of Primary Care Medicine, Geneva University Hospitals, Geneva, Switzerland, <sup>2</sup>Division of General Pediatrics, Department of Woman, Child, and Adolescent Medicine, Geneva University Hospitals, Geneva, Switzerland, <sup>3</sup>Division of Child and Adolescent Psychiatry, Department of Woman, Child, and Adolescent Medicine, Geneva University Hospitals, Geneva, Switzerland, <sup>4</sup>Division and Department of Primary Care Medicine, Geneva University Hospitals, Geneva, Switzerland; Department of Health and Community Medicine, Faculty of Medicine, University of Geneva, Geneva, Switzerland

**Background and Objective:** Recent observational research has revealed the impacts of the COVID-19 pandemic on the multiple dimensions of children's life coming from diverse socioeconomic backgrounds. Determining the consequences of the pandemic on this population over the longer term is a public health priority.

**Methods:** SEROCov-KIDS is an on-going, 3-year longitudinal and prospective cohort study to monitor and determine the direct and indirect impacts of the COVID-19 pandemic on the health and development of children (aged 6 months to 17 years) living in Geneva, Switzerland. The study integrates a paediatric biobank and a research collaborative network. Its cohort is composed of a general population-based sample (targeted N, 2000) and a sample of children with social or clinical vulnerabilities (targeted N, 500). Participants are enrolled during the first 12 months of the 30-month data collection phase. Individual consent is provided by the referent adult and adolescent, aged 14 years or older. Participation includes a baseline serological blood test, and online questionnaires at the baseline assessment and every 4 months thereafter. The outcomes are general and mental health, development trajectory, education, family socioeconomic environment, lifestyle, health behaviors, healthcare consumption, and COVID-19 exposure.

**Results:** The study began on September, 2021 and will be completed in August 2024. As of November 2022, 2145 children are being followed up. A total of 1829 serologies (85%) were performed and most participants (83%) agreed to the biobank. The inclusion questionnaires were completed by 1750/2145 referent adults (96%) and 423/480 adolescents (88%).

**Conclusions:** SEROCov-KIDS is a uniquely large cohort study monitoring the health and development of children of all ages over time, and an opportunity to build a biobank for future translational research. Its findings will provide an evidence base to guide public policies and future programs for the young population, particularly for those in vulnerable situations.

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### Early life exposure to phthalates and risk assessment: are we doing enough?

Lisa De Pasquale<sup>1</sup>, Camilla Lugli<sup>2</sup>, Lucia Palandri<sup>3</sup>, Riccardo Barbieri<sup>1</sup>, Erica Passini<sup>2</sup>, Fabio Facchinetti<sup>3</sup>, Lorenzo Iughetti<sup>4</sup>, Laura Lucaccioni<sup>5</sup>, Elena Righi<sup>1</sup>

<sup>1</sup>University of Modena and Reggio Emilia, Modena, Italy, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>University of Modena and Reggio Emilia, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>3</sup>University of Modena and Reggio Emilia, <sup>4</sup>University of Modena and Reggio Emilia, Paediatrics Unit, Maternal-Infantile Department, University Hospital, Department of Medicine and Surgery, University of Modena and Reggio Emilia, Modena, Italy, <sup>5</sup>University of Modena and Reggio Emilia, Department of Medical and Surgical Science, University of Modena and Reggio Emilia, Modena, Italy

**Background and Objective:** Phthalates, potential endocrine disruptors with antiandrogenic effects, are widely used in several everyday products and are ubiquitous pollutants. Since 1999 European Authorities enacted several regulations to limit phthalate use and prevent exposure, mainly for more susceptible populations such as infants. This study aims to evaluate the estimated daily intake (EDI) of phthalates and to perform risk assessment evaluation in an Italian pediatric cohort.

**Methods:** Between 2019 and 2020, 197 mother-child couples were enrolled in a prospective cohort study at the University Hospital of Modena (Italy). Urine samples were collected at birth, 3 and 6-months. 8 phthalates metabolites were analyzed.

EDI was estimated and Risk quotients (RQ) were calculated using tolerable daily intake levels, (RQ(TDI)) as determined by the European Food Safety Authority, and the revised reference doses for anti-androgenicity RQ(RfD-AA), recently proposed. Finally, combined Hazard Indexes (HI) were calculated to assess synergic effect of different phthalates.

**Results:** Most EDI and RQ(TDI) were lower than the acceptable values. The highest levels were found for Diethyl-phthalate (DEP), followed by Di-2-ethylhexyl-phthalate (DEHP). Newborns showed the highest values, followed by 6-months infants. Values exceeding the risk levels were observed for DEHP or di-n-butyl-phthalate (DnBP) in 5.5% and 10% of the newborns, respectively for RQ(RfDAA) and HI. Overall, HI higher values than threshold were observed at each follow-up visit.

**Conclusion:** Since the European Union has a strict regulation policy regarding the most critical phthalates, these findings raise concern: exposure affecting children in Modena is still spread and includes phthalates banned in childcare products, such as DEHP and DnBP. Notably, few infants (especially newborns) exceeded the risk threshold for antiandrogenic effects. Further, exposure patterns seem to change over time during their first months of life. More extensive public health measures need to be planned to efficiently protect the most sensitive subgroups, including infants.

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### "Come te la passi?" project: Cross sectional survey investigating Physical Activity and well-being of children and adolescents during SARS-CoV-2 pandemic

Aurelia Salussolia<sup>1</sup>, Marco Montalti<sup>1</sup>, Alice Masini<sup>2</sup>, Jacopo Lenzi<sup>2</sup>, Flavia Rallo<sup>1</sup>, Martina Paternò<sup>3</sup>, Marta Agosta<sup>3</sup>, Davide Resi<sup>3</sup>, Michela Stillo<sup>3</sup>, Federica Guaraldi<sup>4</sup>, Davide Gori<sup>2</sup>, Laura Dallolio<sup>2</sup>

<sup>1</sup>University of Bologna, School of Hygiene and Preventive Medicine, Department of Biomedical and Neuromotor Sciences, Italy, <sup>2</sup>University of Bologna, Department of Biomedical and Neuromotor Sciences, Italy, <sup>3</sup>Bologna Local Health Authority, Department of Public Health, Italy, <sup>4</sup>IRCCS Istituto delle Scienze Neurologiche di Bologna, Italy

**Background and Objective:** The sars-cov-2 pandemic had a significant impact on the physical and general well-being of the youngest. In Italy, the population was forced to change habits, especially during the national lockdown that took place from march to may 2020, leading to an increase in sedentary behaviors. "Come te la passi?" project aimed to investigate changes in physical activity (pa) levels and well-being of children and adolescents in the city of bologna.

**Methods:** An anonymous survey was administered in july 2021 to parents of children/adolescents aged 6-18 years attending educational services in bologna. A multilevel mixed-effects generalized ordered probit regression analysis was performed to investigate the change in frequency of pa during and after the national lockdown, as compared with before the lockdown.

**Results:** 1134 Questionnaires were collected; 457 (40.3%) were female and the mean age was 13.0±3.4 years. Regarding perception of general well-being,

61.3% of participants reported that their child worried about the future, that 46.3% had difficulty sleeping and that 72.8% had difficulty paying attention, with a significantly higher proportion among adolescents. Regarding pa frequency during the lockdown, it was reported to be lower than before. additionally, post-lockdown pa levels do not match pre-lockdown pa levels, with a "Polarization" of pa frequency. In fact, the percentage of children/adolescents who reportedly never or rarely did pa and the percentage of those who did pa with a high frequency both increased post-lockdown, whilst the percentage of those who did pa two/three times per week halved. No gender differences were found.

**Conclusion:** Our results show that the current pandemic has had a strong impact on the well-being of children and adolescents. It appears to have affected mainly adolescents, and even after the end of the national lockdown, pa levels decreased significantly.

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### Suicidal ideation in adolescents during the COVID-19 pandemic: prevalence and risk factors from a cross-sectional study in Geneva, Switzerland

Roxane Dumont<sup>1</sup>, Elsa Lorthe<sup>1</sup>, Viviane Richard<sup>1</sup>, Andrea Loizeau<sup>1</sup>, Guillaume Fernandez<sup>2</sup>, David DeRidder<sup>1</sup>, Francesco Pennacchio<sup>1</sup>, Julien Lamour<sup>1</sup>, Maria-Eugenia Zaballa<sup>1</sup>, Hélène Baysson<sup>1</sup>, Klara Posfay-Barbe<sup>3</sup>, Remy Barbe<sup>4</sup>, Silvia Stringhini<sup>1</sup>, Idris Guessous<sup>5</sup>, on behalf of the SEROCOV-KIDS, study group<sup>1</sup>

<sup>1</sup>Unit of Population epidemiology - Geneva university hospital, Switzerland, <sup>2</sup>Geneva University, <sup>3</sup>Division of General Pediatrics, Department of Woman, Child, and Adolescent Medicine, Geneva University Hospitals, Geneva, Switzerland, <sup>4</sup>Division of Child and Adolescent Psychiatry, Department of Woman, Child, and Adolescent Medicine, Geneva University Hospitals, Geneva, Switzerland, <sup>5</sup>Division and Department of Primary Care Medicine, Geneva University Hospitals, Geneva, Switzerland

**Background and Objectives:** Pandemic-related life changes may have had a deleterious impact on suicidal behaviours. Early detection of suicidal ideation and identification of subgroups at increased risk could help prevent suicide, one of the leading causes of death among adolescents worldwide. We aimed to investigate the prevalence and risk factors for suicidal ideation in adolescents, two years into the COVID-19 pandemic.

**Methods:** A population-based sample of adolescents (14-17 years old) included in a prospective cohort between December 2021 and June 2022 were invited to fill in an online questionnaire and were asked about suicidal ideation ("In the past 12 months, have you thought about suicide?"). We conducted a network analysis which identifies direct and indirect risk factors using mixed graphical modelling. **Results:** Among 505 adolescents, 15% (95%CI: 11.7-18.1) declared having experienced suicidal ideation over the previous year, and 2.5% (95%CI: 1.4-4.4) declared having ever attempted suicide. Using network analysis, we identified that strong psychological distress, belonging to a sexual minority (lesbian/gay/bisexual), low self-esteem and extensive screen time were direct risk factors for suicidal ideation. In addition, female gender, addiction to social media, bullying and health compromising behaviors (smoking/drug/alcohol use) were recognized as major indirect risk factors, as connected through intermediate risk factors. Parent/adolescent relationship had the highest centrality strength in the network analysis, hence substantial influence on the network information.

**Conclusion:** An alarming proportion of adolescents declared having had suicidal thoughts over the previous year, especially those with strong psychological distress, low self-esteem, belonging to a sexual minority or with extensive screen time. Research suggests that these risk factors were likely exacerbated by pandemic-related societal changes. Parent/adolescent relationship was identified as a strong influential domain on which targeted preventive efforts could have a considerable impact on reducing suicidal ideation.

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### A systematic review of the global implementation and impact of non-invasive prenatal testing (NIPT) during prenatal screening for Down's syndrome

Elinor Sebire<sup>1</sup>, Mairead Black<sup>1</sup>, Sohinee Bhattacharya<sup>1</sup>, Rachael Wood<sup>2</sup>, Rute Vieira<sup>1</sup>

<sup>1</sup>University of Aberdeen, United Kingdom, <sup>2</sup>Public Health Scotland, United Kingdom

**Background and Objective:** Non-invasive prenatal testing (NIPT) is an accurate and non-invasive screening test for Down's syndrome (DS) that has been recently implemented into antenatal screening programmes worldwide. This review provides a current understanding of the extent of NIPT use in national antenatal

screening pathways and its impact on the reproductive choices made during pregnancy, invasive prenatal diagnosis (IPD) and terminations, and on live births of babies with DS.

**Methods:** A systematic review of studies and guidelines describing the implementation of NIPT and its impact on reproductive choices and pregnancy outcomes. Screening and data extraction was completed independently by two researchers, along with hand-searching to identify national guidelines. Narrative synthesis, descriptive analysis and meta-analysis (where possible) were used to evaluate the implementation of NIPT, its uptake, and impact on pregnancy outcomes. Quality was assessed using the Down's and Black quality assessment tool.

**Results:** In total, 27 countries or states were identified offering NIPT as part of a national screening programme (n=23 studies or national guidelines). NIPT was implemented as either a first- or second-line screening test, and was patient-funded, covered by insurance or healthcare system. Most often, NIPT was a contingent test (n=16) for higher chance of DS pregnancies. In some countries, NIPT implementation resulted in a reduction of IPD procedures. Cultural and societal attitudes to prenatal testing are often cited as an influence on the uptake of NIPT. Preliminary meta-analysis results find no significant difference in the reported terminations or live births of babies with DS following NIPT implementation.

**Conclusion:** Implementation of NIPT into antenatal screening programmes is highly variable between countries, dependent on pre-existing prenatal testing and healthcare provisions. Further monitoring of the impact of NIPT and studies exploring the reasons behind differential uptake of screening and reduction in IPD are important to inform future public health initiatives.

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### Household head- an unspoken crucial dimension to improve maternal healthcare services utilization in Bangladesh: evidence from nationally representative surveys

Md Rahman<sup>1</sup>, Mamun Bashar<sup>1</sup>, Tasnim Ara<sup>1</sup>, Zannatul Ferdous<sup>2</sup>

<sup>1</sup>International Centre for Diarrhoeal Disease Research, Bangladesh

Bangladesh, <sup>2</sup>University of Dhaka Bangladesh

**Background and Objective:** Bangladesh, a lower-middle income country is enormously struggling to reduce the high maternal mortality ratio (196 per 100,000 live births) which got stagnant at the level of 2010. Poor maternal healthcare (MH) services utilization could be attributed to this stagnation. MH programs mostly overlook the household head (HH)- the most influential person in household decision-making in Bangladesh. This study aims to examine the role of HH and their relationship dynamics with women in MH services utilization during pregnancy and childbirth. Additionally, this study explores the possibilities of short and long-term policy actions.

**Methods:** This study used data from the latest nationally representative cross-sectional Bangladesh Multiple Indicator Cluster Survey 2019, Bangladesh Maternal Mortality Survey 2016, and Bangladesh Adolescent Health and Wellbeing Survey 2019-20. Antenatal care (ANC), facility birth (FB), skilled birth attendance (SBA) for home births, and care-seeking for maternal complications were assessed as MH services. The role of HHs' education and relationship dynamics were examined through multivariate regressions and marginal effects. Spatial hotspot analyses were performed to generate policy suggestions.

**Results:** After controlling for pregnancy complications and all other confounders, the adjusted odds of at least four ANC visits, FB, SBA in home births, and facility-based care seeking for pregnancy complication monotonically decreased by lower levels of HH education. Marginal effects of HHs' education across different level of ANC visits indicates that less educated HHs diminish the maximum benefits of ANC in facilitating FB. Hotspot analyses revealed low-level of education among HHs and male adolescents of the eastern region, while the coverage of mobile phone ownership among HH was high there.

**Conclusion:** This study warrants integrating household heads into MH programs. Mobile phone-based awareness programs targeting household heads can be the immediate call for action, while averting school dropout among male adolescents can be the long-term strategy.

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### The use of traditional medicine practitioners for childhood illness in sub-Saharan Africa

Peter James<sup>1</sup>, Jon Wardle<sup>2</sup>, Razak Gyasi<sup>3</sup>, Ossy Kasilo<sup>4</sup>, Abdulai Bah<sup>5</sup>, George Yendewa<sup>6</sup>, Amos Mwaka<sup>7</sup>

<sup>1</sup>National Centre for Naturopathic medicine Southern Cross University

Southern Cross University "Military Road Lismore, New South Wales, Australia 2480" Australia, <sup>2</sup>National Centre for Naturopathic Medicine, Faculty of Health, Southern Cross University, Lismore, NSW, 2480, Australia, <sup>3</sup>African Population and Health Research Center African Population and Health Research Center "Manga Close, Kirawa Road Nairobi, Kenya" Kenya, <sup>4</sup>World Health Organisation office for Africa World Health Organisation office for Africa Brazzaville, Congo Congo, <sup>5</sup>College of Medicine and Allied Sciences, University of Sierra Leone, <sup>6</sup>Johns Hopkins Bloomberg School of Public Health Baltimore, MD 21205, USA United States, <sup>7</sup>Department of Medicine, Faculty of Medicine, Gulu University GuLu University Pece-Laroo Division, Gulu, Uganda Uganda

**Methods:** We utilized extracted Demographic and Health Surveys (DHS) data collected between 2010 and 2021 among 353,463 under-fives children from 32 SSA countries. Our outcome variable was the use of TMP for childhood illnesses (diarrhea or fever/cough or both). We used STATA v14 to conduct meta-analysis and two-level multivariable modeling.

**Results:** Approximately [2.80% (95%CI: 1.88-3.90)] women who sought healthcare for childhood illnesses utilised the service of a TMP with the highest in Ivory coast [16.3% (95%CI: 13.87-19.06)] followed by Guinea (13.80% (95%CI: 10.74-17.57)) to the lowest in Sierra Leone [0.10%(95%CI:0.01-1.61)]. Women with no formal education [AOR=1.62;95%CI:1.23-2.12], no media access [AOR=1.19;95%CI:1.02-1.39], who lived in a household headed by a man [AOR=1.64;95%CI:1.27-2.11], without health insurance [AOR=2.37;95%CI: 1.53-3.66], who considered it a problem getting permission to visit a health facility [AOR=1.23;95%CI:1.03-1.47] and perceived the size of their children at birth to be above average[AOR=1.20;95%CI:1.03-1.41] had higher odds of using TMP for childhood illness.

**Conclusion:** Despite the low usage of TMP for childhood illness, our findings highlight that TMPs continue to have a role in managing childhood illness in SSA. It is essential that policymakers and service providers consider the potential role of TMPs in designing, reviewing and implementing child health policies and interventions in SSA. Also, child health policies and interventions should be focused on the characteristics of women who use TMPs for childhood diseases identified in our study.

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### Acceptance of influenza and Sars-CoV 2 vaccines co-administration in pregnant women according to health action process approach

Patrizia Ferro<sup>1</sup>, Luca Mazzeo<sup>2</sup>, Sefora Petta<sup>3</sup>, Antonio Maiorana<sup>4</sup>, Marianna Maranto<sup>5</sup>, Alessandra Fallucca<sup>1</sup>, Alessandra Casuccio<sup>1</sup>, Vincenzo Restivo<sup>1</sup>

<sup>1</sup>University of Palermo Department of Health Promotion, Mother-Child, Internal Medicine and Specialist of Excellence "G. D'Alessandro" (PROMISE) Via del Vespro 133, Palermo 90127 Italy, <sup>2</sup>University of Palermo, <sup>3</sup>University of Palermo Italy, <sup>4</sup>Hospital of national importance and highly specialized ARNAS Civico-Di Cristina-Benfratelli of Palermo Italy, <sup>5</sup>Hospital of national importance and highly specialized ARNAS Civico-Di Cristina-Benfratelli of Palermo

**Background and objectives:** Infectious diseases contracted during pregnancy, such as influenza and COVID-19, are associated with a greater probability of developing adverse events (perinatal mortality, spontaneous abortions, etc). The Center for Disease Control and other international health authorities recommend co-administration of Influenza and SARS-CoV2 vaccines in pregnant women. In Italy, there is no systematic recording of data on vaccination status for pregnant women. The aim of this study is to assess the acceptance by pregnant women of Influenza and COVID-19 vaccines co-administration.

**Methods:** A cross-sectional study was carried out on pregnant women at ARNAS Civico-Di Cristina-Benfratelli Hospital of Palermo, by administering a questionnaire based on the Health Action Process Approach model. It was detected difference among women who accept or not vaccine co-administration. Subsequently, it was performed a multivariable logistic analysis for women who accepted co-administration using Stata MP14.2 statistical software.

**Results:** Overall 120 pregnant women were enrolled in the study. Of them 33.3% (n=40) would receive co-administration during pregnancy. The women predominantly are married and graduated. The main source of information on vaccinations is the gynecologist followed by the family doctor. The multivariable analysis shows the positive expectation on co-administration (reduction of complications for mother and newborn) was associated to a greater vaccine acceptance (aOR 2,07;IC% 1,15-3,73). The higher self-efficacy of women (influence of family context) appeared to be a further factor directly associated to co-administration adherence (aOR 2,63;IC% 1,15-4,56).

Conclusion: The vaccination campaign could focus on the positive expectation of co-administration and on self-efficacy, also involving the people surrounding the pregnant woman. In places of prenatal visits, a figure is needed to improving access to vaccines for pregnant women and train healthcare workers in the mother-child area. Furthermore, a system that records specific data on vaccination coverage of pregnant women is needed to plan future interventions.

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### Study of the role of oral health status variables in miscarriage events

Immanuel Oktavian<sup>1</sup>, Irene Adyatmaka<sup>2</sup>, Adang Bachtiar<sup>3</sup>

<sup>1</sup>Faculty of public health University of Indonesia "Pulo Asem Timur 8 no 5 Jakarta 13220" Indonesia, <sup>2</sup>Faculty of dentistry Maranatha University Maranatha university "Pulo asem timur 8 no 5 Jakarta 13220" Indonesia, <sup>3</sup>Center for health administration and policy studies

Immanuel Oktavian, Irene Adyatmaka, Adang Bachtiar The Indonesian MOH Ante Natal Care (ANC) guidelines did not included Oral Health status as a factor that plays a negative role during pregnancy and birth. This study aims to what Oral Health (OH) variables and how much it plays a role in the occurrence of Miscarriage. This research method uses secondary data from a Pilot Project of ANC Innovative at 23 locations in West-Kalimantan starting September 2021 it as 1). 254 ANC examination cards, 2). OH examination cards, 3). End of pregnancy report, which recorded 238 births (93.7%), mainly consist of 179 Normal-Births (70.5%), Miscarriages 13 (5.1%). This study focused on the Miscarriage-(M) compared to the Normal Birth-(NB). We will divide 2 groups: 1). M- all variables were compared with NB and a T-Test. Only variables that show significant differences will be assessed as factors that play a role in miscarriage. The results: Tartar in M were 12 persons (92%), NB 132 (74%) RR=1,3. Cavities M 100% compared NB 69%RR=1,5. Purple-Plaques M 100% compared NB 85%RR=1,2. Purple and Blue Plaques M 100% compared NB 89% RR=1,1. Tartar Segments M 4,08 compared NB 3,07 RR=1,3. "Severe Dysbiosis" M 100% compared NB 74% RR=1,3. It was concluded that pregnant woman, related to oral health disorder indicate that the incidence of Miscarriage were higher between 1.1 times (up 10%) to 1.5 times (up 50%). In other words, Bad Oral Health in pregnant women is estimate to have a role of 10% to 50% higher in the incidence of miscarriage.

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### Factors that provide protection against intimate partner physical violence among married adolescents in Bangladesh

Mizanur Rahman<sup>1</sup>, Kanta Jamil<sup>2</sup>, Quamrun Nahar<sup>3</sup>, Nitai Chakroborty<sup>1</sup>, M Haider<sup>4</sup>, Shusmita Khan<sup>1</sup>

<sup>1</sup>Data for Impact, University of North Carolina at Chapel Hill United States, <sup>2</sup>IAP World Services, <sup>3</sup>International Centre for Diarrhoeal Disease Research, Bangladesh Bangladesh, <sup>4</sup>icddr, Bangladesh

Background: Intimate partner physical violence (IPPV), perpetrated by husbands and within adolescence marriage are pervasive in Bangladesh. We examined factors associated with IPPV experienced by married adolescents ages 15–19 and tested four hypotheses: (1) adolescent girls married to relatively older husbands, (2) adolescents living in extended families with parents or parents-in-law, (3) adolescents who are minimally controlled by husbands, and (4) adolescents who have a child after marriage are protective of IPPV.

Methods: We analyzed IPPV data from 1,846 married girls ages 15–19 from a national adolescent survey conducted in 2019–20. IPPV is defined as the respondent having physical violence perpetrated by her husband at least once in the last 12 months. We implemented logistic regression models to test our hypotheses.

Results: Sixteen percent of married adolescent girls experienced IPPV. Girls living with parents-in-law or parents had adjusted odds ratio (AOR) of 0.56(p<0.001) of IPPV compared to those girls who lived with husband alone. Girls with husbands ages 21–25 years and 26 years or older had AORs of 0.45(p<0.001) and 0.33(p<0.001) of IPPV compared to those girls with their husband ages 20 and younger. Married adolescent girls who did not own a mobile phone had an AOR of 1.39(p<0.05) than girls who had a phone. IPPV risk increases with an increased duration of marriage for those with no living children but not for those with at least one living child; the risk was higher among those who had a child within the first year of marriage than those who had not yet had a child.

Discussion

Strictly adhering to the law that requires men waiting until the age of 21 to marry can reduce married girls' risk of IPPV. Raising girls' legal marriage age can minimize adolescents' IPPV and other health risks associated with adolescent

childbearing.

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### Monitoring clinical risk in the obstetric population through the Modified Early Obstetric Warning Score (MEOWS) at the IRCCS san raffaele hospital: a preliminary analysis

Antonio Antonelli<sup>1</sup>, Lara Maramieri<sup>2</sup>, Alessandra Candia<sup>1</sup>, Paola Corti<sup>3</sup>, Ivana Piccinin<sup>4</sup>, Stefania Borlini<sup>1</sup>, Paola Bombardieri<sup>5</sup>, Stefania Rinaldi<sup>5</sup>, Massimo Candiani<sup>5</sup>, Maria Garancini<sup>6</sup>, Carlo Signorelli<sup>1</sup>

<sup>1</sup>School of Public Health, Vita-Salute San Raffaele University, Milan, Italy. School of Public Health, Vita-Salute San Raffaele University, Milan, Italy.

<sup>2</sup>School of Public Health, Vita-Salute San Raffaele University, Milan, Italy.

<sup>3</sup>Quality and Accreditation Area, Medical Direction, IRCCS San Raffaele Scientific Institute, Milan, Italy. Quality and Accreditation Area, Medical

Direction, IRCCS San Raffaele Scientific Institute, Milan, Italy. Italy. <sup>4</sup>Quality

and Accreditation Area, Medical Direction, IRCCS San Raffaele Scientific

Institute, Milan, Italy. <sup>5</sup>Obstetrics and Gynaecology Department, IRCCS

San Raffaele Scientific Institute, Milan, Italy. Obstetrics and Gynaecology

Department, IRCCS San Raffaele Scientific Institute, Milan, Italy. Italy,

<sup>6</sup>Direzione Sanitaria - Area Qualità Accreditemento e Risk Management

IRCCS Ospedale San Raffaele Direzione Sanitaria - Area Qualità

Accreditemento e Risk Management IRCCS Ospedale San Raffaele Italy

Background and Objective: This study aims to evaluate the use of the Modified

Early Obstetric Warning Score (MEOWS) in identifying obstetric patients at risk of

infection or sepsis. The study assesses the correct application of the scale and

its impact on clinical decision-making a year after its integration into the obstetric

unit of San Raffaele Hospital.

Methods: The study was carried out as an internal audit by the Quality and Risk

Management Area in July 2022. A 16-item checklist was built to assess 51

randomly selected medical records. The scoring system used in the checklist

ranged from 0 to 1 (never to always) to evaluate the records.

Results: Analysis of medical records showed that 43% included a complete

evaluation of the parameters, while 33% were almost always complete. Nearly

all the records (92%) were accurately completed with date, time of assessment,

and reference range. Patients were assigned correctly to clinical deterioration

risk classes, with 48 classified as low risk, two as intermediate risk, and one as

high risk. In the case of low-risk women, MEOWS was 64% "always" and 28%

"almost always" correctly performed every 12/24 hours, as indicated by the

scale. Of the 14 low-risk patients who underwent a cesarean section, MEOWS

monitoring was "always" performed correctly in 73% of cases and "almost always"

performed correctly in 21% of cases every 12 hours until the third day. In patients

with complicated cesarean sections, gestational hypertension, infection, PROM,

or other pathologies, a proper assessment was performed in 63% of these cases

every 4 hours.

Conclusion: Integration of the MEOWS scale resulted in a compliance rate of

approximately 76% among the staff, which could be improved through further

awareness-raising actions. Results also showed that its use effectively monitors

obstetric patients clinical condition, optimizing the diagnostic and therapeutic

plan.

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### Vulnerability to the impact of cyberbullying - the role of big-5 personality traits and gender

Frode Stenseng<sup>1</sup>, Silje Skaug<sup>1</sup>, Beate Hygen<sup>2</sup>

<sup>1</sup>NTNU Norway, <sup>2</sup>NTNU Social Science Norway

A considerable number of studies have focused on the prevalence of cyberbullying,

and its associations to e.g. gender and mental health. However, few have

investigated individual characteristics that may amplify or attenuate the subjective

experience of the impact of cyberbullying, in other words, the vulnerability or

resilience related to cybervictimization outcomes. A set of characteristics

likely moderating this impact is personality traits, such as extraversion and

neuroticism. In the present study, using data from the Early Secure in Trondheim

Study, comprising 662 Norwegian 16 year old's, we analyzed data from the Cyber-

Bullying and Victimization Experiences Questionnaire, and the Big Five Inventory,

as well as descriptive such as gender, BMI, and parental SES. Analyses of this

cross-sectional data showed a prevalence of 20% (with once in three months as

cut-off), distributed almost equally among boys and girls, and that parental SES

was negatively correlated with incidences of cybervictimization. Furthermore,

incidences of cybervictimization was only modestly related to less agreeableness,

contentiousness, and more neuroticism. However, the subjective perception of the

impact of such victimization was more strongly correlated to particularly more neuroticism. Moderation analyses showed that more neuroticism and gender (being a girl), most strongly explained the subjective experience of negative impact from cyberbullying. The present study adds knowledge beyond the descriptive level of analysis of cyberbullying and shows that the frequency of cyberbullying may diverge from the subjective experience of the negative impact from it, partly dependent upon personality traits and gender.

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### Prevalence of asthma, rhinitis and eczema symptoms and its determinants in children aged 6-7 years, Santiago island, cape verde

M. Martins<sup>1</sup>, M. Teixeira<sup>2</sup>, Cape Ramos<sup>3</sup>, Silvia Panunzi<sup>4</sup>, Eline Fernandes<sup>5</sup>, Cleise Semedo<sup>6</sup>, Wander Pereira<sup>7</sup>, Patrick Moreira<sup>8</sup>, Odete Sanches<sup>9</sup>, Marcelo Ferreira<sup>10</sup>, Isabel Araújo<sup>11</sup>, Paulino Alves<sup>11</sup>

<sup>1</sup>Universidade NOVA de Lisboa Instituto de Higiene e Medicina Tropical, Global Health and Tropical Medicine "Rua da Junqueira, 100 Lisboa" Portugal, <sup>2</sup>Universidade de Cabo-Verde Faculdade de Ciências e Tecnologia, Universidade de Cabo Verde Campus da UniCV, <sup>3</sup>Ministério da Saúde de Cabo Verde Delegacia de Saúde da Praia, Ministério da Saúde de Cabo Verde "Cidade da Praia Plateau" Cape Verde, <sup>4</sup>University of Verona, <sup>5</sup>Faculdade de Ciências e Tecnologia, Universidade de Cabo Verde Faculdade de Ciências e Tecnologia, Universidade de Cabo Verde Cidade da Praia Cape Verde, <sup>6</sup>China University China University China China, <sup>7</sup>China University, <sup>8</sup>Universidade de Cabo-Verde Faculdade de Ciências e Tecnologia, Universidade de Cabo Verde Capus da UniCV Cape Verde, <sup>9</sup>Hospital Universitário Agostinho Neto, Ministério da Saúde de Cabo Verde Hospital Universitário Agostinho Neto, Ministério da Saúde de Cabo Verde Cidade da Praia Cape Verde, <sup>10</sup>Universidade NOVA de Lisboa Instituto de Higiene e Medicina Tropical, Global Health and Tropical Medicine "Rua da Junqueira 100 Lisboa" Portugal, <sup>11</sup>Universidade de Cabo-Verde Faculdade de Ciências e Tecnologia, Universidade de Cabo Verde Campus da UniCV Cape Verde

**Background and Objective:** Asthma, rhinitis, and eczema are major global health problems in childhood, with widely variable prevalence in Africa. Few studies in Cape Verde are available to inform the development of strategies for primary prevention and clinical management of allergic diseases in children. The aim of this study was to estimate the prevalence of asthma and other allergic diseases symptoms and associated factors, in 6–7 years old schoolchildren on Santiago Island, Cape Verde.

**Methods:** A cross-sectional study was conducted between April and September 2022, in 6–7 years old children enrolled in 43 randomly selected schools on Santiago Island and their mothers/caregivers were interviewed using International Study of Asthma and Allergies in Childhood-ISAAC questionnaire. We estimated the prevalence of asthma, rhinitis and eczema symptoms and respective 95%CI; we used multivariable logistic regression to identify factors associated with allergic diseases.

**Results:** The prevalence of lifetime asthma symptoms for the 1045 children was estimated at 24.1%; the current prevalence estimates were 10.5% for asthma, 20.0% for rhinitis and 7.0% for eczema. All allergic symptoms are more prevalent in boys. Among children with current asthma, 59% also had rhinitis and 13.6% eczema. In multivariable analysis, urban area residence emerged as a risk factor for rhinitis and eczema. Being exposed to antibiotics during the first year of life was a risk factor for current asthma and rhinitis, while early-life exposure to cats appeared to protect from asthma.

**Conclusion:** We identified asthma, rhinitis, and eczema as public health problems in Santiago Island. Higher prevalence was observed in boys and in Praia city. The estimated prevalence of asthma symptoms is consistent with other African countries data. The pinpointed determinants factors must be considered when designing strategies and health policies aimed at improving children's healthcare.

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### The effect of gestational weight gain on delivery and neonatal characteristics: exploring sex differences in the "MAMI-MED" cohort

Roberta San Lio<sup>1</sup>, Martina Barchitta<sup>1</sup>, Andrea Maugeri<sup>1</sup>, Maria La Rosa<sup>1</sup>, Claudia Mastra<sup>1</sup>, Giuliana Favara<sup>1</sup>, Giuliana Ferrante<sup>1</sup>, Fabiola Galvani<sup>2</sup>, Elisa Pappalardo<sup>2</sup>, Carla Ettore<sup>2</sup>, Giuseppe Ettore<sup>2</sup>, Antonella Agodi<sup>1</sup>

<sup>1</sup>University of Catania Italy, <sup>2</sup>Azienda ARNAS Garibaldi Nesima, Catania Italy

**Background and Objective:** Inadequate gestational weight gain (GWG) affects

maternal-child health. Similarly, sex differences – early evident before birth – influence the risk of adverse outcomes. The present analysis aims to evaluate the effect of GWG on delivery and neonatal characteristics, focusing on the potential role of sex in this relationship.

**Methods:** We used data from the ongoing "MAMI-MED" birth cohort settled in Catania (Italy). Adequate GWG was defined according to pre-gestational body mass index: 12.5–18 Kg (underweight), 11.5–16 (normal weight), 7–11.5 (overweight), and 5–9 (obese). Information about gestational age at delivery, birth length and weight, and birthweight for gestational age were collected. The latter was defined as small (SGA), adequate (AGA) or large for gestational age (LGA) according to sex-specific national reference charts.

**Results:** The study included 687 mother-child dyads (median maternal age = 31 years), with a median gestational age at delivery of 39 weeks. Among newborns (49.4% males), 81.1% were AGA, 7.5% SGA, and 11.3% LGA. The proportion of SGA was higher in males than in females (69.2% and 30.8% respectively;  $p = 0.007$ ). Accordingly, the risk of SGA was almost 2.5 times greater in males (OR= 2.470; 95% CI = 1.28 – 4.75;  $p = 0.007$ ). Regarding maternal characteristics, 65.8% mothers reported inadequate GWG (37.6% and 28.2% with reduced or excessive GWG). Birth weight was lower in infants born from mothers with reduced GWG ( $p=0.006$ ). After sex stratification, the relationship was confirmed in males ( $p=0.009$ ) and females ( $p=0.013$ ). There were also differences in gestational age according to GWG ( $p=0.019$ ), although this finding was confirmed only in the male sex ( $p = 0.025$ ).

**Conclusion:** Our findings confirmed how GWG may affect delivery and neonatal characteristics, also pointing out possible differences by sex. Further research is needed to deeply understand sex differences and mechanisms underlying pregnancy complications.

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### Mental health matters in obesity prevention: exploring the dynamic relationships between mental well-being and obesity-related behaviours in adolescents

Anaely Aguiar<sup>1</sup>, Anaely Aguiar<sup>1</sup>, Eduard Romanenko<sup>2</sup>, Gaironeesa Hendricks<sup>3</sup>, Anne-Siri Fismen<sup>4</sup>, Emmanuel Nwosu<sup>3</sup>, Natalie Savona<sup>5</sup>, Janetta Harbron<sup>3</sup>, Laurence Blanchard<sup>5</sup>, Harry Rutter<sup>5</sup>, Mohammad Jalali<sup>6</sup>, Nanna Lien<sup>2</sup>, Birgit Kopainsky<sup>7</sup>

<sup>1</sup>University of Bergen, Norway CO-CREATE project SV-bygget, Lauritz Meltzers hus, Fosswinkels gate 6, 5007 Bergen Norway, <sup>2</sup>University of Oslo Norway, <sup>3</sup>University of Cape Town South Africa, <sup>4</sup>Norwegian Institute of Public Health Norway, <sup>5</sup>London School of Hygiene and Tropical Medicine United Kingdom, <sup>6</sup>Harvard Medical School United States, <sup>7</sup>University of Bergen, Norway

**Background and Objective:** Poor mental well-being is a complex public health problem with a high prevalence in adolescents in Europe, especially those with excess weight. For instance, previous studies have reported that adolescents with excess weight have a higher risk of developing depression and anxiety over their lifetime compared to adolescents with a normal weight. As the systemic complexity of mental well-being processes poses challenges in efforts to curb persistent obesity trends, this study seeks to understand the dynamic relationships between complex mental well-being processes, affecting energy-balance-related behaviors, and youth obesity.

**Methods:** Applying System Dynamics methods, we build a conceptual model which maps the key mental well-being feedback pathways leading to changes in dietary, physical activity, and sleep quality behaviors based on empirical literature synthesis and youth-generated systems maps. We then formalize the conceptual model using the Health Behaviour in School-aged Children (HBSC) data to analyze, through computer simulation, the psychological well-being dynamics resulting from feedback pathways and the impact of potential mental health-based interventions on youth obesity prevalence.

**Results:** The preliminary results from the simulations show that mental well-being is mainly influenced by social pressures related to an ideal body image, stressors such as school pressure and bullying, and digital device use. The core model structure is defined by three major reinforcing feedback loop structures that involve binge eating, motivation to do physical activity, and sleep quality. Identified leverage points related to coping mechanisms for psychosocial stress and increased motivation to engage in physical activity show promising results, particularly among girls.

**Conclusion:** These findings reveal that addressing the underlying feedback pathways between young people's weight status and mental well-being is relevant for public health professionals and others working in the field of adolescent health. More model-based studies are needed to investigate further such feedback

mechanisms in country-specific contexts.

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### Treatment efficacy of vitamin C or ascorbate given as co-intervention with iron for anemia - A systematic review and meta-analysis of experimental studies

Vignesh Loganathan<sup>1</sup>, Arivarasan Bharathi<sup>2</sup>, Alyssa Prince<sup>1</sup>, Jayalakshmy Ramakrishnan<sup>1</sup>

<sup>1</sup>Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry, India Senior Resident, Department of Preventive and Social Medicine India, <sup>2</sup>ESI Medical College, KK Nagar, Chennai, India Assistant Professor India

**Introduction:** Iron deficiency anemia (IDA) is one of the leading causes of anemia, globally. Although there is no evidence, Vitamin C is regarded to enhance iron absorption and is commonly prescribed along with iron for persons with anemia. We conducted this systematic review and meta-analysis to determine the treatment efficacy of experimental studies where vitamin C or ascorbate was given as co-intervention with iron compared to giving only iron among participants with anemia of all ages.

**Methodology:** A comprehensive strategy was used to search literature from PubMed, Cochrane and Google Scholar. Experimental studies conducted among participants with lab-confirmed anemia at baseline, with "ascorbic acid or vitamin C given as co-intervention with iron" as intervention and "only iron" as comparator, and reported the outcomes hemoglobin or ferritin, were selected. Random-effects model was used to estimate standardized mean differences or odds ratio of outcomes and sensitivity analyses were done. Sub-group and meta-regression analyses were conducted to evaluate the reasons for heterogeneity. (PROSPERO number: CRD42022306612)

**Results:** Of the total nine studies included in the review, seven studies with 905 participants were included for meta-analysis. The pooled estimate for Standardized mean difference (SMD) of hemoglobin (g/dL) and Serum Ferritin (mcg/L) for intervention type ferrous ascorbate were 0.44 (95% C.I.: -0.30, 1.26) and 0.03 (95% C.I.: -0.68, 0.73) respectively, and were not statistically significant. The pooled estimate for SMD of hemoglobin (g/dL) and Serum Ferritin (mcg/L) for intervention type 'iron and vitamin C' were 0.11 (95% C.I.: -0.05, 0.28) and -0.90 (95% C.I.: -1.09, -0.72) respectively, and were not statistically significant.

**Conclusion:** The SMD of hemoglobin or serum ferritin between the intervention group were not significantly favouring the intervention, when the intervention group was ferrous ascorbate or iron and vitamin C, and the quality of evidence of these effect measures were low.

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### Preeclampsia and eclampsia-specific maternal mortality in Bangladesh: Levels, trends, timing, and care-seeking practices

Shusmita Khan<sup>1</sup>, Abu Siddique<sup>2</sup>, Ahmed Rahman<sup>2</sup>, Sabrina Jabeen<sup>2</sup>, Anika Hossain<sup>2</sup>, M Haider<sup>2</sup>, Fatema Zohora<sup>2</sup>, Md. Rahman<sup>2</sup>, Shams Arifeen<sup>2</sup>, Kanta Jamil<sup>3</sup>

<sup>1</sup>Data for Impact, University of North Carolina at Chapel Hill United States, <sup>2</sup>icddr, Bangladesh, <sup>3</sup>IAP World Services United States

**Background:** Despite improvements in many health indicators, maternal mortality has plateaued in Bangladesh. In 2010, the ratio of cause-specific deaths due to preeclampsia/eclampsia decreased compared with 2001; however, in 2016, it stagnated. Achieving the global target of reductions in maternal mortality and the associated Sustainable Development Goals will not be possible without actions to prevent deaths due to preeclampsia/eclampsia. In this paper, we examined the levels, trends, specific causes, timing, place, and care-seeking behaviours of women who died due to these two causes.

**Methods:** We used nationally representative Bangladesh Maternal Mortality and Health Care Surveys (BMMS) conducted in 2001, 2010, and 2016 to examine levels and trends of deaths due to preeclampsia/eclampsia. The analysis of specific causes, timing, and place of preeclampsia/eclampsia deaths, and care-seeking before the deaths was based on 41 such deaths captured in the 2016 survey. We used thematic content analysis of the open history from the 2016 survey verbal autopsy (VA) questionnaire to highlight stories that put faces to the numbers.

**Findings**

The preeclampsia/eclampsia-specific mortality ratio decreased from 77 per 100,000 live births in the 2001 BMMS to 40 per 100,000 live births in the 2010 BMMS. The decline reached an apparent stalling in the 2016 BMMS, with preeclampsia/eclampsia-specific deaths of 46 per 100,000 live births. Although preeclampsia/eclampsia accounted for around one-fifth of all maternal deaths in

the 2010 BMMS, in the 2016 BMMS, the percentage contribution reached the 2001 BMMS level of 24%. All deceased women left their homes to care-seek; however, the majority had to visit more than one facility before they died.

**Conclusions:** Awareness of maternal complications, proper care seeking, and healthy reproductive practices, like family planning to space and limit pregnancy through client supportive counselling, may provide benefits. Improving regular and emergency maternal services readiness is essential.

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### Impact of poverty and adversity on perceived family support in adolescence: findings from the UK millennium cohort study

Nicholas Adjei<sup>1</sup>, Kenisha Jonsson<sup>2</sup>, Viviane Straatmann<sup>3</sup>, Gabriella Melis<sup>1</sup>, Ruth McGovern<sup>4</sup>, Eileen Kaner<sup>5</sup>, Ingrid Wolfe<sup>6</sup>, David Taylor-Robinson<sup>1</sup>

<sup>1</sup>Department of Public Health, Policy and Systems, University of Liverpool, Liverpool-United Kingdom United Kingdom, <sup>2</sup>School of Public Health and Community Medicine, Institute of Medicine, Gothenburg University, Göteborg, Sweden, <sup>3</sup>Department of Public Health Sciences, Stockholm University, Stockholm-Sweden Sweden, <sup>4</sup>Population Health Sciences Institute, Newcastle University, Newcastle-United Kingdom, <sup>5</sup>Population Health Sciences Institute, Newcastle University, Newcastle-United Kingdom United Kingdom, <sup>6</sup>Department of Women and Children's Health, King's College London, London-United Kingdom United Kingdom

**Background:** Emotional support from family members may have an important effect on adolescent health outcomes, and has been identified as a target for policy to protect against the impacts of poverty and adversity. However, few studies have assessed the extent to which poverty and adversity themselves influence the nature of emotional support that parents can provide to adolescents. We therefore aimed to investigate the impact of trajectories of income poverty and family adversities on young people's relationships with their families and perceived emotional support received.

**Methods:** We analysed longitudinal data on 10976 children from the nationally representative UK Millennium Cohort Study. Exposure trajectories of poverty and family adversities were characterised using group-based multi-trajectory models. The outcomes were perceived emotional support and quality of family relationships, measured by the three-item Short Social Provisions Scale (SPS-3) and levels of parent-adolescent closeness and conflict, measured at age 14. ORs and 95% CIs were estimated using multivariable logistic regressions.

**Findings:** At age 14 the overall prevalence of low perceived emotional support was 13%. Children of mothers with lower socioeconomic status (SES) were more likely to report low emotional support, with a clear social gradient. Compared with children exposed to low levels of poverty and adversity, children in the persistent adversity trajectory groups experienced higher odds of low emotional support and low-quality parent-adolescent relationship; those exposed to both persistent poverty and poor parental mental health were particularly at increased risk of experiencing poor family relationships and low perceived emotional support (aOR 2.2; 95% CI 1.7- 2.9).

**Conclusions:** Low perceived emotional support and poor family relationships in adolescence are more prevalent among socially disadvantaged children and adolescents and those experiencing social adversity. Policies to improve levels of family support for UK adolescents should focus on improving modifiable determinants such as child poverty and family mental health.

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### Implementation of a new hadrontherapy pediatric pathway: results from CNAO (National Centre for Oncological Hadrontherapy), Italy

Riccardo Calsolaro<sup>1</sup>, Viviana Mutti<sup>2</sup>, Arianna Serra<sup>2</sup>, Alexandra Ferent<sup>2</sup>, Viviana Magni<sup>2</sup>, Giacomo Vigezzi<sup>1</sup>, Silvia Meneghello<sup>2</sup>, Anna Odone<sup>1</sup>, Sandro Rossi<sup>2</sup>

<sup>1</sup>Università degli Studi di Pavia Department of Public Health, Experimental and Forensic Medicine Italy, <sup>2</sup>CNAO Foundation Italy

**Background and Objectives:** The National Centre for Oncological Hadrontherapy (CNAO) in Pavia, an innovative and technologically state-of-the-art facility, is one of the 6 centres in the world treating patients with solid inoperable radioresistant tumours using protons and carbon ions (hadrons) since 2011. Following hadrontherapy inclusion within the National Health Service in 2017, patients treated progressively increased. Recently, CNAO adopted a new care pathway for pediatric patients from Italy and other countries.

**Methods:** We analysed administrative anonymised data of patients treated between 2017 and November 2022, considering patients' age group and treatment duration. We collected qualitative data on the implementation of the pediatric

pathway, whose team includes radiation oncologists, radiologists, anaesthetists, nurses, radiographers, biomedical engineers and psychologists. Specific patient-centred interventions have been developed to improve care humanisation and compliance by patients and their families.

Results: Out of 2,621 patients treated between 2017 and 2021, 54 (2.1%) were children, while in 2022, this share has risen to 7.8% (35 children out of 451 patients). Mean age was 12 years (range 2-17), and mean treatment course duration was 42 days (range 21-57), which was significantly higher than for adults because of disease and patient characteristics (tumour types and need for sedation). In 2022 there were no treatment interruptions among children, whose compliance was improved with a range of initiatives (dedicated pediatric recovery room, customised radiotherapy masks and children-targeted communication program, including books, cartoons and gadgets).

Conclusions: CNAO has progressively improved competencies in treating pediatric patients in terms of scientific knowledge, staff expertise and organisation, thus increasing treatments number per year and emerging as a point of reference in the pediatric network. The implementation of a targeted care pathway with a dedicated multidisciplinary team allowed for the improvement of care quality and patients' compliance in a referral centre at the national and international levels.

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### Pilot experience of comprehensive sexuality education among Italian adolescents: Results from the eduforist project

Alice Chinelli<sup>1</sup>, Domenico Martinelli<sup>2</sup>, Eleonora Torri<sup>1</sup>, Rosario Galipò<sup>3</sup>, Paolo Meli<sup>4</sup>, Antonella Camposeragna<sup>5</sup>, Laura Rancilio<sup>6</sup>, Massimo Farinella<sup>7</sup>, Ludovica Colaprico<sup>8</sup>, Sabrina Bellini<sup>9</sup>, Maria Salfa<sup>10</sup>, Marco Ubbiali<sup>11</sup>, Barbara Suligoj<sup>10</sup>, Anna Palamara<sup>12</sup>, Lara Tavoschi<sup>1</sup>

<sup>1</sup>University of Pisa Italy, <sup>2</sup>University of Foggia, <sup>3</sup>ANLAIDS - National Association for the Fight against AIDS Italy, <sup>4</sup>CICA - Italian Coordination of HIV/AIDS Housing Homes, <sup>5</sup>CNCA - National Coordination of the Hospitality Community Italy, <sup>6</sup>Caritas Ambrosiana Italy, <sup>7</sup>Circolo di cultura omosessuale Mario Mieli Italy, <sup>8</sup>Italian Red Cross Italy, <sup>9</sup>LILA-Italian League for the fight against AIDS Italy, <sup>10</sup>Italian National Institute of Health Italy, <sup>11</sup>University of Verona Italy, <sup>12</sup>Italian National Institute of Health, La Sapienza University of Rome Italy

Background and Objective: Comprehensive sexuality education (CSE) is an integrated approach to sexual health and wellbeing promotion, internationally recognised to be highly effective in preventing HIV and sexually transmitted infections (STIs), especially when experienced in school contexts. CSE, however, is not included in Italian school curricula. This study describes the results of a pilot CSE experience among Italian adolescents attending lower secondary schools of 4 Regions within the EduForIST project, funded by the Italian Ministry of Health.

Methods: The pilot experience consists of 5 modules of 2 hours conducted per classroom. Modules have been developed by a research team of pedagogists, academics, HIV/AIDS civil-society organisations (CSOs), experts and educators from CSOs that lead the activities in the schools. The modules address the domains: A) changes in adolescence, B) emotions and relationships, C) sexual identities and diversity, D) consent, STIs/pregnancy prevention, sexual health services. The last module is dedicated to evaluation of activities, by using standardised pre/post tests and satisfaction questionnaires.

Results: The pre/post-test results referred to 35 classrooms of 11 schools (566 students). Pre/post analysis showed a significance increase of correct answers for 11/15 items investigated. Domain C and D reported the major positive increase, while a higher level of uncertainty regarded domain A and B. The students reported to be overall satisfied by the activity, especially when talking about psychological changes in adolescence and STIs' symptoms and prevention. They reported higher neutrality regarding the methods, i.e. use of innovative technological tools, and group-work.

Conclusions: Pre/post-tests analysis suggested that the pilot activity was effective in providing students with correct information, enhancing knowledge and decreasing uncertainty.

Evidence collected through this study and its advancements (increasing the geographical area of implementation and school grades) will foster awareness among policy makers on the value and urgency of introducing CSE in Italian school curricula.

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### Parenting stress: socio-economic determinants before and during the covid-19 pandemic. results of an Italian cross-sectional study

Marco Fasano<sup>1</sup>, Lorenzo Iughetti<sup>2</sup>, Lucia Palandri<sup>3</sup>, Lisa Pasquale<sup>1</sup>, Eleonora

Ferrari<sup>1</sup>, Viola Trevisani<sup>1</sup>, Erica Passini<sup>1</sup>, Laura Lucaccioni<sup>1</sup>, Elena Righi<sup>1</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>Pediatric Unit, Maternal-Infantile Department, University Hospital, Department of Medical and Surgical Sciences for Mothers, Children and Adults, University of Modena and Reggio Emilia, Modena, Italy, <sup>3</sup>Clinical and Experimental Medicine PhD Program, University of Modena and Reggio Emilia, Modena, Italy Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy

Background and objective: Parenting can be a stressful experience and in the context of a pandemic it can represent a challenge for many families. The aim of this study was to investigate socio-demographic factors related to parenting stress before and after the SARS-CoV-2 outbreak in Italian parents living in Modena (Italy).

Methods: From September 2019 to May 2021, 80 parents of 6 months healthy children were enrolled in a prospective cohort study at the local University Hospital and filled in the Parenting Stress Index Short Form (PSI-SF), a validated questionnaire measuring parenting stress, well-known in clinical practice for its reliability and simplicity of use. PSI scores over the 90th percentile of the Italian population distribution were considered indicative of a highly stressful condition. The role played by different socio-demographic factors in increasing PSI score was tested by chi-square test in the whole sample and by stratifying parents according to the evaluation time (PRE-COVID and COVID period).

Results: Overall, 11% of parents reported high stress scores and prevalence was higher during lockdown (15% vs 6%). In the COVID group, higher scores were observed in younger mothers (17%), higher educated parents (16% and 23% of mothers and fathers respectively), having only one child (18%) and living in the urban environment (23%), regardless of infant's gender. In the PRE-COVID group higher stress scores were reported mainly by parents with more than one child (10%), with male children (9%), and by mothers with lower education (8%). Nevertheless, differences were often not statistically significant.

Conclusion: Different socio-demographic factors appear to be related to higher parenting stress and our results suggest that they could show inverse trends in different conditions. Parenting stress in difficult circumstances must be addressed carefully and promptly and specific public health interventions for families with special needs must be planned and implemented.

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### Educational outcomes of children hospitalised for head injury: a population based cohort study utilising record linkage of 766,244 Scottish schoolchildren

Michael Fleming<sup>1</sup>, Meghan Visnick<sup>1</sup>, Jill Pell<sup>2</sup>, Daniel Mackay<sup>1</sup>, David Clark<sup>3</sup>, Albert King<sup>4</sup>, Michael Fleming<sup>1</sup>

<sup>1</sup>University of Glasgow Dr University Of Glasgow 1 Lilybank Gardens United Kingdom, <sup>2</sup>University of Glasgow, <sup>3</sup>Public Health Scotland United Kingdom, <sup>4</sup>Scottish Government

Background: Childhood traumatic brain injury (TBI) is a leading cause of death and disability in young children and adolescents. Although there have been numerous studies to evaluate the impact of childhood head injury on educational outcomes, few large-scale studies have been conducted, and previous research has been limited by issues of attrition, methodological inconsistencies, and selection bias. We aim to investigate educational outcomes among Scottish schoolchildren previously admitted to hospital for head injury compared to peers.

Methods: A population-based retrospective cohort study was undertaken, employing secondary data analysis of routinely collected health and educational data to evaluate the relationship between hospitalisation for head injury and educational outcomes of children who attended Scottish schools between 2009 and 2013. Outcomes included special educational need, attainment in examinations, school leaver destination, absenteeism, and exclusion from school for poor behaviour. Analyses were adjusted for sociodemographic and maternity confounders.

Results: Previous hospitalisation for head injury was associated with increased odds of special educational need (OR 1.28, CI 1.18, 1.39, P<.001) and low educational attainment (OR 1.30, CI 1.11, 1.51, P<.001), as well as increased risk of absenteeism (IRR 1.09, CI 1.06, 1.12, P<.001) and exclusion (IRR 1.33, CI 1.15, 1.55, P<.001) from school. The relationship between previous head injury hospitalisation and adjusted odds of NEET (not in education, employment, or training) at 6 months after leaving school was not found to be significant (OR 1.03, CI 0.92, 1.16, P = 0.61). After narrowing the exposure definition to exclude hospitalisation attributed to concussion, the magnitude of all significant associations increased.

Conclusion: Results from this cohort study have implications for future public health measures and further research in the field of childhood traumatic brain injury. Strategies should be developed to reduce the burden associated with childhood head injury on affected children, their families, peers, educators, and communities.

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### Effectiveness of an exclusive breastfeeding promotion strategy adopting the trans-theoretical model: a clinical study conducted at the clinical birth unit

Vincenzo Restivo<sup>1</sup>, Vincenzo Restivo<sup>1</sup>, Sabina Paolizzo<sup>2</sup>, Salvatore Pipitone<sup>3</sup>, Antonio Maiorana<sup>4</sup>, Marianna Maranto<sup>5</sup>, Maria Antonietta<sup>6</sup>, Bruna Gabriele<sup>3</sup>, Mario Giuffrè<sup>3</sup>, Alessandra Fallucca<sup>3</sup>, Francesco Vitale<sup>3</sup>, Alessandra Casuccio<sup>3</sup>, Palermo Breastfeeding Group<sup>3</sup>

<sup>1</sup>University of Palermo Via del Vespro 133, Palermo 90127 Italy, <sup>2</sup>University of Palermo, <sup>3</sup>University of Palermo Italy, <sup>4</sup>ARNAS Civico Italy, <sup>5</sup>ARNAS Ospedali Civico-Di Cristina-Benfratelli, <sup>6</sup>Coppola ARNAS Ospedali Civico-Di Cristina-Benfratelli Italy

Background and objective: Breastfeeding is the gold standard in infant nutrition. There are numerous physical and psychosocial benefits from breastfeeding for both mother and child and it is strongly recommended as an exclusive source of nutrition for the first six months of life. The low prevalence and the short duration of breastfeeding, reported in scientific literature, highlight the need for further investigations that could lead to new intervention strategies. The aim of this study is to evaluate the effectiveness of a breastfeeding promotion intervention conducted in hospital after the birth.

Methods: The study is taking place at birth clinic of two hospitals in Palermo, where mothers are recruited after giving birth. The control group is provided with basic information on breastfeeding, while the intervention group is offered the active support of an informative "desk" specifically dedicated to breastfeeding counselling. Furthermore, the factors associated with breastfeeding and the different phases of the behavioural change, linked to adoption of this practice, are investigated exploring the "Trans Theoretical Model".

Results: The study is ongoing and 114 mothers have been recruited to date. Of them, 47% (n=54) of women choose to give their child exclusively breast milk, while about 38% (n=43) are in a "contemplation" stage of adopting the practice. Statistical analyses show the factors that positively influence the decision to breastfeed were: support during pregnancy by a private gynaecologist (OR=4.4, p=0.021), adequate information on the importance of breastfeeding (OR=1.85, p=0.013), rooming-in with the new-born in hospital (OR=3.1, p=0.038).

Conclusions: The study contemplates monitoring adherence to breastfeeding in the intervention arm in the six months following recruitment. The comparison with the control arm will allow to evaluate the effectiveness of this mother-child health strategy. Furthermore, the identification of influencing factors could lead to more appropriate management of breastfeeding promotion.

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### Factors associated with vaccination coverage: population-based survey in Vitória-ES, Brazil

Ethel Maciel<sup>1</sup>, João Cola<sup>2</sup>, Laylla Macedo<sup>3</sup>, Mariana da Silva Araújo<sup>3</sup>, Thiago Prado<sup>1</sup>, Tatiane Comerio<sup>1</sup>, Adriana Ilha<sup>4</sup>, Jose Moraes<sup>1</sup>, Ethel Maciel<sup>5</sup>

<sup>1</sup>Universidade Federal do Espírito Santo Brazil, <sup>2</sup>Universidade Federal Do Espírito Santo Av. João XXII 1003 Brazil, <sup>3</sup>Universidade Federal Fluminense Brazil, <sup>4</sup>Universidade Federal Do Espírito Santo Brazil, <sup>5</sup>Faculdade de Ciências Médicas da Santa Casa de São Paulo Brazil

Background: One of the main disease prevention measures is immunization. In recent years, Brazil has recorded significant declines in the populations vaccination coverage. The was to estimate the prevalence of immunization coverage and analyze the factors associated with complete immunization coverage.

Methods: cross-sectional, population-based survey study with cluster sampling carried out in the city of Vitória, Espírito Santo, Brazil, between December 16, 2020 and January 4, 2021. The study population was the cohort of live births from 2017 and 2018. An interview and analysis of the child's vaccination card was carried out. The prevalence (P) of the complete vaccination schedule and for each vaccine was estimated. To verify the association of independent variables with vaccination coverage, logistic regression was used. Results were expressed as odds ratio (OR) and 95% confidence interval (95%CI).

Results: 792 vaccination cards were evaluated. Complete vaccination coverage was 51.47% (95%CI 46.05-56.85). The pentavalent and pneumococcal vaccines (P 88.80%CI95% 46.05-56.85) showed the highest prevalence of children immunized

with the first dose. The lowest prevalence was the first poliomyelitis booster (P 63.20%CI95% 55.70-70.10) of immunized individuals. Using the private service to carry out the immunization (OR 0.32 CI95% CI 0.15-0.68), and being the fourth child (OR 0.13 CI95% CI 0.02-0.71) had the lowest chance of have complete immunization coverage.

Conclusion: We identified low vaccination coverage. Using a private health service and the child's birth order was associated with a lower chance of having full vaccination coverage. The need for innovative strategies to increase childhood immunization coverage.

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### Effects of health education on spousal knowledge and participation in birth preparedness and institutional delivery care in Farafenni Regional Hospital, The Gambia

Haddy Bah<sup>1</sup>, Haddy Bah<sup>1</sup>, Florence Adeyemo<sup>2</sup>

<sup>1</sup>University of The Gambia Department of nursing and reproductive health University of The Gambia, MDI Road Kanifing, P.O.Box 3530, Serekunda, The Gambia School of Medicine and Allied Health Sciences, University of The Gambia, P.O. Box, 1646, Gambia Gambia, <sup>2</sup>University of Benin

Background: The purpose of this study was to design and measure the effects of antenatal health education on spousal participation in birth preparedness and institutional delivery in Farafenni and satellite villages.

Methods: The study used a quasi-experimental design, and the participants were 300 spouses of pregnant women attending their antenatal care booking at Farafenni Hospital who were equally distributed to the intervention and comparison groups. Pre-test data were collected from both groups. Thereafter, the intervention group was exposed to two health education sessions. The post-test data were collected immediately prior to the discharge of the participants' wives after institutional delivery. IBM SPSS version 21 software was used to analyze the data, and Chi-square, t-test, ANCOVA, and hierarchical linear regression were used to verify the association between the independent and dependent variables.

Findings: After controlling for the demographic variables, the health education administered to the intervention group effectively increased knowledge of birth preparedness among them (F (1, 255) = 376.108, p < .001). Furthermore, the participants in the intervention group had a higher mean score (M = 4.4; SD = 0.8) on participation in birth preparedness than those in the comparison group (M = 0.9; SD = 0.8). The spouses in the intervention group were four times more likely to be prepared for the delivery of their wives after being exposed to health education than those in the comparison group (F (1, 255) = 522.414, p < .001). The spouses in the intervention group also participated more in institutional delivery care of their wives than those in the comparison group (F (1, 255) = 49.398, p < .001).

Conclusion: The study provided evidence that educating men on maternal health care can improve their level of participation in birth preparedness and institutional delivery.

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### Lessons from health camp model in somalia: ensuring equity and accessibility in child immunization

Mohamed Hussein<sup>1</sup>, Meftuh Omer<sup>1</sup>, Salad Ahmed<sup>1</sup>, Mohamed Hussein Omar<sup>1</sup>, Asma Ali<sup>2</sup>, Rashed Shah<sup>3</sup>

<sup>1</sup>Save the Children International - Somalia "Save the Children International Somalia Country Office 1st August, Gen. Nuur Salaad Rd, Garowe - PL, Somalia" Somalia Somalia, <sup>2</sup>Bill & Melinda Gates Foundation "Bill & Melinda Gates Foundation Senior Program Officer London, United Kingdom United Kingdom, <sup>3</sup>Save the Children "899 N. Capitol Street NE Washington DC USA" United States

Somali Demographic and Health Survey (SDHS 2020) showed 60% of children received no vaccinations at all and just 11% of children were fully immunized. This sufficiently depicted Somalia as one of the most difficult places having inequitable health service delivery, following decades of conflict and political instability, coupled with limited capacity and infrastructure. Population living in inaccessible areas controlled by non-state actors with minimal or no humanitarian agencies in operation, have greater needs compared to those in fairly accessible or government-controlled areas.

Save the Children in Somalia, together with other partners, co-designed health camps to offer integrated essential health and nutrition services, including immunization for population living in selected districts within these extremely underserved areas. At least 28,573 zero dose/missed children aged 0-23 months were identified within targeted communities, with dire need to receive life-saving primary health care services.

Initially, this 'Health Camp' model was piloted in 11 inaccessible villages in Kismayo and Afmadow districts between Sept and Oct 2022, and served as week-long 'integrated mobile outreach services' every month. Local NGO staff and community volunteers were trained to effectively deliver primary health care services and engaged to identify existing health facilities in their locations for revival. A total of 3,166 under 5 children (1,532 boys; 1,634 girls) received lifesaving health services and 608 under 23-months children received Penta-1 of which 55% of them were identified as zero dose children (above 6 months age but never received Penta 1 before). This health camp model appears as an effective and preferred (by community) approach to reach more zero-dose children and to interrupt the cycle of transmission of vaccine preventable diseases.

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### Adolescents, sexuality and pornographic content in digital environments

Marcia Stengel<sup>1</sup>, Simone Peres<sup>2</sup>, Pablo Gómez<sup>3</sup>

<sup>1</sup>Pontifícia Universidade Católica de Minas Gerais "Rua Donato da Fonseca 658 apto. 202" Brazil, <sup>2</sup>Universidade Federal do Rio de Janeiro, <sup>3</sup>Universidad de la República Uruguay

This paper discusses the access to pornographic content by adolescents in virtual environments and its repercussions for their affective-sexual lives. It explores contemporary configurations of sexuality, such as affective and sexual initiation, sexual experimentation and consolidation of the construction of the self and sexual identities during this process. The theme of pornography is thought from the crossing that access to virtual environments has today in the lives of adolescents. The study of the access to virtual environments related to sexuality brings relevant contributions to the field of knowledge about adolescents and to the health field, pointing out new elements for the analysis of the constitution of these subjects. The analysis of this access is fundamental to the understanding of the changes linked to the modes of interaction of adolescents among themselves and of the changes related to sexuality, affective life and sexual life. This work is based on a systematic review that advocates primary studies on sexuality and adolescence available in various databases; retrospective interviews conducted with young people between 18 and 24 years, both sexes, from two Brazilian cities, about the retrospective trajectory of amorous and sexual initiation, which occurred during adolescence until the current moment of trajectories, which includes affective and sexual life with a focus on the theme of pornography; and analysis of data from a representative survey of Uruguayan high school students, which correlates pornography use with indicators of sexual risk and socialization. The data point to the common use of online pornography among adolescents and the impact on their affective and sexual lives. These impacts range from the search for certain sexual practices; the discourse of pornography addiction and the harm it brings; recognition of violence in online pornography. It is necessary to think about these effects of online pornography, promoting affective-sexual education for adolescents.

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### Emergency department admissions for non-suicidal self-injurious behaviors in adolescents in Italy: Eleven-year retrospective cross-sectional study and geographical risk evaluation

Giovanni Paladini<sup>1</sup>, Carlo Mamo<sup>2</sup>, Gianmarco Giacomini<sup>1</sup>, Roberta Onorati<sup>2</sup>, Alberto Borraccino<sup>1</sup>

<sup>1</sup>University of Turin Department of Public Health and Pediatrics, University of Turin Italy, <sup>2</sup>Local Health Board T03 Piedmont Regional Public Health Observatory, Epidemiology Unit Italy

**Background and Objectives:** Self-injurious thoughts and behaviors (sibt) can be divided in suicidal and non-suicidal self-injuries (nssis). In Italy, there is a lack of longitudinal epidemiological data on trends in admissions of adolescents to eds for nssis. This study aims to describe the frequency and reason of access to ed among the population between the ages of 10 and 19 years in piedmont, and to identify risk groups by age and geographical areas.

**Methods:** A retrospective cross-sectional study was conducted on medical records (gathered from the ministerial database of health information) of patients aged between 10 and 19 years, accessing eds in the piedmont region. All eds' accesses from january 2011-september 2021 were included, all potential nssis (at triage and through icd9 codes) were selected. Gender and age proportion of eds' hospitalization due to nssi was calculated for 100 thousand accesses each year, and overall methods, severity and geographical risk were described.

**Results:** A total of 1,414,096 ed visits were analyzed, with an nssi ratio of 46.8 cases per 100.000 ed admissions. The overall ratio from 2011 to 2021 increased

from 42.6 to 66.9 with a 57% increase. Nssi were more frequent in girls, with a significantly higher risk of admission (or=1.18; 95%ci 1.01-1.38), except in 2013 and 2015. The 15-19 years old compared with 10-14 years old, showed a greater odds ratio of 1.44 (1.15-1.80). The analysis carried out on urban vs peri-urban vs suburban areas showed gradually increasing adjusted risk: 1 vs 1.26 (0.97-1.64) vs 2.19 (1.62-2.97).

**Conclusion:** Nssis represent a public health issue and deserves specific attention due to the dramatic increase registered in the last seven years. The nssis cases which require ed access are the most severe cases, the remaining mild or moderate portion of this phenomenon is likely to be underestimated by 10-20 times.

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### Dyslipidemia risks and severity of obesity among adolescents in united arab emirates

Syed Shah<sup>1</sup>, Nauman Javaid<sup>1</sup>

<sup>1</sup>Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, UAE Institute of Public Health, College of Medicine and Health Sciences, UAE University 90 Zayn St, Falaj Hazza, Al Ain, Abu Dhabi United Arab Emirates

**Background and Objectives:** The prevalence of obesity among children and adolescent has increased in UAE. Few data were available about the burden of dyslipidemia and its association with the severity of obesity.

**Methods** Emirates

We performed a cross-sectional analysis of data in a random sample (1186) of 111 public and private schools in Al Ain, UAE. Body mass index  $\geq 95$  percentile for age and gender by the 2000 Centers for diseases control and prevention indicated obesity among the study participants. Fasting serum total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C) and triglycerides (TG) were measured. We used standard cutoff values of  $\geq 200$  mg/dL for TC,  $\geq 130$  mg/dL for LDL-C,  $\geq 130$  mg/dL for TG to indicate elevated levels, and  $< 40$  mg/dL for low HDL-C. We used multivariable logistic regression analysis to identify correlation between obesity and dyslipidemia after controlling for age and gender.

**Results:** Overall, 7.7% of participants (95% CI 6.3-9.3) had elevated TC, 10.4% (95% CI 8.7-12.2) LDL-C, 5.8% (95% CI 4.6-7.3) TG and 49.9% (95% CI 47.1-52.8) had low HDL-C dyslipidemia. After controlling for age and gender, increase in obesity was significantly associated with increased prevalence of TC, LDL-C, TG, and low HDL dyslipidemia.

**Conclusion:** A significant proportion of Emirati adolescents had dyslipidemia. These findings suggest the critical need for comprehensive intervention strategies to control obesity to decrease dyslipidemia and premature mortality.

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### Qualitative evaluation of the national strategy for obstetric fistulas in mozambique 2012 to 2020

Maria Cambe<sup>1</sup>

<sup>1</sup>National Insitute of Health National Insitute of Health Vila de Marracuene, parcela 342 Mozambique

**Objective:** To explore the perception and knowledge related to FO by community and health providers in Maputo, Zambezia, and Nampula provinces.

**Method:** The qualitative approach consisted of in-depth interviews with 28 women survivors of FO; 21 health care providers; and 12 Community Leaders. All interviews were annotated, transcribed and analyzed using the content analysis technique.

**Results:** The problem of FO is associated with early marriages, and deliveries outside the US. Almost all FO survivors live far from US (minimum of 15 KM), people talk little about FO and look at the disease as taboo. There is little awareness, little dissemination, there is a need to improve access routes to peripheral US, as well as increase the quantity and quality of Human Resources (HR).

**Conclusion:** Discrimination directly affects women with FO and their full participation in society; Create an FO management committee to improve follow-up and monitoring of survivors; Strengthen psychosocial support, since most survivors feel depressed

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### Influence of the socioeconomic position (sep) of men on child health outcomes in Nigerian households

Abraham Idokoko<sup>1</sup>, Salim Adib<sup>2</sup>

<sup>1</sup>American University of Beirut (AUB) Epidemiology and Population Health Department, Faculty of Health Sciences, AUB Van Dyck Building, Bliss Street,

Riad El Sohl, Beirut Lebanon, <sup>2</sup>American University of Beirut (AUB)

**Background and Objective:** Maternal factors that influence child health outcomes have been extensively studied worldwide and within the Nigerian context. However, there is seemingly little research about the role of paternal factors, knowing that men are culturally situated to influence health-related decision-making in a typical Nigerian household. Therefore, we conjectured that the inequality and stagnated improvement in the child health indices of Nigeria may be partially attributable to unexplored male-specific factors. Hence, this study examined child mortality variations across socio-cultural contexts in Nigeria and explored the determining effect of the socioeconomic position (SEP) of men.

**Methods:** Randomly sampled, nationally representative data from 14,000 households, collected between August and December 2018 in the context of the periodic Demographic and Health Survey (DHS) were analysed. A normalized SEP variable suited to the context and research question was generated as a composite index of the weighted measures of the respondent's age, education, occupation, employment status and household wealth-index quintile. Bivariate analyses and multiple regression models of the hazard of child mortality associated with the dichotomized SEP status were conducted.

**Results:** Of the 13,311 eligible men aged 15-59 years, preliminary findings showed a child under 5-years old was 43 times more likely to die when a man heads the household compared to when a woman did. The crude propensity of an under-five child death was 1.67 times higher in households with men of high SEP compared with those with low SEP.

**Conclusion:** Findings reveal a significant predictive power of men's SEP on child mortality in Nigeria and underscore the need to explore socio-cultural factors associated with men in household health outcomes analysis, as this will improve the overall understanding of the influence of men on the well-being of their families in culturally diverse settings.

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### Evaluation of the implementation fidelity of a project introducing a health innovation in West Africa

Sarah Louart<sup>1</sup>, Habibata Balde<sup>2</sup>, Abdourahmane Coulibaly<sup>3</sup>, Elhadji Dagobi<sup>4</sup>, Kadidiatou Kadio<sup>5</sup>, Gildas Hedible<sup>6</sup>, Valérie Leroy<sup>6</sup>, Valéry Ridde<sup>7</sup>

<sup>1</sup>ALIMA; University of Lille Senegal, <sup>2</sup>University of Conakry; African Center of Excellence for Prevention and Control of Communicable Diseases, <sup>3</sup>Faculté de médecine et d'odontostomatologie (Mali), IRL3981 Environnement, santé, société Ucad Dakar, Usttb Bamako, Cnrs Ouagadougou, CNRS France Mali, <sup>4</sup>Université Abdou Moumouni de Niamey Niger, <sup>5</sup>Institut de Recherche en Sciences de la Santé du Centre National de la Recherche Scientifique et Technologique (IRSS/CNRST) de Ouagadougou (Burkina Faso), <sup>6</sup>CERPOP UMR1295 Inserm - University of Toulouse 3 France, <sup>7</sup>Institut de Santé et Développement, Université Cheikh Anta Diop Senegal

**Background and objective:** The AIRE project aims to improve the detection of respiratory distress in children under five years of age by introducing the routine use of pulse oximeters (POs) during consultations in primary health centers (PHCs) in four countries (Burkina Faso, Guinea, Mali, Niger). A wide range of activities (training of health workers, distribution of essential drugs, supervision visits, etc.) were also carried out. Assessing whether the activities planned by the project were actually implemented and for as long and as often as planned is very important in order to link intervention activities to results; and to analyze implementation challenges in the field.

**Methods:** Our research used the Carroll et al. (2007) and Perez et al. (2016) framework for analysing fidelity and adaptation to implementation. We identified the core activities planned for this project both through a review of the AIRE project documentation and by interviewing the operational teams. We then interviewed the actors involved in the project in 16 PHCs (health workers, heads of centers, etc.) to learn about the actual implementation of the activities.

**Results:** In all countries, essential activities such as the training of agents and the distribution of POs have been carried out, but have sometimes been modified compared to what was planned. We note that the implementation of some activities varies between countries. For example, in Guinea and Burkina Faso, visits to supervise the use of the PO were made more often than planned, while in Mali visits were less frequent in some centers due to safety issues. In one country, technical support to the PHCs on drug management could not be carried out due to difficulties in recruiting a logistician.

**Conclusion:** Differences in implementation fidelity between countries and between health centers may help explain variations in project outcomes.

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### Let's move europe: school based promotion of healthy lifestyles to prevent obesity - EUMOVE project

Giulia Longo<sup>1</sup>, Andrea Cecilian<sup>2</sup>, Giorgia Zanutto<sup>3</sup>, Giulia Longo<sup>4</sup>, Alice Masini<sup>3</sup>, Sofia Marini<sup>2</sup>, Giorgia Soldà<sup>3</sup>, Aurelia Salussolia<sup>3</sup>, Alessandra Anastasia<sup>3</sup>, David Oliva<sup>5</sup>, Laura Dallolio<sup>3</sup>

<sup>1</sup>Alma Mater Studiorum Università di Bologna Italy, <sup>2</sup>Alma Mater Studiorum Università di Bologna Department for Life Quality Studies, University of Bologna, Rimini, Italy, <sup>3</sup>Alma Mater Studiorum Università di Bologna Department of Biomedical and Neuromotor Sciences, University of Bologna, Bologna Italy, <sup>4</sup>Alma Mater Studiorum Università di Bologna 1. Department of Biomedical and Neuromotor Sciences, University of Bologna, Bologna Italy" Italy, <sup>5</sup>Universidad de Extremadura Departamento de Didáctica de la Expresión Musical, Plástica y Corporal, Grupo Análisis Comportamental de la Actividad Física y el Deporte (ACAFYDE), Facultad de Formación del Profesorado, Universidad de Extremadura, Cáceres (Spain) Spain

**Background and objective:** The prevalence of overweight and obesity in childhood and adolescence is one of the most significant health issues of the 21st century. To prevent associated diseases, healthy habits should be promoted. EUMOVE is an Erasmus+ Project aimed at implementing a comprehensive set of strategies and evidence-based resources to enable the educational community to promote healthy lifestyles among children and adolescents from 8 to 16 years old.

**Methods:** The current project is based on two theoretical frameworks: the Behaviour Change Wheel (BCW; Michie, van Stralen, and West, 2011) and the Creating Active Schools Framework (Daly-smith et al., 2020). EUMOVE Project is focused on seven functions to enable those interventions to occur: education, persuasion, enablement, training, modelling, restrictions, and environmental restructuring.

**Results:** All the countries involved in the project are responsible for comprehensive evidence-based educational resources consisting of: EUMOVE smartphone APP, Physically Active Lessons toolkit, Real-Time active breaks platform, Learning Units about healthy lifestyle, Active School Commuting toolkit, Parent Toolkit about promoting healthy lifestyles and School Leader toolkit. In December 2022 EUMOVE website and EUMOVE APP were launched on the internet. The University of Bologna created several Learning Units (LUs) about healthy lifestyles. The LUs are divided into three main categories: 12 LUs related to healthy nutrition, 10 to physical activity and 5 to healthy sleep. The LUs can be used by all the teachers at school regardless of the subject they teach and obviously can be integrated, adapted and extended based on the teacher's experience, creating potential academic connections.

**Conclusion:** EUMOVE project can be a new strategy to integrate healthy lifestyles into the school curriculum and among teachers, students and their families in order to prevent obesity. EUMOVE will organize 4 blocks of events throughout Europe to promote practical strategies for promoting healthy habits.

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### Adolescent health indicators in humanitarian settings: A cross-country comparison

Aisha Shalash<sup>1</sup>, Dervla Kelly<sup>2</sup>, Khalifa Elmusharaf<sup>3</sup>, Niveen Abu-Rmeileh<sup>4</sup>

<sup>1</sup>Birzeit University Palestinian Territory, Occupied, <sup>2</sup>School of Medicine, University of Limerick Ireland, <sup>3</sup>University of Birmingham Dubai United Arab Emirates, <sup>4</sup>Birzeit University

**Background:** Adolescents (aged 10-19) face many barriers to health services, especially in humanitarian crises. Developing a response to adolescent health needs requires age and sex-disaggregated data. We aim to collect available adolescent health indicators and their sources in humanitarian crises to identify gaps in the data to inform policy and practice.

**Methods:** Adolescent health indicators of five countries currently facing humanitarian crises: Myanmar, Nigeria, Ukraine, Yemen, and occupied Palestinian territories, were collected. An extensive search on the available adolescent health indicators was done using surveys in each country, reports, assessments by humanitarian organizations, and peer-reviewed journals. Data were extracted on the source of information, indicator name, domain, categorization, level, numerator and denominator, age groups, and sex on each indicator.

**Results:** The Multiple Indicator Cluster and Demographic Health Survey were done in all five countries selected, but surveys were adjusted according to the appropriateness of each country and done infrequently. Yemen and occupied Palestinian territories only included women in their sample sizes, and no one younger than 15 was interviewed. Many times countries' indicators used by humanitarian organizations were out-of-date. Yemen's latest survey was done in 2015. The most frequent indicators found were in the categorization of reproductive health. Limited data was found on adolescents aged 10-14, boys,

and WASH and nutrition indicators. Out of 52 proposed priority indicators, the most any country fully collected was seven indicators

**Conclusion:** Adolescent health information in humanitarian crises requires frequent surveys and unique data collection methodologies, including all adolescent age groups. Unfortunately, the current surveys used to measure adolescent health indicators cannot be inclusive to all adolescents. Establishing a list of priority indicators in humanitarian settings will help agencies provide appropriate health services and programs based on the adolescent needs of the country.

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### Community's perceptions of the factors related to acute malnutrition in samburu county

Hazel Odhiambo<sup>1</sup>, Calistus Wilunda<sup>2</sup>, Esther Anono<sup>1</sup>, Ruth Muendo<sup>1</sup>, Hazel Odhiambo<sup>1</sup>, Chessa Lutter<sup>3</sup>, Valerie Flax<sup>4</sup>, Faith Thuita<sup>5</sup>, Estelle Sidze<sup>6</sup>, Elizabeth Murage<sup>1</sup>, Albert Webale<sup>5</sup>, Brad Sagara<sup>7</sup>, Teresia Macharia<sup>5</sup>, Monica Ngángá<sup>1,1</sup>

<sup>1</sup>African Population and Health Research Center Kenya, <sup>2</sup>African Population and Health Research Center, Kenya, <sup>3</sup>RTI International, <sup>4</sup>RTI International United States, <sup>5</sup>RTI International Kenya, <sup>6</sup>African Population and Health Research Center, <sup>7</sup>Mercy Corps United States

**Background:** The causal pathways of acute malnutrition in Africa's drylands are complex, interlinked, and require in-depth assessment and analysis to clarify them. We aimed to understand community perceptions of factors related to acute malnutrition across livelihoods in Samburu County.

**Methods:** This qualitative study was conducted in 2021 in selected villages representing three livelihoods: urban/peri-urban, pastoral, and agropastoral. Data were collected through community dialogues, focus group discussions, in-depth interviews, and key informant interviews from 331 participants including mothers and fathers with children younger than three years, and selected key informants. Question guides focused on three areas related to acute malnutrition: factors that influence maternal, infant, and young child nutrition (MIYCN) practices; use and barriers to use of health care services; and gender dynamics in household decision-making. Data were analyzed thematically.

**Results:** Factors that influence MIYCN practices: Poverty appeared to be the main barrier to affording nutritious foods, and seasonality was a key factor for food access and utilization in all livelihoods. Other barriers included maternal alcohol use in urban/peri-urban and agropastoral zones; poor water, sanitation, and hygiene practices; and cultural beliefs prohibiting the consumption of certain foods during pregnancy and lactation. Adolescent mothers faced additional challenges with breastfeeding and complementary feeding because of inadequate knowledge.

**Factors associated with utilization of healthcare services:** Communities trusted healthcare services and the staff, which was attributed to health education and sensitization across livelihoods. Enrollment in the national health insurance scheme and availability of ambulances facilitated health care access. Long distances to health facilities, facility-level barriers, frequent migration, and use of traditional medicine.

**Gender dynamics in household decision-making:** Women were involved in low-paying manual labor and petty trade, while men controlled assets and capital across livelihoods.

**CONCLUSION:** Poverty and seasonality interlinked with other factors such as nutrition, healthcare utilization, household decision-making, childcare, and sanitation practices.

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### Two decades of primary health care expansion in latin america and child mortality: A multi-country evaluation study

Ana Moncayo<sup>1</sup>, Ana Moncayo<sup>2</sup>, Jose Ordoñez<sup>3</sup>, Daniella Cavalcanti<sup>4</sup>, Cristina Almeida<sup>5</sup>, Juan Diaz<sup>6</sup>, Daniella Zuluaga<sup>7</sup>, Alejandro Zamudio<sup>8</sup>, Philipp Hessel<sup>9</sup>, Carlos Chivardi<sup>10</sup>, Davide Rasella<sup>11</sup>

<sup>1</sup>Centro de Investigación para la Salud en América Latina (CISEAL), Pontificia Universidad Católica del Ecuador Centro de Investigación para la Salud en América Latina (CISEAL), Pontificia Universidad Católica del Ecuador Av. 12 de Octubre 1076 y Roca Ecuador, <sup>2</sup>Centro de Investigación para la Salud en América Latina (CISEAL), Pontificia Universidad Católica del Ecuador Centro de Investigación para la Salud en América Latina (CISEAL), Pontificia Universidad Católica del Ecuador Ecuador, <sup>3</sup>Institute of Collective Health, at the Federal University of Bahia (ISC-UFBA) Brazil, <sup>4</sup>Institute of Collective Health, at the Federal University of Bahia (ISC-UFBA), <sup>5</sup>Centro de Investigación para la Salud en América Latina (CISEAL),

Pontificia Universidad Católica del Ecuador Ecuador, <sup>6</sup>School of Government, Universidad de los Andes Colombia, <sup>7</sup>School of Government, Universidad de los Andes, <sup>8</sup>Health Research Consortium - CISIDAT Mexico, <sup>9</sup>Swiss Tropical and Public Health Institute, Department of Public Health and Epidemiology Switzerland, <sup>10</sup>Center for Health Economics, University of York, UK United Kingdom, <sup>11</sup>Institute of Global Health (ISGlobal), Barcelona, Spain Spain

**Background:** There is an urgent need to understand how Primary Health Care (PHC) strategies in Latin American countries (LACs) can be developed, strengthened, and made more comprehensive, effective, and sustainable – especially given the need for cross-sectoral collaborative platforms to achieve the Sustainable Development Goals (SDGs). This study aimed to evaluate the long-term effect of PHC strategies on child mortality in Brazil, Ecuador, Mexico, and Colombia (BEMC).

**Methods:** A multi-country study with a mixed ecological design was carried out. We created a longitudinal dataset (2000-2019) using secondary sources and the analysis included 5,647 municipalities with good quality of vital information. The PHC coverage was calculated and municipalities were classified into four groups: low, intermediate, high, and consolidated coverage. Dependent variables were neonatal, post-neonatal, infant, and child (under-5 and 1 to 4 years of age) mortality rates and under-5 mortality rate (U5MR) due to Primary Care Sensitive Conditions. A set of socioeconomic and health services covariables were used to adjust the models. The effect of PHC was evaluated using conditional negative binomial regression models for panel data with fixed-effects specification and the effect measure was the Rate Ratio (95% Confidence Interval).

**Results:** In multivariate analysis, the consolidated PHC municipalities showed significant risk reductions of post-neonatal (27.2%), infant (13.4%), and child mortality (under-5: 18.7% and 1-4 years: 24.3%). A consolidated coverage of PHC was significantly related to lower U5MR by vaccine-preventable and sensitive conditions (RR 0.548; 95% CI 0.528-0.568), diarrhea (RR 0.442; 95% CI 0.421-0.465), anemia (RR 0.631; 95% CI 0.563-0.708), nutritional deficiencies (RR 0.556; 95% CI 0.525-0.588), and pulmonary diseases (RR 0.534; 95% CI 0.294-0.969).

**Conclusion:** Despite the limitations of LACs health systems, promoting a PHC strategy has successfully contributed to improving child health. It is necessary to ensure this strategy expansion, sustainability, and equitable distribution.

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### Marketing of food to children through food packaging is associated with unhealthy foods in Brazil

Camila Borges<sup>1</sup>, Ana Duran<sup>1</sup>

<sup>1</sup>Center for Epidemiological Research in Nutrition and Health Brazil

**Background and objective:** The exposure to the marketing of unhealthy foods is linked to growing overweight and obese in childhood. Persuasive marketing strategies influence children's food intake, preferences, attitudes, and eating behavior. The present study aims to assess the relationship between presence of marketing to children through food packaging and the nutritional profile of the products.

**Methods:** The analysis was conducted with 7,726 products found in Brazilian retail from 2018 to 2021. Marketing strategies on packaging were collected by trained researchers. Elements such as: mascots, animated characters, fun activities, school, sports, athletes, gifts, energy, growth were used as indicators of marketing to children. The Pan American Health Organization (PAHO) nutrient profile model (free sugar, sodium, total fat, saturated fat, trans fat and non-nutritive sweeteners) with information from the nutritional composition table and ingredient list were used. The association between the presence of marketing to children and the nutritional profile was verified by logistic regression. Values of p<0.05 were considered significant. The analyses were performed in Stata 16.1.

**Results:** A total of 2,613 (33.8%) products with marketing to children on the packaging were observed. Foods with marketing to children were 2.1 times more likely to have high free sugar than those without this type of marketing (p<0.001) and 1.4 times more likely to have high total fat and saturated fat (p<0.001). No statistically significant associations were observed between the presence of marketing to children and sodium, saturated fat, and non-nutritive sweeteners.

**Conclusion:** Foods with marketing to children found in Brazilian retailers in 2018 to 2021 are significantly more likely to have higher amounts of free sugar, total fat, and saturated fat than those not targeted to children.

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### The effect of an adapted physical activity intervention for pregnant women during childbirth preparation classes: preliminary results from the well-done! study

Anna Zannoner<sup>1</sup>, Sofia Marini<sup>2</sup>, Alice Masini<sup>1</sup>, Francesca Scognamiglio<sup>1</sup>,

Angela Coa<sup>1</sup>, Gaia Sicari<sup>1</sup>, Gisele Castagna<sup>1</sup>, Ida Rescigno<sup>1</sup>, Vincenza Leccese<sup>1</sup>, Isotta Caravita<sup>1</sup>, Dila Parma<sup>1</sup>, Virginia Bertini<sup>1</sup>, Laura Dallolio<sup>1</sup>  
<sup>1</sup>Department of Biomedical and Neuromotor Sciences, University of Bologna Italy, <sup>2</sup>Department for Life Quality Studies, University of Bologna Italy

**Background and objectives:** Regular physical activity (pa) during pregnancy is beneficial for mothers and fetuses. The world health organization recommends that healthy pregnant and post-partum women should perform at least 150 minutes/week of moderate-intensity pa. Unfortunately, less than 15% of pregnant women reach these recommendations. The aim of this study is to co-design an adapted physical activity intervention (apai) for pregnant women to include in childbirth preparation classes (cpcs) and evaluate its feasibility and efficacy in terms of pa levels and other outcomes.

**Methods:** This was a quasi-experimental study designed in collaboration with pregnant women and midwives using focus groups. kinesiologists and midwives conducted the intervention at the st. Orsola-malpighi hospital, bologna, (Italy). During cpcs, the experimental group (eg) performed 1 h of pa administered by midwives and co-supervised by kinesiologists for 6 weeks, while the control group (cg) received a one hour lesson about pa recommendation in pregnancy. Pa levels were assessed using the pregnancy physical activity questionnaire (ppaq) at the baseline and at the end of the intervention. Statistical analysis was performed using spss.18.

**Results:** We enrolled 77 women (mean age 34.8±4.3) from november 2021 to may 2022. Preliminary results from 60 participants showed that the ppaq for total activity significantly improved in the eg after 6 weeks ( $\Delta$ total-activity=13.74±29.65, p value=0.04), slightly raising in the cg but not significantly ( $\Delta$ total-activity=3.47±40.76, p value=0.59). Notably, moderate activity significantly improved in eg ( $\Delta$ moderate-activity=7.96±16.97 p value=0.04), while worsened in cg ( $\Delta$ moderate- activity=-4.13±24.53, p value=0.29). However, there was no statistically significant difference between groups.

**Conclusion:** Preliminary findings suggest that introducing apai in cpcs improves pa levels in pregnant women. A multidisciplinary cooperation between health professionals is crucial in health promotion interventions.

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### Screening of visual disorders in primary schools: a cross-sectional study from devrek, türkiye

Eray Öntaş<sup>1</sup>, Onur Özalp<sup>2</sup>

<sup>1</sup>Zonguldak Devrek District Health Directorate Turkey, <sup>2</sup>Zonguldak Devrek State Hospital Turkey

**Background:** Considering neuronal plasticity in early childhood, screening and interventions for visual impairment are cost-effective, because of their impact on DALY. It was aimed to detect and evaluate the most prevalent vision disorders that may lead to the development of amblyopia (lazy eye).

**Method:** Media opacity, anisocoria, strabismus, anisometropia, astigmatism, myopia and hyperopia diseases were screened by mobile binocular infrared photo retinoscopy (Plusoptix A12R, Germany) in 467 children in 8 primary schools in Zonguldak Devrek district. 55 (63.2%) of the 87 children who were found to have visual disorders on screening, were evaluated in the referred district hospitals ophthalmology clinic in terms of demographic data, medical history, refraction values with cycloplegia, best corrected visual acuity (BCVA, logMAR), strabismus and amblyopia.

**Results:** In primary school vision screening, 18.3% of children (n=87) were referred to the hospital. Among the children (n=55) examined by the ophthalmologist, the mean age was 7.1 years, and 50.9% were girls. The median spherical equivalent values of the students were -0.25 (min:-2.38-max:7.13) and -0.25 (min:-2.63-max:8.25) in the right and left eye, respectively. The mean BCVA were 0.05 (min:0-max:1) and 0.1 (min:0-max:1.51) in the right and left eye, respectively. After the examination, 81.8% of the patients (n=45) were prescribed eyeglasses, and occlusion treatment was recommended for 3 new-diagnosed amblyopia. Occlusion treatment was also recommended for 15 students who didn't meet the definition of amblyopia but whose visual acuity was not complete. Strabismus was not detected in any of the 55 students.

**Conclusion:** When the age-specific treatment costs were evaluated according to the literature, it was determined that only 3 new amblyopia early diagnoses in primary school 1st grades cover the cost of the screening device. Therefore, visual disorder screening in primary schools should be implemented as a standard, as it offers an effective intervention at a low cost.

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### The added value of using of pulse oximeter into the integrated

### management of childhood illness guidelines to better identify and manage severe cases among children under-5 years old in west africa, june 2021 to june 2022

Gildas Hedible<sup>1</sup>, Désiré Neboua<sup>2</sup>, Lucie Peters-Bokol<sup>3</sup>, zineb Zair<sup>4</sup>, Abdoul Guaniyi<sup>5</sup>, Sarah Louart<sup>6</sup>, Valéry Ridde<sup>7</sup>, Gildas Anago<sup>8</sup>, Sévérin Lenaud<sup>9</sup>, Honorat Agbeci<sup>4</sup>, Désiré Kargougou<sup>10</sup>, Bertrand Meda<sup>11</sup>, Jacques Kolié<sup>12</sup>, Valériane Leroy<sup>13</sup>

<sup>1</sup>Inserm CERPOP UMR1295 Inserm - University of Toulouse 3 - Toulouse France 315 route de Seysses, 31100 Toulouse France, <sup>2</sup>ALIMA NGO, <sup>3</sup>Inserm CERPOP UMR1295 Inserm - University of Toulouse 3 - Toulouse France Marseille, France France, <sup>4</sup>Inserm CERPOP UMR1295 Inserm - University of Toulouse 3 - Toulouse France Toulouse, France France, <sup>5</sup>Sawadogo Solthis, <sup>6</sup>ALIMA ALIMA, Dakar, Senegal - 8. University of Lille, CLERSE - Centre Lillois d'Études et de Recherches Sociologiques et Économiques, Lille, France Dakar, Ngor Senegal, <sup>7</sup>IRD IRD, CEPED, Paris, France Dakar Senegal, <sup>8</sup>ALIMA NGO ALIMA, Dakar, Senegal Dakar, Ngor Senegal, <sup>9</sup>PACCI Program PACCI, Abidjan, Côte d'Ivoire Abidjan Ivory Coast (Cote D'Ivoire), <sup>10</sup>ALIMA Bamako ALIMA, Bamako, Mali Bamako Mali, <sup>11</sup>Solthis Solthis, Niamey, Niger Niamey Niger, <sup>12</sup>ALIMA Conakry ALIMA, Conakry, Guinea Conakry Guinea, <sup>13</sup>Inserm CERPOP UMR1295 Inserm - University of Toulouse 3 - Toulouse France Toulouse France

**Background:** The Integrated Management of Childhood Illness (IMCI) guidelines for children under 5 is a symptom-based algorithm guiding health care workers in resource-limited countries at the primary health center (PHC) level. Hypoxaemia (SpO<sub>2</sub>< 90%) is a life-threatening condition underdiagnosed in West Africa. To improve the diagnosis and care-management of hypoxaemia, the AIRE project, UNITAID-funded, has implemented the routine Pulse Oximeter use into IMCI consultations at PHCs level in Burkina Faso, Guinea, Mali and Niger. This study aimed to measure the added value of PO integrated into IMCI.

**Methods:** In 16 AIRE research PHCs (4/country), all children aged 0-59 months attending IMCI consultations, except those aged 2-59 months classified as green non-respiratory cases were eligible for PO use, and enrolled in a cross-sectional study with parent's consent. Those classified as severe cases were followed for 14 days. Socio-demographic and clinical data including data about PO use, pathways, patterns of care and health outcomes at D14 were collected.

**Results:** From June 2021 to June 2022, 39,496 children attended IMCI consultations; 31,721 were eligible for PO use of whom 80.3% had an SpO<sub>2</sub> measurement. The prevalence of severe case using IMCI+PO was at 10% (n=3,179; 95% confidence interval [95%CI]: 9.7-10.4). Hypoxemia prevalence was 0.7% (95%CI: 0.58-0.76) among eligible children for PO use and 6.6% (95%CI: 5.8- 7.5) among all severe cases. Of all severe cases identified with IMCI+PO, 1,981 were enrolled and followed-up, their D-14 mortality rate was 4.8% (95%CI: 3.5-5.3). The PO allowed to identify +1.9% (95% CI: 1.5-2.5) severe cases.

**Conclusion:** Based on this large sample study, the uptake of PO integrated into IMCI consultations was high and the identification of severe cases have been increased for +1.9% using PO. However, hospital referral and timely oxygen therapy to manage them remain challenges for governments in the West African settings.

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### Assessing unmet Sexual and Reproductive Health needs of adolescents living with disabilities in Zambia: A cross-sectional study.

Tikulirekuti Banda<sup>1</sup>, Edward Sibeene<sup>1</sup>, Innocent Chansa<sup>1</sup>, Steven Miti<sup>1</sup>, Joseph Zulu<sup>1</sup>, Owaka Isaac Ogweno<sup>2</sup>, Edna Nyanchama Nyang'echi<sup>2</sup>, Dennis Muya<sup>2</sup>, Justus Osano<sup>2</sup>.

<sup>1</sup>The University of Zambia

<sup>2</sup>Kenyatta University

**Background:** Sexual and reproductive health rights (SRHR) thus are fundamental human rights, which should be enshrined in national, regional, and international laws as they are critical for gender equality and sustainable development. Yet young people living with disability continue to face gaps in meeting their SRHR needs. In Zambia, current national data estimates that 7.2% of Zambia's population are living with a disability, who, among other socio-economic challenges, face limitations in access to equitable and quality health care.

**Methods:** The research adopted a concurrent parallel design which used both qualitative and quantitative data collection.

The study was conducted in 3 provinces of Zambia (Lusaka, Southern and Western provinces) among adolescents and young people aged 15-24 years. A total of 149 adolescents and young people were recruited in the study and administered with surveys. 4 Focus Group discussions were also conducted with these adolescents to gain deeper understanding on their challenges accessing SRHR services in

Zambia. 16 Key Informant interviews were conducted with health facility staff and non-governmental organizations with persons with disability.

Results: Generally, there was a low inclination of the availability of SRHR services across all study locations with Lusaka (50.2%), Southern (30.5%) and Western (19.2%). The study also established various harmful practices directed towards adolescents and young people living with disability with stigma and discrimination being the leading harmful vice. The study also found that the main perpetrators of these harmful practices were relatives, while guardians and parents came 3rd respectively.

Conclusion: There is need to provide disability sexual and reproductive health services to bridge existing gaps in the provision and access of sexual reproductive health services for adolescents and young people living with disability in Zambia and the region at large.

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### Analysis of factors associated with nicotine initiation - a 3-year follow-up study among adolescents in the sopkard-junior study

Marta Miller<sup>1</sup>, Klaudia Suligowska<sup>2</sup>, Tomasz Zdrojewski<sup>3</sup>, Łukasz Balwicki<sup>3</sup>

<sup>1</sup>Medical University of Gdańsk Poland, <sup>2</sup>Department of Preventive Medicine, Medical University of Gdańsk; Department of Dental Techniques and Masticatory System Dysfunctions, Medical University of Gdańsk,

<sup>3</sup>Department of Preventive Medicine and Education, Medical University of Gdańsk Poland

Background and objective: The earlier a person reaches for nicotine, the longer they remain addicted to it. Use of tobacco products negatively affects the cardiorespiratory system. The study aimed to analyze factors associated with nicotine initiation among children and adolescents over a 3-year period.

Methods: Data for analysis came from a questionnaire-based cross-sectional survey performed as part of the interdisciplinary SOPKARD-Junior program among the same cohort of students at elementary schools based in Sopot, Poland. Students and their parents participated in a prospective 3-year follow-up study. Responses were collected from children in 2018 at age of 10-11yo and again in 2021 at age 14-15yo. Each time, responses were also collected from the parent of the student research participant. The survey instrument was a set of forty-nine questions, based on the GYTS (The Global Youth Tobacco Survey) questionnaire. Results: During the 3 year period, almost 4.5 times more children had already undergone nicotine initiation. An upward trend was observed in terms of teens noticing smoking people in mass-media - from 53% in 2018 to 68% in 2021. In 2018, children who underwent nicotine initiation declared using only one type of tobacco product. In 2021, already 53.8% of children after nicotine initiation had tried both traditional cigarettes and e-cigarettes. Teenagers were also two times more likely to declare using e-cigarettes than traditional cigarettes. There was a statistically significant correlation in both years indicating that non-smoking children who were frequently exposed to cigarette adverts in stores were more likely to initiate smoking after peer's offer to smoke.

Conclusions: In comparison to earlier elementary school grades, final grade students have a higher exposure to the concurrent use of electronic and traditional cigarettes and are more likely to initiate smoking. It is crucial to limit mass-media promotion of smoking and adolescents exposure to tobacco advertising.

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### Early childhood education quality and child development in lao pdr

Alanna Sincovich<sup>1</sup>, Benjamin Lam<sup>2</sup>, Tess Gregory<sup>3</sup>, Nathalie Rodilosso<sup>4</sup>, Sally Brinkman<sup>2</sup>

<sup>1</sup>Telethon Kids Institute Australia, <sup>2</sup>University of South Australia Australia,

<sup>3</sup>Telethon Kids Institute, <sup>4</sup>Princeton University United States

Background: Globally, as scale up of early childhood education (ECE) continues, monitoring ECE quality is imperative to promote service aspects that drive positive outcomes for children. Monitoring of ECE quality in low- and middle-income countries (LMICs) is scarce, limited by challenges in varied conceptualisations of quality, lack of measurement tools that reflect local culture and context, and implementation difficulties in low resource settings.

Objectives: This research sought to describe quality of ECE across Northern Lao PDR and explore the association between ECE quality and children's development. Advancing understanding of the quality of ECE provision in Lao PDR, how quality may be captured, and how it relates to children's development, are all necessary steps toward informing interventions and policy aimed at improving ECE quality.

Methods: Using data from the World Bank Early Childhood Education Project we conducted a cross-sectional investigation on ECE quality and children's development. Participants were children aged 2-6 years (n=1,168) attending ECE

across 131 villages. Linear regressions explored the association between ECE quality, captured using the Measure of Early Learning Environments (MELE), and adult reported and directly assessed child development. Models were adjusted for child, household, and village level confounding variables.

Results: Mean scores on quality domains indicated classrooms scored highest on Interactions and Approaches and lowest on Learning Activities. Results from linear models estimating the association between ECE quality and child development demonstrated Overall Quality had the strongest association with child development, followed by Interactions and Approaches.

Conclusion: Although associations between ECE quality and children's development were small, findings reiterate the need for investment not only in expansion of ECE access, but also high-quality service provision. Emphasis on quality must extend beyond facilities and materials, to adequately equipping schools and teachers with the training and resources to facilitate learning through high quality interactions within any given context.

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### Proposal to improve access to the maternal and perinatal care route (ramp) through supply chain quality management and digital health interventions for dispersed rural territories

Helena Carretero<sup>1</sup>, Lina Tafurth<sup>1</sup>

<sup>1</sup>Universidad Icesi Colombia

The Ministry of Health of Colombia has been developing care routes to improve perinatal maternal care. However, the reported figures show gaps in access to health services and quality problems, especially for populations in dispersed rural territories. Given the importance of maternal and perinatal health declared in the sustainable development goals (SDG) and the results of the World Health Organization (WHO) and the United Nations Fund (UNFPA) that in the year 2021, they estimated that 810 women die every day from complications of pregnancy and childbirth, mostly from preventable or treatable causes, the need to investigate which variables affect this type of preventable causes was identified. When reviewing the improvement strategies in health organizations, advantages in the use of Supply Chain Quality Management were evident. (SCQM), since it helps to break barriers, improve connectivity and quality in the provision of health services. The objective of this work was to propose an integration alternative between the SCQM and digital solutions to improve access and the Maternal Perinatal Care Route (RAMP) in rural municipalities of Santander de Quilichao and Caloto in Colombia. Descriptive research with the collection of information in databases to interpret the data on the provision of services through the RAMP, through analysis with Process Mining. With this research it was possible to know the variables that influence preventable causes, simulate the reality of the processes in two (2) levels of care and find the variables that affect bottlenecks and the patterns that impact the results. It was confirmed that the integration of SCQM and digital interventions drives the performance of RAMP activities and allows the improvement of processes with scalability and overcoming barriers. The two aforementioned strategies translate into a commitment to improve access and service provision at RAMP.

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### System fragmentation and service silos: Leveraging provider perspectives to support families living in poverty

Brittany Schuler<sup>1</sup>

<sup>1</sup>Temple University College of Public Health 28 Wilson Ave Chalfont PA 18914 USA United States

Background and significance

Intersections of high poverty and trauma increase risks for toxic stress, which can have major consequences for health and mental health. These consequences are particularly salient during childhood, when physical growth and brain development undergo rapid change. Service providers are often the first and only point of contact for many families and have invaluable perspectives on child health and wellbeing and community-driven factors that contribute to health equity or health disparities. Understanding perspectives of professionals involved in community support services could provide insight on system-level changes needed to promote child health equity and provide up-to-date information on the social, economic, and political circumstances promoting or impairing equitable and health and wellbeing among families with limited economic resources living in economically marginalized communities.

Purpose: The aims of this qualitative study were to draw on the perspectives of multidisciplinary social service community professionals who work with populations exposed to high levels of systemic trauma and poverty. We apply

a social justice and ecocultural lens to assess service provider perceptions of major barriers and facilitators to health and mental health in at-risk communities. Method: We conducted semi-structured in-depth interviews with n = 21 social service staff, stakeholders, and volunteers. Service providers were asked a series of open-ended questions related to their perspectives on: (1) health disparities and their repercussions on family's high risk for health disparities; and (2) protectors of and approaches to advance health equity. Analysis was conducted using MAX QDA analytic software, using an ongoing, iterative process following a systematic approach recommended for health research and capturing multi-layered, ecocultural perspectives.

Results: Major qualitative themes contributing to health disparities included burnout and high turnover rates, complex family needs beyond organizational capacity, funding limitations, limited professional development, disconnects between family needs and services, and system fragmentation. Protectors of health equity included prioritizing community engagement, partnerships with other providers, holistic and wrap-around physical and mental health supports, honoring choice and autonomy of families served, capacity building, and providing supports to address effects of vicarious trauma.

Conclusion: Implications are provided for organizational-level targets to promote child health equity in economically underserved populations.

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### Consumption and food habits of children and adolescents with autism spectrum disorder - ASD

Raissa Matos Ferreira<sup>1</sup>, Joana Gonçalves<sup>2</sup>

<sup>1</sup>Graduate student Federal University of Ouro Preto, Ouro Preto, Minas Gerais, Brazil, <sup>2</sup>Nutritionist layane layane vilela marques nutritionist Brazil daiane santos postgraduate student rua ja 16 qd 34 lote 02 mauricio arantes de lisboa Brazil

Children and adolescents with ASD have a differentiated diet with a tendency to dysfunctional and significant eating habits, compromising sensory activities that make it difficult to obtain and establish a healthy diet. This study aimed to understand the consumption and eating habits of children and adolescents with Autism Spectrum Disorder (ASD). This is an exploratory and descriptive qualitative and quantitative research, carried out with 51 parents and guardians of children aged between 5 and 12 years old diagnosed with ASD. The research was carried out in three institutions located in the city of Rio Verde, Goiás, Brazil, through a structured questionnaire in Google Forms. Indicating 6 categories: Food consumption; Eating habits; Food selectivity; Professional follow-up; Aspects and characteristics of children and adolescents; Food allergy and intolerance. The individuals with ASD surveyed have a considerable consumption of ultra-processed foods, greater acceptance of liquid and soft-textured foods, dysfunctional habits such as eating at the same times, in the same quantities and in front of screens (cell phones, tablets and televisions), they also have some alterations gastrointestinal; in addition to not having nutritional follow-up, thus leaving those responsible insecure about feeding their children. It is concluded that children and adolescents with ASD have a different diet with a tendency to dysfunctional and significant eating habits, in which each individual manifests their own eating patterns, and may also compromise sensory activities that make it difficult to obtain and establish a healthy diet.

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### Benchmarking of population-based childhood cancer survival by toronto stage: From epidemiological data to proper health planning

Rosalia Ragusa<sup>1</sup>, Laura Botta<sup>2</sup>, Fabio Didonè<sup>3</sup>, Antonina Torrisi<sup>4</sup>, Gemma Gatta<sup>5</sup>

<sup>1</sup>Azienda Ospedaliero Universitaria Policlinico "G.Rodolico - San Marco Integrated Cancer Registry Ct-Me-En via S.Sofia, 78 Italy, <sup>2</sup>IRCCS National Cancer Institute Foundation, Milan, Italy Evaluative Epidemiology Unit, IRCCS National Cancer Institute Foundation, Milan Via Giacomo Venezian, 1, 20133 Milano Italy, <sup>3</sup>University of Milano Bicocca, Milan, Italy Unit of Biostatistics, Epidemiology and Public Health, Department of Statistics and Quantitative Methods, University of Milano Bicocca, Milan, Piazza dell'Ateneo Nuovo, 1 - 20126, Milan Italy, <sup>4</sup>A.O.U. Policlinico, Catania Cancer Registry Catania-Messina-Enna, via S.Sofia, 78, Catania Italy, <sup>5</sup>IRCCS National Cancer Institute Foundation, Milan, Italy Evaluative Epidemiology Unit Via Giacomo Venezian, 1, 20133 Milano Italy BENCHISTA Italy Working group

Introduction: Paediatric cancers are rare tumours, heterogeneous in location and biologically very different from adult cancers. Documented survival variation across European countries and Italian regions show that there is still room for

further improvement by reducing inequalities. We aim to understand why there are differences in survival. The stage of the tumor is a determining factor in the likelihood of recovery and the intensity of treatment required by the cancer patient. The BENCHISTA-ITA project (National BENCHMARKING of CHILDhood Cancer Survival by STAGE at diagnosis), that is the Italian twin project of the International BENCHISTA, collect stage at diagnosis of solid paediatric tumours, according to the Toronto Guidelines.

We will compare how far the cancer has spread at diagnosis and test if differences in tumour stage explain any survival differences between Italian regions.

Materials and Methods: The project study stage distribution and survival for 9 paediatric solid tumours diagnosed between 2014 and 2017 with 3 years of follow-up for life-stage definition.

The study involves:

- The identification of all new diagnoses.
- Evaluation of the clinical documentation of cases eligible for research, extraction, ICC-3 classification, coding (ICDO-3.2), clinical and pathological information useful for staging
- Linkage of identified cases with clinical records
- Stage assignment at tumour diagnosis using the Toronto staging guidelines using a two-tier system
- Production of a database containing clinical information, stage, recurrence and other prognostic factors

The registries will centralise the data at the National Cancer Institute in Milan. An initial comparative analysis will show stage distribution and 3-year survival by stage by area/country.

Results: Data from 28 population-based cancer registries were collected covering about 84% of the Italian child population. In particular, data on: imaging/examination performed before any treatment; source used for staging; primary treatment defined as given within 1 year from diagnosis; relapse/ recurrence/ progression; follow up and status of life.

The study tested the applicability of Toronto Guidelines as a tool to obtain population-level comparable stage information for childhood cancers. Difference in stage distribution and survival differences between regional grouping were presented.

Conclusions: The Italian BENCHISTA project, improving the connection between pediatric cancer registries, aims to improve care of children with cancer in the national territory, reducing possible disparities.

The wide adoption of Toronto Guidelines will facilitate international comparative incidence studies, strengthen the interpretation of survival data, and contribute to more appropriate solutions to improve childhood cancer outcomes.

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### Dietary habits and physical activity among a sample of Kuwaiti pregnant women: a sociocultural study

Maha Alsejari<sup>1</sup>

<sup>1</sup>Kuwait University, Kuwait

Pregnancy is an important stage in mother and the fetus life. Several physiological and psychological changes occur for both. One of the most prominent factors that affect their health is women's food habits, physical activity, and basic information about pregnancy. The current study aims to measure the pattern of lifestyle behaviors of pregnant women. A sample of 214 Kuwaiti pregnant women were selected. Questionnaire was the major tool of the study. Questionnaire consists five sections: (1) socio-cultural factors; (2) Information about the main sources of pregnancy and the health condition of the pregnant women; (3) A general healthy lifestyle behaviors; (4) pregnant women's lifestyle; and (5) awareness of basic information of pregnancy. Also, interview with 12 informant women were conducted. Descriptive and inferential statistics were used. T-test and chi-square were the major statistical procedures. Results indicate that there are many respondents have changed their eating habits and lifestyle behavior during pregnancy. There is a high degree of awareness about health issues related to pregnancy were noticed. It is found also that there are some cultural differences between certain social groups in Kuwait.

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### "In fact, that's when I stopped using contraception": a qualitative study exploring why sexually active women discontinued contraceptive use in KwaZulu-Natal, South Africa

Mbuzeleni Hlongwa<sup>1</sup>

<sup>1</sup>SA Medical Research Council, University of KwaZulu-Natal, South Africa

Background and Objective: Contraception is one of the most important public

health interventions which respond to reproductive health needs of women, thereby enabling them to plan their pregnancies and decide on the number of children they desire. However, there remain a high proportion of women who experience unplanned pregnancies every year in South Africa. High rates of contraceptive users discontinue their use within a year of starting to use contraception. Therefore, this study explored the reasons why sexually active women discontinued contraceptive use in KwaZulu-Natal, South Africa.

**Methods:** In October 2021, we conducted a qualitative study at Umlazi Township in KwaZulu-Natal province, South Africa, through face-to-face interviews. Eligible women from four primary health care facilities were recruited through a criterion-based sampling strategy. Using NVivo version 11, two skilled researchers independently conducted thematic data analysis, as a mechanism for quality assurance, before the Results were collated and reconciled.

**Results:** The study included 15 female participants, aged between 18 and 35 years, of whom two-thirds were aged 18-24 years. We found that women were concerned about unpleasant contraceptive side effects, including prolonged or irregular menstrual periods, bleeding, weight gain, and/or severe pains, Resulting in discontinuation of their use. In addition to contraceptive stock outs, women also reported that health care providers did not appropriately counsel or inform them about the available contraceptive Methods, including how to use them.

**Conclusions:** Interventions aimed at reducing contraceptive stock outs are immediately required to ensure that women are empowered to choose contraception based on their own preference, convenience, and/or experience. It is imperative that counselling on contraceptive method side effects be improved, to ensure that women have freedom to make decisions about their preferred method, proper management of side effects, and to assist them with method switching as needed, instead of discontinuation.

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### **Beyond incarceration: improving outcomes for women and families affected by substance use disorder**

Chetana Musapeta<sup>1</sup>

<sup>1</sup>National Center for Wellness and Recovery, Tulsa, United States

Substance use during pregnancy and motherhood is both a public health and criminal justice concern. Negative health consequences associated with substance use impact both the mother and the developing fetus, and there are ongoing attempts to criminalize substance use during pregnancy that put women who are pregnant and substance-using at risk of detection, arrest, and punishment. Additionally, The COVID-19 pandemic changed the landscape of health care delivery overnight. As communities and businesses shut down, behavioral health practitioners were forced to expand in innovative ways to serve their most at-risk community members. The purpose of the Neonatal Abstinence Syndrome (NAS) grant program is to reduce morbidity and mortality rates and reduce incidence of NAS among pregnant women and women of childbearing age who are at high risk for Substance Use disorders and Opioid Use Disorders in six rural counties. This was achieved in three ways: (1) Increasing access to prenatal and postnatal care for both incarcerated pregnant women and women of childbearing age through telehealth services via iPad carts. (2) Increasing awareness and treatment options among medical providers by delivering medication for the treatment of opioid use disorder (MOUD) for physicians to safely treat women. (3) Hosting caregiver support and resources for family members and loved ones impacted by addiction. The poster will show an overview of successful case studies, where rural consortia leveraged telehealth to improve access to care among people who are incarcerated and people at risk of delivering a child with substance use. We will address the effectiveness, challenges, and successes of deploying telehealth services within in rural jails, virtual care coordination using evidence-based practices, and continuum of care for women and families once they exit the justice system.

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### **Associations between parental psychological factors and overweight / obesity status in children with Autism or Autism Spectrum disorder**

Akemi Nishide<sup>1</sup>

<sup>1</sup>College of Life Science, Ibaraki Christian University, Tokyo, Japan

**Background and Objectives:** There is a higher frequency of obesity in children with autism spectrum disorders (ASD). Their environment, such as their parents' attitude towards health matters may affect this issue, however, this link has not yet been well established. Thus, the aim of study is to examine how parental psychological factors, such as self-efficacy and outcome expectancy, affect the

children's overweight/obesity status (ob).

**Methods:** A cross sectional study involving sixteen schools for special needs education in Ibaraki prefecture and two schools in other areas in Japan was conducted. At the beginning of September 2022, a questionnaire on the parents' self-efficacy, outcome expectancy as well as a brief self-administered diet history questionnaire was distributed to parents of all first grade to sixth grade elementary school children. Fully completed questionnaires of children whose parents reported them as having ASD or autism, were then analysed. The exposure variable was ob or non-overweight/obesity (non-ob), assessed using self-reported height and weight measurements. The parents' self-efficacy and outcome expectancy were assessed using a five-ordinal scale. A logistic regression analysis was employed to estimate the odds ratio with 95% confidence interval for the analysis of effects of parental factors on ob in children with ASD.

**Results:** There were a total of 147 participants (Autism; n=52, Asperger; n=0, ASD; n=95). It was observed that the parents of ob children have a lower outcome expectancy regarding the healthy diet and having breakfast than the parents of non-ob children, although no significant associations were observed in personal factors, such as school area and sex. Fifth grade children were more likely to be classed as ob than those in younger grades.

**Conclusions:** Support, such as a school-based nutrition education program, particularly before fifth grade, may be required to improve parental attitude which influences the eating behaviour of children with ASD.

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### **A scoping review of the factors that influence the uptake of IPTp among pregnant women informed by the socio-ecological model**

Alaa Suliman<sup>1</sup>

<sup>1</sup>University of Limerick, Ireland

Malaria in pregnancy (MiP) is a major health problem, according to World Health Organization in 2020 there were an estimated 33.8 million pregnancies, 34% (11.6 million) of which were exposed to malaria infection. (World Health Organization 2021). Moreover, it contributes to devastating health outcomes that may end up in a medical emergency ('Management of malaria in pregnancy : Indian Journal of Medical Research' 2022). The progression towards scaling up intermittent preventive treatment in pregnancy (IPTp) uptake remains slow relative to other MiP interventions. Preventive strategies and good quality case management are the starting point for controlling the malaria burden. The objective of this study is to review the available knowledge on the main contextual factors of a direct impact on the uptake of IPTp among pregnant women globally, as well as to address the gaps in the existing literature. **Methods:** A comprehensive literature search was carried out from May to June 2022 on the following online electronic databases; PUBMED, Scopus, Web of Science, EBSCO, and Medline. Sixty-six out of 4210 screened studies addressing the factors that influence the uptake were included. Two independent reviewers investigated the studies for eligibility. Factors that affect the uptake were conceptually analyzed using the socioecological model.

**Results:** It was observed from the literature that there are still low levels of awareness and knowledge among pregnant women regarding IPTp importance, this emphasizes the importance of women empowerment for health-seeking behavior. The availability, accessibility, and affordability of IPTp pose a persistent challenge that impedes governments from achieving the recommended coverage target. Additionally, Health care workers showed inconsistency while delivering IPTp to women and faced difficulties regarding their working conditions. **Conclusions:** From a public health perspective policymakers must address health system obstacles that hinder IPTp implementation from being delivered and utilized by pregnant women.

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### **National abortion survey in Peru**

Elisa Juarez<sup>1</sup>, Roberto Carrasco<sup>1</sup>, Rossina Guerrero<sup>2</sup>

<sup>1</sup>Universidad Continental, Peru, <sup>2</sup>Non-Governmental Organization (NGO)

Centro de Promoción y Defensa de Derechos Sexuales y Reproductivos (PROMSEX), Peru

**Background:** In 2019, the Institute of Public Opinion of "Pontificia Universidad Católica del Perú", by request of the NGO PROMSEX carried out a nationwide survey to calculate the frequency of abortion among women in Perú. Their objective was to have solid information that could support advocacy for abortion in a setting with high legal restrictions to this procedure. Our team at Continental University has secondarily analyzed this data. **Methods and Sampling:** A probabilistic, multistage, and stratified sampling by socioeconomic level was carried out. A total of 2400 women between 18 and 49 years old were included in the sample. The

survey was carried out using the Ballot Box method, which has been previously used in other settings to explore stigmatizing topics reducing social desirability bias. Findings: We estimate that approximately 19.25% of surveyed women had at least one abortion in their lifetimes. About 11.99% of women were under-aged (under 18 years old) when they had the first or only abortion reported; 43.37% were between 18 and 24 years old; 28.32% were between 25 and 30 years old, and 16.33% were 31 years or older. Moreover, 42.34% of women who have had an abortion did not attend a health provider to undergo the procedure.

Discussion: Despite the legal restrictions that Perú has for abortion, this is not an uncommon practice among women in the country. Women who were under 25 years old when they had their first abortion accounted for the largest group and more than three-quarters of the first abortion occurred when women were under 25. Most women did not visit a health provider to undergo the abortion, which suggests that they looked for alternatives to access this procedure.

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### The evaluation of the impact of early sexual activities in young people aged 10-17 years on their mental health: a systematic review study

Oluwatoyin Adesope<sup>1</sup>

<sup>1</sup>University of Chester, United Kingdom

Background: Adolescence is an important stage of building psychological and social skills necessary for mental health. However, these could be altered by factors such as peer pressure, cruel parenting, media, stress, low socioeconomic status, and adverse-environmental exposure. In adolescents, mental disorder contributes to a 13% global disease burden- with depression, and anxiety problems recognised as the leading disorder among the ages 15-19. Similarly, suicide is among the top five leading causes of death in this age group of 15-19 years. While most adolescents' mental health disorder risk factors have been extensively investigated, the association between sexual activities in adolescents and their mental health or mental disorder requires further attention. Furthermore, few primary studies like cross-sectional, case-control, longitudinal/cohort, correlation, and comparative studies have been conducted to find out the association between sexual activities in adolescents and their mental health. Still, no research has been conducted to synthesise these studies into a single document to better inform policy decisions on promoting mental wellness in young people. Aims and Objectives: The aim of this study is to evaluate the impact of early sexual activities in young people aged 10-17 years on their mental health and to use pooled estimates to establish precision of Results. The study seeks to synthesize all available primary studies into a single study.

Methods: PsycINFO, Web of Science, CINAHL, Cochrane and PubMed electronic databases were searched for available literature that will answer the study's research question.

Results: Out of 32 studies selected for full screening, only 9 met the inclusion criteria for the study. These 9 studies make up the included studies for the review. Conclusions: Seven of the nine studies showed statistically significant association between early sexual activities in adolescents' and their mental health outcome of interest, with more consequence on the girls when compared to the boys.

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### Assessment of vulnerability factors leading to psychoactive substances use among school children

Chaimaa Moubchiri<sup>1</sup>

<sup>1</sup>University Hassan the first, Morocco

The use or consumption of psychoactive products is a dynamic subject of scientific interest for all nations. The correlation between the use of Psychoactive substances use and adolescence is a real challenge that requires a multidisciplinary participation in the planning and implementation of prevention actions. At the national level, there is already a slight increase in prevalence figures between the MedSPAD 2013 and MedSPAD 2017 surveys for tobacco, alcohol, cannabis and sleeping pills among Moroccan schoolchildren aged between 15 and 17 years. We opted for a systematic bibliographic search using PRISMA STATEMENT; in order to answer our problem; which is interested in the evaluation of vulnerability factors related to the use of psychoactive substances in young school children. The school environment is an effective field to prevent the use and positively impact this transition. On the socio-economic level, this scourge escapes no one, it is contextual, the disparity exists and coexists in the same context being well off or coming from a low social level, the risk of use is always present. The integration of the family is paramount to protect young adolescents against the influence of peers, which ranks as an underlying factor that follows a neurobiological process

. The assessment of vulnerability factors is one of the first pillars to reduce the use of Psychoactive substances use in young school children

Keywords: vulnerability, psychoactive substances(PAS), adolescents, assessment  
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### Fathers' experiences of child care and feeding: a photo-elicitation study in urban low resource setting, Addis Ababa, Ethiopia

Hanna Berhane<sup>1</sup>, Dagmawit Haimanot<sup>2</sup>

<sup>1</sup>Department of Women's and Children Health, International Maternal and Child Health, Uppsala University, Uppsala, Sweden, <sup>2</sup>Addis Continental Institute of Public Health, Ethiopian Public Health Association, Ethiopia

Background and Objectives: Children's health and wellbeing studies focus mainly on mothers roles, and very little is known about the experiences and challenges that fathers face to fulfill their responsibilities. This study Aims to explore the fathers' lived experiences of child care and feeding in urban low-income settings. Methods: A qualitative study was conducted in Addis Ababa, Ethiopia. Photo-elicitation was used to facilitate the in-depth interviews with fathers who had children below the age of five years. Participants were asked to take pictures depicting their roles as fathers, capturing aspects of the setting they deemed noteworthy. A thematic analysis approach was used to analyze transcribed and cleaned data.

Results: The overarching theme of this study was fatherhood as an enduring identity, comprising three subthemes: 1) Blessings of fatherhood, 2) Adjusting to fathering roles, and 3) Struggles/demands of fatherhood in low-resource settings. The analysis indicated that having children and becoming a father was a blessing. Fathers conveyed their love, devotion, and attachment to their children, and some used the term "my second chance in life". Nonetheless, while striving to spend time and care for children relentlessly, parallel challenges, such as the internal struggle to adjust to a new 'fatherhood' role while maintaining their old selves, were highlighted. The pressure of providing for a family amidst existing pressures from the external environment, such as poor housing conditions, a lack of employment opportunities, and the current COVID-19 pandemic disrupts their context further adding to their stress. Conclusions: Most fathers were engaged in child care and feeding suggesting that like mothers, fathers should be viewed as a potential agent for implementing nutrition interventions. However, if such interventions are to be successful, they need to incorporate components that boost fathers livelihoods and general well-being.

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### Parent adolescent communication on sexual and reproductive health issues in Pokhara, Nepal

Narayani Tripathi<sup>1</sup>, Bibek Rimal<sup>2</sup>

<sup>1</sup>Family Planning Association of Nepal (IPPF), Nepal, <sup>2</sup>Family Planning Association of Nepal, Nepal

The aim of this study was to assess the prevalence of communication, and factors affecting communication between high school adolescents with their parents on reproductive health issues in Pokhara Metropolitan city, Nepal. A school-based cross-sectional study for quantitative and focus group discussion for qualitative study was done where data from adolescents were taken through self-administered questionnaire and information and data were collected from parents through focus group discussions. A multistage sampling technique was used to sample the study participants. Data were collected by using a self-administrated structured questionnaire, which was developed based on previous literature incorporating all variables to be assessed. Data were entered and analyzed through Epi data and SPSS version 20.0, respectively. This study revealed that 18.1% of students discussed RH issues with their parents. Factors such as being a male student (adjusted odds ratio [AOR] =3.36; 95% CI 1.57-7.17); being in the 11-12th grade (P value 0.001;95% CI 0.183-0.77), knowledge on RH issues (AOR =3.94; 95% CI 1.91-8.104); significantly affect the communication between parents and students on RH issues. This study showed that only a low proportion of students communicated on RH issues with their parents. Parents should focus on both male and female child equally, in discussing RH matters and in improving their communication skills, and should be transparent in the community to encourage open discussion among family members particularly with their adolescent children.

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### Trauma informed approach: an innovative tool for assisting a victims of sexual violence

Kelly Parsley<sup>1</sup><sup>1</sup>Carroll College, United States

W.H.O. estimates that "1 in 3 (35%) of women worldwide have experienced either physical and/or sexual intimate partner violence or non-partners sexual violence in their lifetime" and Amnesty International concurs: "at least one out of every three women worldwide has been beaten, coerced into sex, or otherwise abused in her lifetime." While these numbers are deplorable, few medical professionals have learned skills to support these victims. This poster presentation will train medical personnel on trauma-informed ways of supporting rape survivors that include. Creating care based on respect and physical/emotional safety. Understanding of how brains function when confronted with trauma. Avoiding re-traumatization by providing services that meet survivor's needs. Methods: This poster presentation will rely on academic research on sexual violence which includes Discussions of Safety: the ability to seek help knowing that those helping will keep information confidential, will work to keep them safe, and will not respond to them by victim blaming. Empowerment: the ability to determine when to seek medical, legal, and social service assistance. Control: the ability to make choices for themselves. Voice: the ability to tell their stories to medical personnel who won't blame them for the assault but instead will actively listen. Justice: the ability to define justice. It may include court hearings, or something as simple as safe housing, alternate routes to work, and/or the ability to work at a different branch of the same business. Impact By implementing a trauma-informed response to sexual violence, agencies can better serve survivors, speed their recovery, and avoid inadvertently re-traumatizing victims. Implications Research suggest that trauma-informed approaches can reduce stress, speed healing, reduce substance abuse, reduce depression and Post Traumatic Stress Disorder (PTSD), promote psychological well-being, and help victims become functioning members of society again.

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### Prevalence of sexual violence in school children in Brazil: National School Health Survey 2019

Deborah Malta<sup>1</sup>, Nádia Vasconcelos<sup>2</sup>, Fabiana Andrade<sup>2</sup>, Isabella Pinto<sup>2</sup>, Crizian Gomes<sup>2</sup>, Gisele Andrade<sup>2</sup>, Juliana Bottoni<sup>2</sup>, Marli Montenegro<sup>3</sup><sup>1</sup>Departamento de Enfermagem Materno-Infantil e Saúde Pública, Escola de Enfermagem, Universidade Federal de Minas Gerais, Brasil, <sup>2</sup>Universidade Federal de Minas Gerais (UFMG), Brazil, <sup>3</sup>Ministerio da Saude Brasil, Brazil

Adolescents are considered one of society's vulnerable groups, and are exposed to different types of social and health problems, among which violence stands out. Sexual violence (SV) stands out as one of the main forms of aggression against teenager. SV is defined as "any action in which a person, taking advantage of his position of power and making use of physical force, coercion, intimidation or psychological influence, with or without the use of weapons or drugs, compels another person - any sex - to have, witness, or otherwise participate in sexual interactions." The study analyzes data on sexual violence against adolescents using the 2019 National School Health Survey. Objectives To analyze the prevalence of sexual violence among students between 13 and 17 years old in Brazil. methods Cross-sectional study with data from National Survey of School Health 2019. It was analyzed the prevalence and respective 95% confidence intervals (95%CI) of sexual abuse and rape involving students from 13 to 17 years old of Brazil, according to sex, age groups, school type, aggressor, administrative region of residence and federative units.

Results: The prevalence of sexual abuse among students was 14.6% (95%CI: 14.2;15.1) and of rape was 6.3% (95%CI: 6.0;6.6). The prevalence was higher among the female students and of the age group of 16 and 17 years old. The most common aggressor was a intimate partner. Among schoolchildren who were raped, more than half reported to have experienced this violence before the age 13 years old (53.2%; 95%CI: 51.0;55.4). Conclusions: The sexual violence has a elevated prevalence among the Brazilian students between 13 and 17 years old. Besides, the aggressions were perpetrated, overall, by people in the family nucleus and intimate and affectionate relationships. There must be intersectoral articulation to develop public policies that act to face this problem.

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### Monitoring and evaluation of perinatal healthcare in Italy: data from the National Outcomes Evaluation Programme (years 2015-2021)

Alice Maraschini<sup>1</sup><sup>1</sup>Istituto Superiore di Sanità, Italy

Background and Objective: The National Outcomes Evaluation Programme (Programma Nazionale Esiti, PNE) monitors several aspects of perinatal health

care, with particular attention to the quality and appropriateness of health care in Italian maternities.

Methods: Perinatal health care was assessed by calculating seven indicators: two volume indicators (total number of deliveries; number of deliveries by caesarean section, CS); three process indicators (proportion of deliveries with primary CS; proportion of vaginal births after caesarean, VBAC; proportion of episiotomies in vaginal deliveries); and two outcome indicators (hospital readmissions within 42 days from hospitalization in case of vaginal delivery and CS). The information source was the National Hospital Discharge Records. Risk adjustment models were implemented to compare hospital performance and the impact of women's area of residence, eliminating confounding due to women's age, and comorbidities both before and at the time of hospitalization for delivery, as well as for potential clinical determinants of the mode of delivery.

Results: In Italy, the number of hospitalizations for birth has progressively decreased over time, from 484743 in 2015 to 398,506 in 2021. At the same time, the primary CS rate decreased from 25.1% in 2015 to 22.4% in 2021, and the proportion of episiotomies dropped from 24.4% to 12.3%. Both procedures demonstrated significant regional and hospital variability and a strong North-South gradient. Within the same period, the proportion of VBAC increased slightly from 8.4% to 10.7%.

Conclusions: The analysis based on perinatal indicators of the PNE shows high proportion of CS and episiotomy compared to the WHO recommended rates. In addition, the low proportion of VBAC and the persistence of a wide inter- and intra-regional variability suggest ample room for improvement in perinatal care in Italy.

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### Child development in the context of the COVID-19 pandemic: repercussions for health promotion

Debora Mello<sup>1</sup><sup>1</sup>University of Sao Paulo, Brazil

Introduction: The COVID-19 pandemic has made the health situation worldwide serious, with possible effects on children related to behavioral, dietary and emotional changes. Objective: To analyze care circumstances and concerns about child development in the context of the COVID-19 pandemic from the maternal perspective. Methodology: Longitudinal study, through telephone interviews with 86 mothers of Brazilian children between two and three years old, with the same participants in 2020, 2021 and 2022.

Results: Maternal reports express changes in the child's sleep routine, diet and behavior. Dialogues about the pandemic were not carried out with children, mainly in 2020 (48%), with an improvement in 2021 and 2022. From the maternal perspective, the pandemic situation can harm child development, reported in 2020 (40%), increased in 2021 (63%) and returned to the same level in 2022 (40%). Reading children's books was a practice carried out by the majority in 2020 (65%), 2021 (71%) and 2022 (63%). Use of electronic devices in children's routine was frequent in 2020 (78%), 2021 (80%) and 2022 (94%). More than 90% of children's vaccination status was up-to-date, and around 30% of families failed to take their children to health appointments during the analyzed period. Conclusions: There are gaps in activities to promote development, to establish limits and understand children's needs. The situation of the COVID-19 pandemic presents itself as a circumstance that can generate difficulties in the process of caring and providing development at home. Implications for health: Health care in the context of early childhood requires advances to increase the decision-making process and choices of everyday parenting practices. Primary health care for children with quality and proximity to families has the potential to promote development, reduce vulnerabilities and contribute to meeting the essential needs of children.

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### The associations of early formal childcare with problem behaviour trajectories from 5 to 14 years of age

Kathrin Burdenski<sup>1</sup><sup>1</sup>Loughborough University, United Kingdom

Background and Objective: Childcare provides the first opportunity to stimulate children's cognitive, social, and emotional development outside the home. We know little about how childcare is associated with mental health in childhood and adolescence. The Millennium Cohort Study, a large UK longitudinal study, was used to examine the relationship between age of starting childcare and weekly hours in formal childcare between birth and 5 years and externalizing and internalizing behavior trajectories from ages 5 to 14 years.

Methods: The sample comprised 6194 children. Parents reported externalizing and internalizing behaviors with the strengths and difficulties questionnaire at 5,

7, 11 and 14 years. Associations were analyzed using a multilevel general linear regression model, with adjustment for socio-economic position, maternal mental health, demographics, and child temperament.

Results: Later entry into childcare was associated with more internalizing but not externalizing behaviors, with the effect strengthening from 5 years to 14 years. In the fully adjusted model, starting childcare between 1-2 and 4-5 years compared to starting between 0-1 year was associated with 0.39 (-0.01, -0.79) and 0.98 (0.24, -1.71) higher internalizing behavior scores at 14 years. Children who spent more than 40 hours per week in childcare between birth and 3 years had 1.23 (0.58, 1.87) higher externalizing behavior scores at 5 years than children who spent no time in childcare. The association disappeared by 14 years. Weekly hours were not associated with internalizing behavior.

Conclusions: Results show that childcare is associated with subsequent mental health and that the timing matters. Childcare could play an important role in a population's mental health promotion, however so far this is only the case for internalizing behaviors, and high intensities might even be associated to more problem behaviors.

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### New perspectives for the school medical service in Italy

Eva Massari<sup>1</sup>, Luisa Brgonzoli<sup>1</sup>, Chiara Crepaldi<sup>1</sup>, Maria Iardino<sup>1</sup>, Damiano Fuschi<sup>2</sup>

<sup>1</sup>Fondazione The Bridge, Milano, Italy, <sup>2</sup>Università degli Studi di Milano, Italy  
Background and Objective: The School Medical Service was introduced in Italy in 1978 with the aim of developing health prevention and promotion targeted to school pupils. For many years it played a key role, but then it lost its relevance. Despite this, the National Prevention Plan 2020-25 considers it as a fundamental setting for health promotion and protection of the overall national community. Fondazione The Bridge launched an in-depth study aimed to develop an implementation strategy useful to create a new model of school medical service focused on health promotion.

Methods: The first step was building a multi-stakeholder working group that worked on the analysis of the literature review to collect examples of best practices at national and international level. The second step concerned the identification of strength and weakness of different regulatory aspects gathered from existing local practices. Three surveys addressed to mayors, teachers and headmasters have been carried out to collect their wishes and views, generating new ideas that have been proposed as suggestions to policy makers.

Results: The multistakeholders team identified key issues to be considered when developing a new school medical service able to support health promotion and prevention, including the possibility to consider the school as a vaccination setting. The position paper proposed a working model and concrete operative options for the development of policy initiatives.

Conclusions: An innovative strategy able to redesign the relationship between Primary Care, Social Health Services and School, within an integrated strategy able to gather relevant stakeholders (school, health services, municipality), has the potential to generate benefits and positive effects for students, their families and the overall community. Bringing social and health services closer to schools and raising awareness among students can positively influence the determinants of health and ensure greater equity in the provision of social and health services.

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### Adolescents' knowledge, self-efficacy, and the use of implant contraceptives in west point community, Liberia

Mildred Silikpoh<sup>1</sup>, Eementary Kpoh<sup>2</sup>

<sup>1</sup>Institute for Collective Health, Cuttington University Graduate School, Liberia, <sup>2</sup>Cuttington University Graduate School, Congo Town, Liberia

Background: Implant contraceptives are available for free in public health facilities and selected private clinics in most communities in Liberia for the purpose of controlling and preventing unplanned and unwanted pregnancies. Despite the freely available contraceptives, adolescents between the ages of 10 to 19 years still conceive. As a result, nearly 26% of adolescents unintentionally become pregnant, and 30% of pregnancies end in unsafe abortions.

Objective: The aim of this study was realized through the following objectives: 1. What is the extent of knowledge of adolescents on implant contraceptive use? 2. What is the extent of self-efficacy of adolescents on implant contraceptive use? 3. What is the extent of implant contraceptive use among adolescents?

Methods: A self-administered questionnaire survey was distributed to 294 female adolescents using stratified and simple random sampling. Descriptive analysis was conducted on the data using the Statistical Package for Social Sciences (SPSS)

software. Means and Standard deviations were used to determine the extent of knowledge, self-efficacy, and implant contraceptive use among adolescents.

Results: Nearly over half (52.2%) of the 294 surveyed female adolescents demonstrated having fair knowledge of the use of implant contraceptives. An estimated 41% of these respondents believed that implant contraceptive causes infection. Adolescents' motivation (self-efficacy) towards implant contraceptives use was low (overall mean of 2.29). The extent of adolescents' use of implant contraceptives was also low. Respondents that have used implant contraceptives recorded the least mean (2.38) which is interpreted as low for implant contraceptives.

Conclusions: These findings point out a huge gap in knowledge and self-efficacy levels of adolescents as well as their use of implant contraceptives. Hence, there is an urgent need for Sexual Reproductive Health (SRH) education programming, with a focus on the importance of implant contraceptives in the West Point Community in Liberia.

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### Evaluation of indicators of physical development in children and adolescent as a standard for health

Vanya Nedkova-Milanova<sup>1</sup>, Mariyana Stoynovska<sup>2</sup>, Daniel Monov<sup>3</sup>, Milena Karcheva<sup>4</sup>

<sup>1</sup>Department of General Medicine, Medical University, Pleven, Bulgaria,

<sup>2</sup>Department of Hygiene, Medical Ecology, Occupational Diseases and Disaster Medicine, Medical University, Pleven, Bulgaria, <sup>3</sup>Medical College, Sector Public Health Inspector, Medical University of Varna, Varna, Bulgaria, <sup>4</sup>Department of Infectious Diseases, Epidemiology, Parasitology and Tropical Medicine, Medical University of Pleven, Pleven, Bulgaria

Background and Objective: The assessment of the level of physical development is an element of the control over the health of the children and adolescent and occupies an important place in the practical activity of the health specialists. The aim of the study was analysis from the preventive examinations of the main indicators for the physical development of children and adolescent from 1 to 18 years in organized units in Rousse for 5-years period.

Methods: Data from reports of the Regional Health Inspectorate-Ruse, Ruse were used. We analysed, evaluate and monitor the health status of children and adolescent in organized groups in Rousse district for 5 years (2016-2020). Anthropometric indicators of height, weight and physical capacity were a marker of health. When performing an individual assessment of height and weight, according to anthropometric indicators, they are divided into three groups: Group I "norm", Group II "extended norm", Group III "outside the norm".

Results: The scope of the conducted research has better indicators for children 98% and 99% (2016,2017,2018,2019), than adolescents 97.16% (2016) to 95.93% (2020). For children and adolescents, the indicators in the "norm" are leading in the three indicators of height, weight and physical capacity. 2.38% of those exempted from physical education classes were found to be obese.

Conclusions: A good organization has been established to monitor the physical development of children and adolescent in Rousse district by Regional Health Inspectorate, physicians and staff in health offices for anthropometric research for 2016-2020. It is extremely important to carry out an annual preventive screening of children and adolescents in order to promptly detect deviations from their physical development.

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### Mortality profile of pregnant women with severe acute respiratory syndrome due to COVID-19 in Brazil: Pre- and post-vaccination

Danielle Kassada<sup>1</sup>, Maria Vilela<sup>1</sup>, Paula Costa<sup>2</sup>, Dalvani Marques<sup>2</sup>, Débora Santos<sup>2</sup>, Eliete Silva<sup>2</sup>, João Oliveira<sup>2</sup>, Luisa Silva<sup>2</sup>, Giulia Rios<sup>2</sup>, Amanda Camargo<sup>2</sup>, Victoria Santos<sup>2</sup>

<sup>1</sup>Public Health, University of Campinas, Brazil, <sup>2</sup>University of Campinas, Sao Paulo, Brazil

Background and Objective: Pregnant women are more susceptible to more severe Sars-CoV-2 infections, therefore the Brazilian ministry of health recommends immunization since July 2021 to reduce maternal morbimortality. This study aims to describe the mortality profile of Brazilian pregnant women due to COVID-19, in the pre- and post-vaccination period. Methods: A descriptive, cross-sectional, and comparative study of notifications for severe acute respiratory syndrome to COVID-19 in pregnant women in Brazil, based on extracted data from the influenza epidemiological surveillance information system from epidemiological week 1 to 26 of 2021 and 2022. To perform the analyses, the statistical software SAS in 9.4 version was used, and a significance level of 5% was considered.

Results: There were 883 deaths of pregnant women with Sars to COVID-19 in 2021 and 10 in 2022. In 2021, those who were 35 years or older, lived in the northern region, had fever, cough, dyspnea, respiratory distress, saturation lower than 95%, comorbidities, obesity, admission to the Intensive Care Unit (ICU), need for ventilatory support, were not vaccinated, and had an incomplete vaccination schedule were the ones with the highest proportion of cases that died. In 2022, pregnant women were 35 years old or older (50%), from the northeast region (40%), and brown (66.7%). Regarding clinical manifestations, fever (83.3%) and cough (62.5%) were the most identified symptoms. With regard to risk factors, 80% of pregnant women had at least one comorbidity and heart disease was the most prevalent (66.7%). Between these pregnant women, 66.7% needed ICU and 77.8% needed ventilatory support. As for vaccination, 70% were not vaccinated. Conclusions: The study allowed the characterization of the epidemiological profile of pregnant women with Sars to COVID-19 who died in Brazil. This profile may be related to the social determinants of health and the difficult access to health care services.

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### A systems thinking approach to better understand the causal relationships driving child stunting in the Lao PDR

Tari Bowling<sup>1</sup>

<sup>1</sup>Deakin University, Australia

Background and Objectives: The Lao PDR (Laos) has the highest rate of child-stunting (low height-for-age) in South-East Asia despite a higher gross national income compared to other countries. Stunting has significant implications for a country's future economic prosperity and productivity and remains a priority global health issue. A paradigm shift is needed if the burden of childhood stunting is to be reduced both in Laos and globally. This requires a better understanding of the underlying drivers of childhood undernutrition within context, and how these drivers interact to produce the symptomatic outcome of child stunting. Using community-based system dynamics (CBSD), a participatory approach that builds stakeholder capacity to learn and address complex problems, this research sought to better understand the fundamental dynamics of child-stunting in Laos and build stakeholder capacity in systems thinking.

Methods: The CBSD approach was adapted to the context of Laos incorporating literature reviews, exploratory system models, and two stakeholder group model building workshops in Laos. Current research and mental models of stakeholders were mapped, and a combination of synthesis and triangulation employed for data aggregation.

Results: Stakeholders developed five causal-maps of the child-stunting system, along with narratives articulating their understanding of child-stunting determinants in Laos. A thematic analysis of the data identified three key gaps between stakeholder knowledge, published literature, and socioeconomic data. Traditional practices and post-partum dietary restrictions, antenatal care and treatment by health care practitioners, and the education system were identified as core underlying drivers of child-stunting in Laos.

Conclusions: This research provides insights into the complexity of childhood stunting in Laos and delivers an adapted CBSD approach that can be applied to other complex public health problems in low-resource settings. Scaling up this research provides the opportunity to bridge the knowledge-policy gap and inform evidence-based, high-impact policies with improved health outcomes.

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### Cardiometabolic profile of Brazilian children and adolescents during the COVID-19 pandemic

George Machado-Coelho<sup>1</sup>

<sup>1</sup>Medicine School, Federal University of Ouro Preto, Minas Gerais, Brazil

Background: Cardiovascular Diseases (CVD) are the major cause of death in the world and, although predominate in adulthood, exposure to risk factors (RF) begins in childhood. Objective: To evaluate the associations between RF for CVD and overweight in children and adolescents during the COVID-19 pandemic. Methods: Population-based cross-sectional study with 948 students from Ouro Preto city, Minas Gerais, with the application of a sociodemographic and behavioral questionnaire, measurement of anthropometry, blood pressure and serum lipid profile in the year 2021. The association between overweight/obesity and sociodemographic, clinical and behavioral factors was determined by binary logistic regression adjusted for confounding variables, using a significance level of 0.05.

Results: The sample consisted of 51.2% boys, 56.6% adolescents, 68.6% black or brown, 86.6% public school students and 54.8% with family income < 2 minimum

wages. In the clinical evaluation, 25.3% had a waist circumference > percentile 90th, 23.2% were overweight, 8.5% were obese, 3.3% were hypertensive, 68.9% were hypercholesterolemic and 56.0% were hypertriglyceridemic. Compared to adolescents, children were more likely to have hypercholesterolemia (OR 1.75 [1.31-2.33], p=0.001) and hypertriglyceridemia (OR 1.74 [1.34-2.27], p<0.001). Overweight students are more likely to have a birth weight > 4,000g (OR 2.13 [1.05-4.32], p=0.037), family history of obesity (OR 2.65 [2.00-3.51], p<0.001) and diabetes mellitus (OR 1.83 [1.18-2.84], p=0.007), being hypertensive (OR 8.26 [3.52-19.40], p<0.001) and hypertriglyceridemic (OR 1.89 [1.42-2.53], p<0.001). Discussion: A previous study carried out with students from Ouro Preto detected a lower prevalence of waist circumference > percentile 90th (8.0%), overweight (8.2%), obesity (6.7%), hypertension (2.7%), hypercholesterolemia (36.9%) and hypertriglyceridemia (17.0%). The worsening of the data may be a reflection of social isolation in the face of the COVID-19 pandemic. Conclusions: Therefore, in this post-pandemic era, it's essential to invest in strategies that effectively prevent RF in early stages of life.

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### Dietary intake with food taboos among pregnant women attending antenatal checkups at a hospital in Narayanganj city, Bangladesh

Arifur Rahaman<sup>1</sup>, Mahabuba Afrin<sup>2</sup>, Supra Mondal<sup>3</sup>

<sup>1</sup>Department of Nursing Science, Rufaida College of Nursing, Dhaka, Bangladesh, <sup>2</sup>Department of Health Science, Graduate School of Biomedical and Health Sciences, Hiroshima University, Hiroshima, Japan, <sup>3</sup>Department of Urology Operation Theater, Dhaka Medical College Hospital, Dhaka, Bangladesh

Background and Objective: Food habits during pregnancy should be directed toward promoting the health and well-being of the mothers as well as their growing fetuses. But in Bangladesh, there are some misconceptions, beliefs, and practices regarding food intake during pregnancy, which put deleterious effects on the health of mothers as well as on that of their growing fetuses. The aim of this study is to find out the existing dietary intake and food taboos during pregnancy among Bangladeshis.

Methods: A descriptive cross-sectional study was conducted among pregnant women who attended antenatal checkups from Narayanganj Hospital, Bangladesh. A total of 129 participants were enrolled in the study according to the inclusion criteria. After taken consent from the respondents, a face-to-face interview was conducted with each respondent using a semi-structured questionnaire. Socioeconomic, food habits, and taboos data were collected after that data were analyzed by SPSS-25 version software.

Results: The mean age of the participants was 24.89 years, within them, 40.5% of age was 20-25 years. Among the participant 93.5% said some foods are harmful to the baby, as well they don't eat twin bananas (due to threat of twin fetuses), pineapple, coconuts, duck eggs, local mirka fish, local puti fish 83.7%, 82.5%, 25.2%, 29.3%, 79.7%, 13.0% respectively. Food taboos were significant among those with primary education level (P < 0.001), housewife occupation (P < 0.001), and family income BDT 21000-30000 (P < 0.001).

Conclusions: The overall findings revealed that most of the women thought some foods are harmful during pregnancy which is the misconception of that types of foods. The protective factors for food taboos were educational level, occupational status, and family income. Community-based nutritional health education and campaign can be effective to the intake of nutritional food during the pregnancy period.

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### Teachers' perceptions of school dropout among adolescents: a descriptive study conducted in five middle schools in Sousse Tunisia

Arwa Neffati<sup>1</sup>, Houyem Said<sup>1</sup>, Hela Ghali<sup>1</sup>, Soumaya Mhamdi<sup>2</sup>, Soumaya Bouali<sup>3</sup>, Nouha Abbassi<sup>3</sup>, Sana Bhiri<sup>3</sup>, Rania Bannour<sup>1</sup>, Aroua Kamel<sup>1</sup>, Fatimaezzahra Khouya<sup>1</sup>, Emma Hariz<sup>1</sup>, Soufiene Aidani<sup>1</sup>, Souhir Ayadi<sup>1</sup>, Salwa Khefacha<sup>1</sup>, Mohamed Rejeb<sup>1</sup>, Asma Cheikh<sup>1</sup>

<sup>1</sup>Department of Prevention and Safety of Care, Sahloul University Hospital, Sousse, Tunisia, <sup>2</sup>School of Sciences and Health Techniques of Sousse, Tunisia, <sup>3</sup>Higher School of Sciences and Techniques of Health of Sousse, Tunisia

Introduction: Dropping out of school is a problem that weighs heavily on the school system in Tunisia. Thus, Prevention programs are being implemented to improve the quality of education in Tunisia. The objective of our study is to describe the perceptions of middle-school teachers in the region of Sousse about school

dropout.

**Methodology:** A descriptive study was conducted among five middle-schools chosen randomly based on the lists of schools provided by the regional direction of sousse through a self-administered questionnaire from April 26th to June 1st 2022.

**Results:** A sample of 329 teachers was collected. The response rate was calculated at 86.02% with a predominance of females (62.6%). Most of the teachers interviewed mentioned 'student-related' factors such as lack of effort from the student (86.14%), low educational level (75.63%), and excessive drug and alcohol use (73.95%). They mentioned family-related factors: parental neglect and abandonment (83.2%), poor relationship between parents (81.24%) and divorce (80.25%). On the 'social level', the most mentioned factors were the influence of bad companions (80.25%) and violence (73.53%). In addition, 'the educational' system and its changes can intervene in the dropout as the lack of positive role models in education (75.21%), the large number of students per class (73.11%), the lack of resource persons specialists (68.9%), the lack of financial, human and material resources granted (67.68%).

**Conclusions:** It is important to emphasize the importance of dropout prevention in collaboration with the various stakeholders, in the detection of any deviant behavior and in the early management of students at risk.

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### Factors associated with electronic cigarette consumption in the covid-19 pandemic in young people

Eduardo Murillo<sup>1</sup>, Josue Dominguez<sup>1</sup>, Felix Celedonio<sup>1</sup>, Meghan Uriza<sup>1</sup>, Rocio Mendoza<sup>1</sup>

<sup>1</sup>Universidad del Valle de Mexico, Mexico

**Background:** In Mexico, the commercialization of vapers is considered illegal due to the damage it produces in its users, however, the use of electronic cigarettes has spread among young people worldwide, recognizing as users a total of 1.1% of the national population. **Objective:** To determine the factors associated with vape consumption in young people during the covid-19 pandemic. **Methods:** A cross-sectional, prospective study was carried out between December 2021 and April 2022, men and women residents of Veracruz aged between 12 and 25 years were included, excluding participants with a clinical diagnosis of anxiety, with treatment for addictions or anxiety, evaluating the reasons why which vape consumption is made, as well as the changes in consumption since the start of the pandemic. SPSS v22 software was used for data analysis, Chi2 test with Odds Ratio (OR) and 95% confidence interval (95%CI) and MannWhitney U test.

**Results:** 617 participants were included, identifying 15.5% of current vape users, 0.8% of the population stopped consuming during the pandemic, while 5.5% of the population started using it, 4.7% increased it, 1.1% decreased it, and 6.1% maintained their frequency of consumption. Age, sex, and perceived anxiety had values of  $p > 0.05$ , while having less than secondary education (OR/95%CI) (3.1/0.14-0.69), being a student (0.3/0.12-0.8), having high socioeconomic level (1.59-1.0-2.5), having a job (2.19/1.3-3.6), perceiving that vape increases work performance (7.4/3.2-16.2), that it increases academic performance (6.7/3.12-14.4) or perceive anxiety reduction when consuming it (4.22/2.61-6.82) had a value of  $p < 0.05$ . Likewise, those who vape their siblings (7.17/4.19-12.25), partner (9.14/5.14-16.2), relatives (2.24/1.44-3.49) or close friends (23.56/7.36-75.3) showed values of  $p < 0.05$ . **Conclusions:** During the pandemic, the use of Vape in young people increased, having as associated factors being of a high socioeconomic level, low educational levels, being a worker and having close contacts who are consumers.

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### Food insecurity and inadequacy of micronutrient intake in Brazilian children

Érica Priulli<sup>1</sup>, Mariana de Santis Filgueiras<sup>1</sup>, Juliana Farias de Novaes<sup>1</sup>

<sup>1</sup>Department of Nutrition and Health, Federal University of Viçosa (UFV), Minas Gerais, Brazil

**Background and Objective:** The relationship between food insecurity (FI) and micronutrient intake inadequacies is increasing in young ages. This study investigated the association between children's FI and micronutrient intake in Brazilian schoolchildren. **Methods:** This is a cross-sectional representative study conducted with children from the Schoolchildren Health Assessment Survey (PASE, in Portuguese). The sample consisted of 378 children aged 8 to 9 from all the schools in the urban area of Viçosa, Minas Gerais, Brazil, in 2015. The FI was evaluated by the Brazilian Food Insecurity Scale, and the food intake by three 24-hour-recall, being one of a weekend day. The consumption adequacy

was performed by the Estimated Average Requirement (EAR) method as a cut-off point. Poisson regression models were adjusted for sex, age, and race. Statistical analyzes were conducted by STATA 14 considering a statistical significance level of 5%. This study was approved by the Human Research Ethics Committee of the Universidade Federal de Viçosa.

**Results:** The majority of our sample were non-white (68.5%), and the mean per capita income was US\$ 242.28 ± 276.61. We identified a high prevalence of FI in children (48.4%). The prevalence of intake inadequacy of micronutrients was high as well, such as calcium (81%), iron (35.2%), zinc (47.6%), vitamin D (91.5%), phosphorus (47.9%), sodium (51.9%), copper (35.5%) and magnesium (52.9%). The FI was positively associated with intake inadequacy of calcium (PR: 1.21%; 95%CI: 1.10%; 1.33%), iron (PR: 1.41%; 95%CI: 1.07%; 1.86%), zinc (PR: 1.26%; 95%CI: 1.03%; 1.53%), phosphorus (PR: 1.27%; 95%CI: 1.08%; 1.49%), copper (PR: 1.43%; 95%CI: 1.10%; 1.89%), and magnesium (PR: 1.27% (1.08%; 1.51%). **Conclusions:** The high prevalence of food insecurity and its association with an inadequate intake of micronutrients indicate the need to implement public policies to improve access to micronutrients in children's diets in developing country as Brazil.

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### Coming of age: menstrual preparation for adolescent girls living in Palestinian refugee camps in the West Bank and Jordan

Rula Ghandour<sup>1</sup>

<sup>1</sup>Birzeit University, Occupied Palestinian Territory

**Background:** Menarche is the main milestone for adolescent girls marking the onset of their puberty. Adequate menstrual preparation is essential for a healthy menstrual life. This study aims to explore the menstrual preparation and related experiences of adolescent girls living in long-term Palestinian refugee camps in the West Bank and Jordan.

**Methods:** 39 in-depth interviews and 23 focus group discussions were conducted with 15-18 years girls between March and September 2018.

**Results:** The findings highlighted inadequate menstrual preparation of adolescent girls, which focused mainly on practical aspects and hygienic practices and neglected biological, emotional, or psychological aspects. Menstrual preparation was mainly the responsibility of mothers and to a lower extent, teachers, and usually hindered by a general culture of taboo and secrecy, what the girls referred to as "aib ". Appropriate information usually started after menarche, leaving girls with limited knowledge on what to expect or how to deal with menstruation. Girls' own reports indicated that many had their first periods with almost no information, resulting in a dramatic reaction with fear and anxiety as dominant feelings.

**Conclusions:** This study highlights the need to address menstrual preparation for adolescents. Preparation needs to be initiated early, before menarche, with adequate information, practices, and emotional and psychological support to help girls expect and respect what is happening to their bodies. This can be achieved by schools acknowledging the need for adequate information as a first step, followed by a collaborative atmosphere between households, schools, and health services.

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### The use of essential oils in birth care

Teresa Ferreira<sup>1</sup>, Leticia Domingues<sup>2</sup>, Ana Santos<sup>3</sup>, Juliane Souza<sup>2</sup>

<sup>1</sup>Municipal Health Department of Rio de Janeiro, Brazil, <sup>2</sup>Health Department of Rio de Janeiro Prefecture, Brazil, <sup>3</sup>Estate Institute of Cardiology, Aloysio de Castro of Rio de Janeiro, Brazil

**Background and Objective:** The World Health Organization (WHO) has a set of diverse practices, approaches, knowledge and beliefs in health, where plant, animal or mineral-based medicines are used, spiritual therapies, manual techniques that can be applied, separately or in combination, with the aim of maintaining well-being, treating, diagnosing and preventing diseases (WHO, 2002). Non-pharmacological methods are considered important for relieving parturients pain, fears and anxieties, reducing tensions caused by the parturition process, as well as providing comfort and well-being to women during labor. Among these methods, aromatherapy consists of the use of essential oils and has contributions to childbirth care. The objective of this study is to identify which essential oils (EO) can be used during childbirth and describe their applicability in childbirth care.

**Methods:** This is bibliographical research that used classic references in the field of aromatherapy, scientific articles and Ministry of Health Policies. **Results and Discussion:** Essential oils are precious for well-being, both for the body and for the spirit. Elevate the mind, mood and emotions. The use of the non-pharmacological method, for pain relief through massage with OE, can provide parturients with a

more comfortable, pleasant and less exhausting way of giving birth to newborns. The nursing team must have adequate knowledge and be trained to use it in their practice. The EO of French Lavender, Geranium, Sweet Orange, Ylang Ylang, Jasmine, Frankincense and others, always thinking about the conditions of the parturient.

Conclusions: EO can be an additional alternative for parturients, due to their effectiveness in relieving pain, anxiety and improving well-being during labor.

Descriptors: massage; aromatherapy; labor

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### Knowledge, attitude and practices on second hand smoke exposure among pregnant women

Badra Bannour<sup>1</sup>, Rania Bannour<sup>1</sup>, Imen Bannour<sup>1</sup>

<sup>1</sup>Farhat Hached Sousse, Tunisia

Background: Exposure to Second hand smoking (SHS) during pregnancy may endanger maternal and fetal health with long term consequences. The aim of this study was assess the knowledge, attitude, and practices of pregnant women in relation to environmental tobacco smoke exposure.

Methods: A cross-sectional study was conducted among a convenience sample of pregnant women who had a routine obstetrical appointment in the obstetrical gynecology department of the university Hospital Farhat Hached Sousse.

Results: Overall, 125 pregnant women were approached. The prevalence of exposure to SHS in pregnant women was 81.6%. The woman education level ( $p=0.001$ ), the education level of the partner ( $p=0.002$ ), living area ( $p=0.001$ ) and the mother working statue ( $p=0.034$ ) had significant association with the participant prevalence of exposure to SHS. The father's level of education (high school or university level) seems to be a determinant factor of both SHS ( $p=0.006$ ; OR 5.1; IC: [1.53-17.53]) and avoidance practice ( $p=0.04$ ; OR 8.62; IC: [2.03-36.6]).

Conclusions: We suggest strengthening health education for pregnant women on the health risks of active and passive smoking. These interventions should be comprehensive, multi-faceted and multi-sectorial involving primary health care providers, public health practitioners, policy makers, and media.

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### Epidemiological analysis of cases of syphilis in pregnant women and congenital in the city of Indaiatuba - SP - Brazil from 2012 to 2021

Luana Vianna<sup>1</sup>, Willian Marchioli<sup>1</sup>, Mariana Vianna<sup>2</sup>, Johannes Lochter<sup>3</sup>

<sup>1</sup>Unimax University Center, Brazil, <sup>2</sup>Medicine Department, Unimax University Center, Brazil, <sup>3</sup>Computer Engineering Department, Facens Center University, Brazil

The aim of the present study was to analyze the epidemiological profile and spatial distribution of gestational and congenital syphilis cases. This is a descriptive, exploratory and retrospective research, with a quantitative approach, conducted in Indaiatuba - SP (Brazil). Data from case reports confirmed by gestational and congenital syphilis of the Notification Recording Information System from 2012 to December 2021 were used. With the Global Positioning System technology, case coordinates were collected, and with the Quantum GIS program, version 1.7.0, the maps were built. There were 386 cases of gestational syphilis, presenting a growth of 73% in the period. The highest prevalence occurred in young, brown women with low schooling and housewives. Higher frequency of diagnosis in the third gestational trimester was evidenced, with higher prevalence of primary syphilis. There were 172 cases of congenital syphilis, with a 85% growth in detection rate and age prevalence between 1 and 28 days of life. It reveals the fragility in the research management, making it detrimental to permanent education, to qualify the professionals, in order to institute early identification, timely treatment and effective follow-up, to evaluate the quality of prenatal care in the municipality. Through the technique of simple regression artificial intelligence, the perspective for the coming years was analyzed in case the municipal management does not study ways to circumvent this public health problem.

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### Impact of the COVID-19 pandemic on smoking and vaping use among adolescents in Taiwan

Li-Chuan Chang<sup>1</sup>, Pei-Ching Chen<sup>2</sup>, Miauh-Shin Chen<sup>3</sup>, Po-Chang Tseng<sup>3</sup>, Yue-Chune Lee<sup>4,5</sup>

<sup>1</sup>Geriatric and Long-Term Care Research Center, College of Nursing, Chang Gung University of Science and Technology, Taoyuan City, Taiwan, <sup>2</sup>Department of Health and Welfare, College of City Management, University

of Taipei, Taipei City, Taiwan, <sup>3</sup>Health Promotion Administration, Ministry of Health and Welfare, Taipei, Taiwan, <sup>4</sup>Institute of Health and Welfare Policy, School of Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan, <sup>5</sup>Master Program in Transdisciplinary Long-term Care and Management, National Yang Ming Chiao Tung University, Taipei, Taiwan

Background and Objective: The coronavirus disease 2019 (COVID-19) pandemic had led to huge impact on society. The corresponding guidelines and legislation to limit social interaction, such as 2021 stay-at-home mandate for senior-high school level and below in Taiwan ("lockdown" restrictions), may have influence on health behaviors in various ways. This study aimed to examine whether 2021 COVID-19 lockdown in Taiwan is associated with the change in the use of cigarette and electronic cigarette (e-cigarette) among adolescents.

Methods: This population-based pooled cross-sectional analysis study was conducted using the 2019 and 2021 Taiwan Global Youth Tobacco Survey. A total of 70,804 participants (aged 12 to 18-years) was included. The outcome measures were cigarette and e-cigarette use. Multiple logistic regression was carried out to examine the association.

Results: The prevalence of current cigarette use decreased from 6.2% in 2019 to 5.4% in 2021; nevertheless, the prevalence of current e-cigarette use increased from 4.2% in 2019 to 6.3% in 2021. Multivariate analysis showed that adolescents were less likely to report use cigarette in 2021 (aOR= 0.79, 95% CI: 0.66 to 0.95) than in 2019. In contrast, adolescents were more likely to report use e-cigarette in 2021 (aOR= 1.76, 95% CI: 1.38 to 2.25) than in 2019. Male, disposable income, parental smoking, peers smoking, household second-hand smoke exposure, parents' education level and anti-smoke class were important factors for both the use of cigarette and e-cigarette use.

Conclusions: We found the diverse influences of 2021 COVID-19 lockdown on adolescents' tobacco product use. There was decreased use of cigarette yet increased use of vaping, though the sale of it remains illegal, among adolescents in Taiwan. Public health efforts to prevent and address the health harm from use of vaping or the potential switch from other tobacco products among adolescents is urgently needed.

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### Residential exposure to magnetic fields from high-voltage power lines and risk of childhood leukemia in an Italian population

Marcella Malavolti<sup>1</sup>, Carlotta Malagoli<sup>1</sup>, Tommaso Filippini<sup>1</sup>, Maurizio Poli<sup>2</sup>, Monica Cellini<sup>3</sup>, Giovanni Palazzi<sup>4</sup>, Marco Vinceti<sup>1</sup>

<sup>1</sup>University of Modena and Reggio Emilia, Italy, <sup>2</sup>Emilia Romagna ARPAEE, Environmental Prevention Area - West, Italy, <sup>3</sup>Pediatric Oncology and Hematology Unit, Department of Medical and Surgical Sciences for Mothers, Children and Adults, University of Modena and Reggio Emilia, Modena, Italy, <sup>4</sup>Pediatric Oncology and Hematology Unit, Department of Medical and Surgical Sciences for Mothers, Children and Adults, University of Modena and Reggio Emilia, Modena, Italy

Background: An excess risk of leukemia in children living close to high-voltage power-lines and therefore exposed to extremely low frequency magnetic fields has been suggested, though not all studies yielded consistent results, and a possible role of confounding and exposure misclassification could not be entirely ruled out. Methods: We investigated the risk of childhood leukemia associated with magnetic fields exposure from 132+ kV power lines within a population-based case-control study in two Northern Italy provinces, Modena and Reggio Emilia. We included all the 182 registry-based childhood leukemia cases diagnosed from 1998 to 2019, and 726 age, sex and province of residence-matched controls. We assessed exposure by calculating distance from house to nearest power line in a geographical information system database and by modeling magnetic fields at the subjects' residence. We run analyses in the overall population, restricted to acute lymphoblastic leukemia (ALL) cases, and stratified by age (<5 and ≥5 years). Results: Compared to those living ≥ 400 m from high-voltage power-lines, children living <50 m and 50-<100 m from power lines showed a disease odds ratio (OR) of 3.0 (95% CI 0.7-13.3) and 1.6 (95% CI 0.5-5.1), respectively. The excess risk close to the power lines was higher for the ALL subtype (OR 3.0, 95% CI 0.7-13.3) and among children diagnosed after 5 years (4.1, 95% CI 0.8-20.6). Results did not substantially differ when exposure was based on modeled magnetic fields, though risk ratio estimates became more statistically unstable. Conclusions: We found a statistically imprecise excess risk for childhood leukemia associated with close proximity to high-voltage power lines, which appeared to be stronger for the youngest children.

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### What do children aged 5 to 14 years die from in the state of Rio de Janeiro? Analysis of the period 2000-2019

Cynthia Boschi-Pinto<sup>1</sup>, Cynthia Boschi-Pinto<sup>1</sup>, Helen Curvello<sup>1</sup>, Sandra Fonseca<sup>1</sup>, Pauline Kale<sup>2</sup>, Helia Kawa<sup>3</sup>, Julia Correia<sup>4</sup>

<sup>1</sup>Fluminense Federal University "Rua Marquês de Paraná, 303, 3º andar, anexo ao Hospital Universitário Antônio Pedro (Huap), Centro, Niterói - RJ E-mail: isc@id.uff.br" Brazil, <sup>2</sup>Federal University of Rio de Janeiro Brazil,

<sup>3</sup>Fluminense Federal University, <sup>4</sup>Fluminense Federal University Brazil

**Background and Objectives:** Until recently, mortality among children aged 5 to 14 years did not receive the same attention as that of children under 5 years, despite an estimated number of one million annual deaths in the former group. This lack of attention has resulted in an important gap in knowledge on child health. This study aimed to investigate the magnitude and trends of cause-specific mortality among children 5 to 14 years of age in the state of Rio de Janeiro (RJ) from 2000 to 2019. **Methods:** Population-based ecological study, using data from the Brazilian Mortality Information System (MIS). We calculated mortality rates per 100,000 children by chapters, groups, and categories of causes of death (ICD-10) and by age groups (5-9 and 10-14 years). Trends were estimated by Joinpoint regression. **Results:** Mortality rates among children aged 10 to 14 years were higher than those among children 5 to 9. The five leading causes of death were the same in both age groups, but they ranked differently. The two leading ones were external causes and neoplasms (31% and 15% among children aged 5 to 9 years; 45% and 11% among children aged 10 to 14 years). Among children 5 to 9 years, the mortality trend showed an 8.5% annual decline from 2011 to 2015. Among those aged 10 to 14 years, the annual decline was 1.3% from 2000 to 2019. Mortality due to external causes decreased in both age groups, except for the category "Assault by unspecified firearm" (boys, 10 to 14 years) and "Unspecified drowning and submersion" (boys, 5 to 9 years). Mortality caused by neoplasms remained steady in both age groups. Infectious and respiratory diseases decreased differently between the two groups.

**Conclusion:** Most causes of death are preventable or treatable, indicating the need for health and intersectoral investments.

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### The mutaba'ah Study: a cohort profile of the largest mother and child prospective cohort study in the United Arab Emirates

Luai Ahmed<sup>1</sup>, Zufishan Alam<sup>1</sup>, Iffat Elbarazi<sup>1</sup>, Fatma Al-Maskari<sup>1</sup>, Rami Al-Rifai<sup>1</sup>, Tom Loney<sup>2</sup>

<sup>1</sup>United Arab Emirates University United Arab Emirates, <sup>2</sup>Mohammed Bin Rashid University of Medicine and Health Sciences United Arab Emirates

**Background and Objectives:** The effect of early-life exposures on health and development in childhood and adulthood is well established. The lack of cohort studies on maternal and child health in the United Arab Emirates led to the conception of the Mutaba'ah Study. The study aims to secure epidemiological data on maternal and child health from pregnancy until the child reaches 18 years to investigate the mother's health and maternal outcomes and the maternal and early-life determinants of infant, child and adolescent health.

**Methods:** The Mutaba'ah (meaning follow-up in Arabic) Study is a large ongoing prospective mother and child cohort study in Al Ain city, targeting to recruit 17,000 mother and baby pairs. Recruitment started in 2017. Participants are recruited from major hospitals in Al Ain and include pregnant women from the Emirati population aged e18 years, preferably in the first trimester, able to provide informed consent, and their offspring. Data is collected via questionnaires and medical records at various time points.

**Results:** To date, more than 13,000 participants aged 18-54 years have been recruited, reflecting a response rate of 87.0%. The average maternal age was 31 years, and around 29% were primiparous, unemployed (67.4%), had higher than secondary education (53%), and perceived they had sufficient social support (91%). Most initiated antenatal care late in pregnancy (54%) and were worried about birth (65%). The majority had not taken vitamin D (78%), folate (77%) or iron (85%) prenatally. One-third were found to be exposed to passive smoking (34%), whereas nearly one-third of the multigravida women had a history of gestational diabetes (30%).

**Conclusion:** The Mutaba'ah Study is establishing a valuable and rich scientific database to provide research-based evidence on the factors affecting maternal health during pregnancy and childbirth and their implications and other early-life exposures on children's future growth, development, and health.

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### Parents of children with a congenital anomaly or cerebral palsy

### Identified needs when interacting with health services

Ana Santos<sup>1</sup>, Paula Braz<sup>1</sup>, Teresa Folha<sup>1</sup>, Ausenda Machado<sup>1</sup>, Carlos Matias-Dias<sup>1</sup>

<sup>1</sup>National Health Institute Doutor Ricardo Jorge, Department of Epidemiology, Portugal

Parents of children with a Congenital Anomaly or Cerebral Palsy identified needs when interacting with health services.

Children with a Congenital Anomaly (CA) or Cerebral Palsy (CP) have special health needs, with frequent use of healthcare services (HCS). Evidence suggests that parents positive engagement with healthcare providers is associated with health outcomes improvement and reduced healthcare costs.

A mixed-method modify research design was employed in a cross-sectional study with a convenience sample of parents of children diagnosed with CA (severe heart anomalies; spina bifida; orofacial clefts or Down syndrome) and/or CP. A semi-structured online questionnaire was sent by web link to focal points of five institutions in Portugal. Data was analysed through thematic content analysis (open-ended questions) and descriptive analysis (closed-ended questions).

A total of 254 questionnaires were returned. Findings support the need for better collaboration between services and professionals and the importance of information - which elicited apparently divergent results. Of the 15 closed items, two were less frequently rated as a reality within HCS: receiving written information (51.2') and being encouraged to ask questions (42.7%). Inversely, most parents believed that the health services and professionals taught them how to care for one's child (81.6%) and felt to be informed them about what affects the child's development (74.4%). Thematic analysis indicated that parents perceived lack of information and professional's lack of knowledge and training about their child specific conditions.

The mixed methods results indicated perceived lack of collaboration between health services and professionals. On the other hand, while parent perceive that HCS provided enough information on child health care and illness, they felt professional specific knowledge on the child condition as insufficient. This apparent divergent result may be related to parents perceiving health care to emphasize acute illness in detriment of the long-term management of chronic conditions and disabilities.

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### Gaps in doctors' practice: gestational diabetes mellitus diagnosis in the United Arab Emirates

Fatma Al-Maskari<sup>1</sup>, Maryam Bashir<sup>1</sup>, Luai Ahmed<sup>1</sup>, Rami Al-Rifai<sup>1</sup>, Iffat Elbarazi<sup>1</sup>, Shamma Aldhanhani<sup>1</sup>, Safeya Almadhaani<sup>1</sup>, Hajar Alktifan<sup>1</sup>, Mohammed AlJailani<sup>1</sup>, Juma Alkaabi<sup>1</sup>, Fatma Al-Maskari<sup>2</sup>

<sup>1</sup>United Arab Emirates University, Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, United Arab Emirates, <sup>2</sup>United Arab Emirates University, United Arab Emirates

**Background:** Gestational diabetes mellitus (GDM) screening and diagnosis is still a contentious topic worldwide, and guidelines used by medical doctors are widely inconsistent<sup>1</sup>. Different diagnostic criteria make it difficult to accurately combine or compare GDM burden, locally and globally<sup>2</sup>. In the United Arab Emirates (UAE), the local guideline recommends using the WHO 2013 criteria in diagnosing GDM. This study assessed doctors correct use of the recommended criteria. This will inform targeted practice recommendations and areas of emphasis in future guidelines.

**Methods:** We conducted a cross-sectional study among medical doctors who attend to pregnant women at 11 facilities in Al Ain, Abu Dhabi, UAE, from October 2021 to June 2022. A validated self-administered questionnaire<sup>3</sup> collected data from the doctors, online or in person. Data analysis was conducted using STATA statistical software version 16.1.

**Results:** 120 doctors were recruited. 87% were females. 43% were Family Physicians, 37% were Obstetricians, 10% were Endocrinologists, and 10% were General Practitioners. 60% vs. 40% worked at primary vs. tertiary facilities, respectively. About 40% specialized outside the Middle East and North Africa (MENA) region.

Only 31% of the doctors assessed were using the recommended GDM diagnostic criteria correctly. Factors associated with the correct use of the criteria include the doctors place of specialization (Abroad (US and UK) vs. MENA, 50.0% vs. 24.3%, p=0.013), place of practice (Tertiary vs. Primary facilities, 43.8% vs. 20.4%, p=0.011) and specialty [ObGyn (46.7%), Endo (41.7%), Family physicians (16.7%) and GPs (0.0%)] (p=0.003). Up to 16% of the doctors were using multiple GDM guidelines.

**Conclusion:** Our study has shown gaps in doctors practice regarding GDM diagnosis in the UAE. We recommend training and re-training doctors with

regular monitoring and evaluation by UAE Health Authorities regarding the use of GDM guidelines. Further qualitative research could reveal specific challenges experienced by doctors in GDM management.

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### Teens talk vaping: a co-produced participatory study on the micro-geographies of teen vaping in Canada

Stephanie Coen<sup>1</sup>, Kendra Nelson Ferguson<sup>2</sup>, Danielle Tobin<sup>2</sup>, Shauna Burke<sup>2</sup>, Timothy-Jireh Dela Cruz<sup>2</sup>, Laila Girum<sup>2</sup>, Rebecca Haines-Saah<sup>3</sup>, Tanya Iwas<sup>2</sup>, Bhargav Kandlakuti<sup>2</sup>, Aliana Manji<sup>2</sup>, Purushoth Megarajah<sup>2</sup>, Ricardo Soto Canales<sup>2</sup>, Terry Spencer<sup>4</sup>, Jason Gilliland<sup>2</sup>

<sup>1</sup>University of Nottingham, School of Geography, United Kingdom, <sup>2</sup>Western University, Canada, <sup>3</sup>University of Calgary, Canada, <sup>4</sup>London District Catholic School Board, Canada

**Background and Objective:** The increase in vaping (e-cigarette use) among youth in Canada and elsewhere has become a serious public health concern. Among teens in Canada (16-19 years), vaping prevalence increased from 29.3% in 2017 to 40.6% in 2019. The 2019 Canadian Tobacco and Drug Survey found that among youth aged 15-19, 87% had vaped nicotine and 40% had vaped cannabis in past 30 days. The history of failed tobacco cessation and substance use campaigns targeted at youth has shown that effective health promotion begins with evidence that centres young people's experiences in meaningful ways. The "Teens Talk Vaping" project sought to co-produce research about teen vaping with teens to inform the development of evidence-based vaping education materials in collaboration with local public health authorities and school board partners.

**Methods:** Our participatory approach included a capacity-building programme to train teen team members to contribute to the project as 'co-researchers', equipping them with the research skills necessary to contribute to all phases of the project, from data collection through to knowledge translation. Paired with adult team members, teen co-researchers facilitated 7 online focus groups with teens (n=17) from across Canada, including teens who vaped and those who did not, to better understand how vaping features in their everyday environments.

**Results:** Our thematic analysis generated five themes: (1) Secrecy and surveillance at school; (2) Online omnipresence; (3) Social pressures and positionings; (4) (Un)restricted mobilities and access; and (5) Re-thinking school-based vaping education.

**Conclusion:** Our findings reveal the extent to which exposure to vaping is deeply embedded and normalised in the everyday micro-geographies of teens in Canada.

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### Children's passive smoking - a small contribution to a big problem

Mária Bartušová<sup>1,2</sup>, Katarína Dostálová<sup>1</sup>, Ondrej Hinček<sup>1,2</sup>, Katarína Gazdíková<sup>2,3</sup>, Eva Horváthová<sup>1</sup>, Štefánia Moricová<sup>1,2</sup>

<sup>1</sup>Faculty of Public Health, Slovak Medical University, Bratislava, Slovakia,

<sup>2</sup>Slovak Medical University, Bratislava, Slovakia (Slovak Rep), <sup>3</sup>Faculty of Medicine, Slovak Medical University, Bratislava, Slovakia

**Introduction:** Worldwide, 40% of children, 33% of male non-smokers, and 35% of female non-smokers were exposed to second-hand smoke in 2004. This exposure was estimated to have caused 165,000 from lower respiratory infections, 36,900 from asthma, and 21,400 from lung cancer.

The main objective of the study was to determine the impact of passive smoking on the population of three to five-year-old children from the Bratislava region. The side objective was to determine the effect of second-hand smoke on the incidence of pneumonia or bronchitis in the same group.

**Methods:** The data were available from selected ELSPAC (the European Longitudinal Study of Pregnancy and Childhood) questionnaires. The study group consisted of 1,286 boys and girls between the ages of three and five from the Bratislava region exposed to passive smoking.

1,273 children were evaluated about the effects of passive smoking on occurrence of pneumonia and bronchitis and 763 were evaluated about the effect of passive smoking on height of children.

**Results:** We did not confirm a statistically significant relationship between passive smoking and the occurrence of pneumonia or bronchitis  $p=0.285$  (exposure to passive smoking over the weekend);  $p=0.166$  (over the week) in our cohort. We did not confirm significantly lower height among children who had been exposed to passive smoking during weekend ( $p=0,373$ ) nor during week ( $p=0,874$ ). Out of 1,034 parents, guardians and legal representatives answered the question concerning the number of smokers in households. 57.4% answered that no one smokes in the household, 25.9% that there is 1 smoker in the household, 16.7% answered that at least 2 household members smoke in the household.

**Conclusion:** Children are the most vulnerable group to the effects of passive smoking. We do believe that the need for further studies aimed at monitoring the impact of passive smoking of children is still urgent.

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### Evolution of maternal mortality in West Africa (2000-2017)

Francisco Guillen Grima<sup>1</sup>, Sara Guillen-Aguinaga<sup>2</sup>, Laura Guillen-Aguinaga<sup>3</sup>, Ines Aguinaga-Ontoso<sup>4</sup>, Lucas Onamebele<sup>5</sup>

<sup>1</sup>Dept of Health Sciences, Universidad Publica de Navarra, Facultad de Ciencias de la Salud. Universidad Publica de Navarra. Avda Baranain sn, 31008 Pamplona, Spain., <sup>2</sup>Dept of Health Sciences. Universidad Publica de Navarra, Avda Baranain, s/n 31008 Pamplona, Spain., <sup>3</sup>Clinica Universidad de Navarra, Department of Nursing, Clinica Universidad de Navarra, Clinica Universidad de Navarra, Avda Pio XII 36, 31008 Pamplona, Spain., <sup>4</sup>Universidad Publica de Navarra, Dept of Health Sciences, Universidad Publica de Navarra, Avda Pio XII 36, 31008 Spain, <sup>5</sup>Catholic University of Central Africa, School of Health Sciences, Catholic University of Central Africa, Nkolbisson Yaoundé B.P: 11628 YAOUNDE 237 CAMERÚN, Cameroon

**Background:** Maternal Mortality is one of the leading causes of death among African women. United Nations Sustainable Development Goals state that by 2030, the global maternal mortality rate should be lower than 70 per 100,000 live births. This research aims to study the evolution of Maternal Mortality in Central Africa.

**Methods:** Maternal and population data of the countries in Central Africa ((Burundi, Cameroon, Central African Republic, Chad, Congo, DR Congo, Equatorial Guinea, Gabon, São Tomé and Príncipe) were extracted from UNICEF mortality databases from 2000 to 2017 (2017 being last the available data) The Regional mortality rates were estimated by weighting each country mortality rate with its population. Joinpoint regression was performed. The annual percentage change (APC) with 95% confidence intervals (95% CI) was calculated for the region and each country. Results: In the Central African region, maternal mortality decreased by 35.84%, from 798.35 per 100,000 in 2000 to 512.19 in 2017. The APC during the whole period was -2.7% per year (95% IC -2.8; -2.5). We detected three joinpoints in 2002, 2006, and 2011. Since 2006, the APC has been progressively decreasing, first to -2.4% in 2006-11 and later to -2.0% in 2011-14. Congo was the country with a higher decrease with an APC of -4.1% (95% IC -4.8;4.1), while Chad was the country in the region with the lower APC1.4% (-1.5;-1.3). We detected a slowdown in maternal mortality reduction in the region since the economic crisis that began in 2007.

**Conclusion:** Although Central Africa has experienced a considerable reduction in maternal mortality, there is still a long way to go to reach the target United Nations Sustainable Development Goals.

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### Assessment of the diet quality index-international in a sample of Italian primary school children: the I-MOVE project

Rossella Sacchetti<sup>1</sup>, Francesco Sanmarchi<sup>1</sup>, Francesco Esposito<sup>1</sup>, Carolina Poli<sup>1</sup>, Susan Scrimaglia<sup>1</sup>, Laura Dallolio<sup>1</sup>, Alice Masini<sup>1</sup>

<sup>1</sup>University of Bologna, Italy

**Background and Objective:** Assessment of diet quality is a major public health concern, considering the impact of nutrition on health status. Nutritional transition, intended as a modification of food preferences from traditional to unhealthier dietary patterns, greatly affects diet quality, especially for younger generations. The aim of this study was to evaluate the overall diet quality in a sample of primary school children using the Mediterranean adaptation of the Diet Quality Index-International (DQI-I).

**Methods:** This cross-sectional study was conducted among 112 children (6-10 years) in a primary school in Imola (Italy) in 2019. DQI-I explores four aspects considered necessary for a healthy diet: 1) variety 2) adequacy: the intake of those dietary elements that are required to protect against under-nutrition 3) moderation: the intake of food and nutrients related to chronic diseases which may need restriction 4) overall balance: macronutrients ratio. The analysis of the different categories of the DQI-I helps to identify which aspects of the diet need to be improved.

**Results:** The mean total DQI-I score was 59.14 (SD=8.48) on a 0 to 100 scale. Out of the 112 included children, only n=55 (49,1%) had a total score higher than 60 (indicating an intermediate/good diet quality). Adequacy had the highest score (27.13±5.64; min 0-max 40), followed by moderation (18.27±3.21; min 0-max 30) and variety (10.21±3.41; min 0-max 20). Overall balance had the lowest score (3.54±1.34; min 0-max 10). According to the adequacy category, the majority

of the sample reported adequate intake (>50% recommendations) for grains, fibers, proteins, iron, calcium and vitamin C. Most children failed to meet the recommended levels of vegetables and fruits intake.

Conclusion: Health education is necessary to improve the overall quality of children's nutrition habits, especially about the recommended intake of macronutrients and proper intake of fruits and vegetables.

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### **Femininity and gender inequalities: narratives of men authors of violence**

Dherik Santos<sup>1</sup>, Fabiane Simões<sup>2</sup>, Jeremias Simões<sup>3</sup>, Margareth Conceição<sup>3</sup>, Caroline Castro<sup>2</sup>, Rafael Caliarí<sup>3</sup>, Gabriela Martins<sup>3</sup>, Stephania Demarchi<sup>3</sup>, Maria Andrade<sup>3</sup>, Rita Lima<sup>3</sup>

<sup>1</sup>Universidade Federal de catalÃO, Departamento de medicina, Brazil,

<sup>2</sup>Universidade Federal do Espírito Santo, <sup>3</sup>Universidade Federal do Espírito Santo, Programa de pós-graduação em saúde coletiva, Brazil

Background: Gender inequalities in Brazil have foundations in patriarchy, capitalism and racism, studies need to be carried out to question the naturalization of social roles assigned to genders (male and female) that naturalize the dynamics of gender violence.

Objective: To analyze the narratives about femininity and gender inequalities from the point of view of male perpetrators of violence indicted by the Civil Police, referred to the Specialized Police Station for Women, a reference in Greater Vitória-ES.

Methods: This is a descriptive and exploratory study, with a qualitative approach, with 20 male perpetrators of violence (MPV) referred to a service of the Specialized Police Station for Assistance to Women, a reference for the municipalities of Greater Vitória-ES, Brazil. Data collection took place between September and October 2021, using a semi-structured interview. The narratives were transcribed and, with the help of Atlas.ti software, version 9.0, underwent an analysis of enunciation under the theoretical lenses of Habitus, by author Bourdieu, and Domination-exploration, by Saffioti. The research question was: what are the MPV narratives about femininity that, therefore, strengthen practices of gender inequalities?

Results: Male perpetrators of violence referred to the following central ideas about what it means to "be a woman": to be affectionate/caring, companion, faithful, respectful; have dialogue, posture; does not prevent man from carrying out his will; it is not vulgar; it is not conflictual; it does not go out alone for leisure or sell itself for money; no gender swap. It was observed that most cases of gender violence were motivated by jealousy.

Conclusion: These characteristics attributed to the female figure are a fertile ground for gender inequalities, as well as for violence against women, addressing women to the role of a docile, passive and submissive body. This view helps maintain the culture of men's domination over women.

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### **Men's involvement in Early Exclusive Breastfeeding (EEBF) - "a qualitative study of the causes of low men's involvement in early exclusive breast feeding in Nigeria"**

Sammy Joel Panwal<sup>1</sup>

<sup>1</sup>Datahub360, Abuja - Nigeria, Nigeria

Background: It is believed that breast milk alone is all an infant need to survive. Out of the 6.9 million children under the age of five who were reported dead globally in 2011, a million lives would have been saved by efforts like exclusive breastfeeding. Although the rates of exclusive breastfeeding for the past two decades have been increasing, it is still a long road to achieving the 100% global target coverage recommended by UNICEF. In Nigeria, men's participation in exclusive breastfeeding is perceived to be lower than in other countries. This situation is assumed to hinder men's support for exclusive breastfeeding. Thus, this study aims to explore the factors responsible for low men's involvement in exclusive breastfeeding.

Method: A qualitative research approach was adopted to properly explore the attitudes, practices, and factors responsible for men's low participation in Early Exclusive Breastfeeding (EEBF). Four (4) focus group discussions (FGDs) were carried out with thirty-two (n=32) men who were recent fathers aged 20 - 40 in four (4) states with each group comprising of 8 men using a purposive sampling method. The data was analyzed using thematic analysis. NVIVO software was used for coding and data management.

Result: Findings showed that attitudes and cultural practices/beliefs influence Men's decision to support or not support exclusive breastfeeding, limited men's

knowledge and lack of access to exclusive breastfeeding information impede men's readiness to support their wives/partners in exclusive breastfeeding, and men's perception of exclusive breastfeeding as women's role (gender role) hinders men from contributing in exclusive breastfeeding.

Conclusion: This study revealed that men's low involvement in exclusive breastfeeding is linked to attitudes and practices, knowledge limitation and lack of access to exclusive breastfeeding information, and gender perception of exclusive breastfeeding. Hence, this study recommends that exclusive breastfeeding interventions should target both men and women.

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### **Prevalence of congenital anomalies in newborns from a city in the southern region of Brazil**

Luana Silva<sup>1</sup>, Vera Ribas<sup>1</sup>

<sup>1</sup>Secretaria Municipal de Saúde de Campo Bom, Brazil

Introduction and Objectives: Congenital anomalies are characterized by structural or functional changes that occur during intrauterine life and can be identified before or at birth, or later in life. Approximately 50% cannot be linked to a specific cause, however, known causes include: genetic, infectious, nutritional, environmental, multifactorial factors. An estimated that these anomalies represent 6% of births in the world and 0.7% in Brazil.

The objective is to evaluate the epidemiological profile of congenital anomalies registered in the Live Birth Information System (SINASC) of the city of Campo Bom, localized of the state of Rio Grande do Sul, Brazil.

Methods: In Brazil, the notification of congenital anomaly is performed in the SINASC. Annually, approximately 24,000 newborns are registered in Brazil with some congenital anomalies.

The data were evaluated from January/2012 to August/2022 through quantitative analysis.

Results: In almost 10 years, 7,757 children were born in Campo Bom, of which 84 were diagnosed with congenital anomaly and of these 14 died. The information on congenital anomaly was blank and ignored at 11 and 16 times, respectively. Congenital anomalies with higher prevalence in the city are: unspecified polydactyly, other congenital deformities of the foot, unspecified hypospadias, unspecified congenital deformity of the foot, Down syndrome, other defects of upper limb reduction.

Conclusion: The information regarding congenital anomalies is under reported, there is failure in the records, and the diagnosis at birth is quite heterogeneous in different regions of the country. It's necessary to improve the records in the SINASC, strengthening the notification of these diseases to obtain more subsidies and improve the surveillance of congenital anomalies. In addition, we need to provide guidance on the measures to prevent these injuries, since 50% less can be prevented.

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### **Fetal mortality: the challenges of knowledge and intervention (FetRisks) - research protocol, São Paulo, Brazil**

Osmara Alves Viana<sup>1</sup>, Hillegonda Maria Dutilh Novaes<sup>1</sup>, Marcia Furquim de Almeida<sup>1</sup>, Rossana Pulcineli Vieira Francisco<sup>1</sup>, Gerusa Maria Figueiredo<sup>1</sup>, Gizelton Pereira Alencar<sup>1</sup>, Zilda Pereira da Silva<sup>1</sup>, Mara Sandra Hoshida<sup>1</sup>, Luciana Duzolina Manfré Pastro<sup>1</sup>, Lays Janaina Prazeres Marques<sup>1</sup>, Heitor de Andrade Junior<sup>1</sup>, Clarisse Martins Machado<sup>1</sup>, Luciana Regina Meireles Jaguaribe Ekman<sup>1</sup>, Andrés Jimenez Galisteo Junior<sup>1</sup>, Rodrigo Melim Zerbini<sup>1</sup>, Suely Fazio Ferracioli<sup>1</sup>, Renata Monteiro<sup>1</sup>, Paulo Saldiva<sup>1</sup>, Regina Schultz<sup>1</sup>, Luis Fernando Ferraz<sup>1</sup>, Nelson Gouveia<sup>1</sup>

<sup>1</sup>São Paulo University, Brazil

Background: Fetal mortality is still insufficiently known, valued, and studied in different contexts.

Objectives: This is a study protocol designed to identify a large and innovative number of epidemiologic and biological risk factors (demographic, social and environmental, maternal infections, placental alterations and angiogenic factors, gestational and fetal disorders, and prenatal care) and to understand their complex relationships, as well as factors related to fetal loss.

Methods: This is a prospective case-control study with estimated 415 cases (stillbirths) and 415 controls (live-births) carried out in 15 public hospitals in São Paulo City, Brazil. Data is being collected for cases and controls from mother's interviews, hospital records and antenatal cards. And from multiple genetic and serological analyses in samples of maternal and umbilical cord blood and the placenta. For a smaller number of cases traditional and non-invasive autopsies of the stillbirths are being performed and compared to imaging techniques. In

a subsample of 100 women additional interviews and psychometric scales are being performed.

Results: The COVID19 pandemic had a high impact on health services and on the research activities, a team offered constant field support and supervision to reduce case losses and technical and scientific meetings were offered. Until Nov-2022 269 cases and 269 controls were enrolled and carried out interviews, representing 64.8% of the defined sample. Data from antenatal cards and medical charts are being extracted of cases and controls. Placentas were obtained for 262 cases and controls and 265 maternal blood samples of cases and controls collected, 22.6% of the fetuses were referred for autopsy, and 93 (93%) interviews carried out with bereaved mothers.

Conclusion: The results will enable us to develop multiple analyses of the complex relationships of social, environmental, biological risk factors and health services and participate in the efforts to reduce stillbirths and its impact.

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### The impact of palivizumab reimbursement criteria on neonatal RSV hospitalizations and drug prescriptions: an area-based cohort study from the Tuscany Region, Italy

Vieri Lastrucci<sup>1</sup>, Giorgia Alderotti<sup>1</sup>, Martina Pacifici<sup>2</sup>, Lorenzo Stacchini<sup>3</sup>, Monia Puglia<sup>2</sup>, Elettra Bert<sup>4</sup>, Giulia Hyeraci<sup>2</sup>, Giuseppe Roberto<sup>2</sup>, Rosa Gini<sup>2</sup>, Fabio Voller<sup>2</sup>

<sup>1</sup>Epidemiology Unit, Meyer Children's Hospital, Florence, Italy, <sup>2</sup>Observatory of Epidemiology, Regional Health Agency of Tuscany, Florence, Italy,

<sup>3</sup>Medical Specialization School of Hygiene and Preventive Medicine, University of Florence, Italy, <sup>4</sup>Neonatal Intensive Care Unit, Meyer Children's Hospital, Florence, Italy

Background & objective: respiratory syncytial virus (RSV) is a leading cause of hospitalization in infants aged <2 years and palivizumab is a high-cost prophylaxis for RSV. In Italy reimbursement restrictions regarding palivizumab prophylaxis approved in 2016 have been revoked in 2017, restoring use in infants with Gestational Age (GA) >29 weeks. The study aimed to evaluate the impact of the 2016 restrictions (intervention) on RSV hospitalizations and palivizumab prescriptions for infants aged <2 years.

Methods: the study was funded by Tuscany Region. Four RSV epidemic seasons were considered: before-intervention (2015/2016), intervention (2016/2017) and after-revocation (2017-2019). For each season, all the Tuscany infants aged <2 years were retrospectively followed-up in administrative databases to evaluate the occurrence of a RSV infection-based hospitalization. Incidence rates (per 1,000 person-days) were calculated. Furthermore, palivizumab prescriptions were also evaluated.

Results: in a population of 274,810 infants aged <2 years, RSV hospitalizations were 1,210. In the intervention season, an increase in the incidence rate of RSV hospitalization and severe hospitalization were observed (before-intervention: 5.47 (95%CI 5.20-6.27) and 0.35 (95%CI 0.28-0.59); intervention: 7 (95%CI 6.7-7.91) and 1.46 (95%CI 1.32-1.9)); no differences in the distribution of the RSV hospitalizations for GA were observed. In the after-revocation seasons no significant differences were observed in RSV incidence rate compared with the intervention season. Palivizumab prescriptions showed a reduction of 44% in the intervention season; in the after-revocation seasons prescriptions increased compared with the intervention season (+38%), but remained below the numbers registered in the before-intervention season (-23%).

Conclusion: several reasons may be associated with the GA-unrelated increase in the RSV hospitalization rates observed after the restrictions and the lack of further significant changes after their revocation, including an increased attention in notifying RSV. The restrictions were associated with a reduction in the number of palivizumab prescriptions even after their revocation.

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### Malnutrition and anemia in children aged 6 to 59 months in the Autonomous Region of Príncipe and its relation to maternal health

Carina Castro Silva<sup>1</sup>, Elisabete Catarino<sup>2</sup>

<sup>1</sup>USP Espinho/Gaua Portugal, <sup>2</sup>Faculdade de Ciências da Nutrição e Alimentação da Universidade do Porto

Introduction: In low-income countries, malnutrition, including anemia, is a major cause of morbidity among children. Undernutrition and anemia in children will affect their growth, physical and cognitive development later in life, with consequences that extend beyond the individual. An analysis of malnutrition and anemia among children aged 6 to 59 months in the Autonomous Region of Príncipe was conducted.

Methods: A cross-sectional study was conducted in August 2018 on 218 children aged 6 to 59 months who accessed to health care. Weight for height/length, weight for age, and height/length for age were used to measure nutritional status, and hemoglobin concentration was determined using a portable hemoglobin analyzer. First, uni- and bivariate analyses will be conducted, followed by multiple logistic regression models.

Results: The prevalence of wasting was 3.7%, stunting 12.8%, low weight 6%, overweight 3.7% and obesity 0.9%. It was found that 83% of the children were anemic, with most cases being moderate to severe. Child anemia was significantly associated with fever in recent weeks ( $p=0.017$  adjOR 4.6 IC 1.3-16.0) and the lack of sanitary facilities ( $p<0.05$  adjOR 2.2 IC 1.0-4.8) and in children between 6-11 months ( $p=0.01$  adjOR 8.5 IC 1.7-42.7) and 12-23 months ( $p=0.03$  adjOR 3.3 IC 1.1-10.0) comparable with children aged 48-59 months. Wasting was more frequent in rural areas ( $p<0.013$ , OR=4.5 IC 1.2-16.6). Low birth weight was significantly associated with stunting ( $p<0.012$ , OR=3.9 IC 1.4-10.6) and low weight ( $p<0.001$ , OR=10.1 IC=3.0-33.7).

Conclusion: Anemia and stunting were most prevalent among children under two. The importance of vitamin supplementation at this stage is evident. Furthermore, the present study emphasizes the importance of maternal education in improving nutritional and anemia conditions. It also contributes to the development of strategies aimed at achieving the Sustainable Development Goals and improving health outcomes.

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### Correlates of Adolescent Pregnancy in The Context Of COVID-19: A Community-Based Study in India

Shruti Shukla<sup>1</sup>, Andrés F. Castro Torres<sup>2</sup>, Rucha Vasumati Satish<sup>3</sup>, Yulia Shenderovich<sup>4</sup>, Ibukun-Oluwa Omolade Abejirinde<sup>5</sup>, Janina Isabel Steinert<sup>6</sup>

<sup>1</sup>TUM School of Social Sciences and Technology, Technical University of Munich, Germany, <sup>2</sup>Center for Demographic Studies, Universitat Autònoma de Barcelona, Spain, <sup>3</sup>TUM School of Social Sciences and Technology, Technical University of Munich, Germany, <sup>4</sup>Wolfson Centre for Young People's Mental Health; Centre for Development, Evaluation, Complexity and Implementation in Public Health Improvement (DECIPHer), School of Social Sciences; Cardiff University, United Kingdom, <sup>5</sup>Division of Social & Behavioural Health Sciences, University of Toronto Dalla Lana School of Public Health & Women's College Hospital Research Institute, Toronto, Canada, <sup>6</sup>TUM School of Social Sciences and Technology, Technical University of Munich, Germany

Background and objective: Adolescent pregnancy is an important health indicator of the Sustainable Development Goals. In South Asia about one in five adolescent girls give birth before the age of 18 and in India, nine percent of 15-19 years old girls become pregnant each year. The aim of this study was to investigate the demographic, behavioural, social and external factors associated with adolescent pregnancy among girls aged 13-18 years in the state of Maharashtra, India.

Methods: Primary data from a cross-sectional study with adolescent girls aged 13 - 18 years in two regions in Maharashtra: around the city of Pune and rural villages of Sangli district was analysed. Quantitative data were collected face to face by trained local enumerators, and qualitative data were collected from seven in-depth interviews. Data analyses were done using StataMP 17 for descriptive, bivariate and multivariable logistic regression analyses.

Results: The final analysis was undertaken for 3049 respondents. At bivariable analysis, all variables except for participant's higher secondary education were significantly associated with adolescent pregnancy. The final model in the multivariable analysis showed that participant's age, marital status, number of sexual partners and COVID-19 related economic vulnerability increases the likelihood of adolescent pregnancy. Furthermore, predictors including residence in a rural location, participant's education, female sibling and mother's education decreases the likelihood of adolescent pregnancy. Thematic analysis of qualitative data revealed four potential channels linked with adolescent pregnancy: i) economic hardships and early marriage, ii) safety, social norms and early marriage, iii) social expectations and iv) lack of knowledge on contraceptives.

Conclusion: Demographic factors including age, place of residence, participant's education, mother's education, marital status and female sibling, behavioural factor including number of sexual partners and external factor including COVID-19 economic impact are important predictors of adolescent pregnancy in Maharashtra, India in the aftermath of COVID-19 pandemic.

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### Impact of covid-19 pandemic on lifestyle habits and mental health

### among italian adolescents: Results from the coalescent (change among italian adolescents) study

Loredana Covolo<sup>1</sup>, Barbara Zanini<sup>2</sup>, Monica Marullo<sup>2</sup>, Silvia Marconi<sup>3</sup>, Gaia Viviana Viola<sup>2</sup>, Umberto Gelatti<sup>1</sup>, Roberto Maroldi<sup>1</sup>, Nicola Latronico<sup>1</sup>, Maurizio Castellano<sup>2</sup>

<sup>1</sup>University of Brescia Department of Medical and Surgical Specialties, Radiological Sciences and Public Health Italy, <sup>2</sup>University of Brescia Department of Clinical and Experimental Sciences Italy, <sup>3</sup>Department of Clinical and Experimental Sciences Italy

**Background and Aim:** COVID-19 pandemic affected people's health in different ways. Our study aimed to investigate the impact of containment measures in a sample of Italian adolescents, two years after the beginning of the pandemic.

**Methods:** In collaboration with the Territorial School Office, we submitted an online survey to high school students in the province of Brescia (Northern Italy), investigating their change in food consumption habits and in physical and screen activities, sleep quality, psychological distress and smartphone addiction. The Smartphone Addiction Scale - Short Version and the Matthey Generic Mood Questionnaire were also part of the survey.

**Results:** We collected 1686 questionnaires, 48% male, 52% female, mean age  $16 \pm 1.5$  y. Among respondents, 63% did not perceive a substantial change in their diet, 48% improved their physical activity level, 38% declared an increase in body weight, and 26% reported that they had improved their eating habits, while only 11% reported that these had worsened. Half of participants showed a presence of a psychological distress and 46% were smartphone addicted. Compared to pre-pandemic period, time spent on digital device increased a lot especially for studying purposes (54%) compared to entertainment (28%) or boredom (30%). The psychological distress was significantly higher only in case of increased time spent on digital device for studying purposes (56% vs 37% who declared unchanged time,  $p < 0.0001$ ). According to a multivariate logistic analysis presence of a psychological distress was associated with female gender (OR 4.5,  $p < 0.0001$ ), age (OR 1.1,  $p = 0.001$ ), sleep duration < 8hours (OR 1.8,  $p < 0.0001$ ), and smartphone addiction (OR 1.4,  $p = 0.005$ ).

**Conclusions:** The findings highlighted slight changes in lifestyle behaviour, but a relevant presence of psychological distress and smartphone addiction. There is a need to understand how to promote good practices among young people, helping them to stay healthy after the COVID-19 pandemic.

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### Adjusting protocol for outdoor food marketing exposure for piloting in serbian school's neighborhood developed by working package six of the best remap joint action project

Jelena Rakic<sup>1</sup>, Biljana Kilibarda<sup>1</sup>, Milena Vasic<sup>1</sup>, Verica Jovanovic<sup>1</sup>

<sup>1</sup>Institute of Public Health of Serbia "Dr Milan Jovanovic Batut" Serbia

**Background and Aim:** Exposure to food marketing not only increases food consumption but also has a significant impact on food choices in children and adolescents. At the same time, prevalence of overweight and obese individuals in this age group is constantly increasing, reaching epidemic proportions. Restricting the marketing of foods that promote unhealthy dietary habits to children and adolescents is the focus of public health action. The objective is to adjust the methodology for outdoor food marketing exposure in a school neighborhood developed by WP6 of the Best ReMap Joint Action Project for use in Serbia.

**Methods:** A cross-sectional design is proposed to capture outdoor advertisements within a 500 - meter radius around the school perimeter. The proposed items eligible to be registered as food marketing include billboards, posters, bus shelters, advertisements for services and products, and any logo or form of branding that is present, as well as any outdoor promotional material displayed including promotional flyers, branded furniture and/or fencing. Recording is performed using a smart phone camera. It is proposed to record all advertising in order to provide a measure of the proportion of food marketing within all marketing. Two schools are selected for piloting the protocol.

**Results:** Majority of schools in Serbia have distributive school kitchens. However, schools with less than 100 students according to the national regulation related to school size, are not obliged to have school kitchen. In those schools more than half of the children buy food in the school neighborhood so recording of fast-food outlets in school neighbourhoods is also needed.

**Conclusion:** Outdoor advertising around schools presents a potential frequent source of childrens exposure to unhealthy foods. Therefore, policy interventions to reduce exposure and regulate the content of outdoor food marketing near schools are needed.

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### Preconception health in women of childbearing age and lifestyles

Emanuele Gatta<sup>1</sup>, Drieda Zaçe<sup>2</sup>, Anna Viteritti<sup>3</sup>, Alessia Orfino<sup>4</sup>, Luigi Petrella<sup>1</sup>, Maria Pietro<sup>1</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore Italy, <sup>2</sup>Università Cattolica del Sacro Cuore Albania, <sup>3</sup>Fondazione Policlinico Universitario A. Gemelli IRCCS Italy, <sup>4</sup>ASL Roma 2 Italy

**Background:** Daily lifestyles, including diet, BMI control, physical activity, smoking, alcohol and drugs play an important role in preconception health of women of childbearing age. The aim of this cross-sectional study is to describe, in the Italian context, the lifestyles of young women of childbearing age that may have an impact on preconception health.

**Methods:** From July 2020 until April 2021 an anonymous validated online questionnaire was administered to a sample of 340 women aged 18-25 years who were attending secondary grade schools and universities in Italy.

**Results:** In the previous 3 days, the wide majority of participants had at least one portion of pasta or rice (93.82%), bread (80.59%), meat (90.29%), fruit (81.76%), while less than half had fish (45.59%) or legumes (42.65%). 28.24% of the women was a smoker, in average 5.35 cigarettes/day (SD 3.33), and in average started smoking when aged 16.79 years (SD 2.25). 38.82% of women drank alcohol, more frequently wines and beer (71.88% and 69.53%, respectively), and mainly started drinking, particularly for cocktails, when aged 14-17 (63.57%). 18.53% of women used drugs, mostly marijuana (79.37%). Only 53.53% of women did physical activity, however 94.27% of the remaining had done it in the past. 69.03% of participants stopped doing physical activity due to a lack of time. A higher prevalence of alcohol drinkers was found among stressed women, compared to not stressed ones (41.79% vs 25%,  $p = 0.015$ ). Among most socially fulfilled women, compared to least ones, were found higher prevalences of underweight (18.75% vs 7.69%,  $p = 0.016$ ) and smoking (39.58% vs 21.43%,  $p = 0.045$ ).

**Conclusion:** To improve lifestyles of young women, it is crucial promoting policies to encourage healthy diets for improving fish and legumes intake, physical activity, mental health and personal fulfilment, as well as to raise awareness and discourage adolescents from unhealthy behaviours.

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### Factors influencing the practice of breastfeeding among healthcare workers mothers

Rania Nakhli<sup>1</sup>, Imene Kacem<sup>1</sup>, Mohamed Kahloul<sup>2</sup>, Imen Mlouki<sup>3</sup>, Mohamed Ajmi<sup>2</sup>, Najja W<sup>2</sup>, Mrizak N<sup>1</sup>

<sup>1</sup>Department of Occupational Medicine, Farhat Hached Academic hospital, Faculty of Medicine of Sousse, University of Sousse, Sousse, Tunisia,

<sup>2</sup>Department of Anesthesia and Intensive Care, Sahloul Academic Hospital, Faculty of Medicine of Sousse, University of Sousse, Sousse, Tunisia,

<sup>3</sup>Department of Preventive and Community Medicine, Mahdia Academic Hospital, Faculty of Medicine of Monastir, Tunisia

**Background:** The benefits of breastfeeding concern both the health of the mother than that of her child, and are observed at short and long term, resulting in a reduction in infantile morbidity and mortality. WHO recommends exclusive maternal breastfeeding during the six first months of the baby life. However, breastfeeding rates are still below the desired expectation.

The aim of this study was to assess the perceptions of healthcare workers (HCW) regarding early weaning from breastfeeding and to study the factors associated with this practice.

**Methods:** This cross-sectional study was conducted over a period of 2 months among HCW at the Farhat Hached teaching hospital who have at least one child under the age of five years. Early weaning was defined as the cessation of exclusive breastfeeding before the age of 3 months.

**Results:** A total of 100 women participated in this study. The mean age was  $38 \pm 9.1$  years. Nurses were the most represented occupational category (54%) with an average seniority of  $9.9 \pm 9$  years. Early weaning was reported in 58.3% of cases, imposed by obligations in 48.4% of cases. Satisfaction with the duration of breastfeeding was reported in 53% of cases. The main causes of early weaning were lack of sleep (53.3%), nervousness, stress and depression (40%) and lack of time (38.3%). After univariate analysis, only skin-to-skin contact was significantly associated with continued breastfeeding ( $p < 0.001$ ).

**Conclusion:** Promoting the continuity of breastfeeding for HCW mothers should be a priority for decision makers. Thus a cooperative attitude must be encouraged in the workplace, to promote breastfeeding practices.

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### Perinatal anxiety and depression and birth-related post-traumatic

### stress disorder: Prevalence and determinants in a cohort of portuguese women

Ana Chaves<sup>1</sup>, Tiago Pinto<sup>2</sup>, Inês Jongenelen<sup>3</sup>, Diogo Lamela<sup>4</sup>, Ana Morais<sup>2</sup>, Raquel Costa<sup>5</sup>

<sup>1</sup>ISPUP - Instituto de Saúde Pública, Universidade do Porto, Porto, Portugal; Instituto de Saúde Pública, Universidade do Porto Rua das Taipas, 135, 4050-600 Porto, Portugal, <sup>2</sup>Digital Human-Environment Interaction Laboratory, Universidade Lusófona, Portugal, <sup>3</sup>Digital Human-Environment Interaction Laboratory, Universidade Lusófona, Portugal, <sup>4</sup>Digital Human-Environment Interaction Laboratory, Universidade Lusófona, Portugal, <sup>5</sup>EPIUnit, Instituto de Saúde Pública, Universidade do Porto, Rua das Taipas, 135, 4050-600 Porto, Portugal; Laboratório para a Investigação Integrativa e Translacional em Saúde Populacional (ITR), Porto, Portugal; Digital Human-Environment Interaction Labo EPIUnit, Instituto de Saúde Pública, Universidade do Porto, Rua das Taipas, 135, 4050-600 Porto, Portugal; Laboratório para a Investigação Integrativa e Translacional em Saúde Populacional (ITR), Porto, Portugal; Digital Human-Environment Interaction Labo Portugal

Background: Perinatal anxiety, depression, and birth-related post-traumatic stress disorder (PTSD) are important Public Health problems. Comorbidity of these disorders may occur, with preventable short and long-term burden for women, children and families. The post COVID-19 pandemic period represents an opportunity for the collection of updated and empirical data, and for fostering screening and follow-up practices on perinatal mental health.

Objectives: The aims of this study are to assess (a) the prevalence and determinants of clinically significant symptoms of anxiety and depression during the perinatal period and birth-related PTSD; (b) the prevalence and determinants of comorbid profiles.

Design and methods

This longitudinal study, starting in 2023, expects to recruit 321 women and assess them during the third pregnancy trimester and at 2, 5, and 12 months postpartum. Sociodemographic, psychological and obstetric/gynecologic data will be collected. Perinatal anxiety and depression symptoms will be measured using the State-Trait Anxiety Inventory (STAI-S) and the Edinburgh Postnatal Depression Scale (EPDS), respectively, and birth-related PTSD will be measured using the City Birth Trauma Scale (City BiTS). Prevalence data will be analyzed using descriptive statistics and potential determinants of anxiety, depression, and birth-related PTSD will be determined using logistic regressions.

Conclusion: We expect this study to provide updated data on the (a) prevalence and determinants of anxiety, depression and birth-related PTSD; (b) comorbidity of symptoms of anxiety, depression and birth-related PTSD. Ultimately, the results can inform evidence-based decisions to improve perinatal mental healthcare policies and investments in mental health-friendly public policies.

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### Prevalence and associated factors to cigarette smoking among school adolescents in tunisia, 2021

Ahlem Silini<sup>1</sup>, Salsabil Rejaibi<sup>2</sup>, Imen Mouki<sup>5,6,7</sup>, Majdi Zid<sup>1</sup>, Sarra Ben Youssef<sup>1</sup>, Nada Zoghalmi<sup>1</sup>, Rym Mallekh<sup>1</sup>, Ibrahim Ben Slema<sup>1</sup>, Nabil Ben Salah<sup>1</sup>, Hajer Aounallah-Skhiri<sup>1,2,3</sup>

<sup>1</sup>Department of Epidemiology, National Institute of Health, Tunisia,

<sup>2</sup>SURVEN, Research Laboratory, Nutrition Surveillance and Epidemiology, Tunisia, <sup>3</sup>Medical Faculty of Medicine, Tunis El Manar University, Tunisia,

<sup>4</sup>Department of Public Health, University Hospital Tahar Sfar Mahdia, Tunisia, <sup>5</sup>Research laboratory "Epidemiology Applied to Maternal and Child Health" 12SP17, Tunisia, <sup>6</sup>Department of Preventive and Community

Medicine, Mahdia Academic Hospital, Faculty of Medicine of Monastir, Tunisia, <sup>7</sup>Intensive Care Unit Department, Center for Urgent Medical Assistance Tunis Tunisia

Assistance Tunis Tunisia

Ahlem SILINI<sup>1</sup>, Salsabil REJAIBI<sup>1,2,3</sup>, Imen Mouki<sup>5,6,7</sup>, Majdi ZID<sup>1</sup>, Sarra BEN YOUSSEF<sup>1</sup>, Nada ZOGHLAMI<sup>1</sup>, Rym MALLEKH<sup>1</sup>, Ibrahim BEN SLEMA<sup>1</sup>, Nabil BEN SALAH<sup>1,2,3</sup>, Hajer AOUNALLAH-SKHIRI<sup>1,2,3</sup>

1 : National Institute of Health, Epidemiology Departement, Tunisia ; 2 : SURVEN, Research Laboratory, Nutrition Surveillance and Epidemiology, Tunisia ; 3 : Medical Faculty of Medicine, Tunis El Manar University, Tunisia ; 4 : Intensive Care Unit department, Center for Urgent Medical Assistance, Tunis, Tunisia, 5 : Public Health department, University Hospital Tahar Sfar Mahdia, Tunisia; Research laboratory "Epidemiology Applied to Maternal and Child Health" 12SP17, Tunisia, 7 : Department Preventive and Community Medicine, Faculty of Medicine of Monastir, Tunisia.

administered standardized questionnaire was used and weighted prevalence

estimates for cigarette smoking "at least once in a lifetime" were studied. Binary logistic regression model was used to assess associated factors and Adjusted Odds Ratios (AORs) were presented. The independent factors included were: sex, area of residence, private or public sector, alcohol and cannabis use, and being exposed to tobacco smoking in family and peer's environment. CSRpro and STATA software were used for data entry and statistical analysis, respectively.

Results: Among 6.201 participants with a mean age of 16.8 years, 60.4% were girls; the prevalence of cigarette smoking was 24,75% 95% CI[23.24,26.32], significantly higher among boys (41.1% versus 14.2%,p<10-3). Univariate analysis revealed a significant difference in cigarette smoking by region(p-value< 10-4). The highest prevalence of cigarette smoking was observed in the capital city. Cigarettes were perceived as easily accessible by less than a third of the students (38.46% and 20.94% of boys and girls respectively,p=10-4). In multivariable analysis, the only independently associated factor to this behaviour was male sex (AOR=1.5[0.15 - 2.9],p-value=0.03).

Conclusions: Our study revealed a high prevalence of smoking among students with male sex as an associated factor. Developing a healthy school environment and implementing school-based intervention programs are therefore, highly required.

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### The epidemiological burden of pediatric metabolic syndrome in Europe: A systematic literature review

Anna Scardigno<sup>1</sup>, Francesca Orsini<sup>2</sup>, Floriana D'Ambrosio<sup>1</sup>, Roberto Ricciardi<sup>3</sup>, Giovanna Calabrò<sup>4</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore, Rome, Italy Section of Hygiene, University Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>2</sup>Graduate School of Health Economics and Management (ALTEMS), Università Cattolica del Sacro Cuore, Rome, Italy, <sup>3</sup>VIHTALI (Value In Health Technology and Academy for Leadership & Innovation), Spin-Off of Università Cattolica del Sacro Cuore, Rome, Italy, <sup>4</sup>VIHTALI (Value In Health Technology and Academy for Leadership & Innovation), Spin-Off of Università Cattolica del Sacro Cuore, Rome, Italy, <sup>4</sup>Section of Hygiene, University Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy; VIHTALI (Value In Health Technology and Academy for Leadership & Innovation), Spin-Off of Università Cattolica del Sacro Cuore

Background and Objective: Metabolic syndrome (MetS) prevalence in children and adolescents is increasing, in parallel with the increasing trends in obesity rates. Consistent diagnostic criteria to define MetS are not available to date for pediatric population. There is common agreement that the main features defining MetS include disturbed glucose metabolism, hypertension, dyslipidemia, and obesity. However, settings of cut-off values are still heterogeneous in the pediatric population. Prevention and management of MetS consist in lifestyle modifications, behavioral interventions, pharmacological and surgical interventions as needed. Therefore, knowing the MetS epidemiological burden is necessary in order to identify adequate prevention strategies for this condition that, if not managed, can lead to important complications in adulthood.

Methods: A systematic literature review was performed querying two database (PubMed, Web of Science) from 2012 to 2022. All studies in English language, focused on the epidemiological burden of MetS in the pediatric population and conducted in Europe were included.

Results: Overall, 15 studies were included, conducted in 7 countries, in which Spain was highly represented (33.3%), followed by Italy, Slovakia, Poland and Romania (13.3% per country), Czech Republic, Lithuania (6.7% per country). It was described a MetS prevalence, according to International Diabetes Federation criteria, ranged from 1.4% to 55.8%. MetS was most represented in the 11-16 year age group, in males and in overweight/obese subjects.

Conclusions: MetS is a serious disorder associated with multiple diseased states. The definition and criteria for MetS in childhood remains uncertain to date. Obesity

Snyamkumar Sriram<sup>1</sup>, Snyamkumar Sriram<sup>1</sup>

<sup>1</sup>Ohio University Ohio University "Grover Center Athens Ohio USA" United States, <sup>2</sup>Ohio University Ohio University United States

**Introduction:** Pakistan has high prevalence of childhood malnutrition amongst developing countries. National Nutritional Survey 2018 showed 44% of children were stunted. Different circumstances have the potential to create inequality of opportunity in child health. This study aims to identify the drivers of inequality of opportunity in childhood malnutrition among children below five years of age in Pakistan.

**Methods:** This study used Pakistan Demographic and Health Survey, 2017-18 to identify the role played by various factors in inequality of opportunity in child malnutrition. Dissimilarity index (D-index) and Oaxaca decomposition of D-index, and Shapely decomposition were used to measure and decompose inequality in opportunity in stunting. Regional variation in child health under various circumstances was analyzed using GIS.

**Results:** The burden of stunting is exceptionally high in Pakistan. Prevalence of stunting in rural areas far exceeded the urban areas through 1990-2018. Shapely decomposition of the contributors of inequality in opportunity indicates that maternal education contributed to 24 % of total inequality for rural and 44% for the urban children. Water and sanitation contributed 22% to overall inequality in the rural and only 2% in urban areas, implying a critical part played by the lack of water and sanitation in rural areas. Wealth index predominantly contributed to inequality nationally and in the urban region. Southern regions have a high higher prevalence of stunting and higher proportion of households without adequate water and sanitation. Proportion of mothers without education and stunted children are largely concentrated in Baluchistan and Sindh.

**Conclusions:** Lack of mothers' education, inadequate access to water and sanitation services, and poverty are contributing factors to inequality of opportunity in stunting among under-five children in Pakistan. Understanding the critical part played by various circumstances would help policy makers to address the situation and take concrete steps to enhance equal opportunities for child health.

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### Serbia oral health problems among children and mothers indicated need for maternal oral health initiative in serbia

Natasa Pejcić<sup>1</sup>, Hyewon Lee<sup>2</sup>, Vanja Petrović<sup>3</sup>

<sup>1</sup>School of dental medicine, University of Belgrade School of dental medicine, University of Belgrade Dr Subotica 8, Belgrade Serbia, <sup>2</sup>Ida Society United States, <sup>3</sup>School of Dental Medicine, University of Belgrade

**Background and objective:** Pregnancy is an extremely important and sensitive period, for general health and also oral health. During pregnancy, it is important to emphasize on maintain the oral health of both, the future mother and her baby. However, in order to prevent diseases of deciduous teeth, it is necessary for parents to get acquainted with the importance and ways of maintaining oral health in children from the earliest age.

**Methods:** Systematic integrative review includes research from the last 10 years, conducted at the Republic of Serbia. Review of scientific database Pubmed, Scopus and Scholar, was done in order to determine tree key questions: level of oral health status, attitude and habits among pregnant women and prevalence of early childhood caries among children in Republic of Serbia.

**Results:** Latest research in Serbia population emphasize, need for maternal oral health initiative in Serbia. The resent studies showed a high prevalence of poor oral health in Serbian children -41.1% of children aged 36 to 71 months had early childhood caries, while in group of children aged 12-36 months was also high 13,4% (Marković et al. 2020). Prevention of premature birth as a most common adverse pregnancy outcome should be one of the more important goals of maternal oral health initiative. The results of resent studies conducted in Serbia indicate the potential impact of periodontal disease to an increase in the level of inflammatory mediators, which are also biochemical labor markers (Perunovic et al.2015).

**Conclusion:** Considering the mounting oral health needs in young children in Serbia, we truly believe maternal oral health is one of the key primary prevention agendas and we can join our efforts in achieving oral health equity in Serbia by developing this maternal oral health initiative.

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### The association between lifetime history of drug use and experience of stillbirth among adult women in the united states: findings from the national health and nutrition examination survey 2009-2018

Lindsay Wilson<sup>1</sup>

<sup>1</sup>University of British Columbia 2062 Cypress St Canada

**Background:** Stillbirth is a major health issue, but relatively little research has been conducted to determine whether drug use increases the risk of stillbirth. The objective of this cross-sectional study was to determine whether any history of drug use was associated with stillbirth in the United States. Effect modification by ethnicity was considered as a secondary objective.

**Methods:** Data were drawn from the National Health and Nutrition Examination Survey between 2009-2018 and included women between the ages of 20-59 years. Multivariate survey design-adjusted logistic regression was conducted. Effect modification by ethnicity was assessed using simple slopes analysis. Missing data were imputed using multiple imputation by chained equations.

**Results:** Among 6,045 participants, drug use was associated with higher odds of stillbirth after adjusting for confounding, but this was not statistically significant (OR 1.13, 95% CI 0.80;1.62). Among Hispanic women, drug use was associated with significantly lower odds of stillbirth (OR 0.54; 95% CI 0.23;0.84). No significant interactions with drug use were identified among other ethnicities.

**Discussion**

The primary analysis found no statistically significant association between drug use and stillbirth, but this relationship may be modified by ethnicity. The small number of events identified in the dataset likely explains the lack of statistical significance identified, and the unexpected findings among Hispanic women. Further exploration into this potential effect modification is warranted to ensure pregnant people who use drugs receive prenatal care that best meets their needs.

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### Cannabis use in tunisian high school adolescents: medspad 2021

Salsabil Rejaibi<sup>1,2,3</sup>, Rym Mallekh<sup>1</sup>, Majdi Zid<sup>1</sup>, Ahlem Silini<sup>1</sup>, Nada Zoghalmi<sup>1</sup>, Ibrahim Ben Slema<sup>1</sup>, Sarra Ben Youssef<sup>1</sup>, Mariem Zribi<sup>1</sup>, Nabil Ben Salah<sup>3,4</sup>, Hajer Aounallah-Skhiri<sup>1,2,3</sup>

<sup>1</sup>National Institute of Health, Epidemiology Department, Tunisia, <sup>2</sup>SURVEN, Research Laboratory, Nutrition Surveillance and Epidemiology, Tunisia,

<sup>3</sup>Medical Faculty of Medicine Tunis El Manar University, Tunisia, <sup>4</sup>Intensive Care Unit department, Center for Urgent Medical Assistance, Tunis, Tunisia

**Background and objectives:** Cannabis use is wrongly deemed "safe" by teenagers worldwide, despite its increased tetrahydrocannabinoids content and its psychosocial and cognitive harmful effects. We aimed to estimate the prevalence of cannabis use, identify associated factors among Tunisian adolescents and assess the risk of problem cannabis use among users.

**Methods:** The 2021-Mediterranean School Survey Project on Alcohol and Other Drugs (MedSPAD) is a national survey, targeting Tunisian high school adolescents in 1st and 2nd level of secondary education. Based on a self-administered questionnaire, adolescents were asked about their engagement in several risky behaviours including cannabis use. The 6-item Cannabis Abuse Screening Test (CAST) was intended for users to assess risk of problem cannabis use. Binary logistic regression was performed to identify associated factors to cannabis use and Adjusted Odds Ratios (AORs) were presented with 95% confidence intervals (CI). Cspiro and STATA software were used for data entry and analysis respectively. **Results:** Among 6.201 participants (girls: 60.4%), weighted lifetime prevalence of cannabis use was 7.9% 95% CI [7.0, 8.9], significantly higher among boys (16.1 % Vs. 2.5 %, p<10-4). Early initiation (at 13 or younger) was reported by 8.6% of users. Multivariate analysis showed that cannabis use was more prevalent in Tunis district, the capital city (p=0.04), and significantly associated to alcohol, tobacco and E-cigarettes use (AOR of 6.2, 4.2 and 2.6 respectively, p<10-3). Absenteeism for non-medical reasons and nights spent away from home were also independent factors significantly associated with cannabis use (p<10-3). The CAST indicated a high risk of cannabis-use-related problems in 67.2% of respondents.

**Conclusions:** Cannabis use becomes a real threat to Tunisian adolescents' mental health. Moreover, the alarming risk of problem cannabis use warrant the urgent need to implement school-based interventions to increase awareness about this issue, to detect psychological vulnerability and offer timely appropriate help.

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### Human milk banks during covid-19 pandemic

Suada Tikvina<sup>1</sup>, Emanuela Zilli<sup>2</sup>, Rosanna Golin<sup>2</sup>, Pierina Ramina<sup>3</sup>, Suada Tikvina<sup>1</sup>, Paola Cecchinato<sup>2</sup>, Valeria Castellan<sup>3</sup>, Enrico Pinton<sup>2</sup>, Antonio Miotti<sup>2</sup>, Marzia Serafini<sup>2</sup>, Rosaria Cacco<sup>4</sup>, Claudio Pileri<sup>4</sup>

<sup>1</sup>Department of Cardiac, Thoracic, Vascular Sciences and Public Health, University of Padua Italy, <sup>2</sup>Azienda ULSS 6 Euganea Hospital Direction, Hospital of Cittadella, ULSS 6 Euganea, Padua, Italy Via Casa di Ricovero 40, Cittadella (Padua) Italy, <sup>3</sup>Azienda ULSS 6 Euganea, <sup>4</sup>Region of Veneto

### Integrated Care Pathways, Veneto Region, Italy

**Background and objective:** The promotion of breastfeeding, recommended by Unicef and WHO, is an important health goal for Public Health. Human breast milk provides optimal nutrition for preterm infants and prevents various diseases. In Italy, the 41 donated human milk banks (Banche del Latte Umano Donato-BLUD) offer a service that aims to select, collect, store and distribute donated human milk, to be used for specific medical needs in the event of prematurity or critical issues. In this project we report data regarding the donation of human milk and the implications and limitations related to the COVID-19 epidemic in the Province of Padua.

**Methods:** Veneto Regional Council established the Regional Network of 5 BLUDs currently active in the Neonatologies of Padua, Treviso, Verona, Vicenza and Cittadella involving all birth points of the Region according to the Hub and Spoke model. In all birth points the donors are selected according to specific certified protocols in which women's clinical history (including COVID19), infectious disease tests and thorough analysis of the milk are taken into consideration in compliance with the Ministerial Guidelines.

**Results:** The Italian BLUDs have provided, even during the pandemic, an efficient and safe service guaranteeing the usefulness and quality of the service. In the past year, in Cittadella (nearly 1000 births per year) 66 mothers have donated their milk, providing a total of 110 liters of milk for 500 in term newborns and 36 premature infants.

**Conclusion:** This project highlights the capacity of human milk banks to surmount the difficulties given by COVID-19 pandemic. It also states the importance of specific protocols issued by the Italian National Health System and the Italian Association of Donated Human Milk Banks that continue to monitor the appropriateness and management of BLUDs in Neonatal Intensive Care and Neonatology promoting the donation culture.

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### Prevalence of micronutrient deficiency in Brazilian pregnant women

Lívia Zina<sup>1</sup>, Fabiane Silva<sup>1</sup>, Janice Paula<sup>2</sup>, Júlia Campos<sup>1</sup>, Lorrany Rodrigues<sup>1</sup>, Rafaela Pinto<sup>1</sup>, Luana Santos<sup>2</sup>

<sup>1</sup>Universidade Federal de Minas Gerais Adjunct Professor Avenida Antônio Carlos, 6627 - Pampulha CEP 31270-901 - Belo Horizonte - Minas Gerais State Brazil, <sup>2</sup>Universidade Federal de Minas Gerais

**Background and objective:** The pregnant women health is a powerful indicator of a country's health. Diseases caused by micronutrient deficiency in pregnancy represent a public health concern due to the probable risk of perinatal morbidity and mortality, and surveillance of the values of these deficiencies needs to be performed periodically by health systems for the evaluation of mother and baby health care strategies. The aim of this study was to nationally evaluate the prevalence/incidence of micronutrient deficiency in Brazilian pregnant women.

**Methods:** A systematic review was performed. Nine electronic databases, including grey literature, were searched without language restrictions. Paired independent reviewers selected cross-sectional and cohort studies reporting the deficiency on vitamin A, B, C, D, E, calcium, iron, zinc, magnesium and selenium among Brazilian pregnant women, extracted data, and assessed risk of bias. A meta-analysis with a random effect model was conducted.

**Results:** of the 895 references initially identified, 32 were considered eligible for this systematic review. A risk of bias was found in the key area related to the study population (target population, sampling, selection, non-responders). No one study presented data on the incidence of deficiency. In meta-analysis, the prevalence ratios ranged from 12% to 92% depending on the type of micronutrient. The overall prevalence of micronutrient deficiency was 32.8% [0.3280 (IC 95% 0.2382-0.4324)]. Anemia was the most standardized outcome among studies and its prevalence ratio was 20.0% [0.1998 (IC 95% 0.1554-0.2531)]. No pattern was found for the geographic distribution of micronutrient deficiency.

**Conclusion:** The prevalence of micronutrient deficiency among Brazilian women is high. Iron deficiency was prevalent all over the country and anaemia rates justify iron supplementation as a public policy in the Brazilian Health System.

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### Availability, awareness, and quality of adolescents' sexual and reproductive health services in cameroon: a mixed methods study

Roseline Dine<sup>1</sup>, Valentine Uwamahoro<sup>2</sup>, Bertrand Ayuk<sup>3</sup>

<sup>1</sup>Rinda Ubuzima -Rwanda (<https://rindaubuzima.rw>) Rwanda, <sup>2</sup>Intrahealth Rwanda Rwanda, <sup>3</sup>University of Buea Cameroon

**Introduction:** Developing nations such as Cameroon have a shortage of sexual

and reproductive health (SRH) services. This has led to an increased prevalence of sexually transmitted diseases such as HIV/AIDS in the country. The study aims at investigating the availability, accessibility, and quality of SRH provided to young people in selected towns within the North-West and South-West regions of Cameroon.

**Method:** The study is a cross-sectional study that made use of both qualitative and quantitative methods and was conducted from December 2021 to September 2022 among 88 randomly selected participants; 28 are healthcare providers and 59 are young people between 10 and 24 years old. A checklist was developed, validated, and used in the data collection, with ATLAS T1 version 5.2 and SPSS version 26.0 used to code and analyze the qualitative and quantitative data, respectively.

**Results:** Young people indicated that the following services are available: HIV testing (89.1%), pregnancy testing (77.8%), contraception (72.9%), circumcision (68.3%), fertility awareness (50%), antenatal care (65.9%), and postnatal care (65.9%). From our results, only 24.6% of young people revealed that information is disseminated regularly to raise awareness about the availability of SRH services, and most (65.4%) of the providers revealed that they do not raise awareness of SRH services. Concerning the quality of services provided, 64.4% of the young people said their needs are satisfied when they receive SRH services. Qualitative findings revealed shyness, lack of knowledge, resistance from religious groups and families, insecurities from political instability, and inadequate training, among others, as barriers to SRH accessibility.

**Conclusion:** The study shows the availability of SRH services. However, information dissemination about SRH services by service providers was poor. Targeted interventions are required to overcome barriers to the uptake of SRH services and guarantee the health and well-being of young people in Cameroon.

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### Prenatal care for women in drug abuse in the context of primary health care in the Brazilian healthcare system

Taís Oliveira<sup>1</sup>

<sup>1</sup>National School of Public Health Sergio Arouca (ENSP/FIOCRUZ) National School of Public Health Sergio Arouca (ENSP/FIOCRUZ) Brazil

**Objectives:** To analyze the actions of primary health care in the Brazilian healthcare system regarding the approach on the drug abuse use during pregnancy. It also aims at analyzing the approach of health professionals, the interdisciplinary articulation and the activation of the intersectoral network and the health care network.

**Methodology:** The study is an integrative literature review whose sample was chosen based on the combination of descriptors in health sciences (decs): "prenatal" and "substance use disorders". The search was carried out in the virtual health library (vhl) and scientific electronic library online (scielo). selection criteria: publication year from 2006 to 2021, based on the national primary care policy (pnab) launching year; publications in portuguese, english and spanish. Exclusion criteria: duplicate results and publications that did not address the reality of Brazilian services.

**Results:** This study consisted on the characterization and categorization of fifteen publications on prenatal care and substance use disorders. From the publications selected for research, two categories emerged: perceptions and practices of pregnant and postpartum drug abusers regarding the services provided and analysis of professional practices and services based on information from pregnant and postpartum drug abusers. This analysis showed that the biomedical aspects outweigh the social aspects in prenatal consultations performed by health professionals and that the moralizing actions of drug abuse persist in health services on women.

**Conclusions:** The logic of fetal care and biomedical actions are still very frequent when it comes to the nursing professional, who is the protagonist in prenatal care. It is observed that there is a lack of intersectoral articulation that encompasses other knowledge and other professionals; a greater approximation to the territory is necessary, as well as a greater and better multiprofessional articulation within the family health strategy (esf) in Brazil.

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### Knowledge of adolescents about contraceptive methods and prevention of sexually transmitted infections

Paula de Sousa e Castro<sup>1</sup>, Beatriz Zapala<sup>2</sup>, Karen Virginia<sup>3</sup>, Michelly Thauany<sup>4</sup>, Paulo Figueiredo<sup>5</sup>

<sup>1</sup>Universidade Paulista, Sao Paulo, Brazil Priscilla Sete De Carvalho Onofre, <sup>2</sup>Universidade Paulista UNIP Brazil GABRIELA DA SILVA BARBOSA

Universidade Paulista UNIP Brazil, <sup>3</sup>Da Silva Universidade Paulista UNIP Brazil, <sup>4</sup>Da Silva Barros Universidade Paulista UNIP Brazil, <sup>5</sup>Cardoso Universidade Paulista UNIP Brazil

Adolescence is a time of significant change for human beings, bringing new forms of social interaction and exposure to risks. At this stage, concerns arise around early pregnancy and sexually transmitted infections (STIs), which are considered public health problems and are directly related to low adherence to condom use. The objective was to analyze the level of knowledge of adolescents about STIs and contraceptive methods. This is a descriptive-exploratory research of a quantitative nature, carried out with students between 14 and 15 years old, from two educational institutions, public and private, through the application of printed questionnaires and via the Google Forms platform, on the knowledge of contraceptive methods and STI prevention. Regarding the results, 98 students were interviewed, 44 from the Public School (GEP) and 54 from the Private College (GCP). The female audience gained prominence in both schools, totaling 54 students. The prevalent age in both groups was 14 and 15 years. With regard to knowledge about STIs and contraceptive methods, in both samples the adolescents were aware of and had been instructed about STIs. Regarding contraceptive methods, 38 (86.4%) were instructed in the GEP and 54 (100%) in the GCP. In the case of contraceptive methods, in both groups as a whole, they know the male condom, however, in the GEP 6 (13.6%) know about coitus interruptus, in the GCP, in turn, only 15 (27.8%) know the vaginal ring. GCP adolescents are more aware of contraceptive methods than GEP. Given the above, it is possible to understand that the knowledge presented by the students on the subject is ineffective in both schools, and it is essential to expand the activities proposed by the schools, since the students themselves consider them necessary for a better understanding of issues involving sexuality.

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### Assessing the effects of knowledge and attitude on high school students' milk consumption in hoang mai district, hanoi, vietnam in 2022

Le Dat<sup>1</sup>, Chu Ngoc<sup>2</sup>, Cao Que Anh<sup>2</sup>, Nguyen Nguyen<sup>2</sup>, Nguyen Cuong<sup>2</sup>, Do Duy<sup>2</sup>, Le Hung<sup>2</sup>

<sup>1</sup>Vietnam Public Health Association Viet Nam, <sup>2</sup>Hanoi Medical University Viet Nam

**Introduction:** High school students who consume adequate amounts of milk have a lower risk of developing non-communicable diseases, have higher bone density, are better able to absorb nutrients, and have improved academic performance. Milk consumption in Vietnam is still low and ineffective in this area. A problem like this may be explained by factors like knowledge and attitude.

**Method:** Cross-sectional description of 590 high school students in Hoang Mai district, Hanoi. The questionnaire consists of 33 questions (general information, knowledge, attitudes, and behaviors of using canned milk) based on referenced questionnaires from previous related studies.

The data has been cleaned, processed, and analyzed using Jamovi software, etc. Descriptive statistics are presented by frequency and percentage for qualitative variables. Statistical analysis was performed to find the correlation, determined by the correlation coefficient  $r$  and the 95% confidence interval. The correlations were statistically significant when  $p < 0.05$ . Assess the knowledge and attitudes of individuals according to 3 levels: Not good (=90%).

**Results:** General knowledge about canned milk is at "Not Good" (Mean Score: Male - 69.8%, Female - 68.6%), Attitude is at "Pretty Good" (Mean Score: Male - 76.8%, Female - 78.1%). Grade 12 has lower knowledge and attitudes than other grades ( $p < 0.001$ ). Understanding of nutritional value is better than knowledge of the health benefits of milk. There is a positive correlation between knowledge about nutritional value with milk consumption behavior ( $r = 0.144$ ), attitude towards milk consumption behavior ( $r = 0.233$ ), and knowledge with attitude towards using condensed milk. box of high school students ( $r = 0.411$ ).

**Recommendation**

Strengthen educational programs to improve knowledge and attitudes to positively improve the students' behavior using milk-canned milk at this age.

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### Astute exploration of collective mental health events among the residents of elderly care homes in Bangladesh

Nasrin Akter<sup>1</sup>, Bilkis Banu<sup>2</sup>, Sujana Chowdhury<sup>2</sup>, Tahsin Tabassum<sup>3</sup>, Kazi Islam<sup>2</sup>, Sarder Hossain<sup>2</sup>

<sup>1</sup>Department of Public Health, Northern University Bangladesh (NUB), Banani, Dhaka, Bangladesh, <sup>2</sup>Department of Public Health, Northern

University Bangladesh, Bangladesh, <sup>3</sup>Department of Community Medicine, East West Medical College, Bangladesh

**Background and Objective:** Developing countries are presently witnessing a great burden of rapid aging followed by losing the social values of older adults due to age-related cognitive impairment as well as rising depression levels. This study was designed to assess the cognitive impairment and depression status combinedly among older adults in elderly care homes.

**Methods:** It was a cross-sectional survey among randomly selected 200 older adults aged between 60-80 years residing in some old homes in Dhaka district, Bangladesh. Data were collected through face-to-face interviews while Cognitive function and level of depression were assessed by applying the Standardized Mini-Mental State Examination (MMSE) and Geriatric Depression Scale (GDS).

**Results:** Among all the respondents, the majority (81.5%) were staying in old homes for 1-5 years. Mostly (91.0%) had difficulties with vision, 40.7% had difficulties with hearing and 19.6% had difficulties in moving around. The MMSE test revealed that 43% had moderate cognitive impairment, 36% had mild and 19.5% were found normal while more than half (56%) had severe depression. Significant cognitive impairment was found among the illiterate respondents who did not have any family care support. In addition, higher educated respondents were found to have more severe depression (OR/ $p = 6.33 / < 0.01$ ; CI: 2.36-16.96). Furthermore, severely depressed respondents had more severe cognitive impairment (COR/ $p = 3.83 / 0.01$ ). Functional disabilities were also a greater concern for cognitive impairment and depression.

**Conclusion:** An increasing number of old home residents are suffering from significant mental disorders while there is no mental health support in the elderly care homes in Bangladesh. Finally, there is a great need to develop packages and programs of mental health care for senior citizens and their caregivers residing in old homes, which can be scaled up across the country's mixed healthcare delivery system.

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### The relationship among social contact pattern, crowded living space and the anxiety level of young adults in Hong Kong during the COVID-19 pandemic

Hiu Sze<sup>1</sup>, Hor Lai<sup>2</sup>, Ka Chong<sup>1</sup>

<sup>1</sup>The Jockey Club School of Public Health and Primary Care, The Chinese University of Hong Kong, Hong Kong, <sup>2</sup>Department of Applied Social Sciences, The Hong Kong Polytechnic University, Hong Kong, China

**Background:** Young adults in Hong Kong, especially those who live in crowded living spaces, are at risk of anxiety during the pandemic. The social contact patterns of young adults have been greatly affected by the implementation of social distancing measures which can possibly affect their anxiety levels. This study aimed to investigate the effect of social contact patterns on buffering the negative effect of crowded living environment on anxiety level as well as the relationship between social contact pattern and anxiety level of young adults in Hong Kong. **Methods:** Participants were asked to complete the online questionnaire, including demographic information, self-developed social network survey, living environment, items related to the susceptibility and severity of COVID-19 and DASS21 (anxiety sub-scale).

**Results:** To this end, 427 participants were included in the study. A significant association between crowded living environment and anxiety level was showed ( $P = 0.009$ ), as well as the positive effects of non-physical contact ( $\beta = -0.418$ ,  $p < 0.001$ ), physical contact ( $\beta = -0.257$ ,  $p = 0.015$ ) and closed contact ( $\beta = -0.576$ ,  $p < 0.001$ ) on the anxiety level of young adults. A significant buffering effect of social contact patterns on the association between moderate ( $\beta = -0.120$ ,  $p = 0.005$ ), highly crowded living environment ( $\beta = -0.307$ ,  $p < 0.001$ ), and anxiety level is observed. **Conclusions:** Social contact patterns have a positive impact on reducing the anxiety level of young adults in Hong Kong and it can act as a buffer for people living in highly dense environments who have a higher anxiety level.

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### Physical Distancing and Mental Well-Being in Youth Population of Portugal and Brazil during the COVID-19 Pandemic

Jesus Cortes<sup>1</sup>, Pedro Aguiar<sup>2</sup>, Sofia Azeredo<sup>3</sup>, Patrícia Soares<sup>4</sup>, Heriederson Moura<sup>5</sup>, Ricardo Arsênio<sup>5</sup>, Ana Goes<sup>6</sup>, Ana Gama<sup>2</sup>, Rita Pedro<sup>2</sup>, Ana Feliciano<sup>2</sup>, Pedro Laires<sup>6</sup>, Sonia Días<sup>2</sup>, Rosa Sousa<sup>7</sup>, Liana Pinto<sup>7</sup>, Alexandre Abrantes<sup>6</sup>, Carla Nunes<sup>2</sup>

<sup>1</sup>Escola Nacional de Saúde pública, ENSP Portugal, Portugal, <sup>2</sup>Escola Nacional de Saúde pública, Portugal, <sup>3</sup>NOVA Medical School Faculdade de Ciências Médicas (NMS|FCM), Portugal, <sup>4</sup>National School of Public Health-

ENSP, Portugal, <sup>5</sup>Escola de Enfermagem de Ribeirão Preto da Universidade de São Paulo, Brazil, <sup>6</sup>ENSP, Portugal, <sup>7</sup>Escola Nacional de Saúde Pública Sergio Arouca, Fundação Oswaldo Cruz, Brazil

**Background:** The COVID-19 pandemic may affect youth's physical and mental well-being, partially because of the countries' rules to contain the virus from spreading. However, there is still uncertainty about the impact of physical distancing on youth's mental health. We aimed to estimate the prevalence of feeling agitated, anxious, down, sad, or low mood (FNF) due to physical distance measures and verify which factors are associated with young Portuguese and Brazilian people. **Methods:** We used cross-sectional data from the instrument "COVID-19 Barometer: Social Opinion" in Portugal (March 2020 and September 2021) and from "COVID-19 Social Thermometer" in Brazil (August 2020 to April 2021); these surveys included data regarding the health and socioeconomic impact on the population. The health and sociodemographic variables of the two countries were summarized as absolute and relative frequencies. A multivariable logistic regression model was fit by country to estimate the relation between FNF and selected variables of interest.

**Results:** Approximately 36% of the sample studied reported anxiety, agitation, sadness, or low mood almost every day in Portugal and 52% in Brazil due to physical distancing. In Portugal, having more than two comorbidities represented a greater chance of experiencing FNF every day or almost every day (odds ratio [OR] = 1.51 [CI: 1.22–1.87]) than those without comorbidities. In contrast, having a university education level represented a protector factor (OR = 0.76 [CI: 0.67–0.88]). In Brazil, being unemployed increased the chance of FNF compared to students (OR = 11.2). **Conclusions:** Physical distancing measures have impacted the mental well-being of the young population in Portugal and Brazil. The countries must make a quick effort to attend to and protect young people's well-being and mental health in the changing context of the current pandemic.

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### Eating patterns according to NOVA classification and mental health: COVID inconidentes population survey

Mariana Menezes<sup>1</sup>, Julia Carraro<sup>2</sup>, Hillary Coletro<sup>3</sup>

<sup>1</sup>Universidade Federal de Ouro Preto, Bauxita, Ouro Preto, Brazil, <sup>2</sup>Federal University of Ouro Preto, Brazil, <sup>3</sup>Federal University of Ouro Preto, Ouro Preto, Brazil

**Background and Objective:** Psychological disorders are one of the major health problems worldwide, not being determined solely by intrinsic factors. Our aim was to evaluate how the different types of food consumption, are associated with the presence of symptoms of depression during the COVID-19 pandemic, in Brazilian adults. **Methods:** Cross-sectional study from a population-based survey, with face-to-face interviews, in Ouro Preto and Mariana, based on stratified and conglomerate sampling in three stages. Food consumption was assessed by a food frequency questionnaire and categorized by NOVA in fresh/minimally processed (FMP) foods, and ultra-processed foods (UPF), by the weekly consumption. Thus, four types of food consumption were evaluated: i) Low consumption of UPF and FMP (used as reference); ii) High consumption of UPF and FMP; iii) High consumption of UPF and low consumption of FMP; iv) Low consumption of UPF and high consumption of FMP. The presence of depression symptoms was measured by the patient health questionnaire-9 scale, validated, and categorized into absence or presence of depression symptoms. We used prevalence ratio (PR) and 95% confidence interval (95%CI) by Poisson regression to verify the association tested, adjusted by gender, age, medical diagnosis of anxiety disorder or depression, family income and marital status, selected by a directed acyclic graph.

**Results:** Among the participants, 51.1% were female and aged between 35 to 59 years (45.9%). About 15.6% presented symptoms of depression. From the four types of food consumption, it was observed the high consumption of both categories, was associated with a higher PR for the occurrence of symptoms of depression (PR: 2.53; 95% CI: 1.63 - 3.92). **Conclusions:** The consumption of ultra-processed foods represents an important part of the world food supply. There is a need for the reformulation of public policies that consider the processing extent and purpose on human health.

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### Adverse perinatal outcomes among Aboriginal women with mental health disorders

Akilew Adane<sup>1</sup>

<sup>1</sup>Ngangk Yira Institute for Change, Murdoch University and Telethon Kids Institute, Murdoch, Australia

**Background and Objective:** Maternal mental disorders are implicated in a range

of adverse perinatal outcomes, although few studies have examined these links among Australian Aboriginal populations. We aimed to evaluate the association between maternal mental disorders and key adverse perinatal outcomes among Aboriginal neonates.

**Methods:** We used whole population-based linked data to conduct a retrospective cohort study (N=38,592) using all Western Australia singleton Aboriginal births (1990–2015). Maternal mental disorders were identified based on the International Classification of Diseases codes and grouped into six broad diagnostic categories (severe mental disorder, common mental disorder, personality disorder, substance use disorder, and all other adulthood- and childhood-onset mental disorders). Perinatal outcomes evaluated included preterm birth, small for gestational age, perinatal death, major birth defect, fetal distress, low birth weight, and low Apgar score. We employed log-binomial/-Poisson models to calculate risk ratios (RRs) and 95% confidence intervals (CIs).

**Results:** After adjustment for sociodemographic factors and pre-existing medical conditions, having a maternal mental disorder (within the five years prior to birth) was associated with adverse perinatal outcomes, with RRs (95% CIs) ranging from 1.26 (1.17, 1.36) for fetal distress to 2.00 (1.87, 2.15) for low birth weight. We found similar associations between each maternal mental disorder category and birth outcome, with slightly stronger associations for maternal mental disorders within the year prior to birth and for substance use disorder. The strongest association was found between maternal substance use disorder within the year prior to birth and low birth weight (RR=2.34, 95% CI: 2.16, 2.53).

**Conclusions:** This large population-based study demonstrated an increased risk of preterm birth, low birthweight, perinatal mortality, and other adverse outcomes among births to Aboriginal women with mental disorders. Holistic perinatal care, treatment, and support for women with mental disorders may reduce adverse outcomes among Aboriginal births.

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### The mediating effect of internet addiction on the relationship between exposure to extra familial violence and sleep disorder among youth

Imen Mlouki<sup>1,2,3</sup>, Arij Naimi<sup>1</sup>, Imen Souid<sup>1</sup>, Sana El Mhamdi<sup>1,2,3</sup>

<sup>1</sup>Department of Preventive and Community Medicine, University Hospital Tahar Sfar Mahdia, Tunisia, <sup>2</sup>Research laboratory "Epidemiology Applied to Maternal and Child Health" 12SP17, Tunisia, <sup>3</sup>Department of Community Medicine, Faculty of Medicine of Monastir, Tunisia

**Background and Objective:** Recent researches showed short and long term deleterious consequences of Adverse Childhood Experiences (ACEs) on mental as well as physical health. Sleep disorder is one of the harmful well-known ACEs outcomes that should be considered. The real knowledge gap consists in the mechanisms by which ACEs lead to sleep disorders later on in life. Specifically, we aimed at investigating the mediating role of internet addiction in the link between exposure to extra familial ACEs and sleep disorders among schooled adolescents in Gafsa city (Tunisia).

**Methods:** We conducted a cross-sectional study, in February 2020, including youth registered in all secondary schools of Gafsa city. Sleep disorders were evaluated via the Pittsburgh Sleep Quality Index, internet addiction via the Internet Addiction Test and Social ACEs via the Adverse Childhood Experiences-International Questionnaire.

**Results:** Overall 650 schooled youth were initially included. Among them, 414 returned the questionnaire (response rate=63.7%). Girls represented 63% of the studied population. Social violence exposure was higher in males (91.9% vs 79.6%, p=0.002). The majority of students (76.8%) revealed being victim of community violence. Peer violence was reported by 57.1% of adolescents. Sleep disorders were more prevalent among females (95.4% vs 91%, p=0.001). Males presented highest rates of internet addiction (82.9% vs 78.3%, p=0.001). We found a statistically significant partial mediation effect by internet addiction for social ACEs as the exposure variables and sleep disturbances as the outcome variable (p=0.005, % mediated =28.7%).

**Conclusions:** Our study is the first in Tunisia and in the Arab countries to demonstrate the role of internet addiction in the association between social ACEs and sleep disorders.

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### Estimated impact of the COVID-19 pandemic on the prevalence and treatment of depressive symptoms: an interrupted time series analysis in 2014-2021

David Villarreal-Zegarra<sup>1</sup>, Mahony Reátegui-Rivera<sup>2</sup>, Gloria Yantas-Alcantara<sup>3</sup>,

Percy Soto-Becerra<sup>4</sup>, G. Melendez-Torres<sup>5</sup>

<sup>1</sup>Instituto Peruano de Orientación Psicológica, Lima, Peru, <sup>2</sup>Universidad Nacional Mayor de San Marcos, Peru, <sup>3</sup>Instituto Peruano de Orientación Psicológica, Peru, <sup>4</sup>Universidad Continental, Peru, <sup>5</sup>College of Medicine and Health, University of Exeter, United Kingdom

**Purpose:** The COVID-19 pandemic increased the burden of mental disorders worldwide. Peru has been one of the countries most affected by COVID-19, yet its impact on Peruvians' mental health remains unknown. We aimed to estimate the impact of the COVID-19 pandemic on the prevalence and treatment of depressive symptoms using nationally representative surveys in Peru.

**Methods:** We carried out a time series cross-sectional analysis based on the National Demographic and Health Survey of Peru, collected using a complex sampling design. The patient health questionnaire-9 was used to measure mild (5-9 points), moderate (10-14 points) and severe (15 points or more) depressive symptoms. The participants were men and women aged 15 years and older, living in urban and rural areas of all regions of Peru. The main statistical analysis used Newey-West standard errors, taking into account that each year of the evaluation was divided into four measures (quarter measure).

**Results:** We included 259,516 participants. An average quarterly increase of 0.17% (95%CI: 0.03%-0.32%) in the prevalence of moderate depressive symptoms was identified after the onset of the COVID-19 pandemic. The percentage of cases treated for mild depressive symptoms increased quarterly by an average of 0.46% (95%CI: 0.20%-0.71%) after the onset of the COVID-19 pandemic.

**Conclusions:** In Peru, increases in the prevalence of moderate depressive symptoms and the proportion of cases treated with mild depressive symptoms were found after the COVID-19 pandemic. Therefore, this study is a precedent for future research assessing the prevalence of depression and the proportion of cases receiving treatment during the pandemic and post-pandemic years.

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### Mental well-being of COVID-19 survivors in Karachi, Pakistan: an exploratory case study

Salima Meghani<sup>1</sup>

<sup>1</sup>Aga Khan University, Pakistan

**Introduction:** COVID-19 pandemic has affected every individual's mental well-being. It is estimated that the burden of mental health issues will increase globally during and after the COVID-19 pandemic. There is a dearth of literature on the mental well-being of COVID-19 survivors in the Pakistani population. Hence, this study explores the experiences of survivors, family caregivers, and healthcare providers regarding the mental well-being and healthcare needs of the COVID-19 survivors in communities of Central Karachi, Pakistan.

**Methods:** The exploratory case study design was used in the context of the population of Ayesha Manzil and Karimabad, areas in central Karachi. Through the snowball sampling technique, those adult survivors who quarantined themselves at home were included. Family caregivers of survivors and healthcare providers of area were also interviewed to triangulate the study. In-depth and key informants interviews were used to study the mental well-being of survivors during the illness. For analysis, thematic analysis method was used.

**Results:** The key effects on COVID-19 survivors mental well-being, coping strategies, and the response of healthcare providers were identified through six themes which include self-acceptance of life changes, personal growth, purpose in life, relationship with others, autonomy, and environmental mastery. The study's Findings also indicate a non-availability of public-funded mental health services. The presence of any such facility in the area may help COVID survivors to mitigate the negative consequences of quarantine and isolation

**Conclusions:** Study Findings explicitly concluded that COVID survivors of central Karachi have suffered from negative mental well-being. The study suggests initiating community-based mental health services and programs to cope with negative mental well-being. In addition, training LHW and CHW for barefoot counseling for COVID patients are recommended. Moreover, training all general practitioners in mental health, which will Results in early diagnosis of survivors mental well-being issues and reduces the country's mental health burden.

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### Nutritional interventions for the prevention of cognitive deterioration in patients with mild cognitive impairment and Alzheimer's disease: a network meta-analysis of randomised controlled trials

Qian He<sup>1</sup>, Kei Chan<sup>1</sup>

<sup>1</sup>Department of Biomedical Sciences, City University of Hong Kong, China

**Background and Objective:** As ageing of the population accelerates, cognitive impairment, in the form of conditions such as Alzheimers disease (AD) and mild cognitive impairment (MCI), is an important public health issue that has drawn a lot of attention. Nutritional intervention is a promising non-pharmacological therapy for cognitive dysfunction, but it is unclear which type of nutritional intervention is the best. This study involved a systematic review and network meta-analysis (NMA) to inform clinical practice by comparing different nutritional interventions. **Methods:** A pair-wise and network meta-analysis were adopted to analyse the intervention effectiveness according to direct and indirect evidence. In this study, 11 comparative nutritional interventions, which were: multi-ingredient (such as omega-3 fatty acid with antioxidant) nutrition, omega-3 fatty acid, vitamin B complex, vitamin E complex, Vitamin D, minerals, chemical compounds, dietary interventions, triglycerides, coenzyme Q, Chinese herbs, and a placebo group, were included. The mini mental state examination (MMSE) was the primary outcome and the cognitive subscale of the AD assessment scale (ADAS-cog) was the secondary outcome.

**Results:** Fifty-one trials were included, in which 8,420 people took part in the study. For the primary outcome, 39 trials were eligible, which involved 6,698 participants. Our NMA analysis indicated that multi-ingredient nutrition (standardised mean difference (SMD) = 1.30; 95% confidence interval (CI) = 0.43, 2.30) was statistically superior to placebo, and this finding was confirmed through the application of pair-wise meta-analysis (SMD = 0.45, 95%CI = 0.14, 0.77). The subgroup analysis indicated that multi-ingredient nutrition (SMD = 1.30, 95%CI = 0.64, 2.0) was superior to placebo as measured by MMSE in the MCI group. In the AD group, no potentially promising intervention was identified.

**Conclusions:** Our study concluded that multi-ingredient supplementation might be the most effective nutritional intervention to prevent cognitive decline among patients with cognitive impairment, especially those with MCI.

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### Work life balance and its association with job satisfaction among government medical officers in Ampara district

Muhammed Fouzad<sup>1</sup>

<sup>1</sup>MOIC/ Regional Directorate of Health Services Kalmunai (RDHS), Kalmunai, Sri Lanka

**Introduction:** The medical profession is a noble profession and it is a stressful job as well. Doctors experience extreme physical or mental tiredness due to their extended working hours, night shifts, increased workload, on-call duty, and less flexibility at work, which eventually significantly impacts their Work Life Balance (WLB) and Job Satisfaction (JS). Prevalence and relationship study about WLB and JS among medical officers has not been undertaken in the Sri Lankan context. This study focused on describing the prevalence of WLB and its relationship with JS among government medical officers in the Ampara district. **Objectives:** To describe the levels of WLB and JS, their association and the impact of WLB on JS among government medical officers in Ampara district.

**Methods:** A descriptive cross sectional study was performed among 424 government medical officers working in hospitals using a stratified random sampling technique. A pre-tested and self-administered questionnaire was used and data were analyzed using SPSS. Pearson's correlation coefficient, linear regression, and chi-square tests were deployed to examine the relationship between WLB and JS. **Results/analysis:** Out of 366 respondents, 66.1% and 17.8% of medical officers were having moderate and high levels of WLB respectively. Whereas 60.7% and 23.5% had moderate and high levels of JS respectively. WLB showed a significant association with and impact on JS.

**Conclusions:** This study provided a good understanding regarding the prevalence of the WLB and JS among government medical officers in Ampara district, Sri Lanka. A significant proportion of medical officers (66.1%) with a moderate level of WLB are at risk of developing low satisfaction in the future and significantly low prevalence of WLB and JS would affect the performance, well-being, patient care, and satisfaction if proper policies and programs are not incorporated. Good WLB and JS are important for medical officers to enhance the quality of life and quality of care.

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### Integration of peer-support groups into public AOD treatment

Ariel Roxburgh<sup>1</sup>, Victoria Manning<sup>1</sup>

<sup>1</sup>Turning Point, Monash University, Clayton, Australia

**Background and Objective:** Research suggests peer-support groups can amplify and extend treatment effects and enhance long-term recovery from Alcohol and Other Drug (AOD) problems. However, the benefit of peer-support at different

stages of recovery is not well known. Further, peer support groups are rarely integrated into public treatment programs, Resulting in a missed opportunity for cost effective adjunct treatment.

Methods: Study 1: 488 participants in recovery from AOD problems in Australia completed the Life in Recovery survey. Social factors were explored at each stage of recovery (1 year, 1-5 years, > 5 years) to determine the factors that contribute to recovery capital (DV) at each stage of recovery. Study 2: Self-Management and Recovery Training (SMART) was integrated into three public AOD treatment providers in Australia. Questionnaires, attendance, and qualitative interviews were used to determine the uptake, impacts, and participant experiences of the pilot program. Lived-experience: Dr. Ariel Roxburgh integrates his own lived experience of addiction to bring to life the learnings from each study.

Results: Study 1: Having a portion of a social network in recovery was associated with greater recovery capital in early (5 years) recovery. Study 2: The integration of SMART Recovery into formal AOD treatment Resulted in good uptake (M = 6), benefits (e.g., 94% reported reduced substance use or maintenance of abstinence), and the qualitative Results revealed the active ingredients underpinning these benefits (e.g., peer-to-peer learning).

Conclusions: Having peers in recovery is important during early recovery, and introducing SMART Recovery into public AOD treatment services is a cost effective way to meet this need. Further, the Introduction of SMART Recovery provides unique benefits and is met with good uptake by participants. Together, the findings highlight the potential benefits of integrating SMART Recovery into public AOD treatment services.

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### What young adults need in order to not feel lonely

Eric Schoenmakers<sup>1</sup>, Tina Bruggencate<sup>2</sup>

<sup>1</sup>Fontys University of Applied Sciences, The Netherlands, <sup>2</sup>Fontys University of Applied Sciences, Netherlands

Background and Objective: Many young adults have experiences with loneliness. The COVID-19 pandemic increased the number of lonely young adults. Loneliness is related to poor mental and physical health outcomes. In this study we set out to discover how young adults cope with loneliness. They were asked to share their personal experiences with loneliness and discuss what they learned from these. The research question of this study is 'what do emerging adults need in order to not feel lonely?'. Methods: In depth interviews with University students, aged between 20 and 26 years were conducted (N=29 participants; N=31 interviews). Diversity within the sample was attempted through variation in study background, gender and ethnicity. Participants did not have to self-identify as being lonely at the time of the interview. An open, inductive approach was used for analysis.

Results: All participants mentioned experiences with loneliness. There is great variety in length and intensity of these experiences. In order to not feel lonely, participants mentioned inter- and intra-individual factors. Regarding inter-individual factors, participants need functional, available social networks in which the 'inner circle' is essential for not feeling lonely. They need to make active efforts to be in contact with their social network. Regarding intra-individual factors, participants mentioned they need realistic expectations about others and they need to know and accept themselves.

Conclusions: Results are in line with coping theory. Loneliness is addressed in two ways. First, by making active efforts to have and maintain a functional, available network. Second, by cognitive efforts in which young adults learn and accept themselves and learn to formulate realistic expectations about others, making the threshold for potential stressors to Results in loneliness higher. Loneliness interventions for young adults should address both inter- and intra-individual factors.

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### The cost of mental illness for patients attending the outpatient department at Queen Elizabeth Central Hospital, Blantyre

Alex Zumazuma<sup>1</sup>

<sup>1</sup>Kamuzu University of Health Sciences (KUHEs), Blantyre, Malawi

Mental disorders contribute to 20% of all cases seen at primary health facilities in Malawi. Despite this, the governments budgetary allocation for mental health services is only 1% of the total annual health budget. In spite of global studies showing the cost (direct and indirect) of mental illnesses to be high, In the Malawian context, no data exists on the cost of mental disorders incurred by individual patients. Therefore, we conducted a retrospective cross-sectional study to establish the cost of living with mental illness for outpatients at Queen Elizabeth Central Hospital, Blantyre. Patients with an established mental illness

were recruited and information for costs incurred over the previous 3 months was captured. Data analysis was performed on 97 participants recruited in March and April 2019 (52 males; 45 females). Our study found that 51% of the participants were unemployed, 9% had formal employment and 24% had informal employment. Eighteen per cent (18%) of participants walked to the clinic (mean duration 74 minutes (SD 51) and 82% used public transport (mean duration 62 minutes (SD 48); mean cost 1.54 (SD 1.54) USD per visit, range: (0.41 USD to 10.95 USD)). Thirty-five per cent (35%) of participants were asked to buy medication at least once during the preceding 3 months (mean cost 6.77 (SD 6.61) USD). Furthermore, 18.3% reported job loss, 18.3% reported dropping out of school; 4.6% separated from their spouses and 30.3% reported stigma or depressed mood because of their illness. With the majority of Malawians living below the poverty line, the Findings from the study require an urgent need for interventions to reduce the costs and burden on people living with mental illnesses.

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### Influence of core-self evaluation on academic burnout among Pakistani university students: mediating role of life satisfaction

Dur Tariq<sup>1</sup>

<sup>1</sup>Pakistan

The study is aimed to access the relation of Core-Self Evaluation and Academic Burnout among university students. Four Hundred and Sixty students (N=460) with age 18-32 including both undergraduate and postgraduate and male and female students. They were assessed using the Core-Self Evaluation Scale (CSES) (Judge et al.2003), the Copenhagen Inventory (CBI) proposed by Kristensen et al. (2005) and the Satisfaction with Life Scale (SWLS) (Diener E,1984). Convenient sampling technique was used to examine the relation between core-self evaluation and academic burnout, mediating role of life satisfaction and the existence of difference of experiencing life satisfaction by males and females. Results indicate that significant and negative relation between core-self-evaluation and academic burnout. A partial mediating role of life satisfaction is also observed. Also, a significant difference in experiencing life satisfaction among the two gender is also seen by the results.

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### Effectiveness of a structured training program on mentoring and mental well-being for officers and instructors in the Indian air force

Kolar Meena<sup>1</sup>, Prasanthi Nattala<sup>1</sup>, Poornima Bhola<sup>1</sup>

<sup>1</sup>National Institute of Mental Health & Neurosciences (NIMHANS), India

Background and Objectives: Military environment is characterized by uncertain situations and stressors that range from combat to separation from family. For personnel from the Indian Air Force (IAF), stress is habitual in everyday life. Stigma, lack of knowledge and negative attitudes towards mental health act as barriers to treatment. The new trainees join the Indian Air Force during a crucial stage of adolescence and effective mentorship can foster success in their career and aid in mental well-being. The sample consisted of 70 Indian Air Force instructors/officers who attended a week-long training workshop on mentorship and mental well-being. This study aimed at evaluating the effectiveness of a structured training program on mentoring and mental well-being for officers and instructors in the Indian Air Force. Furthermore, this study investigated the relationship between age, experience, educational qualification and pre-training knowledge, attitude and self-perceived competence. Methods: The study employed a quasi-experimental design with single group pre and post test. The questionnaire measured 3 components- a) mentorship and mental health knowledge b) attitude c) self- perceived competence in addressing mental health distress. Descriptive statistics, paired sample t tests and Pearson's product correlation were used for data analysis through SPSS software.

Results: Post-training, a positive effect was found on mental health knowledge, attitude and self- perceived competence at statistically significant levels. There was an increase in mental health knowledge, self-perceived competence and a decrease in negative attitude towards mental health. Furthermore, a positive relationship was found between service experience, attitude and competence. Conclusions: With high rates of unattended mental health needs and increasing rates of suicides, mental health distress in members and veterans of armed forces developing effective programs for reducing barriers to care is essential. Therefore, structured training programs could be an effective key in addressing the urgent need for crucial mental health needs.

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### Fear of cancer recurrence and its predictive factors in Moroccan cancer survivors

Amina Aquil<sup>1</sup>

<sup>1</sup>Higher Institute of Health Sciences, Hassan First University of Settat, Morocco

**Background and Objectives:** Cancer is a real public health problem worldwide as well as in Morocco. Advances in cancer diagnosis and treatment methods have increased the number of cancer survivors. However, the psychological and mental health care of cancer survivors in Morocco remains understudied, and often underestimated by the health system. Our study aims to assess the fear of cancer recurrence and its associated sociodemographic and clinical factors in cancer survivors.

**Methods:** A cross-sectional study was conducted among a population of (n = 200) patients followed at the oncology and hematology hospital of the university hospital center Mohammed IV, Marrakech, Morocco. The data collection instrument consists of standardized scales validated and translated into dialectal Arabic.

**Results:** The main Results we obtained from this study indicated that 51% of the patients present a clinical level of fear of cancer recurrence, 33% of the patients suffer from the anxiety disorder and 21.5% suffer from depression. Significant inter-correlations have been revealed between fear of cancer recurrence, anxiety disorders and depressive disorders.

**Conclusions:** At the end of this study, important recommendations were made to improve the conditions of care for the mental health of cancer survivors. In particular, the establishment of programs and protocols for psychological care.

**Keywords:** cancer survivors, anxiety, depression, fear of cancer recurrence.

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### Can interventions to improve social wellbeing reduce health care utilisation? A systematic review and meta-analysis

Neta HaGani<sup>1</sup>, Daniel Surkalim<sup>1</sup>, Philip Clare<sup>1</sup>, Dafna Merom<sup>2</sup>, Ben Smith<sup>1</sup>, Ding Ding<sup>1</sup>

<sup>1</sup>The University of Sydney, Australia, <sup>2</sup>Western Sydney University, Australia

**Background:** Poor social wellbeing is associated with health risks and excessive health care use. Identifying individuals at risk for poor social wellbeing and providing them with social care may improve their wellbeing, and also reduce costs from unnecessary health care utilization. Psychosocial interventions have been suggested to contribute to decreased health care use, however, such evidence has not been systematically quantified or synthesized.

**Objective:** To systematically examine and meta-analyze all available evidence on the effect of psychosocial interventions on health care utilization.

**Methods:** The databases Medline, Embase, PsycInfo, CINAHL, Cochrane and Scopus were searched in May 2021. Studies were included if they were randomised controlled trials that reported on health care utilisation and social wellbeing outcomes. A multi-level meta-analysis was used to derive pooled effects of interventions. Sub-group analyses examined participant- and intervention-level characteristics associated with intervention effects. **Findings:** Twenty-nine studies were included from 14,622 citations; 25 were eligible for meta-analysis. Data were analysed across 6357 participants, including older adults, post-natal women, people with chronic illnesses and caregivers. The overall effect was in favor of the intervention group, with 28% reduction in health care utilization [OR = 0.68; 95%CI = 0.48, 0.94]. Decreases in the use of emergency care, primary care and inpatient care were found. An improvement was observed in social support [SMD = 0.32; 95%CI = 0.04, 0.61]. Short (< 6 months), one-on-one interventions delivered by health professionals and interventions targeting caregivers had more favourable health care utilisation outcomes. A sustained reduction in inpatient care was observed for 6-12 months post-intervention.

**Conclusions:** There is evidence that psychosocial interventions have the potential to reduce the burden on the health care system. Participant and intervention delivery characteristics, as well as intervention duration, could potentially affect outcomes and should be considered when designing and implementing future interventions.

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### How is the association of childcare attendance in the first five years of life with psychological wellbeing between 11-17 years confounded by socioeconomic position?

Kathrin Burdenski<sup>1</sup>

<sup>1</sup>Loughborough University, United Kingdom

**Background and Objective:** UNESCO and other organisations have outlined the importance of early childcare for children's psychological wellbeing. We aimed to

investigate how the age of starting and the intensity of formal childcare in under-5s were associated with self-esteem trajectories between 11 and 17 years and life satisfaction at 11 and 14 years.

**Methods:** Data from 5484 children from the UK Millennium Cohort Study were used. Childcare intensity (no childcare, part-time and full-time) and age of starting (0-1, 2-3, and 4-5 years) were measured between birth and 5 years. Self-esteem was self-reported at 11, 14 and 17 years, life satisfaction at 11 and 14 years. Ordered and binary logistics regression were used to analyse the association between childcare and life satisfaction, and multilevel logistics models to analyse the association between childcare and self-esteem. To understand the confounding by socio-economic position, models were first analysed unadjusted and then adjusted for socio-economic position, demographic information, maternal mental health and temperament.

**Results:** Most results were null. In unadjusted analyses, later age of starting was consistently associated with lower odds of good life satisfaction (e.g., OR = 0.79 for children who started childcare aged 3-5 years compared to < 1 year). However, upon adjustment for family socio-economic position, effect sizes attenuated and became null (OR = 1.01). Childcare estimates were confounded as children from a lower socio-economic position started childcare later and had lower odds of good psychological wellbeing. Further investigation revealed that income was the SEP measure that confounded the association the most. The adjustments for demographic information, maternal mental health and child temperament did not alter the unadjusted estimates.

**Conclusions:** We find limited evidence that childcare is related to life satisfaction. Evidence that children who start childcare later might have worse psychological wellbeing is likely due to positive confounding by socio-economic position.

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### Evaluation of the National Suicide Prevention program and its association with suicide mortality in Chile

Francisco Bustamante-Volpi<sup>1</sup>, Paula Bedregal-García<sup>2</sup>

<sup>1</sup>Department of Epidemiology and Health Studies, Faculty of Medicine, Universidad de los Andes, Chile, <sup>2</sup>Department of Public Health, Pontificia Universidad Católica de Chile, Santiago, Chile

**Objectives:** To analyze the association between the implementation of the national suicide prevention program (NSPP) and mortality from this cause in Chile.

**Methods:** An exploratory longitudinal observational analytical study was carried out. Indicators regarding its implementation were requested from all the country's regional government agencies in charge of the NSPP, and the statistical association between the decrease in suicide mortality and its degree of implementation was analyzed, comparing mortality in the six years prior to the program with the subsequent six years.

**Results:** Chile experienced a statistically significant decrease in the suicide mortality rate after starting the NSPP (from 13.98 to 11.58 per 100000 inhabitants older than 10 years), however, it could not be correlated with the implementation of the program (r = 0.18; p=0.52), probably because most of the NSPP components failed to be fully installed (average national implementation of 36.61%).

**Conclusions:** The decrease in the suicide mortality rate in Chile seems to be due to factors unrelated to the implementation of the NSPP, which has also been insufficient. It is necessary to explore these factors in depth as well as to identify the causes that have interfered with a complete implementation of the program.

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### Schizophrenia's patient journey: a participatory model

Luisa Brogonzoli<sup>1</sup>, Matteo Porcellana<sup>2</sup>, Stefano Barlati<sup>3</sup>, Antonio Vita<sup>3</sup>, Mauro Percudani<sup>2</sup>, Maria Iardino<sup>4</sup>, Anna Lascari<sup>1</sup>

<sup>1</sup>Fondazione The Bridge, Milano, Italy, <sup>2</sup>Niguarda Hospital, Milano, Italy,

<sup>3</sup>ASST Spedali Civili of Brescia, Italy, <sup>4</sup>Fondazione The Bridge, Italy

**Background and Objective:** Schizophrenia, a severe mental disorder, in up to 60% cases has a variable but chronic course, worsening quality of life and psychosocial functioning. In response to its complexity, a two-year project was built to design a schizophrenia patient journey, including care and disease management in his path towards recovery. This survey-based study aims to share evidence-based information and real-world experiences, examining patients' needs during their care path, and identifying gaps and areas for improvement.

**Methods:** Three most significant steps in the journey of a patient with schizophrenia were defined: early diagnosis, management of the acute phase, long-term management. Physicians, patients as experts by experience and caregivers were involved in the surveys, to establish current best practices in the management of schizophrenia by Departments of Mental Health (MHD). For

each area answers focused on agreement or disagreement on the importance of each statement, and the level of implementation. The survey was conducted through a computer-assisted Web Interviewing approach in Lombardy in 2021, and widespread throughout Italy in 2022. Finally, two multi-stakeholder Consensus Meetings are envisaged to draw a draft of the Patient Journey, also on the basis of the surveys' results.

Results: The national survey and the Consensus will be closed by the end of the year. The results collected up to now indicate a gap in the long-term management phase, in particular concerning family care, home interventions, work/study support, psychoeducational/psychotherapeutic interventions. Important gaps were also found for pharmacological restraint, collaboration with the general practitioner and in the role of experts in peer support and multiprofessional care teams.

Conclusions: The survey offers an updated assessment of the priority areas of intervention for MHD Heads and covers the current limits of the NHS. Chronicity management represents a limit to be addressed in the patient journey of people with Schizophrenia.

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### Quality of life among the partners of the TBI survivors

T.R. Kanmani<sup>1</sup>, Chandrashekar Goud<sup>1</sup>

<sup>1</sup>National Institute of Mental Health and Neuro Sciences, India

Introduction: Traumatic brain injury can significantly change among partners in several functions of their life. Unexpected role changes can arise suddenly without preparation; this may be temporary or even permanent. This indicates significant impact on partner's quality of life. Hence, current study aimed to measure the quality of life among partners of TBI survivors.

Methodology: The study adopted descriptive research design; data was collected from 43 spouses at the time of admission and follow up after 3months. Semi-structured questionnaire was used to collect the patient and spouse's demographic details. WHOQOL was administered to measure the quality of life at the time of discharge and during the follow up. Data was analysed by using R software.

Results: 7(17.5%) male spouses and 33(82.5) female spouses had participated in the study. The Results Findings identified significant differences in physical health (pre 35.89±8.89 and post 43.39±7.16) ≤ 0.001. Environmental support was statistically significant differences ≤ 0.042 (pre-52.57±9.80 and post 56.09±7.03). However, there is no statistically significant differences were not observed in the domains of social support and psychological health domains.

Conclusions: The study concludes timely surgical interventions and long-term psychosocial intervention can improve the quality of life of the partners of the TBI survivors. Keywords: TBI, partners, QOL

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### Art in mental health: more than a therapeutic approach

Martina Giusti<sup>1</sup>, Persiani Niccolò<sup>2</sup>

<sup>1</sup>Department of Experimental and Clinic Medicine, University of Florence, Florence, Italy, <sup>2</sup>Departmental of Experimental and Clinic Medicine, University of Florence, Florence, Italy

The WHO has recognized the role of art as effective therapeutic approach in mental illness and useful tool in the humanization of care. Nonetheless, this methodology is still rarely used. The research aims to investigate the extension of art therapy and the possible use of art also as instrument for primary prevention. The mental health department of Italian Local Health Authority Roma 1 was chosen as case study. Here the art is use both as therapeutic approach in outpatient of mental health and as means of communications in initiatives of mental health education and sensibilization campaigns for the population. Data about this experience were collected by semi-structured interviews addressed to the top management of the health facility and focus groups with a multi-professional and multidisciplinary team made up of professionals involved in mental health services. With the term "art", the interviewees referred not only to the art therapy and but also to the historic and artistic ambient, in which they work. The contextualization of the mental health department in a monumental complex, influences positively the interpersonal relationships and the organizational climax. In addition, the focus group underlines how art therapy is used because it is suitable for multiple types of patients, who are favoured to work sincerely and hardly on themselves, obtaining a positive impact. Moreover, art is identified as well as an effective communicational method in projects of primary prevention related to mental health coming from the direct experience developed in the museum "Laboratory of Mind". In this moment of profound reorganization and remodelling of the mental health department in the post-COVID-19, the use of art in primary prevention

initiatives is an innovation to adapt. The limits of this work are the evaluation of a single case study. Possible research's developments can be the comparison with other similar realities.

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### Is community Health workers mental health affected by community violence? A study in a Brazilian metropolis

Anya Vieira-Meyer<sup>1</sup>, Ana Moraes<sup>2</sup>, Helena Santos<sup>3</sup>, Aisha Yousafzai<sup>4</sup>, Isabella Campelo<sup>5</sup>, José Guimarães<sup>2</sup>, Ana Sales<sup>2</sup>, Mayara Rodrigues<sup>2</sup>, Rebeca Silva<sup>2</sup>, Thaís Moreira<sup>2</sup>, Raul Menezes<sup>6</sup>, Tanandra Rodrigues<sup>7</sup>

<sup>1</sup>Fundação Oswaldo Cruz e Unichristus, Brazil, <sup>2</sup>Universidade Estadual do Ceará, Brazil, <sup>3</sup>Prefeitura Municipal de Fortaleza, Brazil, <sup>4</sup>Harvard T. H. Chan School of Public Health, United States, <sup>5</sup>Unifanor, Brazil, <sup>6</sup>Escola de Saúde Pública do Ceará, Brazil, <sup>7</sup>Unichristus, Brazil

The Family Health Strategy (FHS) is the main primary health care system in Brazil. FHS is organized through a multidisciplinary team that include Community Health Workers (CHWs), which play a critical role, by strengthening the bond between families and FHS teams. However, they are also exposed to adverse factors such as violence in the territories served. Violence is a major social problem in Brazil with serious repercussions on the health care sector. In this study, we analyzed the relationships between adverse working conditions and dimensions of violence in the territory on the prevalence of common mental health disorders (CMHD) among CHWs in Fortaleza, a Northeastern Brazil capital. Information was collected with a self-report questionnaire containing items on sociodemographics, job-related violence, psychoemotional signs and symptoms (Self-Reporting Questionnaire-20), mental health care, and absence from work due to general or mental health issues. The prevalence of CMHD among CHWs in Fortaleza was shown to be influenced by high levels of violence in the territory and on the job. Based on the responses of 1,437 CHWs, the prevalence of CMHD (32.75%) was shown to be associated with violence perceived, witnessed or suffered in the work territory. In the hierarchical analysis, CHMD was associated with age, sex, religious identity, years of experience as a CHW with the FHS, activities in the community, considering the absence of bond with families as an obstacle, having suffered domestic violence, use of medication for emotional dysregulation, identifying the neighborhood as violent, considering violence a physical or mental health determinant, and identifying impunity as a cause of violence. Thus, the work and mental health of CHWs were significantly impacted by dimensions of violence. Our findings are relevant to the adoption of strategies to mitigate the effect of violence on the work and mental health of CHWs., 2013).

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### Assessing the acceptability of group model building as a method of engaging people with lived experience of mental ill-health and recovery

Tari Forrester-Bowling<sup>1</sup>, Renae Carolin<sup>2</sup>, James McLure<sup>2</sup>, James Lucas<sup>1</sup>, Stephanie Bennetts<sup>1</sup>, Josh Hayward<sup>1</sup>, Andrew Brown<sup>1</sup>, Anna Peeters<sup>1</sup>

<sup>1</sup>Deakin University, Australia, <sup>2</sup>Barwon Health, Australia

Background and Objectives: In Australia, the Royal Commission into Victoria's Mental Health System identified a complex and fragmented system ill-equipped to address the needs of people living with mental illness or psychological distress, along with their families, carers and supporters (1, 2). To begin to address these systemic failings, recommendations included calls for co-designed systems-level innovations responsive to the voice of those with lived-experience (3, 4). Group model building (GMB) is a participatory systems-based approach to enhance problem understanding, increase engagement and co-design systemic solutions. This research aimed to assess the usefulness and acceptability of GMB as a process for co-design within the mental health sector and provide clear translation of the methodologies.

Methods: A scoping review on participatory methods used within mental health services informed the co-design approach. Focus groups and GMB workshops with health service lived-experience workforce, clinicians, and other healthcare workers were run to identify person-centred growth-oriented language to be used, acceptability of existing GMB Methods, and the co-creation of adaptations to improve efficacy as a methodological approach.

Results: Person-centred growth-oriented language identified and adopted into vocabulary. A co-created systems approach for stakeholder engagement tailored to the context of mental health services.

Conclusions: This research seeks to elevate people with lived experience to transform mental health services from within, delivering an evidence based, person-centred and co-designed approach to mental health service improvement.

This co-created systems approach for stakeholder engagement will be piloted within an acute mental health inpatient unit to ascertain and foster a shared understanding of the problem scenario and identify contextually relevant and sustainable intervention strategies.

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### The relationship between the strength of atheistic and theistic beliefs and risky drug use: a public health issue

Camila Chagas<sup>1</sup>, José Galduróz<sup>2</sup>, Leonardo Martins<sup>3</sup>, Wellington Zangari<sup>3</sup>

<sup>1</sup>Institute for Collective Health, Universidade Federal de São Paulo, Brazil,

<sup>2</sup>Universidade Federal de São Paulo, Brazil, <sup>3</sup>Universidade de São Paulo, Brazil

**Introduction:** Religiousness has been pointed out in the public health literature as a protective factor for drug use; as religiosity increases, drug consumption decreases. However, such an Interpretation may not include other variables such as the type of religion, levels of religiosity and strength of belief. Belief strength refers to how and to what extent a persons belief system is well established and active in his/her life and worldview. Regardless of being theistic or atheistic, belief strength has been negatively correlated to depression and anxiety, and positively to quality of life. However, public health studies on risk and protective factors for drug use neglect the variable "belief strength". Therefore, this research investigated such dimensions in theistic and atheist people as a risk or protective factor for the consumption of alcohol and other drugs. **Methods:** The study was conducted online in Brazil, with adults aged 18 years or older. We used the ASSIST, AUDIT and Fargestrom scales to assess patterns of drug use and scales to assess degrees of religiosity (Centrality of Religiosity Scale) and atheism (Dimensions of Secularity scale). **Results/Discussion:** 5.256 people participated in the study, including atheists, agnostics, Evangelicals, Umbandists, Catholics, esotericists, spiritualists, Buddhists and people who declared themselves not to be adherent to any religion, but to believe in a superior power/a God. The types of drugs and more frequent consumption patterns in these religious or non-religious groups are presented. The results are compared with those from studies in other areas of health, in which a curvilinear relationship emerged. The association between drug use patterns and secular social variables such as participation in voluntary work (compared to attendance at religious services) are discussed. In addition, we discuss the differences among men, women and the LGBTQ population in drug consumption patterns.

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### Socioeconomic and transcultural determinants of mental health in medical students of four countries

Anna Zimovjanova<sup>1</sup>, Anna Zimovjanova<sup>2</sup>, Frederick Wekesah<sup>3</sup>, Jan Brož<sup>4</sup>, Jana Urbanova<sup>5</sup>, Fatemeh Firouzabadi<sup>6,7</sup>, Jeffrey Mechanick<sup>8</sup>, Masih Babagoli<sup>9</sup>, Ramfis Nieto-Martinez<sup>10</sup>, Natalia Sulbaran<sup>11</sup>, Andrea Medina<sup>11</sup>, Maritza Torres<sup>12</sup>, Geraldo Neto<sup>2</sup>, Juan Rivas<sup>2</sup>, Monika Kunzova<sup>2</sup>, Martin Pesl<sup>2</sup>

<sup>1</sup>International Clinical Research Center (ICRC), St Anne's University Hospital (FNUSA) Brno, Czech Republic, <sup>2</sup>International Clinical Research Center, St Anne's University Hospital Brno, Czech Republic, <sup>3</sup>African Population and Health Research Center, Nairobi, Kenya, <sup>4</sup>Department of Internal Medicine, Second Faculty of Medicine, Charles University, Prague, Czech Republic, <sup>5</sup>Faculty Hospital Kralovske Vinohrady, 3rd Faculty of Medicine, Charles University, Prague, Czech Republic, <sup>6</sup>ENT and Head and Neck Research Center, The Five Senses Institute, Iran University of Medical Sciences, Tehran, Iran, <sup>7</sup>Iran University of Medical Sciences, Tehran, Iran, <sup>8</sup>Divisions of Cardiology and Endocrinology, Diabetes and Bone Disease, Icahn School of Medicine at Mount Sinai, New York, United States, <sup>9</sup>School of Medicine at Mount Sinai, New York, United States, <sup>10</sup>Department of Global Health and Population, Harvard TH Chan School of Public Health, Harvard University, Boston, Massachusetts, United States, <sup>11</sup>Escuela de Medicina, Facultad de Medicina, Universidad de los Andes, Mérida, Venezuela, <sup>12</sup>Ministry of Public Health of Ecuador, Quito, Ecuador

**Background and Objective:** Medical students experience poorer psychological well-being than age-matched individuals. Social determinants and cultural factors influence an individuals health. The association between social determinants and the mental health of medical students is poorly understood. This study aims to compare the association of stress, anxiety, and depression in medical students with different social determinants and cultures from four countries, Czechia, Iran, Kenya, and Venezuela.

**Methods:** An online cross-sectional survey was implemented in the spring of 2022. The levels of anxiety, stress, and depression were assessed using the validated

psychiatric questionnaire DASS 21.

**Results:** In total, 2033 medical students were evaluated, with a median age of 23.0 and 64.8% were female. By country, 1127 were from Czechia, 391 from Venezuela, 331 from Iran, and 184 from Kenya. The prevalence of high-level symptoms was: stress 56.2% (mild to moderate [M-M] 32.7% and severe to extremely severe [S-E] 23.5%), anxiety 57.8% (M-M 29.8%, and S-E 28.0%), and depression 60.8% (M-M 32.5% and S-E 28.3%). The prevalence of high stress and anxiety levels were higher in females than in males ( $p < 0.001$ ). Subjects with low socioeconomic status, low personal budget, and poor involvement in social life presented higher levels of stress, anxiety, and depression than those in the higher categories ( $p < 0.001$ ). The prevalence of S-E stress was higher in Venezuela (26.6%) and Iran (24.2%); S-E depression was higher in Iran (37.5%) and Czechia (28.2%); and the prevalence of anxiety was similar among countries.

**Conclusions:** The prevalence of high levels of stress, anxiety, and depression in medical students affected more than half of the subjects, and about a quarter of the total experienced severe symptoms. Students with low social determinants presented higher symptoms than students with higher levels, and this association was different across countries.

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### Physical activity and workers' quality of life during the COVID-19 pandemic: a possible strategy to deal with emotional exhaustion

Federica Ghelli<sup>1</sup>, Domenico Sanseverino<sup>2</sup>, Chiara Ghislieri<sup>2</sup>, Roberto Bono<sup>1</sup>

<sup>1</sup>Department of Public Health and Pediatrics, University of Turin, Italy,

<sup>2</sup>Department of Psychology, University of Turin, Italy

**Background and Objective:** Working life is a delicate balance between demands and abilities to meet them. Challenges exceeding individual resources can affect both job performance and the overall workers' Quality of Life (QoL). Assuming Emotional Exhaustion (EE) acting as a mediator, our aim was to assess the role of Physical Activity (PA), number of diseases, and some work-related factors (workload (WL), Job Insecurity (JI), and autonomy (JA)) in modulating workers' QoL. **Methods:** A web survey was administered in July 2021 to 650 Italian workers. A series of regressions were carried out to test the role of EE as mediator between socio-demographic (Sex, Age, n° of diseases), lifestyle (Smoking habit, PA level), and work-related factors (WL, JI, JA, and Classification) and the four domains of QoL defined by the WHO (physical, psychological, social relationships, and environmental).

**Results:** The response rate was 51.1% (21-63 yrs., 66% males, 79% white-collars, 76% providing a complete report). Concerning the physical domain, WL ( $B=0.42$ , 95% C.I. (0.331, 0.509),  $p<0.0001$ ) and medium-to-high PA level ( $B=-0.11$ , 95% C.I. (-0.213, -0.012),  $p=0.029$ ) significantly affected EE, which had a negative relationship with QoL ( $B=-0.48$ , 95% C.I. (-0.580, -0.380),  $p<0.0001$ ). We observed a full mediation for WL while PA still maintained a positive impact on QoL ( $B=0.11$ , 95% C.I. (0.023, 0.198),  $p=0.014$ ). EE did not mediate the negative effect of diseases ( $B=-0.32$ , 95% C.I. (-0.400, -0.231),  $p<0.0001$ ) and JI ( $B=-0.14$ , 95% C.I. (-0.232, -0.054),  $p=0.002$ ) on QoL. PA seemed to not affect the remaining QoL domains. **Conclusions:** EE is a core component of burnout syndrome, a condition that, although being a widely discussed issue in modern societies, is still not recognised clinically. The suggested possible role of PA in reducing EE and improving workers' QoL, at least physically, could be worthy of attention in defining strategies to promote workers' well-being.

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### Exploring the impact of task shifting to widen access to treatment for depression for patients with non-communicable-disease and depression multimorbidity on health workers in South Asia

Karen Coales<sup>1</sup>

<sup>1</sup>Department of Health Sciences, University of York, York, United Kingdom

**Background and Objective:** Low-and-middle-income countries (LMICs) are experiencing growing demand for non-communicable disease and mental health healthcare services yet face a persistent shortage in access to specialist health workers (SHWs) in these services. Task shifting is an approach used to address this gap in service provision in which specific healthcare tasks are shifted to larger cadres of non-specialist health workers, including lay health workers (NSHWs) with SHWs potentially taking on supervisory roles. Previous evaluative studies have demonstrated that task shifting is both clinically and economically effective, however the impact of task shifting on NSHWs is not fully understood. This information is important given health workers are a key resource in addressing the growing gap in healthcare provision in LMICs. Understanding what challenges and benefits health workers encounter when engaging in task shifting will contribute

to accommodating their likely support needs when implementing future task shifting initiatives. Using a feasibility trial evaluating the effectiveness of a brief talking therapy for depression as an exemplar, the aim of this study is to explore how diabetic health workers in publicly funded diabetic healthcare services in Bangladesh and Pakistan experience delivering a mental health intervention for patients with diabetes and depression multimorbidity. Methods: Using grounded theory methodology, we will make field observations and interview diabetic health workers trained in delivering culturally adapted behavioural activation about their experiences of integrating mental healthcare into their usual practice. Recruitment to the study will begin in December 2022 and continue until theoretical saturation is reached.

Results: We will present preliminary Findings contributing towards the development of an explanatory theory about how mental health task shifting impacts on diabetic health workers in Bangladesh and Pakistan.

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### Neighborhood deprivation and aging sexual minority people's mental health

Wook Yang<sup>1</sup>, Shelley Craig<sup>2</sup>

<sup>1</sup>California State University Los Angeles, United States, <sup>2</sup>University of Toronto, Canada

Background and Objective: Previous studies have explored the impact of interpersonal level factors on sexual minority people's mental health outcomes. Even though increased number of studies are discussing sexual minority aging and mental health, the importance of neighborhood level factors has not been discussed extensively. Hence, the current study examined how neighborhood social and material deprivation levels contribute to aging sexual minority people's depression.

Methods: The current study used the baseline data of the Canadian longitudinal study on aging (CLSA) in order to conduct a series of regression analysis. The Canadian urban environmental health research consortium (CANUE) data was also linked to the CLSA data to investigate the relationship between sexual minority identity and depression while considering the role of neighborhood deprivation. 48,792 adults, over the age of 45, were included in the analyses (47,792 heterosexual, 760 homosexual, and 240 bisexual adults). Each model had a moderator (material or social deprivation) to explore the neighborhood deprivation's influence. Analyses were stratified by gender and age was included as a control variable.

Results: The results indicate that lesbian identity and neighborhood material deprivation levels contribute to aging lesbian adults' depression levels when compared to their heterosexual and bisexual counterparts. For aging men, bisexuality and neighborhood material deprivation influenced aging bisexual men's depression levels when they are compared to aging heterosexual and gay men.

Conclusions: The current study shows that neighborhood material deprivation level significantly contributes to aging sexual minority people's mental health outcomes. Such results point to the need of community level services for aging sexual minority adults, especially for those residing in materially deprived neighborhoods. Further efforts to develop intervention strategies to serve this vulnerable population would elicit positive aging experiences for aging sexual minority people.

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### Depression in healthcare workers in Czechia during COVID-19 pandemic

Pavla Cermakova<sup>1</sup>, Katrin Wolfova<sup>1</sup>, Barbora Frycova<sup>1</sup>, David Novak<sup>1</sup>, Marie Kuklova<sup>1</sup>, Jaroslav Pekara<sup>2</sup>, Matej Kucera<sup>1</sup>, Miroslava Janouskova<sup>1</sup>, Jana Seblova<sup>1</sup>, Dominika Seblova<sup>1</sup>

<sup>1</sup>Charles University, Czech Republic, <sup>2</sup>Medical College, Czech Republic

Background and Objective: Health care workers were at risk for poor mental health during the COVID-19 pandemic. We investigated whether they experienced a change in the occurrence of depression and associated factors.

Methods: Data comes from the COVID-19 HEalth caRe wOrkErS (HEROES) Study. The baseline wave 0 in Czechia was conducted in June 2020 (n=1,778) followed by wave 1 in spring 2021 (n=1,840). Depression was defined as  $\geq 10$  points on the Patient Health Questionnaire. Logistic regression estimated odds ratio (OR) with 95% confidence interval (CI) for the association of participants' individual and work-related characteristics, simultaneously entered into the model, with depression.

Results: In wave 0, 11% of the participants had depression, while 22% had

depression in wave 1. Irrespective of wave, depression was associated with stress (OR 4.38; 95% CI 3.25-5.95), physical illness (OR 1.5; 95% CI 1.14-1.97), contact with COVID patients (OR 1.53; 95% CI 1.04-2.25), necessity to prioritize patients (OR 1.90; 95% CI 1.34-2.68), stigmatization (OR 1.64; 95% CI 1.25; 2.17), and experience of death due to COVID (OR 1.46; 95% CI 1.06-2.00). Lower odds of depression were predicted by resilience (OR 0.32; 95% CI 0.26-0.40), male gender (OR 0.62; 95% CI 0.44-0.86), sufficient personal protective equipment (OR 0.72; 95% CI 0.54-0.95), trust in management (OR 0.65; 95% CI 0.45-0.94), and professions of physician (OR 0.51; 95% CI 0.31-0.84) and nurse (OR 0.48; 95% CI 0.26-0.80) when compared to working in management. Age, education, informal daily caregiving, support from loved ones, work sector, and change in work tasks were not associated with depression.

Conclusions: The occurrence of depression in health care workers in Czechia has doubled during the pandemic. Both individual and work-related factors seem to have played a role.

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### The moderating effect of socio-demographic variables on the 'character-strengths' of rural frontline workers: a formative study in India

Radhika Sharma<sup>1</sup>, Spruha Singh<sup>2</sup>, Abhishek Singh<sup>2</sup>, Ameya Bondre<sup>3</sup>, Deepak Tugnawat<sup>3</sup>

<sup>1</sup>Sangath, India, <sup>2</sup>Sangath, Madhya Pradesh, India, <sup>3</sup>Sangath, Bhopal, India

Introduction: Accredited Social Health Activists (ASHAs), who deliver village-level primary healthcare in India, experience substantial work-stress due to the 'emotional labor' contributed by the interplay between personal (domestic) and workplace factors. Negotiation with work-stress tends to involve, among others, personal attributes, or 'character-strengths' as termed in the positive psychology literature. Little is known about the background variables that influence the expression and usage of these strengths. We aim to explore the moderating effects of specific socio-demographic variables on the character-strengths of ASHAs, to inform designing of an intervention to address their work-stress. Methods: A cross-sectional study was conducted in rural Madhya Pradesh (central India) to assess the self-reported 'character-strengths' of ASHAs (N=274) using a 24-item vignette-based six-point Likert measure, 'Self-Perceived Strengths' (Mehrotra et al, 2015). Secondary analysis using descriptive and two-tailed unpaired t tests explored the relationships between socio-demographic variables (e.g., ASHA's age and work experience in years; number of family members; monthly household income and number of close friends) and mean scores of individual strengths.

Results: The strengths of "persistence" and "gratitude" showed significant differences in mean scores by age-groups, with greater expression in older (>33-year-old) ASHAs. Between ASHAs with different levels of work experience, "spirituality" and "close and loving relationships" showed a significant difference in means, with greater expression among more experienced ASHAs (>10 years). Concerning monthly household income, "practicality and far-sightedness" showed a significant difference in means, with greater expression in ASHAs with lesser incomes ( $\leq$  ₹80). No strength showed significantly different expressions between ASHAs having varying number of family members or close friends. Discussion: Self-perception of character-strengths is culture-dependent and moderated by varied socio-demographic characteristics. Interventions aiming to reduce work stress among ASHAs (and similar frontline workers) by leveraging character-strengths should consider a contextualization of their strategies for optimal absorption by individuals having different underlying socio-demographic moderators.

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### Depression, anxiety, and quality of life of Afghan women under the Taliban Government

Ahmad Neyazi<sup>1</sup>

<sup>1</sup>Afghanistan Center for Epidemiological Studies, Herat, Afghanistan

Background: According to the World Health Organization (WHO), depression is a common mental health illness that is characterized by a persistent feeling of sadness and loss of interest. The present study examined the association of two mental health variables (i.e., depression, anxiety) with quality of life (QoL), and the socio-demographic characteristics of Afghan women living under the rule of Taliban government in Afghanistan. Methods: A cross-sectional study was administered across major provinces of Afghanistan (Herat, Mazar-e-Sharif, Kabul, and Samangan). Logistic regression models were used to examine the association of depression, anxiety with QoL and socio-demographic characteristics among women (N=465).

Results: The prevalence of depression symptoms were 80.6%, and mild to

extremely severe anxiety was 81.3%. Depression symptoms among Afghan women were associated with being older, having more children, lower education level, other individuals' bad behavior, traumatic events, and feeling physically ill. Multiple regression analysis indicated that poor physical domain of quality of life (aOR:4.3; 95%CI: 1.748-11.029, p=.002), and poor psychological domain of quality of life (aOR:22.168; 95%CI: 7.50 – 65.49, p<.001) were significantly associated with depression. Conclusions: The prevalence of depression was high women living under the government of the Taliban in Afghanistan. Considering the high prevalence of depression, anxiety, and their impact on quality of life and the overall quality of healthcare services, international health organizations should implement programs for regular screening of depression and anxiety, and there should be psychological counselling services available for vulnerable women living under the government of the Taliban. Keywords: depression, anxiety, quality of life, women, Taliban, Afghanistan

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### Study conditions and university students' mental health 20 months after the COVID-19 outbreak in Germany - Results from a cross-sectional study

Eileen Heumann<sup>1</sup>, Jannis Trümmeler<sup>2</sup>, Christiane Stock<sup>1</sup>, Stefanie Helmer<sup>3</sup>, Heide Busse<sup>4</sup>, Sarah Negash<sup>5</sup>, Claudia Pischke<sup>2</sup>

<sup>1</sup>Institute of Health and Nursing Science, Charité - Universitätsmedizin Berlin, corporate member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Berlin, Germany, <sup>2</sup>Institute of Medical Sociology, Centre for Health and Society, Heinrich-Heine-University Duesseldorf, Duesseldorf, Germany, <sup>3</sup>Institute for Public Health and Nursing Research, Prevention and Health Promotion, University of Bremen, Bremen, Germany, <sup>4</sup>Leibniz Institute for Prevention Research and Epidemiology - BIPS, Bremen, Germany, <sup>5</sup>Martin-Luther University Halle-Wittenberg, Halle (Saale), Germany

**Background and Objective:** University students are generally vulnerable to mental health problems. This vulnerability was further exacerbated by the COVID-19 pandemic as students experienced restrictions in public and academic life. The aim of this study was (1) to describe students' perception of study conditions, (2) to identify study conditions that may be associated with symptoms of anxiety and depression, and (3) to analyse the use of counselling services at universities during the pandemic.

**Methods:** The cross-sectional COVID-19 German Student Well-being Study (C19 GSWS) was conducted at five universities in Germany in autumn 2021 (N=7,267). Descriptive analyses were performed to describe students' perceived study conditions, self-rated mental health and counselling utilisation patterns. Additionally, linear regression models were applied to analyse the associations between study conditions and mental health outcomes.

**Results:** More than one third of the students felt burdened by their study conditions: 44.1% indicated that they were less aware of what was expected of them in their study modules during the pandemic and 39.6% reported that their workload had significantly increased since the first COVID-19 outbreak. A total of 42.4% of university students reported feeling down, depressed, or hopeless and 44.5% that they felt nervous, anxious or 'on edge' several days per week. Higher academic stress and dissatisfaction were associated with depressive symptoms and anxiety. Only 7.1% indicated that they had utilised counselling services. Those who had were more likely to be female, enrolled in a Bachelor's programme, and had more than one reason for utilisation.

**Conclusions:** Our research underlines the need for universities to review their study conditions and to provide targeted counselling services and intervention strategies to promote students' mental well-being.

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### Comprehensive mental health needs assessment study: the case of Slovenia

Irena Makivić<sup>1</sup>, Špela Selak<sup>2</sup>

<sup>1</sup>National Institute of Public Health, Ljubljana, Slovenia, <sup>2</sup>National Institute of Public Health Ljubljana, Slovenia

**Background and Objective:** Needs assessment is important especially during the times of change within the health care system, aiming to prepare good evaluation and valuable implementation of practices that best suit the people in need. It is also an important factor within a continuous process of quality improvement. In order to address the needs comprehensively the aim of the study was to assess them from different perspectives.

**Methods:** At the systemic level the Delphi study (with 49 stakeholders: service providers, decision-makers and service users) was carried out. Individual needs

of people with mental health problems were assessed using Camberwell needs assessment tool by professionals (206 patients participated) and through measuring patient experiences within newly developed mental health centres (64 patients participated).

**Results:** The major needs recognized at the systemic level are the needs for companionship and peer support; continuous implementation of destigmatization campaigns; continuous training, supervision and connected work among all professionals and in all sectors within each service; accommodation facilities with different levels of support; needs for strengthening the network of day-care centres. According to professionals one third of the patients are dealing with the needs about self-care, intimate relationship and company. Around half of the patients feel psychological distress and have the needs in physical health, on daytime activities and needs information on condition and treatment. The majority of patients have reported that they can manage their mental health problem better than before joining the treatment. The needs for quality and patient-centred care were addressed. The treatment timeframe is a potential unmet need since a quarter of patients reported to have mental health problems for more than three years before seeking professional help.

**Conclusions:** Future qualitative needs assessment is vital to address the problems of help seeking as well stigma from patients' as well as professionals' perspective.

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### Evaluation of a university medical faculty students in terms of mental disorders with SRQ-20

Sevda Sungur<sup>1</sup>, Sevil Gedik<sup>2</sup>, Ayşegül Mutlu<sup>1</sup>, Tuğçe Torba<sup>1</sup>, Mine Tepetas<sup>1</sup>, Alaettin Ünsal<sup>3</sup>, Didem Arslantas<sup>3</sup>

<sup>1</sup>Department of Public Health, Faculty of Medicine, Eskisehir Osmangazi University, Eskisehir, Türkiye, <sup>2</sup>Eskisehir Odunpazari İlçe Sağlık Müdürlüğü, Eskisehir, Türkiye, <sup>3</sup>Department of Public Health, Faculty of Medicine, Eskisehir Osmangazi University, Eskisehir, Turkey

**Background and Objectives:** Mental disorders are common in the community, can become chronic, result in disability, decrease academic achievement, and often cannot be adequately treated because they are not noticed. For this reason, mental disorders are a public health problem that concerns not only the individual but also the society and has a high cost. In this study, it was aimed to evaluate the students of Eskişehir Osmangazi University (ESOGÜ) Faculty of Medicine in terms of mental disorders. **Methods:** This cross-sectional study was conducted on 742 ESOGU Medical Faculty students between 2021-2022. The Self-Report Scale (SRQ) and the General Health Questionnaire (GHQ) were used to assess the participants' mental disorders. An online questionnaire form was prepared and distributed to students. Mann Whitney U, Kruskal Wallis, and Spearman correlation analysis were used.

**Results:** Of the study group, 376 (50.7%) were women, and the mean age was 21.03 ± 2.05 years. The mean score of the SRQ was 7.02 ± 5.22. Being women, worsening income, living alone, having a history of mental disorder, chronic illness, experiencing significant trauma, and not getting enough social support increase the probability of experiencing a mental disorder. It was determined that there was a strong positive correlation between SRQ and GHQ scores (p<0.001, r=0.740). **Conclusions:** The probability of experiencing a mental disorder was low in the study group. Gender, economic conditions, living conditions, family history of mental disorder, chronic illness, life traumas and social supports predicted the probability of mental disorder. Influencing individuals trained in the field of health can lead to significant disruptions in the health system when they are involved. For this reason, individuals at risk should be identified and necessary preventive and therapeutic interventions should be applied.

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### Multidimensional and intergenerational impact of severe mental health conditions

Wubalem Fekadu<sup>1</sup>, Tom Craig<sup>2</sup>, Abebaw Fekadu<sup>1</sup>

<sup>1</sup>Addis Ababa University, Ethiopia, <sup>2</sup>Kings College, London, United Kingdom

**Background:** Severe Mental Health Conditions (SMHCs) affect multiple generations although this is poorly studied. The aim of this study was to investigate the intergenerational and multidimensional impacts of SMD in rural Ethiopia.

**Methods:** This comparative study was nested within an existing population-based cohort study. We collected data from a total of 5762 family members of 532 households (266 households with at least one family member with SMHCs and 266 sex and age-matched mentally well controls from the neighborhood) in 2019. The main outcomes were multidimensional poverty, mortality, food insecurity, and family satisfaction. Findings: Multidimensional poverty Index was higher

in the households of persons with SMHCs (74.44%) than in the comparison households (38.35%). School attendance was lower in children of people with SMHCs (63.28%) than in children of the comparisons (78.08%). The median years of schooling were also lower among children of people with SMHCs than the controls. This lower attendance was also true among siblings of people with SMD (35.52%) than the comparisons (49.33%). Over the course of 20 years, family members who have a person with SMHCs in their household had a 23% increased risk of death compared to family members who did not have a person with SMHCs in their household. Severe food insecurity was also higher in the SMHCs households (20.68%) than in the comparison (13.53%) while family satisfaction was lower. Interpretation: Families of people with SMHCs experience pervasive multidimensional and intergenerational impacts. Interventions should consider the broader family social and healthcare needs of the broader family.

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### Self-reported knowledge and confidence of clinical associates in South Africa in providing mental health services

Saiendhra Moodley<sup>1</sup>, Jacqueline Wolvaardt<sup>1</sup>, Christoffel Grobler<sup>1</sup>

<sup>1</sup>School of Health Systems and Public Health, University of Pretoria, South Africa

**Background and Objective:** COVID-19 has exacerbated the pre-existing mental health pandemic globally. Additional human resources will be needed to provide mental health services. Clinical associates, the mid-level medical worker cadre in South Africa (SA), could potentially be used to deliver these services as similar cadres have been used elsewhere in Africa. The study aimed to determine the self-reported knowledge and confidence of clinical associates in providing mental health services. **Methods:** A cross-sectional study of clinical associates was conducted between December 2021 and July 2022. The questionnaire was finalised after expert validation and cognitive interview processes. The link to the electronic (Qualtrics) questionnaire was distributed to all clinical associates that could be reached using alumni databases and social media. Data was imported into Stata v17 for analysis.

**Results:** Of the 209 clinical associates included in the analysis, 205 (98.1%) indicated they had training on management of patients with mental illness during their clinical associate undergraduate degree and 192 (91.9%) indicated they had a mental health rotation. Approximately one-tenth of participants (10.7%) had some additional mental health training after qualifying. Most participants rated their knowledge of various mental disorders that are considered important in the SA context as 'good' or 'excellent' with the only exception being attention-deficit hyperactivity disorder (29.5%). Only 43.2% of participants felt 'quite confident' or 'very confident' in carrying out a mental health examination. Most participants rated their knowledge of suicide risk (59.0%), the aggressive patient (55.6%) and the confused patient (66.3%) as 'good' or 'excellent' though fewer participants felt 'quite confident' or 'very confident' to manage patients presenting with suicide risk (44.9%), aggression (46.9%) and confusion (53.1%).

**Conclusions:** Clinical associates have a contribution to make in mental health service provision based on their existing mental health knowledge but this may need to be supplemented by additional practical training.

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### Healthcare workers' emotions, perceived stressors, and coping strategies at workplace during the COVID-19 pandemic in Palestine

Muna Ahmead<sup>1</sup>

<sup>1</sup>Al Quds University, Occupied Palestinian Territory/Occupied Palestinian Territory

**Background:** Evidence about the impact of the COVID-19 pandemic on the mental health of Palestinian healthcare professionals is lacking and has been disregarded during the COVID-19 pandemic. This study aims to describe Palestinian healthcare workers (HCWs) emotions and factors causing stress, and factors used to reduce the stress experienced at the workplace and to examine the relation [1] ships between HCWs level of stress and their coping strategies and motivational factors during the COVID-19 pandemic.

**Methods:** A self-reported online survey was completed by 506 doctors and nurses working in healthcare facilities that provide COVID-19 care. Descriptive statistics, bivariate, and multivariate regression models were developed to adjust for the association between HCWs coping and motivation factors with HCWs' perceived stressors.

**Results:** The findings showed that 24.1% of the participants had a high-stress level, and 25.7% had a low level of stress. The participant's main coping strategy

was avoidance and the key emotional factor was the ethical and professional obligation to continue working. A major cause of their stress was their personal safety and having the COVID-19 infection. Findings showed a positive association between stress and the younger age of participants, with physicians being less stressed than nurses. Furthermore, there was a significant positive correlation between stress scoring and coping strategies scoring but not with motivation score. **Conclusions:** This study shows that Palestinian healthcare workers experienced emotional turmoil during the COVID-19 pandemic. These results indicate the necessity of providing supervision, psychological counseling and intervention to professional healthcare workers who work directly with COVID-19 patients in health settings during the current pandemic or in the event of future outbreaks. Policymakers and managers must also conduct training and provide interventions on how to cope with stress in pandemics, in order to assist HCWs in developing their adaptive coping strategies and increase their motivation.

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### Loneliness in emerging adulthood: a qualitative study using cultural probes and in-depth interviews

Berit Nielsen<sup>1</sup>, Lise Nielsen<sup>2</sup>, Mathias Lasgaard<sup>3</sup>

<sup>1</sup>Advanced Wellbeing Research Centre, Defactum, Department of Public Health Research, Social and Health Services and Labour Market, Aarhus, Denmark, <sup>2</sup>Defactum, Department of Public Health Research, Social and Health Services and Labour Market, Aarhus, Denmark, <sup>3</sup>Defactum, Department of Public Health Research, Social and Health Services and Labour Market, Denmark

**Background:** Loneliness has become a great public health concern in the Western world. Most vulnerable to loneliness are emerging adults. Prolonged loneliness in emerging adults is associated with poor mental health such as symptoms of depression and anxiety that may have negative implications for health and well-being in later life. **Aim:** To explore and gain a better understanding of how prolonged loneliness is experienced and coped with in the everyday life of emerging adults. **Methods:** The study is a thematic analysis of qualitative data consisting of cultural probes and in-depth interviews. Participants were recruited through targeted advertising on social media. Over a week, participants aged 18-25 completed a cultural probe that included open and evocative activities for them to delve into in their own time thereby contributing to depicting their story about loneliness in everyday life. After reviews of the cultural probes, in-depth interviews were conducted. The interviews were recorded and transcribed verbatim.

**Results:** Participants were 21 emerging adults (mean age 21.3), three men and 18 women. Except for one, they all completed cultural probes that were returned prior to the interview and used as a starting point for conversation. At present (December 2022), the coding of the transcribed interviews has been completed and thematic analysis is underway. The final Results will be presented at the conference. **Perspectives:** A wider understanding of emerging adults' lived experiences with prolonged loneliness can contribute to new perspectives on the reasons underlying loneliness. The material from the cultural probes are strong testimonies and formed the basis for creating a traveling exhibition to set the stage for dialogue. The exhibition is currently traveling around various cultural and educational venues in Denmark. Going forward, the study can contribute as a direct voice of emerging adults when developing interventions aimed at reducing loneliness.

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### Association between physical and mental illness comorbidity, self-harm repetition and highly lethal self-harm acts: a mixed methods study among individuals with frequent self-harm episodes

Anvar Vakkayil<sup>1</sup>, Isabela Troya<sup>1</sup>, Sarah Nicholson<sup>1</sup>, Grace Cully<sup>1</sup>, Dorothy Leahy<sup>1</sup>, Ana Costa<sup>1</sup>, Ruth Benson<sup>1</sup>, Paul Corcoran<sup>1</sup>, Eve Griffin<sup>1</sup>, Eunice Phillip<sup>1</sup>, Eugene Cassidy<sup>2,3</sup>, Katerina Kavalidou<sup>4</sup>, Ella Arensman<sup>1</sup>, Anna Jeffers<sup>3</sup>, Frances Shiely<sup>5</sup>, Íñigo Alberdi<sup>6</sup>

<sup>1</sup>School of Public Health and National Suicide Research Foundation, University College Cork, Ireland, <sup>2</sup>Cork University Hospital, Cork, Ireland, <sup>3</sup>Health Service Executive, Ireland, <sup>4</sup>National Suicide Research Foundation, University College Cork, Ireland, <sup>5</sup>University College Cork, Ireland, <sup>6</sup>Hospital Clínico San Carlos, Madrid, Spain

**Background:** Research has indicated an increased risk of self-harm repetition and suicide among individuals with frequent self-harm episodes. Co-occurring physical and mental illness further increases the risk of self-harm and suicide. However, the association between this co-occurrence and frequent self-harm episodes is not well understood. We examined the profile of individuals with



**Background and Objectives:** Although workplace wellbeing (WWB) has been receiving increasing research interest, there have been few studies in East Asian countries. This study seeks to examine factors associated with low WWB in Hong Kong, a high-income Asian city.

**Methods:** Using a newly validated Chinese language instrument, an anonymous telephone survey was conducted among working adults in Hong Kong (n=400) in November 2022. **Methods:** Using a newly validated Chinese language instrument, an anonymous telephone survey was conducted among working adults in Hong Kong (n=400) in November 2022.

The sociodemographic factors associated with low WWB (45, being married, lower income, lower education, being a non-professional worker, high weekly work hours, and non-flexibility of work location were significantly associated with low WWB levels (OR: 1.87-6.91).

**Results:** In the unadjusted analysis, age>45, being married, lower income, lower education, being a non-professional worker, high weekly work hours, and non-flexibility of work location were significantly associated with low WWB levels (OR: 1.87-6.91, p<0.05). However, the multivariable regression noted that only non-tertiary educated (OR=3.10) and high working hours (OR: 2.09-6.61) were associated with lower WWB. Gender, having dependent children, and commute time were not associated with WWB. Seven of the eight WWB subscale scores (Emotional WB, Social WB, Psychological WB, Job Benefits, Spillover Effects, Organizational Culture, Work Nature) were positively correlated with self-rated health scores (p: 0.12-0.32, p<0.05) and likelihood of changing jobs while the Physical Environment WB score showed only marginally significant associations (p< 0.10).

Of respondents, 33.8% reported that WWB had worsened during the COVID-19 pandemic (3.5% reported improvement). Compared with workers in the financial services, those employed in education (OR=3.79), healthcare (OR=3.50), retail (OR=4.20), and manual labor (OR=8.17) were more likely to report that their WWB had worsened after the pandemic; 21.5% attributed their worsened WWB to lowered income or work opportunities while 14.1% reported that their workload had greatly increased during this time.

**Conclusion:** Workers with lower education and high work hours are at risk of low WWB. The COVID-19 pandemic had varying levels of effects on different industries due to economic difficulties and work overload.

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### Racial disparities and anxiety symptoms association with nutritional status during the COVID-19 pandemic

Júlia Cristina Cardoso Carraro<sup>1</sup>, Ana Cláudia Morito Neves<sup>2</sup>, Mariana Carvalho de Menezes<sup>3</sup>, Raquel de Deus Mendonça<sup>2</sup>, Adriana Lúcia Meireles<sup>4</sup>

<sup>1</sup>Universidade Federal de Ouro Preto, Clinical and Social Nutrition Department, "Rua Dois, 90, Apto 301", Brazil, <sup>2</sup>Universidade Federal de Ouro Preto, Program in Health and Nutrition, School of Nutrition, Brazil,

<sup>3</sup>Universidade Federal de Ouro Preto, <sup>4</sup>Universidade Federal de Ouro Preto, Clinical and Social Nutrition Department, Brazil

**Background and Objective:** Some evidence shows an increase in anxiety symptoms among undergraduate students during the covid-19 pandemic. However, anxiety symptoms can be different between individuals of different races/skin color, especially in a country with social inequalities linked to skin color, as Brazil. So, this study aimed to assess the interaction between different races/skin color and anxiety in relation to body weight status in university students during the covid-19 pandemic.

**Methods:** This cross-sectional study was conducted with 610 undergraduate students from Brazil during the first wave of covid-19. Data were collected using an online questionnaire between July and August 2020. Self-reported race/skin color was categorized into white and black or pardo. Symptoms of anxiety disorders were assessed by depression, anxiety and stress scale-21 scale, validated in Brazil. Body mass index (bmi) was obtained using self-reported weight (kg) and height (m), being  $bmi \geq 25 \text{ kg/m}^2$  for adults,  $\geq 27 \text{ kg/m}^2$  for the elderly and z-score  $\geq 1$  for adolescents, used as the cutoff point for excess weight. For data analysis, it was used adjusted logistic regression to estimate the odds ratio (or) and 95% confidence interval (CI).

**Results:** Of the 610 university students, 51.31% were black or pardo, 62.95% were female, 56.89% were  $\geq 23$  years old, 42.79% had anxiety symptoms, and 48.52% were overweight. In the multivariate analysis, being black and having anxiety symptoms had higher odds of being overweight (or= 2.04; 95% ci: 1.21-3.45) compared with white individuals without anxiety symptoms. There was no interaction between race/skin color and anxiety in relation to being overweight.

**Conclusion:** The findings suggest a possible racial disparity in weight status among undergraduate students, where those who declared black or pardo skin

race/color and having anxiety symptoms were more likely to be overweight when compared to white without anxiety symptoms.

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### Exploring diffusion and spillover effects of an evidence-based mental health intervention among peers and caregivers of youth in rural regions of Sierra Leone

Alethea Desrosiers<sup>1</sup>, Laura Bond<sup>2</sup>, Morgan Hoffman<sup>2</sup>, Praveen Kumar<sup>2</sup>, Carolyn Schafer<sup>3</sup>, Alpha Vandi<sup>4</sup>, Miriam Hinton<sup>4</sup>, Isha Metzger<sup>5</sup>, Theresa Betancourt<sup>2</sup>

<sup>1</sup>Brown University, United States, <sup>2</sup>Boston College School of Social Work, United States, <sup>3</sup>NorthWestern University, <sup>4</sup>Caritas-Freetown, Sierra Leone, <sup>5</sup>Georgia State University, United States

**Background:** Given the large mental health treatment gap in low- and middle-income countries (LMICs), harnessing the naturalistic processes of diffusion- the untargeted and unplanned spread of new practices across networks- and spillover- the phenomenon of beneficial effects among nonparticipants- could shed light on the wider benefits of evidence-based mental health interventions in LMICs, including Sierra Leone. This study explored potential diffusion and spillover effects of an evidence-based mental health intervention- the Youth Readiness Intervention (YRI)- among peers and cohabitating caregivers of Sierra Leonean youth (aged 18-30) who participated in the intervention.

**Methods:** We recruited index participants who had completed the YRI delivered within entrepreneurship training (N=165) and control index participants (N=165). Index participants nominated three of their closest peers and one primary cohabitating caregiver. Nominated peers (N=879) and caregivers (N=284) were recruited and enrolled into this study. Sub-samples of caregivers, index participants and peers were selected to participate in 20 key informant interviews, 11 dyadic interviews, and two focus group discussions (N=16), respectively. Qualitative data was analyzed using grounded theory. Multivariate regression analysis compared YRI knowledge levels among YRI participants' peers relative to control participants' peers.

**Results:** Qualitative analysis indicated that spillover effects occurred among caregivers, via improvements in sense of well-being, household dynamics, and caregiving burden. Qualitative analysis supported diffusion of several YRI components among peers, particularly progressive muscle relaxation and diaphragmatic breathing. Sharing occurred mostly via verbal explanation or demonstration with same-aged peers. Regression analysis indicated that YRI participants' peers ( $\beta=0.02$ , p<.00) demonstrated significantly greater YRI knowledge compared to control participants' peers.

**Conclusion:** Diffusion and spillover of evidence-based interventions can occur naturally in a post-conflict, LMIC setting. Disseminating evidence highlighting the wider societal benefits of evidence-based mental health interventions to key stakeholders and policy-makers in LMICs could help increase investments in scaling up services.

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### The effectiveness of integrated mental health and psychological support interventions in reducing postpartum depression of mothers in Palestine: a randomized control trial

Salam Khatib<sup>1,2,3</sup>, Nuha Sharif<sup>4</sup>, Hana Rabadi<sup>3,5</sup>

<sup>1</sup>Al-Quds University, Faculty of Health Profession, Abu Dis Campus, Al

Quds University, Palestine, <sup>2</sup>Abu Dis Campus, Al Quds University, Palestine,

<sup>3</sup>Palestinian Territory, Occupied, <sup>4</sup>Al-Quds University, <sup>5</sup>Al-Quds University, Abu Dis Campus, Al Quds University, Palestine

**Background and Objective:** Various sources indicate the high prevalence rate of depression during prenatal and postnatal periods in Palestine. Therefore, the aim of this study was to test the effectiveness of an integrated mental health and psychosocial support (PSS) intervention in reducing depressive symptoms of mothers in vulnerable communities in Palestine.

**Methods:** A cluster randomization trial, conducted on 26 vulnerable communities in the West Bank, was included in the study. A total of 469 pregnant mothers were included in the study, of which 231 were assigned randomly to the control group and 238 were assigned to the intervention group. Data were collected from both groups at the baseline and the end-line of the survey using Edinburgh Postnatal Depression (EPDS) questionnaire. Pregnant women in the intervention clusters were supported with the integrated package including PSS, while pregnant women in the comparison group received routine care by trained community

health workers.

Results: In the pre intervention phase, the prevalence rate of antenatal depression was 10.5% in intervention group and 25.5% among the control group. While in the post intervention phase, postpartum depression level among the intervention group was lower in comparison to the control group (7.5; 13.7 respectively). In addition, during this phase 4.6% of mothers in the intervention group had an EPDS score > 13 (severe depression), whereas 2.9% had an EPDS score of 10–12 (mild depression). Conversely, 7.9% of mothers in the control group had an EPDS score > 13, while 5.8% had an EPDS score 10–12; this indicated the effectiveness of intervention on decreasing postpartum depression level.

Conclusion and Global Health Implications

Providing PSS intervention to pregnant women was found to be effective in reducing depressive symptoms, thus it is crucial to integrate it within primary health programs to mothers.

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### Male victims of intimate partner violence in Greece during the COVID-19 pandemic: prevalence and risk factors

Maria Papadakaki<sup>1</sup>, Roxane Eftychidi<sup>1</sup>, Joannes Chliaoutakis<sup>1</sup>

<sup>1</sup>LaHeRS Lab, Social Work Department, Hellenic Mediterranean University, Greece

Background: Male victimization is neglected both in research and policy. Social stereotypes serve as a barrier in prevention and efficient management of the problem. The current study aimed at exploring the manifestation of violence against male and the factors associated with its occurrence, in a country with the lowest gender equality score among EU member states (based on EIGE index).

Methodology: Non-random sampling survey was carried out on a sample of 211 men, aged 18 and over, residents of rural and urban areas of one prefecture of Greece. The profile of the male victims of partner abuse, the level of mental resilience, the frequency of victimization and the response strategies were studied.

Results: Most subjects reported experience of psychological and socioeconomic abuse (24.2% physical, 18.0% sexual 74.7% psychological, 58.1% socioeconomic). Resilience had weak to moderate association with victimization. The age, duration of the relationship in years and monthly salary had negative association with the victimization. The higher the educational level and the professional achievement of individuals, the higher the frequency of victimization. Single and divorced individuals were more victimized than married individuals and those in a relationship. Income and educational inequalities between participants and their partners were not correlated with the frequency of victimization. Most subjects chose the strategy of direct confrontation when victimized (35.6%), whereas few chose to report their abuse to the authorities (3.2%).

Conclusions: Psychological and socioeconomic victimization by intimate partners is prevalent among men. Certain socioeconomic characteristics could distinguish males most at risk. Further research is needed to understand and tackle the phenomenon.

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### Determining associations between co-use of tobacco & cannabis products and mental/behavioral health outcomes: a narrative literature analysis

Taichi Murata<sup>1</sup>, Gideon St Helen<sup>2</sup>, Neal Benowitz<sup>3</sup>

<sup>1</sup>University of California San Francisco (UCSF) School of Pharmacy, United States, <sup>2</sup>UCSF School of Medicine, <sup>3</sup>UCSF School of Medicine/San Francisco General Hospital, United States

Studies suggest that co-use of tobacco and cannabis, which is highly prevalent among cannabis users, has detrimental effects on user mental health and public health. Thus, we reviewed extant literature to determine associations between co-use of tobacco and cannabis on mental and behavioral health outcomes such as depression.

We conducted a narrative literature review of manuscripts published between 2007–2022. Using two Boolean search terms, we performed a literature search across 4 databases (PubMed, Embase, PsycINFO, and Web of Science). TM reviewed the titles and abstracts for relevance to the topic. Abstracts that were not obviously relevant were discussed by the three investigators and included or excluded based on consensus. Data were extracted from the included manuscripts, including study design, population, sample size, measures of cannabis and tobacco use, and mental and behavioral health outcomes.

From 19,153 literature search results across four databases, 31 articles are relevant to the narrative literature analysis. There were 15 prospective cohort studies, 7 cross-sectional studies while 9 studies included mixed methods

(exploratory survey, qualitative/quantitative, longitudinal cohort). Across numerous prospective cohort and cross-sectional studies: there were consistently higher odds ratio of depression [range: 1.93 (1.27–2.93) to 3.4 (1.70–7.00)] among co-users of tobacco and cannabis compared with single or non-users. Mixed Methods studies discovered that there were higher 9-item Patient Health Questionnaire (PHQ-9) scores indicating higher severity of depression symptoms among co-users of tobacco and cannabis.

Our narrative review found co-use of tobacco and cannabis is associated with increased risk of mental health disorders. While associations between cannabis and tobacco co-use and mental illness is strong, current research cannot determine whether co-use is causally related to mental illness, or whether mental illness is causally related to co-use. By understanding current trends of co-use of tobacco and cannabis research, we could develop public policy to improve public health.

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### Roles of wantedness of pregnancy and childbearing on depression among married adolescent girls in Bangladesh: evidence from a nationally representative cross-sectional survey

M Haider<sup>1</sup>, Karar Ahsan<sup>2</sup>, Mizanur Rahman<sup>3</sup>, Shusmita Khan<sup>3</sup>, Qamrun Nahar<sup>1</sup>, Anadil Alam<sup>1</sup>, Kanta Jamil<sup>4</sup>

<sup>1</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, 68 Shaheed Tajuddin Ahmed Sarani, Mohakhali, Dhaka, Bangladesh, <sup>2</sup>University of North Carolina at Chapel Hill, <sup>3</sup>Data for Impact, University of North Carolina at Chapel Hill, United States, <sup>4</sup>IAP World Services, United States

Background: Near half of the adolescent (15–19 years) girls in Bangladesh are married. Complex physical and emotional states lost childhood in marriage and childbearing affects their mental well-being. One of the adverse consequences is living with major depressive disorder (MDD). We aim to examine the MDD among currently married female adolescents aged 15–19 (CMFA) by their wantedness of pregnancy and birth.

Methods: We used data from the nationally representative 2019 Bangladesh Adolescent Health and Wellbeing Survey that collected data on MDD from 2280 CMFAs, and adopted the patient health questionnaire (PHQ-9) to assess MDD. We examined MDD by seven statuses – no child, pregnancy wanted or later, a child born in the last 0–5 months wanted then or later, and a child born in the last 6+ months wanted then or later. Finally, a multivariable logistic regression model adjusts MDD for background characteristics.

Results: 15% of the CMFAs had MDD with wide variation across childbearing status. While 13% of the CMFAs with no child had MDD, it was 17% among pregnant CMFAs if the pregnancy was wanted, and 24% for unwanted pregnancies. MDD levels among CMFAs having a birth in the last 0–5 months by wantedness of the child were similar to that of wantedness of pregnancy. However, MDD among CMFAs who had birth before six months was close to CMFAs with no child. CMFAs with unwanted pregnancy and birth in 0–5 months were found to have significantly higher MDD after controlling for socio-demographic and marital characteristics, gender attitude, and recent experience of physical violence, sexual harassment, and verbal bullying.

Discussion

Unwanted childbearing increases MDD among CMFAs in Bangladesh. However, a playful child aged six months and above perhaps helps her to be normal. Social awareness and strengthening family planning programs may protect CMFAs from MDD.

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### Experiencing Domestic Violence in Urban Spaces- Issues of Psycho-Social Wellbeing

Dr Singh<sup>1</sup>, Dr. Acharya<sup>2</sup>

<sup>1</sup>Mindfield Research Services, "Flat-13, Pocket- D2, Opp Post Office, Sector - 15, Rohini, New Delhi - 110085", India, <sup>2</sup>Jawaharlal Nehru University, New Delhi

Background and Objective: There is a significant association between domestic violence and psycho-social wellbeing. Women who have experienced domestic violence or abuse are at higher risk of experiencing a range of mental health conditions. Lack of coping mechanisms and social support leaves women to stay in distress condition throughout their life. Thus, this paper attempts to evaluate the relationship between empowerment, social support, and psycho-social wellbeing of women who have experienced violence and their awareness level and coping mechanism.

Methods: The study is based on both quantitative and qualitative data collected from men and women in rural and urban slum sites in four cities of India (Delhi,

Hyderabad, Jaipur and Lucknow). The research adopted a mixed methods approach. Statistical methods such as principal component analysis for index creation, cross-tabulations, chi-square tests were applied.

**Results and Conclusion:** The finding shows that around 78% of women faced any form of domestic violence across the four cities. The physical form of violence was around 59.6%, emotional violence was 73% and sexual violence was 34.7%. The highest prevalence of domestic violence was in Jaipur, followed by Lucknow, Delhi, and Hyderabad. The relationship of violence with social support and empowerment shows a significant association: i.e with decreasing social support the chances of facing domestic violence increase by 83% (OR: 1.83;  $p < 0.01$ ), and with lower empowerment the chances of facing domestic violence increases by 14% (OR:1.14;  $p < 0.05$ ). To cope with domestic violence, more women from Jaipur and Hyderabad sought help. Most women relied on their own families for help, while some knew about the 181-helpline number and tried seeking help. The findings show the lack of policies and programs on the psycho-social wellbeing of women.

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### Risk and protective factors of youth crime: An umbrella review

Rosa Alati<sup>1</sup>, Getinet Ayano<sup>1</sup>

<sup>1</sup>Curtin University, School of Population Health, Curtin University, Perth, Australia

**Background and Objective:** Several systematic reviews and meta-analyses have been conducted on the risk and protective factors of youth crime. This study aims to consolidate this evidence using an umbrella review methodology.

**Methods:** A systematic electronic search was conducted on Web of Science, PubMed, PsychINFO, and Scopus to identify relevant studies. The protocol was registered in PROSPERO (CRD4201707652), and A Measurement Tool to Assess Systematic Reviews (AMSTAR) was used to assess the quality of the studies. Inverse variance weighted fixed- and random-effect meta-analysis was conducted to pool odds ratios from the included studies.

**Results:** In total, 29 systematic reviews and meta-analyses were sourced. Sixty-three risk and protective factors of youth crime were considered in the final analysis and grouped into individual, family, school, social, and victim-level risk domains. Within the individual risk domains, substance use, previous history of crime, moral development, psychopathology, genetics, and adverse childhood experiences were key predictors of youth crime. At the family level, the main risk factors included poor parental supervision, maltreatment or neglect, lower educational level, and poor attachment. Whereas school bullying and negative school climate were identified as important risk factors for youth crime within the school domain. Additionally, economic inequality, discrimination, and peer pressure from the social domain, gender, age, and the relationship of the offender with the victims within the victim domain were found to be important risk factors for youth crime. Effective parental supervision, good attachment, and supportive school environments were found to be protective.

**Conclusion:** The evidence-based atlas of key risk and protective factors identified in this umbrella review could be used as a benchmark for advancing research, prevention and early intervention strategies for youth crime.

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### Self-efficacy, work-related autonomy and work-family conflict and their role on employee's stress level during home-based remote work

Martin Lange<sup>1</sup>, Ina Kayser<sup>1</sup>

<sup>1</sup>IST-University of Applied Science, "Erkrather Straße 220a-c, 40233 Düsseldorf, Germany"

**Background:** The facets of home-based remote work are multifaceted and can become stressors that affect a person's health. At the same time, self-efficacy is an important personal resource to deal with health-related stressors (Charalampous et al., 2019). The objective of this study is therefore to explore the relationship between self-efficacy (SE), work-related stress (WRS), health outcomes (health and anxiety), contributing factors (autonomy and experience) and work-family conflict (WFC) in a remote work setting.

**Method:** A cross-sectional design with a probabilistic sample of  $n=5.163$  recruited from January to February 2021 was chosen. Validated instruments with a total of 38 items were selected to assess SE, WRS, WFC, autonomy, experience, health, and anxiety (Staples et al., 1999). For evaluation we used a PLS-SEM approach (partial least square-based structured equation model).

**Results:** Results show that SE significantly reduces WRS ( $\beta = -0.164$ ;  $p < 0.001$ ). Moreover, WFC increases WRS and anxiety, while SE reduces WFC and mediates

health outcomes (anxiety:  $\beta = -0.065$ ;  $p < 0.001$ ; health:  $\beta = -0.048$ ;  $p < 0.001$ ). At the same time, autonomy ( $\beta = 0.260$ ;  $p < 0.001$ ) and experience ( $\beta = 0.215$ ;  $p < 0.001$ ) increase SE.

**Conclusion:** Our results have high practical implications for employers and employees, underlining the importance of self-efficacy as a personal resource to buffer work-related stress and work-family conflict while promoting overall health at the same time.

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### Anxiety and depression among young people in Lithuania under the exposure of the war in Ukraine

Marija Jakubauskiene<sup>1</sup>, Ausra Berzanskyte<sup>1</sup>, Audrius Jakelaitis<sup>1</sup>, Dovydas Gavenavicius<sup>1</sup>, Jelena Stanislavoviene<sup>1</sup>

<sup>1</sup>Vilnius University, Faculty of Medicine Lithuania

**Introduction:** The Russian-Ukrainian War (RUW) after the covid-19 pandemic once again exposed societies and economies around the world to insecurity and suffering. The surrounding countries in the eastern Europe are widely affected due to geopolitical reasons, social and cultural proximity to Ukraine and overwhelming mass media exposure. Mental ill-health consequences have already been reported in several European countries. Though long-term consequences of the ruw on mental health are yet to be evaluated, the main aim of our study was to assess the prevalence of anxiety and depression among young people in the exposure of ruw. **Participants/Methods:** A cross sectional e-based study has been conducted in October - November 2022 among 410 students aged 18-30 years in Lithuania. Research instrument consisted of general anxiety disorder (gad-7) and patient health questionnaire (phq-9) scales supplemented by the self-constructed scale on involvement in Ukraine support activities. The final outcomes of anxiety and depression (gad-7 score, phq-9 score) were assessed by sociodemographic variables, as well as by involvement.

**Results:** 40% and 49% prevalence of moderate to severe anxiety and depression respectively was assessed among young adults. 31.5% of young adults reported being highly involved in Ukraine support and information/communication activities. Females and people with high level of involvement in Ukraine support had more higher levels of anxiety and depression. Weak associations between involvement, anxiety and depression were disclosed (respectively  $\rho = 0.24$ ,  $\rho = 0.18$ ). Anxiety was strongly correlated with depression ( $r=0.725$ ).

**Conclusions:** High involvement in Ukraine support activities and intensive exposure to media coverage of ruw were associated with moderate to severe levels of anxiety and depression in young adults in Lithuania. These findings can help in understanding and addressing long term impacts on population mental health in exposure to the war in Ukraine.

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### Together at Social Sciences - the ABCs of mental health at the university

Line Nielsen<sup>1</sup>, Cecilie Madsen<sup>1</sup>, Line Nielsen<sup>1</sup>, Malene Nelausen<sup>1</sup>, Charlotte Meilstrup<sup>1</sup>

<sup>1</sup>Department of Psychology, University of Copenhagen Denmark

**Background and objectives:** For most young people, the study years are a good period of their lives, socially and academically. Unfortunately, there are also an increasing number of young people who experience mental health problems or low levels of mental well-being. Much research on university student wellbeing has focused on psychological distress and the use of support services by students experiencing mental health problems. More research on how to promote mental well-being in this context is needed. The objective of the complex ABC-uni intervention is to promote mental wellbeing among students by 1) increasing mental well-being literacy among students and staff and 2) to promote a mental health promoting study environment.

**Methods:** 'Together at Social Sciences - ABCs of mental health at the university' (ABC-uni) is an adaptation of the ABC of mental health (ABC) to the university setting. ABC is the first universal research based public mental health promotion initiative in Denmark. ABC-uni applies a whole university approach focusing on students, surroundings, staff and other parties that can influence students' mental well-being. It includes several elements: elective course for students on mental

health promotion (MHP) in theory and practice, online module on MHP for students based on podcast interviews with experts and students, capacity building in MHP among staff and student organisations, photovoice-based mapping of health promoting assets and needs at campus, and communication campaigns on MHP. Results: The elements of the complex intervention is under development and are being pilot tested during 2023. At the conference, we will present preliminary experiences and findings.

Conclusion: Universities play an important role in promoting mental well-being at the individual, group and university level. The salutogenic approach applied in the ABC-uni may provide valuable experiences that can support this.

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### **Movimento Biologico: an innovative training program based on mindful movement that can contribute to salutogenesis**

Chiara de Waure<sup>1</sup>, Manuela Chiavarini<sup>1</sup>, Francesco Iorio<sup>1</sup>, Giancarlo Pocetta<sup>1</sup>, Livia Buratta<sup>2</sup>, Roberta Carestia<sup>3</sup>, Antonio Cosenza<sup>2</sup>, Camilla Gobetti<sup>1</sup>, Chiara Lupi<sup>1</sup>, Guglielmo Sorci<sup>1</sup>, Claudia Mazzeschi<sup>2</sup>, Andrea Biscarini<sup>1</sup>, Stefano Proietti<sup>1</sup>

<sup>1</sup>Department of Medicine and Surgery, University of Perugia, Perugia, Italy,

<sup>2</sup>Department of Philosophy, Social Sciences and Education, University of Perugia, Perugia, Italy, <sup>3</sup>Department of Medicine and Surgery, University of Perugia, Perugia, Italy; Italy

Background and Objective: Movimento Biologico (MB) is a form of mindful movement that integrates interoceptive, proprioceptive, kinesthetic, tactile, spatial, emotional, psychological, and relational aspects "through" and "into" movement. We set up a training program based on MB for students attending the 2nd and 3rd year of the Degree in Sport Sciences at the University of Perugia, Italy, and we investigated its feasibility and impact in terms of psychological well-being and sense of coherence, a salutogenic concept related to the way of viewing life. The objective of this work is to describe how the program was organized and launched and to report on students' participation.

Methods: The program was conducted by an expert in MB and developed over a period of 8 weeks, with one day session per week for a total of 48 hours. A meeting was held before and after the program to collect data on participants' characteristics, lifestyles, psychological well-being and sense of coherence. The program started on October 2022 and was advertised through the website of the Degree in Sport Sciences and students mailing list and WhatsApp group. The enrolment was voluntarily, and applications were collected in the second half of September. The number of participants was set at 40 for logistical issues and a maximum number of 8 hours of absence was allowed.

Results: Out of 56 applications, 38 students (mean age 21.2 years; range 20-25; 60.5% males) followed the program. The majority of students (84.2%) attended the required number of training hours. From participants' feedbacks emerged the creation of a favorable environment to develop soft skills such as teamwork, empathy, self-awareness and adaptability.

Conclusion: The MB program was attractive and feasible as the expected number of students to enroll was almost achieved and most participants complied with the required attendance reporting overall positive feedback.

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### **Assessing risk perception and its associated factors of university students in the COVID-19 era**

Qi Zhao<sup>1</sup>, Jiasheng Xiong<sup>1</sup>, Xiaoqin Guo<sup>1</sup>, Biao Xu<sup>2</sup>, Genming Zhao<sup>1</sup>, Na He<sup>1</sup>

<sup>1</sup>Department of Epidemiology, School of Public Health, Fudan University, Shanghai, China, <sup>2</sup>Songjiang Municipal Center for Health Promotion, Shanghai, China

Background: The health belief model states that individuals' adoption of health behaviors is influenced by one's risk perception, and health education is often connected with effective management of risk perception. This study was to investigate the factors associated with risk perceptions of china's university students in the face of an infectious disease outbreak such as coronavirus disease 2019 (COVID-19), thereby providing scientific basis and implications for constructing targeted health education system.

Methods: A cross-sectional survey study covered 3627 participants was conducted in april 2020 in songjiang district, shanghai, china. A self-administered questionnaire was distributed via an online platform, which aims to assess to what degree the factors are associated with students' risk perceptions of public health emergencies, particularly COVID-19. Descriptive analysis and the chi-square test were used to identify the differences in respondents' risk perceptions, while factor analysis and logistic regression were used to analyze the public factors

associated with risk perceptions.

Results: University students in both high-risk and low-risk regions were likely to have higher risk perception than those of in medium-risk regions, and female students tended to have higher perceptions of risk than male (both  $P < 0.01$ ). University students with high-risk perceptions showed higher sensitivity to public opinion ( $P = 0.002$ ) and disease seriousness ( $P < 0.001$ ). Female students or students in high-risk COVID-19 regions were more concerned about disease seriousness, while those in low-risk regions were more concerned about public opinion.

Conclusion: Female students or students in high-risk and low-risk regions of COVID-19 have higher risk perceptions for COVID-19, and their risk perceptions are identified to be mainly associated with disease seriousness. The risk perception of students in low-risk regions were mainly associated with public opinion. Health departments should take account of different profiles of risk perceptions among varying public groups when promoting and implementing health education under public health emergencies situations.

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### **Levels and sources of stress in medical students at a pakistani medical school pertaining to year of study and gender**

Nimra Ishfaq<sup>1</sup>

<sup>1</sup>Aligarh College of Nursing Pakistan

Background and Objectives: Medical Training is regarded as stressful and stress is prevalent amongst medical students. However, studies assessing whether stress is uniform across year of study and gender in a Pakistani Medical school are lacking. The study primarily aims to examine levels and sources of stress in students at a Pakistani Medical school with regards to year of study and gender. This study also looks at the effects of demographics on self reported stress.

Methods: A cross sectional survey was distributed to 350 medical students of year 1, 4 and 5 at Combined Military Hospital, Lahore Medical College, Lahore. It contained a consent form, general demographic information and the MSSQ questionnaire consisting of 40 items to identify levels and sources of stress.

Results: The response rate was 241/350 (68.84%). Year 1 reported a Moderate stress level of 1.890, Year 4 reported a High stress level of 2.039 and year 5 reported a Moderate stress level of 1.925 where academics were the stressors. Males reported a lower stress levels than females ( $p < 0.000$ ). The common sources of stress were academic and social. Linear regression analysis indicated that daily hours of study was positively correlated with academic stressors ( $p < 0.026$ ) and social stressors ( $p < 0.028$ ). Daily hours of sleep was negatively correlated with academic stressors ( $p < 0.045$ ). Year of study ( $p < 0.036$ ) and Marital Status ( $p < 0.024$ ) were negatively correlated with social stressors.

Conclusion: The stress levels and sources did change with year of study. Stress and stressors were found to be gender specific with males reporting lesser perceived stress.

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### **Promoting family well-being at scale: Optimising and re-designing a digital parenting programme for reducing violence against children in Imics using the 6squad framework**

Maxwell Klapow<sup>1</sup>, Paula Zinser<sup>2</sup>, Jamie Lachman<sup>3</sup>, Chiara Facciola<sup>4</sup>, Qing Han<sup>5</sup>, Maria Ambrosio<sup>3</sup>, Francisco Calderon<sup>6</sup>, Khanyile Brukwe<sup>7</sup>, Ross Sheil<sup>8</sup>, Ytske Van Winden<sup>9</sup>, Shanoy Combs<sup>10</sup>, Bernice Mamaug<sup>11</sup>, Reyes Jennel<sup>12</sup>, Camille Habacon<sup>12</sup>, Liane Pena Alampay<sup>12</sup>, Samantha Erika Mendez<sup>13</sup>, Rumaya Binti Juhari<sup>14</sup>, Moe Schafer<sup>3</sup>, Lily Clements<sup>4</sup>, David Stern<sup>4</sup>

<sup>1</sup>University of Oxford Postgraduate student United Kingdom, <sup>2</sup>Global Parenting Initiative, University of Oxford, United Kingdom, <sup>3</sup>University of Oxford United Kingdom, <sup>4</sup>IDEMS International United Kingdom, <sup>5</sup>University of Oxford, <sup>6</sup>University of Oxford United Kingdom, <sup>7</sup>Clowns Without Borders South Africa (NGO), <sup>8</sup>UNICEF - Jamaica, <sup>9</sup>UNICEF United States, <sup>10</sup>UNICEF - Jamaica Jamaica, <sup>11</sup>University of the Philippines Visayas Philippines, <sup>12</sup>Ateneo de Manila University Philippines, <sup>13</sup>University of the Philippines Diliman Philippines, <sup>14</sup>University Putri Malaysia Malaysia

Background and Objective: In response to the increased levels of emotional and physical violence against children due to the covid-19 pandemic and existing barriers to taking parenting programs to scale in Imics, parenting for lifelong health (plh) adapted its parenting programmes into a self-guided chatbot, parenttext. Initial acceptability and engagement with parenttext was tested in multiple pilot studies with results indicating that engagement was a significant barrier to the impact and effectiveness of the digital intervention. Using pilot data, this presentation describes the process of re-designing the intervention to

increase engagement and retention.

**Methods:** Mixed methods pilot studies were conducted in Jamaica, Malaysia, and the Philippines. Quantitative data from Jamaica (n = 1,114), Malaysia (n = 82), and the Philippines (n = 97) was analysed descriptively, examining average length of participation, number of modules completed, and interaction rates with different message types. Qualitative interviews with parent text participants from the Philippines and Malaysia (n = 9), and implementers in Jamaica and Malaysia were conducted and thematic analysis was performed. After data collection, a working group conducted workshops to re-design the intervention using the 6squad/mrc framework.

**Results:** Quantitative analysis showed an average length in the programme of 5 days before disengaging regardless of the percentage of the intervention completed. The working group identified four main areas for re-design: 1) adding personalisation features, 2) introducing mechanisms to trigger re-engagement within the intervention, 3) removing structural features contributing to disengagement, and 4) ease of use given a lack of in-person technical support. A new structure for parent text was created along with a set of recommendations to address limitations of the current programme.

**Conclusion:** Our findings demonstrate a pragmatic approach for improving digital violence-reduction interventions in LMICs and also represent the first use of the 6squad framework for designing a digital programme for family wellbeing.

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### **Mental health complexity in post-acute care for acquired brain injury: informing mental health screening development**

Georgina Mann<sup>1</sup>, Georgina Mann<sup>2</sup>, Lakkhina Troeung<sup>3</sup>, Angelita Martini<sup>4</sup>, Romola Bucks<sup>2</sup>

<sup>1</sup>University of Western Australia School of Psychological Science Australia,

<sup>2</sup>University of Western Australia Australia, <sup>3</sup>Brightwater Care Group,

<sup>4</sup>Brightwater Care Group Australia

**Background and objectives:** In Australia, mental health and acquired brain injury (ABI) services are distinct and funded independently, preventing the development of effective methods to identify psychological support needs in this group. This is despite up to 80% of adults with ABI experiencing comorbid anxiety or depression in the 5 years following injury. This study aims to identify mental health conditions commonly comorbid in individuals with ABI, to allow an early-intervention mental health screening tool to be developed.

**Method:** Retrospective cohort study of 1,011 adults with ABI admitted to neurorehabilitation or disability support services in Western Australia (WA), 1991-2020. Mental health symptomatology and diagnoses were identified using electronic medical records, and hospital and emergency department data from the WA Data Linkage System. Mental health presentations were examined across 15 diagnostic categories (e.g. substance use disorders, anxiety disorders) and 3 non-diagnostic categories (e.g. self-harm) using the International Classification of Diseases 9th and 10th edition and WA Data Linkage System codes.

**Results:** Preliminary results indicate that mental health comorbidities are common, with 56.1% presenting with a mental health condition within 12 months of their admission to services. This indicates the presence of significant mental health burden, with difficulties likely persisting beyond admission to post-acute services.

**Conclusion:** Mental health comorbidities are common in individuals with ABI. Identification of these conditions will allow appropriate management and intervention. Cluster analysis will be conducted to identify commonly co-occurring mental health conditions. Development of key diagnostic clusters will inform a new mental health screening tool, permitting early identification of mental health complexity in ABI, and provide data to inform effective interventions.

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### **Mental health in Serbia - transitional context or are we going towards reform**

Dragana Atanasijevic<sup>1</sup>, Dragana Atanasijevic<sup>2</sup>, Petar Djuric<sup>3</sup>, Perisa Simonovic<sup>2</sup>, Aleksandar Medarevic<sup>2</sup>, Snezana Perisic<sup>3</sup>, Verica Jovanovic<sup>2</sup>, Milena Vasic<sup>2</sup>

<sup>1</sup>Institute of Public Health of Serbia "Dr Milan Jovanovic Batut" "Dr Subotica

511 000 Belgrade" Serbia, <sup>2</sup>Institute of Public Health of Serbia "Dr Milan

Jovanovic Batut" Serbia, <sup>3</sup>Institute of Public Health of Serbia "Dr Milan

Jovanovic Batut"

**Background:** Since 2012, when Serbia became a candidate for membership in the European Union (EU), an extensive process of reforms is being carried out for the reason of harmonization of national legislation with the standards and regulations of the European Union. This also applies to the field of mental health care (MHC).

To assess the current situation, it has been decided to participate in the EU joint action ImpleMENTAL project that brings together more than 20 European countries and focuses on the implementation of two best practices in mental health (MH), a model of MH service delivery reform in Belgium and a suicide prevention program from Austria. The OBJECTIVE of the study is to present the current status of the MHC system in Serbia with an emphasis on the availability of community-based services and show the need for further improvement.

**Method:** The situation analysis has been performed through the JA ImpleMENTAL project and it is based on data gathered through the questionnaires delivered by the project. SWOT analysis has been performed to investigate the situation of community-based MH service provision as a basis that can be used as a response to specific needs in future steps of the reform.

**Results:** Although MH is a national asset, still it is seen as a low priority. There is still an accent on inpatient care, especially long-term hospitalization. Cooperation between inpatient and primary health care is not adequate and general practitioners do not have enough knowledge and skills in the field. There are not enough community-based MH centers. Data that more closely describe the work of MH service is missing or are of low quality.

**Conclusion:** Given to the findings the reform of the highly centralized MH system is needed, including its payment.

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### **Psycho-behavioral response of residents in prince hassan refugee camp during covid-19 pandemic: A cross sectional study**

Mary AlMadani<sup>1</sup>, Israa Al-Rawashdeh<sup>1</sup>, Mary AlMadani<sup>1</sup>, Hasan Mihyar<sup>2</sup>, Marwa Qadoura<sup>2</sup>, Issa Shari<sup>2</sup>, Faris Marji<sup>3</sup>, Huda Baidoun<sup>4</sup>, Maysam Obeidat<sup>4</sup>

<sup>1</sup>Mu'tah University/Jordan Jordan, <sup>2</sup>Jordan University of Science and Technology/Jordan Jordan, <sup>3</sup>Royal Medical Services Jordan, <sup>4</sup>University of Jordan Jordan

**Background:** COVID-19 pandemic, constitute an extraordinary health, social and economic global challenge. The impact on peoples mental health is expected to be high. This paper sought to assess mental health in AL-Nasr camp (Amman, Jordan). This demographic was selected due to being under represented in general research surveys, while also suffering from low income and overcrowding, and so mental parameters were expected to be high, and even more so with the rise of the pandemic in these areas.

**Method:** This cross-sectional study included 372 participants of camp's residents. Data was collected using an interviewer questionnaire that captured general demographic parameters, and DASS scale (Depression Anxiety Stress Scales-21) which assess depression, anxiety and stress levels. Data were then analyzed using SPSS version 25.

**Results:** A high percentage of respondents reported Extremely Severe levels of Depression (74.3%) according to DASS, (70%, 69%) reported Extremely Severe Anxiety, Stress levels, respectively. Around 32% of participants had COVID19 last 2 years, data showed no significant association between COVID diagnoses and DASS scores. Unlike expected, there was no significance association between income and levels of Depression, Anxiety, and Stress, even though the level of participants' monthly income was low in 67% of participants (less than 300JD). However, the data showed statistical significance in depression and anxiety levels in participants who have persisting COVID symptoms after the initial 2 weeks. Most of residents weren't afraid from eating outside, contacting with people were abroad or with flue symptoms. However, most of them wear masks, wash hands frequently, cover when sneeze and stay home if sick.

**Conclusion:** Overcrowded camps such as AlNasr camp suffer from elevated levels of Depression, Anxiety, and Stress. And would benefit greatly from counseling programs and raising awareness about mental illness.

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### **Patient engagement in cancer care: A focus group study on their physicians**

Pietro Melodia<sup>1</sup>, Eleonora Bossi<sup>2</sup>, Gaia Perego<sup>1</sup>, Carlo Signorelli<sup>3</sup>, Valentina Di Mattei<sup>3</sup>, Fabio Ciceri<sup>3</sup>

<sup>1</sup>Vita-Salute San Raffaele University Milan, Italy School of Public Health, Vita-

Salute San Raffaele University Milan, Italy, IRCCS San Raffaele Scientific

Institute, Milan, Italy Viale Olgettina 60 Italy, <sup>2</sup>San Raffaele Hospital, Milan

Healthcare Directorate, San Raffaele Hospital, Milan Viale Olgettina 60 Italy,

<sup>3</sup>School of Public Health, Vita-Salute San Raffaele University Milan School

of Public Health, Vita-Salute San Raffaele University Milan, Italy, IRCCS San

Raffaele Scientific Institute, Milan, Italy Viale Olgettina 60 Italy

**Background and objective:** Cancer diagnosis and treatment can be a challenging

experience for patients. A good doctor-patient relationship is fundamental to support them throughout the disease path. The objective of this study is to explore the perception of a group of oncologists concerning the relationship with their patients, in order to plan interventions that may promote patient engagement in San Raffaele Hospital Cancer Center.

**Methods:** A focus group of five doctors was interviewed in November 2022 with a semi-structured questionnaire to analyze their perception concerning how their cancer patients face treatment process, their needs, difficulties and how the relationship with the doctor works.

**Results:** Communication issues turn out to be one of the major obstacles to a therapeutic alliance: patients were described as unaware of their own disease state, while doctors struggle to make the treatment path understandable. One of the causes is the limited time doctors have to update patients about their conditions, which makes it difficult for them to provide necessary emotional support. As a result, patients no longer trust their doctor and prefer to ignore their status, withdrawing into fear and anxiety. Often even caregivers represent a barrier to communication and in the end doctors feel overburdened by the roles they are required to take. One further point to note is that medical reports are quickly sent by e-mails and SMS, preceding doctors that should be the reference figure.

**Conclusions:** To promote patient engagement, it is fundamental to develop an action plan: to improve their work, doctors need support from a multidisciplinary team. A training in the humanization of care should be highly recommended, with the purpose of developing empathy and enhancing communication, while also taking into account cultural and social differences as well as the psychological characteristics of each patient.

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### Prevalence and associated factors of suicidal ideation among married women in himalayan mountain villages: Project silkroute to healthy future

Alia Parveen<sup>1</sup>, Syed Shah<sup>1</sup>

<sup>1</sup>Institute of Public Health, College of Medicine, and Health Sciences, United Arab Emirates University, Al Ain, UAE Institute of Public Health, College of Medicine, and Health Sciences, United Arab Emirates University, Al Ain, UAE Tawam Street post code 7666, Al-Ain, Abu Dhabi United Arab Emirates. United Arab Emirates

**Background and Objectives:** Suicide is a leading cause of death among women in Himalayan villages of Pakistan, So this study aimed to determine the prevalence of suicidal ideation and associate factors among married women in the Himalayan Mountain villages of Gilgit Baltistan (GB) in Pakistan.

**Methods:** We used a cross-sectional study design to recruit a random sample (N=830) of married women aged 18-49 years. Trained nurses obtained sociodemographic information, self-reported suicidal behavior using the WHO suicidal ideation module. Multivariable logistic regression analyses were used to estimate significant correlates of suicidal ideation.

**Results:** The mean age of study participants was 38.3 years (SD: ±12.8).

The 12-month prevalence of suicidal ideation, plans, and attempts is 18.8% (95% CI 16.2-21.7), 4.1% (95% CI 2.9-5.7), and 3.4% (95% CI 2.2-5.3). Significant risk factors for suicidal ideation included lack of cash income (adjusted odds ratio (aOR)=2.78 (95% CI 1.09-7.09), poor relationship with the mother-in-law (aOR=1.63 (95% CI 1.09-2.14), self-perceived poor quality of health (aOR=2.15; 95% CI 1.47-3.13), poor quality of life (aOR=2.79; 95% CI 1.46-5.34), positive history of intimate partner violence (aOR=2.58 (95% CI 1.75-3.82) and positive symptoms of depression (aOR=7.24; 95% CI 4.83-10.82). College or higher levels of education had a protective effect (aOR=0.44; 95% CI 0.23-0.83). Among those reporting suicidal ideation, 13.5% (95% CI 8.8-20.1) attempted suicide, by hanging (47%), jumping into a river (18%), use of pesticide (18%), an overdose of sleeping pills (12%), and use of sharp instruments (5%).

**Conclusions:** Suicidal behavior is a serious public health problem in the study population. Prevention efforts should focus on upstream risk factors.

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### A qualitative study to explore various meanings of mental distress and help-seeking in the Yamuna valley, north India

Meenal Rawat<sup>1</sup>

<sup>1</sup>University of Edinburgh "9D Holyrood Road HRRH133, OShea Reshall" United Kingdom

Context

In rural India, mental healthcare remains limited due to scant state services and incongruity between provider- and patient-framing distress. Help-seeking by

people with mental health problems is related to how meanings of distress are understood differently by individuals, based on their interaction with various actors in the community and the available cultural explanation within their local ecologies.

**Methodology:** This study examines the mutually constituted relationship between meanings of mental distress and help-seeking among people residing in the Upper Yamuna Valley, Uttarakhand, North India. This qualitative study builds on six in-depth interviews with people with severe mental health issues and one person with epilepsy, referred to as people with psychosocial disability (PPSD) in the study. The data analysis was iterative and followed a thematic approach.

**Results:** The study found that personal beliefs based on one's experience, such as negative self-judgment and broader cultural explanations, such as supernatural beliefs, as well as gender roles, impacted the way people address their mental health problems, in turn shaping their help-seeking behaviour. Participants lost hope for a cure after years of trying to find an effective solution. Moreover, the lack of access to care and the remoteness of the mountainous area made help-seeking and recovery impossible.

**Conclusions:** This study underscores the need for researchers and policy professionals to explore the local context and culture to improve care and treatment quality. The study also explains that personal explanations of psychosocial problems and help-seeking are not unidirectional. It is a complex phenomenon layered with the local contexts that should be addressed in clinical practice and future research. Finally, clinicians training should address the local cultural language of distress to identify the problem and suggest an effective solution.

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### Examining the economic approaches in mental health promotion targeted towards black asian and minority ethnic communities in the UK: a critical discourse analysis

Phillipa Peart<sup>1</sup>

<sup>1</sup>University of Wolverhampton None "25 Preston House, Tantarra Street, Walsall West Midlands, WS1 2HT" United Kingdom

It is well documented that people from Black Asian and Minority Ethnic (BAME) communities are more at risk of developing mental health disorders, mainly because they are more exposed to unfavourable social, economic, and environmental circumstances. However, the majority of BAME mental health intervention studies focus on the effectiveness of treatment and rarely use economic methods to evaluate their effectiveness; as a result, little is invested in the economic assessment of psychosocial interventions. The need to focus on value for money has become increasingly important as the UK government's austerity program has resulted in reduced funds for public health services.

This research study explores the mental health initiatives targeted at BAME communities in the West Midlands region of the UK. Mental health services were invited to take part in the study - their evaluations as well as interviews with key members of staff were examined, and these were discussed alongside the political drivers that frame, shape, and direct their work. Using critical discourse analysis as an approach and method, the study analysed the techniques used when examining the cost-effectiveness of mental health initiatives for BAME mental health communities. In doing so, the study highlights how mental health policies initiatives are directing this work and the value and need for accessible economic models of evaluation.

This study enhances our understanding of how adequate and cost-effective mental health services can be provided for BAME communities but also has wider application in a range of public health practice areas where the outcomes of interventions are difficult to quantify.

Lead author/investigator

Phillipa Peart, PhD candidate, (Faculty of Health and Wellbeing) (FHEW) University of Wolverhampton

Supervisors

Dr Ranjit Khutan, Head of Department (Public Health), University of Wolverhampton  
Dr Ian Jackson, Senior Lecturer - Economics, University of Wolverhampton

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### A clustered randomized controlled trial to evaluate the effectiveness of a school-based intervention on the mental health of adolescents

Kazi Ahmed<sup>1</sup>, Asaduzzaman Khan<sup>1</sup>

<sup>1</sup>The University of Queensland, Australia Australia

**Background and Objective:** Schools are an ideal setting for promoting student mental health and well-being. This study aimed to evaluate the effectiveness of a

school-based multi-component intervention on the mental health of adolescents. Methods: A clustered randomized controlled trial was employed in eight high schools in Dhaka city, Bangladesh, which were randomly assigned to either intervention or control group; 40 students in grades 8-9 (aged 13-16 years) from each school took part in the trial (n=160 per group). Students in the intervention schools participated in a 12-week multi-component physical activity intervention, developed using the WHO's Health-Promoting Schools framework. Control group schools continued their usual practice. Participants completed baseline and endline surveys measuring depressive symptoms (Centre for Epidemiologic Studies Depression Scale), and life satisfaction (Cantril ladder), along with other socio-demographic and behavioral characteristics. Linear mixed-effects modelling was used to evaluate the intervention effects.

Results: Depressive symptoms in the intervention groups decreased by 41% at the post-intervention, while remaining stable in the control group. There was a 24% increase in life satisfaction in the intervention group while a 3% decrease in the control group. Multivariable modelling showed that students in the intervention group had significantly lower levels of depressive symptoms ( $\beta=-4.60$ , 95% CI: -5.76 to -3.46) and higher levels of life satisfaction ( $\beta=1.43$ , 95% CI: 0.77 to 2.10) compared to their counterparts in the control group. Sensitivity analyses supported the positive effects of the intervention.

Conclusions: Our school-based multi-component intervention is effective in enhancing mental health indicators in school children. Future trials should be scaled-up to include schools in rural and regional settings and use robust measures of mental well-being.

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### Sex differences in psychiatric medication use in patients with cluster b personality disorders: Trends from 2002 to 2018

Carlotta Lunghi<sup>1</sup>, Victoria Massamba<sup>2</sup>, Lionel Cailhol<sup>1</sup>, Elhadji Laouan Sidi<sup>2</sup>, Caroline Sirois<sup>3</sup>, Elham Rahme<sup>4</sup>, Louis Rochette<sup>2</sup>, Suzanne Renaud<sup>2</sup>, Evens Villeneuve<sup>5</sup>, Marion Koch<sup>6</sup>, Robert Biskin<sup>7</sup>, Cathy Martineau<sup>1</sup>, Philippe Vincent<sup>8</sup>, Pierre David<sup>9</sup>, Alain Lesage<sup>8</sup>

<sup>1</sup>Université du Québec à Rimouski Department of Health Sciences Canada,

<sup>2</sup>Institut National de Santé Publique du Québec Canada, <sup>3</sup>Faculty of Pharmacy, Université Laval Canada, <sup>4</sup>McGill University Department of Medicine, Division of Clinical Epidemiology, McGill University Canada,

<sup>5</sup>Université McGill Canada, <sup>6</sup>Université Laval Canada, <sup>7</sup>McGill University Canada, <sup>8</sup>Université de Montréal Canada, <sup>9</sup>Institut Universitaire de Santé Mentale de Montréal Canada

Background: Psychiatric medications are often prescribed to patients with cluster B personality disorders (PDs). This study aimed to explore sex differences in the use of psychiatric medications in the 1-year before and after the first diagnosis of PD and to identify trends and patterns between 2002 and 2018.

Methods: We used the Quebec Integrated Chronic Disease Surveillance System (QICDSS) to identify all Quebec residents ( $\geq 14$  years) insured with the public drug plan and with a first diagnosis of a cluster B PD. We retrieved all the claims for psychiatric medication classes during the one year before and after the diagnosis and calculated yearly and monthly proportions of individuals exposed to psychiatric medications. We also tested age and sex-adjusted trends in medication use changes using robust Poisson regression models.

Results: We identified 87,778 individuals with a first diagnosis of a cluster B PD. The mean age was 44.5 years (SD: 19.5), and 57.5% were women. Psychiatric comorbidities were common, with the most prevalent being depression (50.9%), anxiety (49.7%), and psychotic disorders (37.5%). The proportion of medication users increased after diagnosing a PD for both sexes. Women were more frequently exposed than men to at least one psychiatric medication (74.3%-80.5% vs 68.0%-71.0%). Among patients diagnosed in 2018-19, women were more likely to use antidepressants (60.6% vs 46.9%) and anxiolytics (33.2% vs 27.4%), while men were more likely to use antipsychotics (38.3% vs. 35.2%) and ADHD medications (11.2% vs 10.5%). Mood stabilizers had similar proportions (11.2% of women and 11.4% of men). Trends over the study period showed a marked increase in ADHD medications use, while anxiolytics use decreased.

Conclusions: Differences in psychiatric medication use exist between men and women with cluster B PDs according to medication classes. Changes in prescriptions over the last decade are similar for men and women.

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### Burden on caregivers of schizophrenic patients at polyclinic outpatient psychiatric department, edward francis small teaching hospital, the gambia

Jarra Marega<sup>1</sup>, Haddy Bah<sup>2</sup>

<sup>1</sup>Edward Francis Small Teaching Hospital; University of The Gambia Ministry of Health, The Gambia Banjul, The Gambia Gambia, <sup>2</sup>Department of Nursing, University of The Gambia

Background: Caring for schizophrenic patient is associated with a significant burden. This study determines the burden of caregivers of schizophrenic patients at the Edward Francis Small Teaching Hospital (EFSTH), The Gambia

Methods: Using a cross-sectional study design, a sample of 161 caregivers of schizophrenic patients were randomly recruited from the EFSTH psychiatric clinic. A 12-item General Health Questionnaire (GHQ-12) and Zarit Burden Scale were used to measure the burden of caregivers. A General Linear Model (GLM) multivariate regression was used to determine the socio-demographic variables predicting the burden of caregivers.

Results: The results showed that the majority (93%) of caregivers experienced psychological burden followed by social (78.3%), physical (70%) and financial (55.3%) burdens. Results of GLM multivariate regression showed that self-employed ( $\beta = 2.76$ ; 95% CI, 0.41~5.09) and unemployed ( $\beta = 4.27$ ; 95% CI, 2.48~6.06) and being a Wolof tribe ( $\beta = 2.64$ ; 95% CI, 0.03~5.24), were significantly associated with financial burden on the caregivers. The total score of social burden was also significantly higher among the unemployed caregivers ( $\beta = 2.73$ ; 95% CI, -5.09~0.37) compared to their self-employed and employed counterparts. The caregivers with junior secondary education reported a significantly lower level of psychological ( $\beta = -2.76$ ; 95% CI, -5.38~0.4) and physical burden ( $\beta = -3.20$ ; 95% CI, -6.09~0.32) compared to those with no education. Up to 36% of the caregivers rated poor health status (OR, 5.10; 95% CI [2.71, 9.62]).

Conclusion: The main findings showed a significantly high psychological, social, physical and financial burden on the caregivers. Initiation of routine screening of caregivers will help to determine the needed help to reduce the incidence of burden.

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### Examining the association between sports participation and mental health of adolescents

Asaduzzaman Khan<sup>1</sup>, Kazi Ahmed<sup>2</sup>

<sup>1</sup>The University of Queensland, Australia Australia, <sup>2</sup>The University of Queensland, Australia

Background and objectives: Sports participation has been linked to various health outcomes; however, such understanding is somewhat limited in low-income countries. The aim of this study was to examine sports participation and its relationship with the mental health outcomes of Bangladeshi adolescents.

Methods: Using a mixed method approach, this paper explored sports participation and their relationship with mental health outcomes of 320 adolescents aged 13-17 years (59% boys) in Bangladesh. Participants completed a survey that included participation in team and non-team sports, depressive symptoms, and life satisfaction. Four focus group discussions (FGDs; 16 boys, 16 girls) were conducted to explore preferences for, and barriers to, sports participation.

Results: Regression analysis showed that both team and non-team sports participation were inversely associated with depressive symptoms in boys ( $\beta=-1.22$ , 95%CI:-2.55,-0.10,  $\beta=-2.50$ , 95%CI:-3.83,-1.16, respectively), while team sports was inversely associated with depressive symptoms in girls ( $\beta=-2.44$ , 95%CI:-4.63,-0.24). Both team and non-team sports participation were positively associated with life satisfaction in both genders. Analyses of FGDs showed that boys preferred playing football and cricket, while girls preferred skipping and running. Prolonged time on electronic devices was reported by both genders as a barrier, while involvement in household chores, family restrictions, and unsafe environment were reported by girls. Participation in team sports may provide mental health benefits for both genders, while non-team sports may be more beneficial to boys than girls.

Conclusions: This study offers cross-sectional associations between sports participation and mental health outcomes and hence contributes to the growing evidence of the relationships in resource-poor settings. Gender-based differences in preference for, and barriers to, sports participation found in the current study can help inform future research as well as strategies to promote sports participation in adolescents in Bangladesh and other countries that share similar cultures and traditions.

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### Study-related stress among healthcare students in a university of southern Italy

Roberto Venuto<sup>1</sup>, Vincenza Fauci<sup>2</sup>, Roberta Pappalardo<sup>3</sup>, Cristina Genovese<sup>1</sup>,

Raffaele Squeri<sup>2</sup>, Miriam Gorgone<sup>1</sup>, Ioselita Giunta<sup>1</sup>, Daniela Giudice<sup>1</sup>, Sebastiano Calimeri<sup>1</sup>, Valeria Alessi<sup>1</sup>

<sup>1</sup>University of Studies of Messina, Messina Italy, <sup>2</sup>University of Studies of Messina, Messina, <sup>3</sup>University of Campania "Luigi Vanvitelli", Napoli Italy

**Background and objective:** Many studies have shown that the stress level among students is often as high as in workers who experience burnout, occurring this especially in healthcare university students. Our study investigated if it is possible to observe the burnout syndrome in these kind of students, able to significantly alter the quality of life, their approach to daily activities and relationship life.

**Methods:** The study was conducted from March 2022 to May 2022 through the administration of an anonymous questionnaire, distributed online through messaging apps, during the breaks between lessons, in the middle of the semester. It was formulated using the perceived stress scale (PSS) in its short formula in order to evaluate feelings and thoughts and the WHOQOL-AGE, in order to evaluate the quality of life.

**Results:** The sample consisted of 292 university students aged between 18 and 49, 70% females and 30% males, with an average age of  $22,42 \pm 4,65$ . In the previous month, 16.4% often did not feel able to control the important things in life, 42.8% often was unable to manage personal problems. The PSS score of all our university students showed a low stress level in 36.6%, an average stress level in 57.2% and a high stress level in 6.2%. The WHOQOL score shows that only 4% had a poor quality of life, 54% had an intermediate quality of life and 42% had a high quality of life. Half of the sample was satisfied with the way he felt every day.

**Conclusion:** Stress prevention should start since childhood through correct communication and information, in order to overcome stress also using strategies able to teach students how to exploit their resources, so that they are capable to meet the demands that come from outside and adapt successfully.

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### Organizing primary mental healthcare for older persons in India: Challenges and opportunities from the perspective of key stakeholders

Tom Kafczyk<sup>1</sup>, Kerstin Hämel<sup>2</sup>, Tom Kafczyk<sup>3</sup>, Kerstin Hämel<sup>4</sup>

<sup>1</sup>School of Public Health, Bielefeld University Universitätsstraße 25, 33615 Bielefeld, Germany, <sup>2</sup>School of Public Health, Bielefeld University, Bielefeld, Germany, <sup>3</sup>School of Public Health, Bielefeld University, 2) HelpAge Deutschland e.V. "1) Universitätsstraße 25, 33615 Bielefeld 2) Arndtstraße 19, 49080 Osnabrück, Germany, <sup>4</sup>School of Public Health, Bielefeld University Universitätsstraße 25, 33615 Bielefeld Germany

**Background and objective:** Health systems able to address the mental health needs of older persons contribute to health equity. Primary mental healthcare (PMHC) is considered a key strategy for promoting mental health. India has embarked on improving PMHC in legislations, strategies and programmes that identify older persons as vulnerable to impaired mental health. This study analyses perspectives of key stakeholders on the challenges and opportunities in strengthening age-inclusive PMHC in India.

**Methods:** We conducted semi-structured interviews with 14 stakeholders from the PMHC system in India. Data analysis was based on thematic analysis. Themes were organizationally structured alongside the six WHO health system building blocks; challenges and opportunities were derived through inductive coding.

**Results:** The stakeholders support the policy discourse on strengthening PMHC for older persons in India which ties into already established concepts of community-oriented primary health care (PHC). They denote, however, that the health system still focuses overly on medicalizing mental health problems by this shifting towards secondary and tertiary care levels failing to reach most older people vulnerable to mental health issues through PHC. Experts see as a main obstacle to further development of PMHC that policies built on unrealistic promises such as functioning primary care structures. Improving PHC capacity in general and the integration of viable PMHC approaches, such as building capacity among primary care physicians, and targeting community health workers to improve older peoples' mental health are seen as important. Experts argue that unaccountable governance structures, poor monitoring-structures, inappropriate public spending, and a still widely spread lack of awareness of the mental health needs of older people in the health sector would need to be addressed.

**Conclusion:** While first steps have been taken in India to strengthen PMHC, more structured and integrated approaches are needed to unfold PMHC policies' visions.

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### Increasing antidepressant consumption among adolescents and young adults following the covid-19 outbreak: Results from an

### interrupted time series analysis on the population of the emilia-romagna region, Italy

Zeno Valerio<sup>1</sup>, Marco Montalti<sup>2</sup>, Dario Tedesco<sup>3</sup>, Davide Gori<sup>2</sup>, Daniela Fortuna<sup>3</sup>, Alessio Saponaro<sup>4</sup>, Elena Berti<sup>5</sup>, Maurizia Rolli<sup>3</sup>

<sup>1</sup>University of Bologna Unit of Hygiene "Giovanni Battista Delponte 18" Italy, <sup>2</sup>University of Bologna Unit of Hygiene Italy, <sup>3</sup>Emilia-Romagna Region Directorate-General for Health and Welfare, Emilia-Romagna Region, Department of Innovation in Healthcare and Social Service Italy, <sup>4</sup>Emilia-Romagna Region Directorate-General for Health and Welfare, Emilia-Romagna Region, Department of Primary Care and Mental Health Services Italy, <sup>5</sup>Emilia-Romagna Region Directorate-General for Health and Welfare, Emilia-Romagna Region, Department of Innovation in Healthcare and Social Services Italy

**Background:** The COVID-19 pandemic has had a relevant impact on mental health by influencing a series of well-known predictors: frequency and quality of socialization, income security, and physical activity. As society returns to normality, the potential mid-to-long term impact of such a major event on mental wellbeing must not be underestimated.

**Methods:** We performed an interrupted time series analysis to evaluate the change in trends of antidepressant consumption (ATC Classification: N06A) 24 months before and after the March 2020 COVID-19 lockdown in the Emilia-Romagna region of Italy. Using the Regional Outpatient Pharmaceutical Prescriptions database, we extracted the monthly amount in Defined Daily Doses (DDDs) of dispensed antidepressants. An OLS regression was performed with Newey-West standard errors. A Cumby-Huizinga test was used for autocorrelation; the model was subsequently corrected for seasonality. Separate analyses were performed for different age groups and genders.

**Results:** Between 2018 and 2022, patients who were dispensed antidepressants in the Emilia-Romagna Region varied from a minimum of 337.141 (69.0% females) in 2020 to a maximum of 348.925 (69.1% females) in 2021, while 77.306.004 and 79.512.128 DDDs were dispensed in the same years, respectively. We found increasing trends in antidepressant consumption both before and after the lockdown. Significant changes in slope of monthly trends from pre- to post-lockdown were found: +11.039,50 DDDs/month ( $p=0.035$ ) among the general population; in age groups 14-19: +1065,50 DDDs/month ( $p<0.001$ ), 20-34: +1983,08 DDDs/month ( $p<0.001$ ). These represent 308%, 461% and a 199% increases from pre-pandemic monthly growth trends, respectively.

**Conclusions:** Our study found increasing trends in antidepressant consumption before and after the start of the COVID-19 pandemic. However, the pandemic may have caused an acceleration in these trends, particularly evident among adolescents and young adults. These categories might have suffered more due to a need for socialization, vulnerability in labor markets, and overburdening in family settings.

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### Using integrated data to explore the geography of citizens in mental distress in aotearoa new zealand

Daniel Exeter<sup>1</sup>, Annie Chiang<sup>2</sup>, Arier Lee<sup>1</sup>

<sup>1</sup>University of Auckland New Zealand, <sup>2</sup>University of Auckland

There is extensive research into the population health effects and experiences of people living with mental illness, however, little is known about the socio-demographic characteristics of people who call the police while in mental distress. Calls to New Zealand Police about people in mental distress are coded by police as "1M", while events related to suicide are coded "1X". Between 2009 and 2016, there was a 77% increase in 1M-related calls. Previous research found that mental health was one of the six major demands of police resources, with approximately 280 hours per day of police time spent on mental health-related calls. There remains little research that provides an evidence-base for police, together with health and social care services, to better respond to the increasing mental distress in the community. This research investigates the socio-demographic context of approximately 43,000 people in mental distress who have sought support from the NZ Police in response to 1M or 1X calls, between 2013 and 2019, using a whole-of-population cohort of deidentified individuals created in Statistics New Zealand's Integrated Data Infrastructure (IDI). We describe the spatial and temporal distribution of 1M and 1X calls, and use statistical modelling to investigate whether people in mental distress contacting police (1M/1X) have also sought support for their challenges from relevant publicly-funded health and social support services. \*Dear reviewers. Our study data are not released from the IDI yet, so we cannot provide detailed numbers sorry.

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## Health behaviours and subsequent mental health problems during the COVID-19 pandemic: A longitudinal analysis of adults in the UK

Kenisha Jonsson<sup>1</sup>, David Taylor-Robinson<sup>2</sup>, Nicholas Adjei<sup>2</sup>, Viviane Straatmann<sup>3</sup>, Gabriella Melis<sup>1</sup>

<sup>1</sup>School of Public Health and Community Medicine, Institute of Medicine, Gothenburg University, Box 463, Göteborg, Sweden Sweden, <sup>2</sup>University of Liverpool, Department of Public Health and Policy, Waterhouse Building 2nd Floor, Block F, Liverpool, L69 3GL, UK, <sup>3</sup>Stockholm University Visiting address Albanovägen 12 Plan 5 Postal address Institutionen för folkhälsovetenskap 106 91 Stockholm United Kingdom

**Background:** Public health mitigation policies aimed at slowing the spread of COVID-19 led to an increase in mental health problems (MHPs). This study examines the association between multiple pre-pandemic health behaviours and MHPs prior to, and during, the COVID-19 pandemic.

**Methods:** We analysed a representative population sample of 11,256 adults (aged 20-65 years) from Understanding Society – The UK Household Longitudinal Study. Baseline data from participants interviewed in 2017/2019 (wave 9) were linked to web surveys conducted during the COVID-19 pandemic. We used latent class analysis (LCA) to identify mutually exclusive health behaviour (physical activity, alcohol consumption, eating habits and smoking tobacco) clusters by gender, and examined the sociodemographic correlates of each cluster. We assessed how pre-pandemic clusters of health behaviours were associated with changes in MHPs during the pandemic using fixed effects regression models.

**Results:** Three health behaviour clusters were identified: positive (33%), moderate (24%) and high risk (43%), where similar behaviours clustered within individuals and sociodemographic circumstances. In particular, gender, age, migrant status and ethnicity were found to have strong associations with cluster membership. Our results also demonstrated a clear association in MHPs with health behaviours both prior to, and during the pandemic. There were significant increases in MHPs between 2017/2019 and January 2021, with fluctuations coinciding with changes in public health mitigation policies. Assessments across the three clusters showed about 25.2%, 16.9% and 0.7% increases in MHPs in the positive, moderate and high risk health behaviour clusters respectively.

**Conclusion:** This study shows that pre-pandemic health behaviours were significantly associated with mental health before and during the pandemic. Holistic policy interventions and promotions targeting multiple health behaviours may be an effective strategy to improve mental health in the pandemic recovery period.

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## Remote delivered psychosocial support to improve the wellbeing and functioning of adults affected by covid-19 in new york city: Remote problem management plus (pm+)

Kendall Pfeffer<sup>1</sup>, Adam Brown<sup>1</sup>, Brandon Kohrt<sup>2</sup>, Manaswi Sangraula<sup>1</sup>, Samantha Bakke<sup>1</sup>

<sup>1</sup>The New School for Social Research United States, <sup>2</sup>George Washington University

**Background:** COVID-19 shed light on a global mental health crisis and underscored a host of barriers to mental health support for historically marginalized groups. Critical among these barriers to care for those living in high income countries is an underrepresentation among mental health professionals. Evidence from the implementation of brief psychological interventions delivered by non-specialist providers offers a community-based pathway to expand the provision of representative mental health support. Problem Management Plus (PM+), a five-session intervention designed for adults affected by adversity and impaired by psychological distress, has demonstrated effectiveness in reducing distress in low-income countries and humanitarian context settings, but only recently has its feasibility and acceptability been explored when delivered remotely in high income countries, like the United States.

**Methods:** In this single-arm feasibility trial, participants recruited from several sites in New York City (a university training clinic and two community-based organizations) were offered five sessions of PM+ delivered via Zoom. A mixed-methods design was used to assess the feasibility, acceptability, perceived utility, and impact of remotely delivered PM+. Data was collected via structured participant interviews at pre, post, and three-month follow-up and in-depth interviews were conducted with participants and providers. The primary clinical outcomes were depression symptoms assessed using the Patient Health Questionnaire (PHQ-9) and distress related to client-generated problems using the Psychological Outcomes Profile (PSYCHLOPS) administered at baseline and one-week post-intervention.

**Results:** Quantitative and qualitative results of the 45 recruited participants demonstrated feasibility, acceptability and utility for non-specialist community providers delivering remote PM+ in NYC. Though the study was not powered to assess for effectiveness, improvement was demonstrated in both primary outcomes.

**Conclusion:** Remote PM+ was acceptable to participants, and both participants and providers found it beneficial. A fully powered cluster randomized controlled trial is now being conducted to determine the effectiveness of PM+ in NYC.

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## Age of depression, age of melancholy? age, period, and cohort trajectories of mental health in ten countries between 1991-2020

Frans Van Leeuwen<sup>1</sup>

<sup>1</sup>European University Institute Netherlands

**Background and objective:** It is often claimed that mental health issues have become increasingly prevalent, especially among young people from more recent generations. This has been described as the advent of a new 'age of melancholy' or 'age of depression' originating in changes in social and economic conditions. However, surprisingly little is known empirically about to extent to which these popular claims actually apply in modern societies. This study assessed contemporary trends in mental health and their drivers using high-quality panel data in a cross-national perspective.

**Methods:** I used longitudinal data on mental health from ten different countries (n = 329,321 individuals, N = 1,534,863 observations) collected between 1991 and 2020, focusing on the age range between 18 and 79 and the birth cohort range between 1930 and 2000. Each of the datasets contained some commonly accepted instrument for measuring mental health in the general population (e.g. GHQ-12, CES-D-10, SF-12).

After assessing the presence of general period trends, I applied hierarchical linear growth curve modeling to account simultaneously for change with age, change across cohorts, and change in age patterns across cohorts. Finally, I investigated if intercohort trends in mental health could be explained by compositional changes in education distribution, household income, marital status, and number of children.

**Results:** Though some countries showed a decrease in mental health across periods and across cohorts, others showed no change, and still others showed an improvement. Adding covariates to the models made cohort effects more negative in some countries, while it did not change cohort effects in others.

**Conclusion:** Rather than being a global phenomenon, developments in mental health differ substantially across countries. This heterogeneity likely reflects a variety of social and institutional factors driving changes in mental health trajectories.

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## First step for the cross-validation of the arabic emirate version of "the subjective scale to investigate cognition - emirates" (sstic-e)

Fadwa Mugaddam<sup>1</sup>, Fadwa Al Mugaddam<sup>2</sup>

<sup>1</sup>CMHS, UAEU Public Health Institute (PHI), College of Medicine and Health Sciences (CMHS), United Arab Emirates University (UAEU). Abu Dhabi, United Arab Emirates, <sup>2</sup>CMHS, UAEU Public Health Institute (PHI), College of Medicine and Health Sciences (CMHS), United Arab Emirates University (UAEU). Abu Dhabi, United Arab Emirates

**Background:** Cognitive complaints and lack of cognitive insight are not specific to schizophrenia. It could be depression, mild cognitive impairment, dementia, Alzheimer or addiction. Hence, scales in this field can be very useful to assess and collect data for populations at risk of developing cognitive decline.

**Objectives:** To develop and validate the Subjective Scale to Investigate Cognition-Emirates (SSTIC-E) adopted from The subjective Scale To Investigate Cognition In Schizophrenia (SSTICS).

**Methods:** This study is a cross-sectional validation study design. At the start, we did the cross-translation process starting with translation and back-translation. Following that we tested the Arabic version of the scale (SSTIC-E) on 13 subjects, to insure whether there are semantic or cultural aspects that need to be taken into consideration. Finally, we had to assess the validity of the scale on clinical and non-clinical subjects, to do that we enrolled the eligible subjects, obtain their consent, and asked them to do the STIC-E, MoCA, and the sociodemographic questionnaire all in the Arabic language.

**Results:** Based on our preliminary findings, 210 participants of whom 126 were clinical subjects and 84 were non-clinical subjects were recruited; 123 of them were women and 87 were men. Our samples include 81 non-Emirati participants,

36 of whom were patients, and 129 Emirati individuals, of which 90 were patients. Patients average SSTIC-E scores were 44.06 (SD= 15.19), higher than the control groups score of 22.55 (SD=12.04). The average MoCA score for the patient group was 22.71 (SD=4.59), which is considered outside of the normal range, while the average score for the control group was normal at 27.19 (SD=2.24).

Conclusion: It's essential for any community to provide a culturally adapted and validated psychometric instrument, that will fit their needs in all cultural aspects.

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### **A global lens of Party n Play/ Chemsex: mental health and resilience for GBMSM, and cultural and clinical competencies for clinicians working with GBMSM**

Devan Nambiar<sup>1</sup>

<sup>1</sup>Gay Men's Sexual Health Alliance, Toronto, Canada

Party n Play (PnP), also known as Chemsex, is a global phenomenon (Blanchard, 2019) of the sexualized use of recreational substances, injecting drug use, and other drugs by gay, bisexual, and men who have sex with men (GBMSM). PnP is associated with increased condomless sex, group sex, transactional sex, STBBIs, stigma, and discrimination. PnP involves using various depressants and stimulants such as alcohol, cocaine, MDMA, crystal meth, ketamine, poppers, and Viagra. PnP is used by GBMSM to increase acceptance by peers, reduce inhibition, promote closeness, sustain sex, pleasure, and intimacies, and manage trauma. The persistence of health inequities persists for GBMSM who experience intersecting forms of oppression, stigma, discrimination, and trauma. Healthcare providers and services are not equipped or knowledgeable of practices of PnP/Chemsex (Card et al. 2021) and "because of a lack of knowledge of practices, associated vocabulary, and a failure to integrate sexual health with drug services" (Florian et al., 2021). The workshop will explore PnP and its definitions, drugs used, stimulants, depressants and drugs interactions, range of use and intake, psychological roots of Chemsex, and case scenarios of intersectional needs of GBMSM who PnP. The workshop will showcase videos from clinical providers on best practices to provide cultural safety, cultural competence, and clinical competencies when caring for cis and trans-GBMSM who PnP. Additionally, we will explore the Four Zones of Engagement: PnP Landscape a New Concept of Current Evidence. In the Zones of Engagement, we will explore the biopsychosocial component (Platteau et al. 2019) of client-centered care in PnP, utilize a trauma-informed practice, educate clients on drug-drug interactions, including interactions with anti-HIV medication via a harm reduction lens. Objectives: 1. Describe PnP/Chemsex, and populations that are disproportionately impacted, 2. Demonstrate knowledge of the biopsychosocial context of PnP/Chemsex in the global GBMSM communities, 3. Practice a harm reduction approach to substance use in the context of sex, 4. Develop competencies in cultural humility, cultural safety, and clinical care. References: Blanchard, S.K. (2019) Inside the Rising Chemsex Response in Europe. Retrieved from <https://filtermag.org/chemsex-Europe/> Card, K., McGuire, M., Jordan, B. G. et al. (2021) Perceived difficulty of getting help to reduce or abstain from substances among sexual and gender minority men who have sex with men (SGMSM) and use methamphetamine during the early period of the COVID-19 pandemic. Retrieved from, <https://substanceabusepolicy.biomedcentral.com/articles/10.1186/s13011-021-00425-3> Florian, S., Wells, J., Henriques, S., Hout, M. C. V. (2021). "Slam Sex" - Sexualized Injecting Drug Use ("SIDU") Amongst Men Who Have Sex with Men (MSM)—A Scoping Review, *Journal of Homosexuality*, 68:14, 2344-2358, DOI: 10.1080/00918369.2020.1804258 Platteau, T., Pebody, R., Dunbar, N., Lebacqz, T., Collins, B. (2019). The Problematic Chemsex Journey : A Resource for Prevention and Harm Reduction. <https://doi.org/10.1108/DAT-11-2018-0066>

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### **Prevalence of bullying victimization and associated factors in Brazilian teenagers**

Guilherme Wendt<sup>1</sup>

<sup>1</sup>Public Health Lab, Postgraduate Program in Applied Health Sciences, Western Paraná State University, Francisco Beltrão, Brazil

Background and Objective: Bullying is a serious type of antisocial behavior that mainly takes place during school years. Reports are abundant indicating that experiencing bullying – as a victim, perpetrator, or bystander – can have negative consequences, affecting also physical health. Thus, the current study aimed to investigate the prevalence of bullying victimization and its associated factors in Brazilian teenagers.

Methods: A cross-sectional study was carried out with 291 Brazilian students, aged between 11 to 17 years old (M = 14,7, SD = 1,5). Most of the participants

reported being female (57,7%). Data was collected at different public schools in a major metropolitan area in Southern Brazil using self-reported questionnaires. The Statistical Package for the Social Sciences (v. 23) was used for data analysis. Phi ( $\phi$ ) was adopted for measuring the effect size in the 2 x 2 contingency tables. Results: The prevalence of bullying victimization was 43% (95% CI: 37 – 49%). Among the school variables, only the question about school climate was significantly linked with bullying victimization ( $X^2(1, N=275) = 8,26, p=0.004; \phi=0.17$ ). Differences in gender and age group (such as younger vs. older adolescents) were not significant.

Conclusions: The prevalence of bullying victimization found in this study is aligned with estimates from several other countries, thus indicating that bullying is a rather frequent experience for school-aged students. Moreover, the association between school climate and higher self-reported occurrence of bullying victimization emphasizes the multifactorial nature of this type of antisocial behavior, although the magnitude of the effect was in the weak to moderate range. Finally, the results indicating no gender and age groups differences are mixed in the literature and deserved further research.

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### **Childhood neighborhood quality, peer relationships, and trajectory of depressive symptoms in middle-aged and older Chinese adults**

Lei Yang<sup>1</sup>

<sup>1</sup>Department of Sociology, Minzu University of China

Background: From the life course perspective, the childhood living environment exerts long-term effects on adulthood mental health. This study aims to examine childhood neighborhood quality, peer relationships, and trajectories of depressive symptoms among middle-aged and older Chinese adults using a large and representative set of survey data. Methods: The data were derived from the China Health and Retirement Longitudinal Study (CHARLS, 2011-2018). Depressive symptoms were measured using the 10-item Center for Epidemiological Studies Depression Scale (CES-D-10). Childhood neighborhood quality and peer relationships were measured via a standardized questionnaire. Latent Growth Curve Model (LGCM) was used to study the trajectories of depressive symptoms according to different levels of childhood neighborhood quality and peer relationships.

Results: The mean level of depressive symptoms increased first and then decreased in the follow-up period. Poorer childhood neighborhood quality and peer relationships were associated with higher levels of depression in adulthood ( $\beta=0.15$  and  $\beta=0.29, p < 0.001$ ) at baseline and a faster increase in depressive symptoms with age for childhood neighborhood quality ( $\beta=0.10, p < 0.05$ ). Quadratic growth factors were generally not significant for both childhood neighborhood quality and peer relationships. Conclusions: Poorer childhood neighborhood quality are associated with a faster increase in the rate of change in depressive symptoms in later life. Efforts toward improving living conditions may help to prevent the detrimental health effects of such early-life disadvantages.

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### **Polydrug use and suicidal behaviors among secondary school students in a nationally representative sample in Puerto Rico**

Juan Reyes<sup>1</sup>, Linnette Rodríguez<sup>1</sup>, Margarita Moscoso<sup>2</sup>, Héctor Colón<sup>1</sup>

<sup>1</sup>Department of Biostatistics and Epidemiology, University of Puerto Rico, Puerto Rico, <sup>2</sup>School of Medicine, Universidad Central del Caribe, Puerto Rico

A great deal of research on adolescent suicidal behavior has focused on depression and alcohol use. Major depression and mood disorders have been shown consistently to be the psychiatric disorders most highly associated with attempted suicide in adolescence. However, less attention has been given to illegal drug use, specifically polydrug use. The Objective of this study is to determine the association between suicidal attempts and polydrug use in a nationally representative sample of secondary school students in Puerto Rico. Consulta Juvenil X is a monitoring program that Aims to study the prevalence of substance use and violent behavior as well as the risk factors associated with those practices. The survey was conducted during the 2018-20 academic year. The study utilizes a self-administered questionnaire. Use of two or more substances (tobacco, marijuana, cocaine, heroin, or amphetamines) in addition to using alcohol was defined as polydrug use. The sample included 4668 (54%) females and 3977 (46%) males. Half of the sample was between seventh and ninth grade with a median age of 15 years old. The prevalence of polydrug use in the public and private schools participating in the study was 9.4% and the suicide attempts was 7.6%. Multiple logistics regression analyses revealed that students

who use multiple substances during the last year were significantly more likely to report suicide attempts after controlling for depression symptoms and other sociodemographic variables (OR=3.07; 95%CI: 2.53-3.72). Adolescents who used three or more substances (95%CI=7.00-10.84) were 8.7 times more likely to attempt suicide than those who did not use drugs. Findings of this study suggest that adolescents who use multiple substances seem to be at higher risk for suicide behaviors. Understanding who is most likely to report polydrug use is important in developing interventions to prevent suicidal attempts.

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### Using community-based research to enhance mental health services for teen mothers

Giulia Puinean<sup>1</sup>, Melissa Tremblay<sup>2</sup>

<sup>1</sup>School of Public Health, University of Alberta, Canada, <sup>2</sup>Faculty of Education, Department of Educational Psychology, University of Alberta, Canada

**Background and Objective:** The transition to motherhood carries significant challenges. Teen mothers in particular are at disproportionate risk for mental health problems such as anxiety and depression which, if not addressed, can negatively affect maternal well-being and child development. Experiences of stigma and perceptions of being judged for seeking help aggravate these issues, compounding barriers to accessing mental health services. Teen mothers are disproportionately impacted by inequities in the social determinants of health, yet their perspectives are rarely solicited in discussions of research and practice. Exploring the needs and lived experiences of this population is crucial for enhancing mental health services in ways that reflect their preferences and values. **Methods:** This research is being conducted in partnership with the Terra Centre, a non-profit organization supporting pregnant and parenting teens in Edmonton, Alberta. Using a community-based approach and qualitative descriptive design, this study Aims to: (1) explore teen mothers experiences with accessing and receiving mental health services; and (2) determine how mental health service providers can best meet their unique needs. Teen mothers and service providers, including therapists and Terra staff, were interviewed. A thematic analysis was conducted on interview transcripts.

**Results:** Although the study is still underway, preliminary Findings highlight the importance of relationship-building with mental health service providers, where trust and mutual respect are essential for continued engagement. Participants identified attributes of an ideal provider such as being present, laid-back, and respectful of boundaries. Mothers also emphasized the need for both formal and informal mental health support, while providers touched on their experiences working with this population.

**Conclusions:** This study provides insight into an issue that has been under-researched in the Canadian context. A mental health service delivery model will be developed based on the Findings. Research and practice implications will be discussed.

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### Mediating role of physician's empathy between physician's communication and patient's satisfaction

Maham Arshad<sup>1</sup>, Shyamkumar Sriram<sup>2</sup>, Saira Khan<sup>3</sup>

<sup>1</sup>Quad-I-Azam University, Islamabad, Pakistan, <sup>2</sup>Ohio University, Athens, United States, <sup>3</sup>Quad-I-Azam University, Pakistan

**Introduction:** Physician communication is vital for an effective physician-patient relationship. Physician empathy is crucial to patient communication. The relationship between physician empathy, physician communication, and patient satisfaction is not very clear. This study Aims to study the mediating role of physician's empathy between physician's communication, physician's empathy, and patient's satisfaction.

**Methods:** A cross-sectional study was conducted at the National Institute of Psychology, Quaid-i-Azam University during the time period of December 2018 to February 2019. Employing the technique of purposive convenience sampling, data was collected (N = 238) from psychiatric, cardiology and dermatology wards of public and private sector hospitals of Islamabad and Rawalpindi. The Communication Assessment Tool, specifically the Patient's Perception of Physician's Empathy and Patient Satisfaction Scale were used to assess study variables. The measures used in the research assess the Patient's Perception of Physician's Communication, Empathy and Patient's Satisfaction. Formal permission for the research was taken from the hospital administration with the approval from the institutional review boards. Participants were briefed about the purpose of research. Both verbal and written informed consent was taken from

them.

**Results:** Results shows that Physician's Empathy plays mediating role between Physician's Communication skills and Patient's Satisfaction. Moreover, Pearson product moment correlation indicated a significant positive relationship between doctor's communication skills, doctor's empathy and patient satisfaction.

**Conclusions:** Building a positive doctor-patient relationship would not only lead to improved patient satisfaction but also reduce the likelihood of medical malpractice. Therefore, steps should be taken to enforce the trust, interaction, and empathy in doctor-patient relationships, with patient-centered services. Physician's empathy plays a mediating role between Physician's Communication skills and Patient's Satisfaction.

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### "A whole fruit salad there": a systematic review exploring collaboration between traditional healing systems and biomedicine in mental illness

Shingirai Dzapas<sup>1</sup>

<sup>1</sup>Teesside University, United Kingdom

**Background:** Existing clinical research suggests that efforts have been taken to address the treatment gap between mental illness. However, the treatment gap is a complicated, multi-dimensional phenomenon because asylum seekers and refugees may continue to hold different explanatory models of illness which influence help-seeking behaviour. This paper critically analyses medical pluralism in mental health, focusing on existing literature discussing collaborative efforts between biomedicine and traditional healing systems in managing mental illness. **Methods:** A systematic literature review was performed to identify and critically analyse articles discussing collaboration initiatives in mental illness which included traditional/faith healing systems and biomedicine. Electronic and hands searches revealed 659 citations, 11 articles fulfilled the criterion.

**Results:** The following themes recurred throughout the dataset: open-mindedness, awareness, unidirectional, clinical outcomes, and feasibility. Results indicated statistical significance ( $p < 0.0001$ ) in patients receiving collaborative shared care in comparison to the control group (Gureje et al., 2020). Biomedicine and prayer camps working collaboratively Resultsed in positive symptom control for patients. However, the number of days patients spent in chains was not reduced (Ofori-Atta et al., 2018).

**Conclusions:** Ensuring appropriate systems, services and support for asylum seekers and refugees should be a priority for healthcare services to improve access and clinical prognosis. The present Results are significant in clinical practice and provide clear evidence of feasibility, awareness and an openness for the two paradigms to work together. So far, patients using collaborative strategies expressed a deep appreciation of the collaborative efforts of biomedicine and traditional/faith healers "A whole fruit salad there". More efforts to improve the partnership are warranted as the collaboration remains unidirectional. Efforts to reduce the treatment gap need to start with the de-stigmatisation of traditional healing systems as taboo, evil, and shameful. Future studies are warranted to analyse the effectiveness of the collaboration by monitoring relapse rates for patients.

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### Pilot evaluation of a digital mental health first aid program for adolescents

Noor Yousef<sup>1</sup>, Joemer Maravilla<sup>2</sup>

<sup>1</sup>Institute for Social Science Research, University of Queensland, Australia,

<sup>2</sup>Institute for Social Science Research, University of Queensland, Australia

**Background:** Despite high rates of mental health problems, including suicide, self-harm, and panic attacks, adolescents do not usually seek help from adults and are more likely to seek help from their peers. To prepare adolescents to support each other, a digital mental health first aid program, called Brain Pilot, was designed for young people. **Objectives:** The Brain Pilot program Aims to improve adolescents' mental health literacy, resilience, and self-efficacy in order to support themselves and their peers. Our study will evaluate the effectiveness of Brain Pilot program in achieving its outcomes, as well as the appropriateness of the program. This evaluation research will also assess the type of support provided by teachers to students who completed the program.

**Methods:** Using a mixed-methods approach, we will analyse pre and post training survey data to measure changes in mental health outcomes among adolescents aged between 15 and 18 in Australia. A focus group with 6-8 program participants (Youth Advisory Group members) and semi-structured interviews with 10 other adolescents will be conducted to explore the key Findings from the surveys. To

participate, adolescents will be required to obtain parental consent and provide assent. To understand suitability of the teachers training guide, trained teachers will be surveyed and interviewed.

Discussion: Our study will highlight digital strategies to address youth suicide, self-harm, and panic attacks by improving young people's capacity in supporting their peers. Our evaluation will also provide insights on co-design with adolescents to ensure appropriate messaging and ongoing support for trained adolescents. Our process evaluation findings will help in informing future implementation of Brain Pilot in Australia and overseas.

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### Senior managers' experience with health, happiness, and motivation in hospitals and the perceived impact on health systems: the case of Meru county, Kenya

Rose Muthuri<sup>1</sup>

<sup>1</sup>KEMRI Wellcome Trust Research Programme, Kenya

Hospitals play a significant role in health systems. Studies among the health workforce have revealed their experiences with mental health challenges. In comparison, there is limited literature on their positive mental health. The purpose of this study was to explore senior managers' experiences with health status, happiness, and motivation in hospitals and the perceived impact on the health system in Kenya. This qualitative study applied a phenomenological research design. Senior managers within the hospital management teams were selected using purposive sampling. Semi-structured interviews were carried out among senior managers across eleven hospitals in Meru County, Kenya. Among the eleven participants 63.6% were female and 36.4% were male and the mean age was 44.5 years. The audio-taped data were transcribed and analyzed using Colaizzi's phenomenological approach. The five themes revealed were: (1) Happiness in the health system; (2) Health status in the health system; (3) Motivation in the health system; (4) Challenges in the health system; (5) Possible solutions to the challenges in the health system. This study revealed the positive and negative impact of the three domains, challenges, and solutions, from the senior managers' perspective. Healthy, happy, and motivated senior managers and healthcare workers are more responsive and perform better. Policy interventions and programs promoting happiness, health status, and motivation are necessary for strengthening the health workforce and health system.

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### Demographic and behavioural differences between gamblers with and without Gambling Disorder

Špela Selak<sup>1</sup>, Mark Žmavc<sup>1</sup>, Irena Makivič<sup>1</sup>

<sup>1</sup>National Institute of Public Health, Slovenia

Background and Objective: The rapid rise of internet related technologies has made gambling accessible to a wider audience. The risk for Gambling Disorder (GD), i.e. excessive, problematic or uncontrolled gambling behaviour, has been established as a key concern by non-substance addiction experts. In order to better understand the phenomenon, our study provided a detailed description of the differences between gamblers who meet criteria for GD and those who don't (hereinafter gamblers with and without GD). Methods: As part of the National Survey on the Use of Tobacco, Alcohol and Other Drugs, conducted in 2018 in Slovenia, nationally representative data on 1,686 Slovenian gamblers in the age range between 15 and 64 years was obtained. Gamblers were categorised into a GD and non-GD group based on their responses to the Berlin Inventory of Gambling Behavior – Screening, which assesses the presence of the 9 gambling disorder criteria, according to DSM-V. Additionally, data on various health-related behaviours was collected to investigate the intergroup differences.

Results: Group comparisons between gamblers with GD (4.3% of gamblers) and gamblers without GD (95.7%) revealed many notable differences. Gamblers with GD were significantly more likely to be males, students, gambling online, watching pornography, playing videogames, using drugs in the past year and less likely to be living with a partner than gamblers without GD. Correlation analysis further revealed that lower age and excessive alcohol use are significantly related to GD symptoms, while education and monthly income are not.

Conclusions: The findings of the present study highlight key demographic groups and factors associated with increased risk for GD and outline those with little to no effect on GD. Data also shows that certain behaviours (e.g., substance use, gambling online, watching pornography, playing videogames) were much more likely in the GD group, and can be considered risk behaviours.

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### BURTOOLA: a digital evidence-based tool to reduce burnout syndrome in medical students

Júlia Mas<sup>1</sup>, Marilina Santero<sup>2</sup>, Irene Rexach<sup>1</sup>, Inés Clavero<sup>1</sup>

<sup>1</sup>Universitat Autònoma Barcelona, Spain, <sup>2</sup>Cochrane Iberoamerica, Spain

Background: Studies suggest that medical students experience mental distress in a proportion higher than the rest of the population. For instance, burnout prevalence in Spanish medical students was 37%, significantly higher among 6th year than among 1st-year students. Moreover, burnout syndrome seems to be associated with an increased likelihood of subsequent suicidal ideation.

Aim: The objectives of this study are to design and implement a tool to assess medical students burnout risk allowing students and their universities to reduce the prevalence of burnout in Spain.

Methods: Burtoola (burnout + tool + accessibility) is a digital evidence-based tool connecting clinical data and patients reported outcomes (proms). Our intended audience is over 45000 students from 43 medical schools in Spain. A 3-5 years timeline plan considers 3 phases: 1) instrument development (~1 academic year) includes validating the burnout risk scale, development of predictive software and data collection; 2) clinical phase (~2 years) evaluation of stress, burnout and cortisol levels; 3) implementation phase (~1.5 years) strategies to adopt and integrate evidence-based health interventions into the university setting. Expected results: Burtoola has been selected as the winner of the hackathon healthtech 2030 celebrated recently in Barcelona organized by the Xartec Salut Network. As part of being selected as the best idea, we will be awarded by sponsors and receive mentorship to develop the winning project towards a proof-of-concept phase. We are now looking for collaboration, trust, and funding to build our first prototype (phase I study).

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### East coast kitchen party - Creating an inclusive community for queer and transgender immigrants through cooking and conversation in Halifax, Canada

Liane Khoury<sup>1</sup>

<sup>1</sup>Nova Scotia Health, Dartmouth, Canada

Background and Objective: East Coast Kitchen Party (ECKP) is a community program connecting Queer and Transgender (Trans) immigrants through food. Immigrants often experience isolation from the dominant culture upon arrival. Queer and Trans immigrants additionally may feel unwelcome in their cultural community and not yet connected to the local Queer and Trans community. Our objective is to develop a sense of community and promote mental wellness among Queer and Trans immigrants. Methods: At the start of each ECKP session, a participant led the group in cooking a traditional or favourite meal. Culturally appropriate ingredients were sourced from local grocery stores, teaching participants where to find familiar items. Participants ranged from recent newcomers to immigrants living in Canada for over 10 years. At the end of each session, we shared a meal and guided participants in conversations around themed topics, such as stigma around mental health.

Results: Through facilitated conversations, participants discussed thoughts and views on mental health through the lens of their initial displacement and transition to Canada. Having participants with various immigration statuses provide peer support for navigating both the immigration system and a new city. We found that participants needed a sense of belonging, experienced social isolation, and felt stigma discussing mental wellness. Participants expressed a need for programming targeting Queer and Trans immigrants and a desire for connection with the local Queer and Trans community. Conclusions: Helping immigrants increase their food autonomy and access culturally appropriate foods is vital for mental wellness; there is a barrier to immigrants accessing familiar foods and ingredients. Sharing meals with others promotes mental wellness and community development. The conversations from our "kitchen party" will help to inform decisions around community programming for Queer and Trans immigrants, and provide evidence of the need for better funding and access to mental health care.

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### Building mental health and psychosocial support capacity in higher education: psychological first aid training to support displaced Afghan student refugees

Nicole Ross<sup>1</sup>, Aline Lanes<sup>2</sup>, Caroline McEneaney<sup>2</sup>, Adam Brown<sup>2</sup>

<sup>1</sup>Trauma and Global Mental Health Lab, The New School for Social Research, The New School, New York, United States, <sup>2</sup>The New School for Social Research and The Trauma and Global Mental Health Lab, New York, United States

**Background and Objective:** In recent years, a growing number of universities have welcomed refugee students. Given the high levels of Mental Health (MH) stressors associated with displacement, there is a call for institutions to prepare delivery of Mental Health and Psychosocial Support (MHPSS). A growing body of research points to scaleable, non-specialist delivered mh strategies as both effective and a way to build capacity. Specifically, Psychological First Aid (PFA) trains populations to identify and respond to people in distress, while emphasizing self-care and personal resilience. The aim of this study was to adapt and deliver pfa trainings for higher education institutions serving as a home for refugees. Objectives were to train participants in pfa to support Afghan refugees, and to collect data on the perceived efficacy of the training.

**Methods:** A team trained in delivering pfa, held 7 online sessions in fall 2022 across 5 institutions in the US, central Asia and Europe. In total, 50-75 faculty, staff, students, and administrators participated. After the sessions participants rated content of the training, facilitators, perceived understanding of material, and their confidence in assisting individuals in distress. They were then asked qualitative questions regarding their experience of the training.

**Results:** Preliminary results demonstrate trainees felt a high degree of confidence ( $m=8.6$ , 0=no confidence, 10=extremely confident) assisting people in distress. 89.5% strongly agreed that co-facilitators communicated the material clearly and concisely. 73.7% agreed that they understood the pfa action principles. 73.7% felt they understood the importance of self-care. Participants offered qualitative feedback demonstrating their enjoyment of and efficacy around pfa, but also identified areas for further adaptation.

**Conclusions:** This preliminary data is evidence for the effectiveness of pfa training in higher education contexts, especially those looking to support student refugees. Further research is needed to understand longer-term competency outcomes after receiving pfa training.

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### Interventional components for mental health apps: a scoping review

Hazwa Harith<sup>1</sup>, Nik Daliana Nik Farid<sup>1</sup>, Abqariyah Yahya<sup>1</sup>

<sup>1</sup>Social and Preventive Medicine Department, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia

Mobile phone apps are increasingly popular in usage especially in the health sector. Apps such as mHealth have been used internationally to address many concerns in particular those brought by non-communicable diseases such as diabetes. However, there seem to be a growing interest for mental health apps as a solution in reducing the barriers surrounding services uptake. Apps are seen to bridge the gap between self-care and the augmentation of the existing clinical treatment processes. With more research pertaining to mental health apps, there has been a recognizable knowledge of the importance of delivering effective treatment modalities within the app. Reviews of contemporary literatures supported the need for a scoping review as there is a lack of high-quality research such as randomized control trials done in determining the best current practice to provide interventions within a mental health app. This scoping review aims to ascertain the interventional domains that are most appropriate to supplement the screening tool in the current 2Heal mental health app. The scoping review will be done according to the Arksey and O'Malley (2005) methodological approach as a guiding framework. The steps involved will be identifying the research question, identifying the relevant studies, describing the study selection, charting the data and lastly, reporting the results. This scoping review will be reported according to the PRISMA Extension for Scoping Reviews. The summary and results of this study are expected to contribute to the future development of interventional content or mental health app that are evidence-based, reliable and suitable to the current best practice pertaining to mental health problems.

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### Translation of the Malay Version of the Depression Literacy Questionnaire (D-Lit)

Mohd Zahiruddin Mohd Khairi<sup>1</sup>, Abqariyah Yahya<sup>1</sup>, Nik Daliana Nik Farid<sup>1,5</sup>, Rafidah Aga Mohd Jaladin<sup>2</sup>, Feisul Idzwan Mustapha<sup>3</sup>, Rozaidah Jaafar<sup>3</sup>, Idayu Abdullah Mansor<sup>3</sup>, Lizawati Abd Sane<sup>4</sup>

<sup>1</sup>Department of Social and Preventive Medicine, Faculty of Medicine, Universiti Malaya, Kuala Lumpur, Malaysia, <sup>2</sup>Department of Educational Psychology and Counselling, Faculty of Education, Universiti Malaya, Kuala Lumpur, Malaysia, <sup>3</sup>Ministry of Health, Putrajaya, Malaysia, <sup>4</sup>Center for Counselling & Disability Empowerment, Universiti Malaya, Kuala Lumpur, Malaysia, <sup>5</sup>Centre for Population Health, Faculty of Medicine, Universiti

### Malaya, Kuala Lumpur, Malaysia

**Background:** Depression is a mental illness characterised by impairments in mood as well as mental and physical performance. It places a significant burden on society by restricting productivity and daily activities. Despite compelling evidence of depression-prevention interventions, the global prevalence remains high. On the other hand, the Depression Literacy Questionnaire (D-Lit) is a depression-specific assessment tool that has been translated and validated in multiple languages. To date, there is no Malay version that has been translated and validated. Hence, the primary objective of this study is to translate the Depression Literacy Questionnaire into Malay.

**Methods:** The D-Lit translation procedures were based on Wild et al translations guidelines. After obtaining the authors permission, the D-lit was translated from English to Malay by a psychiatrist and an English teacher who are both independent native speakers. The questionnaire was back translated from Malay to English by two independent bilingual English teachers with no prior experience with the D-Lit. The back translation was reviewed by an expert committee comprised of a psychologist, a public health consultant who specialises in noncommunicable diseases and a psychiatrist. Each sentences conceptual, item, and semantic quality was assessed in both translated versions. In the Malay version of D-Lit, a question that is irrelevant to the Malaysian context was removed.

**Results:** The Malay version of D-Lit had a content validity index of 1.00, which met the requirement of having fewer than five experts available. Item 5 was removed due to cultural equivalence considerations. As a result, the Malay version of D-Lit had 21 items instead of the original 22.

**Conclusions:** This study found a high level of I-CVI in the Malay translation of D-Lit. The translated questionnaire will be tested for construct validity, internal consistency, and test re-test reliability among 420 participants.

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### Mental health in asylum seekers and refugees: early detection at SAMIFO Center

Rossella Carnevali<sup>1</sup>, Silvia Capretti<sup>1</sup>, Enrico Francisci<sup>1</sup>, Maria Guerra<sup>1</sup>, Loredana Madonia<sup>1</sup>, Antonio Spina<sup>2</sup>, Emilio Vercillo<sup>3</sup>, Giancarlo Santone<sup>2</sup>

<sup>1</sup>ASL Roma 1 (Public Local Health Authority), SAMIFO Center, Rome, Italy,

<sup>2</sup>SAMIFO Center, ASL Roma 1 (Public Local Health Authority), Rome, Italy,

<sup>3</sup>SAMIFO Center, Centro Astalli, JRS (Jesuit Refugees Service), Rome, Italy

**Background:** Refugees in Europe have prevalence rates 3 times higher than the general population regarding depression, anxiety, and poor mental well-being (Priebe et al 2016). At the arrival in Europe, asylum seekers and refugees (ASRs), who are often victims of torture and intentional violence, have a higher incidence of PTSD. 5 years after the arrival, the prevalence of anxiety, depression and psychosis also increases (Bogic 2015). Italian Ministry of Health Guidelines support the early detection of at-risk individuals (2017).

**Objective:** SAMIFO Center promotes early identification of at-risk ASRs, both in-house and in external services with the aim of treating and rehabilitating victims of violence, but also for secondary and tertiary prevention of post-traumatic and non-traumatic mental pathologies.

**Methods:** SAMIFO carries out early detection and treatment of at-risk ASRs. The identification is carried out in different ways: through the operators working in first and second level ASRs centers, who indicate the reason for referral by e-mail; through in-house physicians (general practitioners and specialists) who identify at risk patients through a 12-item questionnaire administered by the clinician during the first visit; through the Territorial Commissions or through the Court in the event that symptoms occur during the hearings; through self-referral.

**Results:** SAMIFO's mental health unit makes around 1600 visits a year, including 300 first attendances. In 2021, 73% of first attendances were referred by external services, 26% by internal physicians, 1% was a self-referral. The 33% of first consultations and 40% of total referrals were affected by PTSD. 80% of patients continued the treatment, 19% received counseling and 1% were referred to external services.

**Conclusions:** SAMIFO has developed a methodology for early identification and referral of at-risk individuals that extends beyond the service itself, promoting guidelines-compliance and best practices in ASRs services as well.

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### The impact of loneliness on post-stroke memory decline and depression in elderly (Bulgaria, 2019-2021)

Ivanka Veleva<sup>1,2</sup>, Mirena Valkova<sup>3</sup>, Maya Stoimenova<sup>1,2</sup>, Gena Grancharova<sup>2</sup>

<sup>1</sup>Department of Psychiatry and Medical Psychology, Medical University of Pleven, Bulgaria, <sup>2</sup>Bulgarian Public Health Association, Bulgaria, <sup>3</sup>University

**Hospital SofiaMed, Bulgarian Public Health Association, Sofia, Bulgaria**

**Background and Objective:** Loneliness is an independent risk factor for stroke in both genders. It is associated with memory and cognitive decline in adults. Our objective was to examine the impact of loneliness on post-stroke functional outcome, memory and depression.

**Methods:** We examined 107 ischemic stroke (IS) survivors (65 males and 42 females), 85 of them were not lonely (NL) and 22 lonely living (LL). The baseline stroke severity was measured by National Institutes of Health Stroke Scale (NIHSS) and the functional outcome - by Barthel Index (BI). All patients were examined twice - at acute IS phase via 10 Words Memory Test (WMT) for short-term (STM), working memory (WM) and 21-Hamilton depression scale (HDS) for severity of depression and at 3rd month after IS via WMT, HDS, Benton Visual Retention Test (BVRT) and Subscales "Information" (for episodic memory - EM) and "Nonpersonal Memory" (for semantic memory - SM) from Blessed Dementia Information Memory Concentration Test. Groups were compared by T-test at 95% confidence level. Data processing was performed by SPSS 24.

**Results:** The stroke severity (NIHSS) of LL and NL groups were similar ( $p>0.05$ ). NL patients had higher BI than LL (25.1 vs 15.3p.;  $p=0.0006$ ). LL showed poor STM (4.65 vs 5.63p.,  $p=0.0114$ ) and WM (2.87 vs 4.24p.,  $p=0.0069$ ), compared to NL at acute IS phase. At chronic IS phase LL had poor STM (4.76 vs 5.87p.,  $p=0.0018$ ), WM (3.05 vs 4.48p.,  $p=0.0050$ ), EM (9.91 vs 18.86p.,  $p=0.0041$ ), SM (1.04 vs 2.04;  $p=0.01$ ) and more total number of errors on BVRT (17.0 vs 13.74,  $p=0.0120$ ) than NL. Lonely living showed higher HDS results at acute (15.69 vs 19.8p.,  $p=0.0121$ ) but not at chronic IS phase ( $p>0.05$ ).

**Conclusions:** Loneliness play important role as risk factor for memory decline in elderly post-stroke survivors. It is also associated with acute post-stroke depression.

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**Difficulties faced by caregivers of children with Autism spectrum disorder in getting their child diagnosis in Kazakhstan**

**Karina Nukeshbayeva<sup>1</sup>, Baurzhan Omarkulov<sup>1</sup>**

<sup>1</sup>Karaganda Medical University, Kazakhstan

**Background and Objectives:** Autism Spectrum Disorder is a developmental disorder associated with significant difficulties throughout a humans life and is characterized by repetitive sensorimotor behavior and social communication disorder. The purpose of this study is to overview the caregivers' journey to the diagnosis of Autism Spectrum Disorder in their children in Kazakhstan. To identify what influences parents decisions in matters of diagnosis and what problems families with children with Autism Spectrum Disorder face when providing them with diagnostic care.

**Methods:** This study is a mixed interview of caregivers of children diagnosed with Childhood Autism, Atypical Autism about difficulties in the process from initial concern about the child's development to formal diagnosis.

**Results:** There is the steady increase in the number of children with Developmental Disorders and the rather late age of the final diagnosis in Kazakhstan. Despite the fact that caregivers seek specialized help in a timely manner as soon as they notice alarming signs, the final diagnosis can only be obtained after a long time. Reasons for this may be both the low awareness of autism among health providers the environment, and the parents themselves, as well as the inaccessibility of diagnostic assistance in the form of long waiting lists.

**Conclusion:** Extremely important point is to increase awareness of ASD among medical workers who conduct routine screening of the psychophysical development of young children in Kazakhstan. Given the public health emergency posed by ASD and the long period between the first parental problems and a diagnosis of autism, there is an urgent need to improve our methods for early detection of ASD in Kazakhstan.

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**Employment status and bereavement after parental suicide: a population representative cohort study**

**Sissel Bélanger<sup>1</sup>, Kim Stene-Larsen<sup>1</sup>, Anne Reneflot<sup>1</sup>, Solveig Christiansen<sup>1</sup>, Per Magnus<sup>1</sup>, Lars Hauge<sup>1</sup>**

<sup>1</sup>Norwegian Institute of Public Health, Norway

**Background and Objectives:** Losing a loved one to suicide is associated with negative mental health outcomes. So work related outcomes might also be affected, but very little is known with regard to this. The objectives of this study was to examine employment status among adults bereaved by parental suicide at the time of bereavement and 2 and 5-years after the loss and to explore the importance of the gender of the adult child and the deceased parent.

**Methods:** Population-based register study including Norwegian residents aged 25–49 years in the period 2000–2014. Participants were divided into three groups: bereaved by parental suicide, bereaved by parental death of other causes and non-bereaved population controls. Logistic regression analysis yielded odds ratios (ORs) for the risk of non-employment at different time points.

**Results:** Those bereaved by parental suicide had a higher risk of non-employment already at the time of bereavement. Stratified analyses showed that women accounted for this difference, while no difference was found for men. Looking at the gender of the parent, there was only a significant association of non-employment when losing a mother, while not for losing a father. Among those working at the time of bereavement, offspring bereaved by suicide were more likely to be non-employed at both 2 and 5 years after the loss compared with the general population.

**Conclusions:** Women bereaved by parental suicide and those losing a mother to suicide were found to have a weaker attachment to the labour market already before losing their parent. Those who were employed when bereaved by suicide were somewhat more likely to be non-employed 5-years after the event.

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**Patterns of healthcare utilization prior to suicide according to educational attainment: a nationwide register-based population study**

**Carine øien-ødegaard<sup>1</sup>, Lars Hauge<sup>1</sup>, Kim Stene-Larsen<sup>1</sup>, Solveig Glestad Christiansen<sup>1</sup>, Espen Bjertness<sup>1</sup>, Anne Reneflot<sup>1</sup>**

<sup>1</sup>Norwegian Institute of Public Health Norway

**Background and objective:** Suicide prevention is complex and difficult. Timely help, improved quality of care and correct assessment by healthcare professionals can reduce suicide risk, but then the at-risk individuals must utilize healthcare services. Studies suggest that most of those who die by suicide have consultations with primary healthcare services (PHC) and about 25% with mental health services (MHS), the last year prior to suicide. Total healthcare utilization prior to suicide, and differences from the general population, are still unknown. The same is the association between educational attainment and healthcare service use prior to suicide. Therefore, the object of this nationwide register-based study is to examine patterns of healthcare consultations one month and one year prior to suicide.

**Methods:** Data stems from the Norwegian population registry, The Primary Health Care Database, The Specialist Health Care Database, The National Education Database and The Cause of Death Registry, which includes all Norwegian residents in the ages 18-65 from 2008-2021. This is a descriptive article, and the results will be presented in cross-tables and figures.

**Results:** Preliminary analyses indicate a clear association between educational attainment and any consultation within the healthcare services last year prior to suicide. This applies to both sexes, but stronger among men. We find an educational gradient among those with a consultation with MHS prior to suicide, in favor of those with higher education. Among men there is a significant association between educational attainment and contact with PHC the last month prior to suicide. Those who die by suicide utilize the healthcare system more than the general population.

**Conclusion:** Men without higher education utilize the healthcare system to a low extent. However, as they constitute over half of the suicides it is missed potential for suicide prevention measures. Actions for increasing healthcare use in this group should be investigated.

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**Impact of the COVID-19 pandemic on the mental health of health-care workers vs the adult general population in South Africa**

**Mutshidzi Mulondo<sup>1</sup>, Sithembiso Ndlovu<sup>1</sup>, James Ndirangu<sup>1</sup>, Joyce Tsoka-Gwegweni<sup>1</sup>**

<sup>1</sup>University of the Free State South Africa

**Background and Objective:** There has been 3 coronavirus outbreaks within the last 2 decades, SARS in 2003, MERS in 2012, and COVID-19. This review summarized and compared impact of the pandemic on the mental health of health-care workers (HCWs) and general population during the COVID-19 pandemic. The following objectives were addressed: Identify the impact of COVID-19 on HCWs' and on the general population's mental health; Compare the mental health impact of COVID-19 on HCWs versus that of the adult general population

**Methods:** A scoping review was conducted. Literature searches on EBSCOhost database, which also hosts other databases, produced 143 studies, after duplicates and ineligible studies were assessed, 5 studies met the criteria for

synthesis.

**Results:** The eligible studies found the impact of mental health among HCWs, specifically PTSD, to be more prevalent as opposed to rise of suicide cases among the general population. Both HCWs and general population had an increase of anxiety and depression during the pandemic. Among HCWs, mental health was negatively impacted by loss of infected patients, concern over personal safety, passing infections to family members and exhaustion from long working hours as colleagues contracted COVID-19. The general population had increased cases of anxiety due to fear of contracting the virus and increased levels of depression due to job losses, isolation, loneliness, substance abuse/ withdrawal and fear of the unknown.

**Conclusion:** Limited access to mental health services and low utilization rates in low resource settings may exacerbate mental health problems during and post-pandemic. There is need to increase community-based awareness and advocacy for mental health. The importance of utilizing lessons learnt in other countries is key to building a robust and responsive strategy. Lessons learnt from other countries include digital mental health support packages established for frontline HCWs using social media online chat groups.

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### The effects of social capital and built environment on depression in urban residents in South Korea

Kyeong-Sook Choi<sup>1</sup>, Ji-Ae Yun<sup>1</sup>, Hyemin Jang<sup>1</sup>

<sup>1</sup>Euji University School of Medicine, Department of Neuropsychiatry Korea, Republic Of

**Background and Objective:** Social capital is an important factor related to health inequalities and has been reported to be related to depression independently of individual factors. Built environment associated with social capital. The purpose of this study was to find out how social capital and the built environment affect depressive symptoms in a Korean city resident.

**Methods:** A cross-sectional study was conducted with 20–69 aged people living in a city in South Korea through an online survey. Based on the literature review, questions related to social capital and built environment were collected, and finally a 23-item self-report questionnaire (5 items of cognitive social capital, 6 items of structural social capital, 12 items of built environment) was prepared. The social capital and built environment questionnaire's Cronbach's  $\alpha$  was 0.91. Depressive symptoms were evaluated using the Patient Health Questionnaire-9 (PHQ-9) and depression was determined based on a score of 9. Logistic regression was used to find the relationship between related variables and depression.

**Results:** A total number of participants was 555, 163 males (35.8%) and 292 females (64.2%). In simple logistic regression analysis, cognitive social capital (OR=0.36, CI: 0.26-0.48), structural social capital (OR=0.44, CI: 0.35-0.57) and crime/safety-related built environment (OR=0.45, CI=0.33-0.61), Aesthetics-related built environment 0.61 (0.47-0.81) were all related to depression. After adjusting for gender, age, education level, family income, marital status, number of physical diseases, and presence of chronic diseases, structural social capital (social network/human resources) (OR=0.60, CI:0.43-0.84) and crime/safety-related built environment (OR=0.66, CI: 0.44-0.99) were still associated with depressive symptoms, however, cognitive social capital (social cohesion/trust), and aesthetics of built environments were not associated with depression.

**Conclusion:** This study shows that social capital and built environment are associated with depressive symptoms in urban residents.

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### Comparison of suicidality among Pacific Islanders in the Western Pacific and the United States

Davis Rehuher<sup>1</sup>, Genesia Paolo<sup>1</sup>, Jeanelle Sugimoto-Matsuda<sup>1</sup>, Deborah Goebert<sup>1</sup>

<sup>1</sup>University of Hawaii at Manoa, United States

**Background and Objective:** Islands in the Western Pacific have among the highest suicide rates in the world. Gaps in suicide prevention efforts and mental health care are compounded by a lack of adequate mental health infrastructure and qualified mental health professionals. Over the past few decades, seeking better opportunities for education, employment, and health care, people from the Pacific region have been migrating to the United States and its Territories in increasing numbers. Similarly, suicide rates have increased among Pacific Islander migrants. This study examines suicide data in the Pacific region and among Pacific Islander migrants in the US. The study maps the extent of the problem, summarizes research findings, and identify gaps in the existing literature for this understudied population.

**Methods:** A systematic review of the peer-reviewed publications, theses and dissertations, and government and agency reports, and other grey literature was conducted. For the references found, their citations were also examined to see if any of the citations were relevant.

**Results:** Overall, there are few sources of information on Pacific Islander suicide. However, suicide rates among young Micronesian males have been as high as 100 per 100,000 among different island groups in the region. Rates have decreased over the past 40 years but are still high by global standards. According to estimates by the World Health Organization, as of 2019 the age-standardized suicide rate in the Federated States of Micronesia was 29.0 per 100,000. Among males, it was 44.3 per 100,000. In comparison, the global age-standardized rate was 9.0 per 100,000 for both sexes and 12.6 per 100,000 for males.

**Conclusion:** Suicide prevention efforts are needed to abate high rates of suicidality. Efforts must include awareness, enhanced training, screening, and the development and evaluation of interventions tailored to the needs of Pacific Islander young people.

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### The emergency departments frequent user in Rome: an observational study in 13 hospitals

Giuseppe Furia<sup>1</sup>, Antonio Vinci<sup>2</sup>, Francesco Di Nardo<sup>3</sup>, Francesca Troiano<sup>2</sup>, Patrizia Chierchini<sup>2</sup>, Maddalena Quintili<sup>2</sup>, Gianfranco Damiani<sup>4</sup>, Corrado De Vito<sup>1</sup>

<sup>1</sup>Sapienza University of Rome, Italy, <sup>2</sup>Local Health Authority Roma 1, Italy,

<sup>3</sup>Local Health Authority NO, Italy, <sup>4</sup>Università Cattolica del Sacro Cuore di Roma, Italy

**Background and Objective:** Frequent users are patients who repeatedly and inappropriately access the emergency department (ED), with low grade symptoms potentially treated outside the hospital setting. They contribute to increase the ED extra costs and risk to compromise the quality of hospital services. This study aims at investigating the phenomenon of frequent user in Rome, defining the profile and comparing the accesses to EDs.

**Methods:** The analysis was carried out considering the accesses to 13 EDs in 2021 in the Local Health Authority Roma 1 geographical area. According to the Italian Ministry of Health's categories, the EDs were classified into three levels of complexity (I, II, III level). A digital app collected demographic, geographical and clinical data, using the Lazio Region official data flows. Records were pseudo-anonymized. According to the literature, 3 categories of frequent user were identified:  $\geq 4$  access,  $\geq 7$  access,  $\geq 10$  access per year. Chi-squared tests were conducted to verify the differences between the three EDs categories in terms of the proportion of frequent user accesses.

**RESULTS:** A total of 110.761 ED accesses were registered and 81.406 users were included.  $\geq 4$  access user category represented 1.4% of all users,  $\geq 7$  access was 0.7%,  $\geq 10$  access was 0.2%. 77% were registered as not an emergency/urgency, 54% of users didn't need hospitalization. The mostly recorded diseases were chronic pathologies, often with social and mental health-related issues. Significant differences ( $p < 0.001$ ) were found in the analysis of EDs: the II level ED received a lower proportion of accesses as compared to the other level.

**CONCLUSION:** The first profile characteristics are in line with the international literature, describing mostly non urgent chronic and social issues. The analysis of three ED level accesses underline the need of further studies to investigate the predictors of accesses and the geographical area of origins. This study can represent a first important step to strengthen the preventive policies outside the hospital setting.

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### Intimate partner violence among young women and men in KwaZulu-Natal, South Africa

Nuha Naqvi<sup>1</sup>, Sarah Aheron<sup>1</sup>, Ariana Paredes-Vincent<sup>1</sup>, Mireille Cheyip<sup>1</sup>, Jennifer Drummond<sup>1</sup>, Edward Nicol<sup>2</sup>, Mbuzeleni Hlongwa<sup>2</sup>

<sup>1</sup>Centers for Disease Control and Prevention (CDC), South Africa, <sup>2</sup>South African Medical Research Council, South Africa

**Background/Objective:** South Africa has one of the highest rates of intimate partner violence (IPV) globally. Although there is abundant research on IPV against women with men as perpetrators, there is limited research on men as victims of IPV. To address this gap, we conducted an analysis of reported lifetime physical IPV (PIPV), emotional IPV (EIPV), and composite IPV (CIPV) by gender.

**Methods:** We administered 2,581 questionnaires focused on sexual behavior and violence as part of a prospective cohort study among young women aged 15-24 years and men aged 15-35 years in uMgungundlovu District, South Africa between

August 2021-July 2022. Descriptive analysis and multivariate logistic regressions were performed.

Results: Of total participants, 16% (n=411) reported experiencing at least one form of IPV in their lifetime. Of 1649 women surveyed, 14.7% reported experiencing CIPV, 8.7% PIPV, and 9.5% EIPV. Of 941 men surveyed, 18.5% reported experiencing CIPV, 7.7% PIPV, and 14.4% EIPV. Women who consumed alcohol 2-4 times per week and those who always experienced condom refusal were more likely to report experiencing CIPV (adjusted odds ratios (aORs)=5.17, 2.36; 95% confidence intervals (CIs): 1.55-17.29, 1.19-4.70), EIPV (aORs=9.28, 2.72; 95% CIs: 2.42-35.54, 1.30-5.68), and PIPV (aORs=5.27, 3.64; 95% CIs: 1.40-19.90, 1.68-7.87), respectively. Men who reported high food insecurity and those who participated in transactional sex were more likely to report experiencing CIPV (aORs=4.29, 2.43; 95% CIs: 1.15-15.92, 1.39-4.27) and EIPV (aORs=5.34, 2.11; 95% CIs: 1.19-23.99, 1.02-4.33), respectively. HIV-positive men were more likely to report experiencing PIPV than HIV-negative men (aOR=7.17; 95%CI: 1.73-29.76).

Conclusion: We found differences in factors affecting young women and men who experience IPV, with proportionally more men than women as victims of CIPV and EIPV. Our findings indicate the need for additional research and interventions targeted towards men as victims of IPV, prioritizing those with high food insecurity and those who transact sex.

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### Intimate partner violence against women and common mental disorders: an integrative literature review

Dinair Ferreira Machado<sup>1</sup>, Natália Rezende de Freitas<sup>1</sup>, Dinair Ferreira Machado<sup>1</sup>

<sup>1</sup>Faculty of Medicine of Botucatu, unaffiliated, Brazil

Background: Historically related to a persistent gender inequality, configured as a growing public health problem, accompanied by culturally determined actions, violence against women in the domestic environment has been the subject of research in various fields of knowledge, recognized as a complex and multifaceted phenomenon of human rights violation, which brings serious repercussions for the lives of victims, mainly related to mental illness.

Objective: To identify the association between the development of common mental disorders and domestic violence against women by an intimate partner. Methods: This is an integrative literature review conducted in the month of July 2022, and the final sample of studies was 28 articles.

Results: After critical reading, the articles were categorized according to the method of analysis, electing three categories: 1) Complications of violence against women on the mental health of victims; 2) Violence against women as potentiators of suicide attempts and ideations; 3) Violence against women during pregnancy: correlations with depression in the postpartum period. The articles ratified the main focus of this study, stating that, regardless of the type of violence suffered and what led the perpetrator to such practice, it has harmful effects on the mental health of the victims and their families. It was also found that the patriarchal culture reinforces this practice, and, associated with the lack of preparation of professionals, these victims do not receive an adequate reception in the services where they seek help.

Conclusion: It is necessary to evolve in several aspects pointed out here, from overcoming patriarchy, to the preparation of future professionals, from graduation on, for the adequate care of victims of domestic violence, expanding the view beyond the biological aspect of this phenomenon, relying on joint and multiprofessional actions, aiming at the integral and longitudinal care of these women.

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### Is the prevalence of Cardiovascular risk factors in patients with schizophrenia higher than in the general population? a cross-sectional study in Navarra (Spain)

Ines Aguinaga-Ontoso<sup>1</sup>, Sara Guillen-Aguinaga<sup>2</sup>, Antonio Brugos-Larumbe<sup>1</sup>, Laura Guillen-Aguinaga<sup>3</sup>, Francisco Guillen-Grima<sup>4</sup>

<sup>1</sup>Universidad Publica de Navarra, Dept of Health Sciences. Facultad de Ciencias de la Salud, Universidad Publica de Navarra. Avda Baranain s/n 31008. Pamplona. Spain., <sup>2</sup>Universidad Publica de Navarra, Dept Health Sciences, Universidad Publica de Navarra, Facultad de Ciencias de la Salud, Universidad Publica de Navarra. Avda Barañain s/n 31008 Pamplona, Spain, <sup>3</sup>Clinica Universidad de Navarra, Dept of Nursing, Clinica Universidad de Navarra, Clinica Universidad de Navarra, Avda Pio XII 36, 31008 Pamplona. Spain, <sup>4</sup>Universidad Publica de Navarra, Dept of Health Sciences, Universidad Publica de Navarra, Facultad de Ciencias de la Salud.

Universidad Publica de Navarra. Avda de Baranain sn. 31008 Pamplona, Spain

Background and Objective: Patients with schizophrenia have higher mortality than the general population, with cardiovascular diseases being the first cause of mortality. This study aims to estimate the excess cardiovascular risks in patients with schizophrenia.

Material and Methods: We did a cross-sectional study within the "Navarre primary health care system cohort" (APNA study) APNA is a dynamical multipurpose prospective cohort of the population in the Region of Navarra, Spain. We selected 505,889 people over 18 years old. We collected age, sex, income status, and clinical variables ( Body Mass Index (BMI), systolic and diastolic BP, smoking, and diagnoses of type 2 diabetes, hypertension, and dyslipidemia.) Data were analyzed with logistic regression using IBM SPSS.

Results: Adjusting by age, sex, and income, patients with schizophrenia have a higher prevalence of Type 2 Diabetes OR=1,911 (95% CI 1,363-2,010), Dislipemia OR=1,443 (95% CI 1,139- 1,829), smoking OR=1,565 (95% 1,395-1,755), Obesity (BMI>30) OR=2,295 (95% CI 2,026- 2,599), Morbid Obesity (BMI >40), Smoking OR=2,544 (95% CI 1,943-3,330) than the general population. The prevalence of hypertension was similar in both groups (p =0.06).

Conclusion: Schizophrenia patients have a higher prevalence of cardiovascular risk factors than the general population. General practitioners should be aware of this higher prevalence of cardiovascular risk factors in patients with schizophrenia and instruct nurses to monitor them and include them in their follow-up programs. Primary care nursing interventions should monitor these patients and reduce cardiovascular risk factors.

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### Mental Health Literacy Scale (MHLS) validation studies: a scoping review

Rouwida El Khalil<sup>1</sup>

<sup>1</sup>United Arab Emirates University Al Ain United Arab Emirates

Background and Objectives: Following a systematic assessment of mental health literacy tools in 2014, O'Conner and Casey developed a comprehensive mental health literacy measure in 2015, which was based on the six attributes endorsed by Jorm et al. in 1997. Since it was first developed, the Mental Health Literacy Scale (MHLS) has found widespread application in mental health literacy research worldwide. This scoping review aims to map the existing MHLS validation research and summarize its validity in different populations.

Methods: A scoping review was conducted following the guidelines of the Joanna Briggs Institute. A comprehensive literature search was conducted in December 2022 on PubMed, PsycINFO, Embase, CINAHL, Cochrane Library, Scopus, Medline, and ERIC from 2015 to 2022. The review focused on validation studies of O'Conner and Casey MHLS. The study participants and locations were not limited in the search. Reference list search and publication suggestions from MHLS authors were performed as well. Non-English studies and grey literature were excluded.

Results: The study included 14 articles that have validated the MHLS worldwide. The scale was validated and translated into Chinese, French, Persian, Portuguese, Slovenian, Arabic, Turkish, and Urdu. Seven studies performed Exploratory Factor Analysis, Six performed Confirmatory Factor Analysis (CFA), and one performed Principal Component Analysis. The sample size average was 662 (282-1189), the expert panel average was 9 (4-21), the Cronbach's alpha average was 0.818 (0.744-0.89), and the Interclass Correlation Coefficient (ICC) average was 0.85 (0.741-0.99). In addition, items 20, 21, and 22 were commonly removed based on the individual article's CFA results.

Conclusion: This review provided a compendium of MHLS validation research by systematically searching, selecting, and synthesizing existing publications. It also provided an evidence map for future researchers attempting to utilize the MHLS in their local settings.

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### Evidence-based status of forest healing program in South Korea

Geonwoo kim<sup>1</sup>, sujin park<sup>1</sup>, soojin kim<sup>2</sup>, yeji choi<sup>1</sup>

<sup>1</sup>Korea National Institute of Forest Science Korea, Republic Of, <sup>2</sup>Korea National Institute of Forest Science

Various effects of forest healing on health have been reported, but a certification system to assess the effectiveness of forest healing programs does not exist. In this study, a systematic review (SR) on the "health benefits of forests" and "meta-analysis of forest therapy" was conducted after analyzing the status and level of evidence of 75 forest healing programs that were conducted post-certification in South Korea. The SR for "health benefits of forests" distinguished between

activities and time, resulting in 90.9% of walking activities for more than an hour under psychological health, and 100.0% of exercise activities for less than an hour under physiological health. However, the effect of indirect activities performed for more than an hour was unknown. Thus, we confirmed that many indoor activities in the field had low effect size or no established basis regarding the feasibility of its operation. The SR on "meta-analysis of forest therapy" to check whether the program was effective. The highest number of healing effects were obtained for blood pressure (32), followed by psychological depression (24). The findings of this can serve as baseline data to facilitate future development and dissemination of evidence-based forest healing programs.

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### Mental health services in the school environment - future visions

Tiina Putkuri<sup>1</sup>, Mari Lahti<sup>1</sup>, Camilla Laaksonen<sup>2</sup>, Anna Sarvasmaa<sup>3</sup>, Rauno Huttunen<sup>1</sup>, Anna Axelin<sup>1</sup>

<sup>1</sup>University of Turku Finland, <sup>2</sup>Turku University of Applied Science Finland, <sup>3</sup>Finnish Student Health Service, Helsinki Finland

**Background and Objective:** The increased need for mental health care has challenged the role of schools and school health care. According to political guidelines, mental health services should be an integrated part of the general health services, such as school health care. There is a need for future visions concerning the mental health services provided in the school environment. The aim of this research was to describe the variation in stakeholders perceptions related to the desirable mental health services in school environments and to construct alternative future visions based on these perceptions.

**Methods:** The qualitative study was conducted with the phenomenographic approach using a visioning methodology. Interviews were conducted in Finland between February 2020 and February 2021. Professional stakeholders (n=15) participated in individual interviews and stakeholders advocating for adolescents or parents (n=10) in focus group interviews.

**Results:** Four alternative future visions were formulated based on the perceptions of the stakeholders. The visions emphasised different aspects: (1) non-medicalising the school environment, (2) early and extensive intervention by school nurses enabled by work distribution with mental health specialists, (3) a multiprofessional team providing help on overall health questions and (4) a focusing of the services on mental disorders.

**Conclusion:** The future visions are based on distinct and even opposite perceptions related to the mission and focus of school health care. One extreme emphasises overall health promotion for everyone, and the other treatment for those suffering from mental disorders. Selection of a desirable vision is challenging: the former may lead to inadequate help for mental health problems and the latter insufficient help for other problems.

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### Defense strategies developed by military workers in the intervention in suicide crises

Jeremias Campos Simões<sup>1</sup>, Silvanir Destefani Sartori<sup>2</sup>, Eloisio Moulin De Souza<sup>3</sup>, Gabriela De Brito Martins<sup>1</sup>, Stephanie Mendes Demarchi<sup>2</sup>, Rafael Vulpi Caliarí<sup>1</sup>, Margareth Nunes Neves Conceição<sup>1</sup>, Caroline Feitosa Dibai De Castro<sup>4</sup>, Rita De Cássia Duarte Lima<sup>1</sup>, Maria Carvalho Andrade<sup>1</sup>

<sup>1</sup>Federal University of Espírito Santo (Ufes) Postgraduate Program in Collective Health Postgraduate Program in Collective Health Federal University of Espírito Santo Av. Marechal Campos, 1468, 29047-105 - Vitória - ES, Brasil, <sup>2</sup>Federal University of Espírito Santo (Ufes), <sup>3</sup>Federal University of Espírito Santo (Ufes) Postgraduate Program in Administration Federal University of Espírito Santo. Postgraduate Program in Administration Av. Fernando Ferrari, 514, Goiabeiras | Vitória - ES - CEP 29075-910 Brazil, <sup>4</sup>Federal University of Espírito Santo (Ufes) Postgraduate Program in Collective Health Postgraduate Program in Collective Health Federal University of Espírito Santo Av. Marechal Campos, 1468, 29047-105 - Vitória - ES, Brasil Brazil

**Introduction:** Suicide is considered a serious public health problem and has affected an increasing number of people in Brazil and Latin America, consequently leading to an increasing number of people affected by the suicidal crisis, regardless of having a bond with the attempting person.

**Objective:** To understand defense strategies developed by workers who intervene in suicidal crises.

**Methods:** This study consists of a qualitative approach, using psychodynamics of work as a theoretical and methodological category. Data were produced through semi-structured interviews, an intersubjective technique that allows the

interviewee to speak and the interviewer to listen. The analysis of these data was possible with the use of a content analysis technique: set of techniques that aims to analyze the communications, through the systematization of objective procedures allowing the inference of knowledge related to the messages.

**Results:** 15 workers with experience in interventions in suicidal crises, members of the military fire brigade, located and operating in the southeastern region of Brazil, were interviewed. Defense strategies were identified that occur in four distinct and interconnected moments: (1) moment when they receive the information that the crisis is happening, (2) followed by the teams displacement to the place of the crisis, (3) the intervention aiming to remove the trying subject from the risk and (4) the return to the base. The flow of work practices allowed us to understand defense strategies that act in the denial of suffering, while others act in the concealment of suffering.

**Conclusion:** The elaboration of these strategies inserts workers into true traps: dissimulation and denial of suffering allow the continuity of work, but also make suffering difficult to identify.

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### Effectiveness of a meditation technique sudarshan kriya yoga (sky) on depression and anxiety: - A systematic review and meta-analysis

Jwenish Kumawat<sup>1</sup>, Carla Perrotta<sup>2</sup>, Mary Codd<sup>1</sup>, Patrick Wall<sup>1</sup>

<sup>1</sup>University College Dublin School of Public Health, Physiotherapy and Sports science <sup>2</sup>University College Dublin, Woodview House, Belfield, D04 V1W8, Dublin<sup>1</sup> Ireland, <sup>2</sup>University College Dublin

**Background:** Sudarshan Kriya yoga (SKY) is one of the proposed breathing techniques, which has proven to be an effective intervention for depression and anxiety in small studies. This study set out to retrieve, appraise and summarize the existing literature to assess the effectiveness of SKY to improve health outcomes in patients with mild to moderate anxiety and depression.

**Methods:** A systematic review of the literature was conducted to identify randomized control studies assessing SKY versus pharmacological intervention or placebo in patients with either depression and/or anxiety published from 1998 to June 2020. The studies were identified through database searches. Assessment of the quality of evidence included risk of bias, heterogeneity, directness of the evidence, risk of publication bias and precision of effect estimates.

**Results:** The pooled Standardized Mean Difference (SMD) for the effect of SKY on depression was 0.02[-0.20, 0.24] in 6 studies with 388 participants. The pooled SMD for the effect of SKY on anxiety was -0.05 [-0.63, 0.52] based on five studies with 428 participants. The robustness of the results was assisted by a sensitivity analysis that revealed the effect of each study predominantly affected the overall SMD in each clinical outcome. There was also high heterogeneity observed for depression (I<sup>2</sup>=93%; p < 0.001) and for anxiety (I<sup>2</sup>=97%; p < 0.001).

**Conclusion:** SKY in itself is diverse in nature and when it comes to its overall effectiveness it may be inferred that teaching has shown immense potential in treating depression and anxiety. Many small studies claimed the effects of SKY on a different range of outcomes. It has also shown to be effective among different segments of population with varying physical capabilities. However, future studies are needed to evaluate the short- and long-term impact of SKY on larger samples.

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### Resilience in the covid-19 pandemic: New meanings and evolution

Azzurra Foggi<sup>1</sup>, Nicola Nante<sup>2</sup>, Giovanni Guarducci<sup>1</sup>

<sup>1</sup>University of Siena Post Graduate School Of Public Health, University Of Siena Italy, <sup>2</sup>University Of Siena Gabriele Messina University Of Siena Department Of Molecular Ad Developmental Medicine, University Of Siena Italy

**Background and Objective:** Since the end of 2019 there were several waves of COVID 19 pandemic. To limit contagion, governments have introduced measures that are able to exacerbate or identify psychopathologies, also because resistance to stressful conditions is helped by socialization and sharing of experiences. The study aimed to analyze the scientific literature produced on the subject of "resilience" during the pandemic, evaluating its evolution and possible new fields of development in psychological disorders.

**Methods:** Articles on MEDLINE were evaluated dividing them into four periods: first one 2019-2021, second one 2021-2022, total literature 2000-2022 and the sum of the first two periods. The following Medical Subject Headings were used: resilience AND mental health, resilience AND COVID 19. Inclusion criteria: articles in English, studies on psychological aspects in psychopathologies and eutimia. The exclusion criteria: studies on gender differences, psychopathology with disabling

conditions, cancer, infirmity, studies on children and adolescents, studies on elderly people rest home, studies focused on single psychiatric pathologies.

Results: The literature on resilience during the COVID period showed a significant increase. Of the 1011 articles on resilience AND mental health written in 2000-2022, 645 were written in 2019-2022. Only 475 articles were written in the pre-COVID period; 645 in the entire period COVID 2019-2022 of which 561 only in the second period COVID 2021-2022. The same increase were for resilience AND COVID 19, highlights 598 articles written from 2019 to 2022, since before 2019 there were no pandemic, of these 506 articles were written from 2021 to 2022.

Conclusion: It highlights the increase of literature on mental health issues during the covid period, mainly on individual resources and the inherent capabilities of response to stress factors. Attention can again be directed to the person not only as an individual but as a social resource

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### Mental Health of those who care: how can epidemiology help address the burden of depression?

Claudio Costantino<sup>1,2</sup>, Vincenza Gianfredi<sup>2,3</sup>, Nuno Amparo<sup>4</sup>, Alessandro Catalini<sup>5,6</sup>, Giovanna Failla<sup>7,8,9</sup>

<sup>1</sup>Department of Health Promotion, Maternal and Child Care "G. D'Alessandro", University of Palermo, Palermo, Italy, <sup>2</sup>Italian Society of Hygiene, Preventive Medicine and Public Health (S.It.I), Italy, <sup>3</sup>University of Maastricht, Maastricht, The Netherlands, <sup>4</sup>Central Alentejo Health Cluster's Public Health Unit, European Network of Medical Residents in Public Health, Évora, Portugal, <sup>5</sup>Department of Biomedical Sciences and Public Health, Università Politecnica delle Marche, Ancona, Italy, <sup>6</sup>Medical Residents' Assembly of the Italian Society of Hygiene and Preventive Medicine (S.It.I), Italy, <sup>7</sup>Section of Hygiene and Public Health, Department of Life Sciences and Public Health, Catholic University of the Sacred Heart, Rome, Italy, <sup>8</sup>High School of Health Systems Economics and Management (ALTEMS), Università Cattolica del Sacro, <sup>9</sup>European Network of Medical Residents in Public Health (EuroNet MRPH) Cuore, Rome, Italy

Depression is one of the most prevalent mental disorders with a high burden of disease, affecting one in fifteen adults (6%). Moreover, because the COVID-19 lockdown has highly impacted on mental health, in each strata of the population (from the most to the least vulnerable, also including health professionals), projections estimate that depression will become the leading cause of disease burden in 2030. COVID-19 increased the emotional burden on health professionals working at the forefront, including the one involved in the public health field. Furthermore, although the etiology of depression is still not well known, multiple risk factors have been associated with it. How do these several factors interact and have an impact on depression? How has the COVID-19 pandemic played a role on health professionals mental health or even on informal caregivers, especially considering that during the pandemic many healthcare activities have been postponed, further burdening them? The workshop Aims to reply to these still open questions by bringing together experts in public health, epidemiology, statistics, and quantitative social sciences with topic knowledge on depression. The workshop will be structured as follows: we will first set the scene with an introductory presentation. We will then deepen the theme by focusing on two different topics, each presented by two speakers. This will allow us to compare different perspectives and stimulate the final debate. Audience participation will be encouraged with live polls, quizzes or word clouds. The introductory presentation will move from a quick overview of the past, present and future of Public Mental Health. It will then focus on the stigma of psychiatric pathology and the impact of the pandemic on it. Finally, it will approach the theme of mental health among health professionals, residents and students taking cues from the SMS-ME project (Sicilian Medical Student Mental Health). In the first contribution, we will present data from the Italian and European surveys among Public Health Residents deepening the impact of COVID-19 pandemic on their mental health. These two surveys were conducted respectively by the working groups on "Public Mental Health" from the medical residents Assembly of the Italian Society of Hygiene and Preventive Medicine and from the European Network of Medical Residents in Public Health (EuroNet MRPH). The second contribution aims at discussing the most recent evidence on how several lifestyle and socio-economic factors are associated with prevalent and incident depressive symptoms among the general population. A specific focus on the role of social support and informal caregiving will be discussed. Data presented will come from The Maastricht Study, a large population-based cohort study, and from evidence of the literature. Identifying risk factors of depression could guide preventive strategies with the final aim of reducing its high morbidity. We hope that the final debate will lead to a fruitful discussion on the data presented, also aimed at understanding how

to inform policy makers about health and economic consequences of the high burden of depression.

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### ABCs of mental health promotion in a world of Turmoil

Christina Pollard<sup>1</sup>, Elin Färnstrand<sup>2</sup>, Emma Hjalte<sup>3</sup>, Magni Mohr<sup>4</sup>, Monika Mohr<sup>5</sup>, Charlotte Meilstrup<sup>6</sup>, Line Nielsen<sup>6</sup>, Steinar Krokstad<sup>7</sup>, Rosa Alati<sup>8</sup>

<sup>1</sup>Curtin University, School of Population Health, Australia, <sup>2</sup>Region Östergötland, Sweden, <sup>3</sup>Karolinska Institutet, Sweden, <sup>4</sup>University of the Faroe Islands, Faroe Islands, <sup>5</sup>Board of Public Health, Faroe Islands, <sup>6</sup>Department of Psychology, University of Copenhagen, Denmark, <sup>7</sup>HUNT Research Centre, NTNU, Norway

Brief Outline of Workshop

COVID-19[1], natural disasters and protracted conflicts have taken a toll on mental well-being. The Act Belong Commit™ evidence-based campaign is a public health strategy to protect and promote mental well-being[2].

This workshop will engage participants in a journey outlining how the successful Western Australian ACT BELONG COMMIT™ social marketing campaign, first launched in 2008, has been replicated and adapted in Denmark, Norway, Sweden, and the Faroe Islands. Presentations by each country's team, will show how the campaign has evolved to transcend cultural, environmental, and target audience differences.

The campaign encourages individuals and organisations to engage in activities that strengthen mental well-being: ACT, be physically, mentally, socially, spiritually, culturally active; BELONG, connect with others through activities that promote mental well-being; COMMIT, to meaningful or personally challenging activities such as volunteering or setting personal goals.

In the Nordic countries the campaign is called the ABCs of Mental Health, and is tailored to the cultural context and settings in each country. Each partner will describe their approach, giving examples of its application to specific populations. This is the first time all ABC countries have been brought together to share their key learnings. Workshop attendees will participate in the face-to-face panel discussion that explores how to undertake mental health promotion in a world of turmoil.

Specific aims/objectives and components: The workshop aim is to showcase the Act Belong Commit / ABC framework and how it assists countries and organisations to promote mental well-being, in alignment with the UN Sustainable Development Goal #3, Ensure Healthy Lives and Promote Well-being for all at all ages[1][2] and the WFPHA's Global Charter for the Public's Health[3] objectives.

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### Moral distress and moral injury in the public health workforce during the pandemic

Farhang Tahzib<sup>1</sup>, Jutta Lindert<sup>2</sup>, Steven Bow<sup>3</sup>, Adrian Te-Patu<sup>4</sup>, Alison McCallum<sup>5</sup>, Peter Schröder-Bèck<sup>6</sup>

<sup>1</sup>UK Faculty of Public Health, United Kingdom, <sup>2</sup>University of Applied Sciences Emden /Leer, Germany, <sup>3</sup>University College London, London, United Kingdom, <sup>4</sup>World Federation of Public Health, New Zealand, <sup>5</sup>The Centre for Population Health Sciences, Usher Institute, University of Edinburgh, United Kingdom, <sup>6</sup>EUPHA ethics in public health section, Germany

Brief Outline

Moral distress and moral injury are the experience of psychological distress arising from participating in, or witnessing, ethically problematic actions, and the resulting injuries of that distress. Moral distress is said to be "the troubled call of conscience, an expression of fidelity to moral commitments seen as imperiled or compromised". Feeling ill-prepared or unable to pursue ethically-appropriate action – based on personal integrity or professional obligations – causes moral distress, which can lead to stress, burnout, lack of resilience and mental health issues.

The concepts of moral distress and injury were originally described among soldiers during wars and conflict, law enforcement agents, and nurses, with growing interest in their importance in other health professions. Public health professionals routinely face tough ethical decisions and face morally ambiguous situations, and are consequently vulnerable to moral distress. However, to date, this issue has received little attention in the public health arena.

The proposed workshop by a multidisciplinary team of researchers and practitioners will share and reflect on their recent robust cross sectional study on moral distress and injury in the public health workforce in the UK during the pandemic. They will outline the scale, nature, frequency, and severity of moral distress in the public health professional workforce during the pandemic and

its resulting impact on mental health. There will also be description of a major international longitudinal study among health care workers in hospitals and primary care units in Brazil, Bolivia and Germany considering the issue.

It was found that 64% of the public health workforce in the UK had one or more experience of moral distress associated with their own action (or inaction), and 26% reported experiencing moral distress associated with a colleague's or organisation's action (or inaction) SINCE THE START OF THE PANDEMIC, AND THAT 14% of those with moral distress, reported MORAL INJURY severe enough to require time off work and/or therapeutic help. The main situations causing moral distress were developing or Implementing National Policy, Guidance and Law, Providing Public Health Advice, and Workplace Relationships and Environments. Moral distress was chiefly precipitated by moral judgements about Having Caused Injury, being Unable to do Good, Dishonest Communications, and Unjust Prioritisation.

The researchers will share analysis and insights on possible causes, aggravating factors and impacts in the public health workforce during the pandemic, and options for its prevention, amelioration and care.

The workshop will:

share recent research and insights on moral distress and injury in the public health workforce and options for its prevention, amelioration and care. Highlight the need to appreciate cultural dimensions and conflicting world views in practice create a space sharing knowledge and hearing the insights of the participants as part of interdisciplinary ethical, professional and policy efforts needed to better understand and consider interventions to increase the moral resilience of the workforce.

Key Questions the Workshop Will Address

What is the nature and impact of moral distress and injury in the public health workforce? What are options for its prevention, amelioration and care?

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### Public health mental health - challenge for public health

Jutta Lindert<sup>1</sup>, Jonathan Champion<sup>2</sup>, Jutta Lindert<sup>3</sup>

<sup>1</sup>University of Applied Sciences Emden University of Applied Sciences Emden Constantiaplatz 4 Emden Germany, <sup>2</sup>South London and Maudsley NHS Foundation Trust, United Kingdom Bettina Borisch World Federation of Public Health, Switzerland, <sup>3</sup>EUPHA University of Applied Sciences Emden Constantiaplatz 4 Emden Germany

Organised by EUPHA Section on Public Mental Health, WFPHA, University of Applied Sciences Emden / Leer, Emden, Germany; University of Geneva, Geneva, Switzerland

Brief outline of the overall workshop

Mental disorder is responsible for at least a fifth of global disease burden due to high prevalence, early onset in the life course and a broad range of public relevant impacts. Mental wellbeing is also an important asset and results in wide ranging impacts. Effective interventions exist to treat mental disorder, prevent associated impacts, prevent mental disorder from arising, and promote mental wellbeing and resilience. Such interventions are delivered by different sectors including public health. Prior to the COVID-19 pandemic, only a minority of those with mental disorder received interventions with negligible coverage of effective interventions to prevent associated impacts, prevent mental disorder or promote mental wellbeing and resilience. This implementation gap has further widened since the COVID-19 pandemic and results in population scale preventable human suffering, public health relevant impacts and associated economic costs.

Public Mental Health is therefore an important part of public health and supports the achievement of a range of public health objectives. However, to date, this issue has received little attention in the public health arena.

Specific aims / Objectives: The workshop session will

\* Share recent research and insights on mental disorders and wellbeing before and during the pandemic

\* Consider reasons for implementation failure of effective PMH interventions and required actions to address this through PMH practice

\* Create a space sharing knowledge and expertise hearing the insights of the participants as part of interdisciplinary ethical, professional and policy efforts needed to promote Public Mental Health.

The key questions that the workshop will address

\* What is the extent of mental disorder, poor mental wellbeing and associated risk/protective factors at population level and how to assess in order to inform population need?

\* What are options for mental disorder prevention, amelioration and care, and promotion of mental wellbeing and resilience?

\* What is the role of public health to support scale implementation of evidencebased

PMH interventions?

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### Discourses of sexual violence and safety among transwomen of colour: an online forum analysis

Pranee Liamputtong<sup>1</sup>

<sup>1</sup>College of Health Sciences, VinUniversity, Hanoi, Vietnam

Background and Objective: Violence towards transwomen is common in many countries. It is well-known that transwomen of colour face very high rates of sexual and physical violence. This paper is based on an online forum analysis that explored the experiences of sexual violence and safety among transwomen of colour.

Methods: Four online forums that allowed research were chosen for the analysis. Thematic analysis method was used for data analysis.

Results: Three key themes were identified: dating and violence in intimate relationships, fear of violence and safety strategies, and coping after sexual assault. Forum posters faced heightened gender policing and scrutiny, due to not conforming to normative ideals of femininity. Femininity is also predicated on white, middle-class status, and associated with domesticity and romance. Therefore, expressions of femininity from non-white Background:s can be read as deviant or excessive. The intersection of deviation from gender norms and femininity based on whiteness means that transwomen of colour face disproportionate levels of violence, both in public and private spaces. Many face cumulative disadvantages due to gender non-conformity, participation in higher risk forms of sex work, low socioeconomic status and employment and institutional discrimination. Coping mechanisms to deal with cumulative disadvantage include seeking support from health professionals and transgender community networks. However, it includes more harmful forms of self-medicating such as heavy alcohol and drug use, self-harm and suicide attempts.

Conclusions: Healthcare providers need to develop an understanding of the impacts of trauma on transwomen, particularly when it may be intertwined with gender dysphoria. Transwomen of colour are likely to have less social support as many are isolated from their families and ethnic groups. Sexual violence survivors' groups need to be accessible to transwomen by developing inclusive policies or setting up specific groups for transwomen who are survivors of sexual violence.

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### Cardiovascular health of the population in situation of Rua de São Paulo 2019/2020

Andreia Menezes<sup>1</sup>, Claudia Muniz<sup>2</sup>

<sup>1</sup>Universidade Nove de Julho, São Paulo, Brasil, <sup>2</sup>Universidade Nove de Julho, Brazil

Objective: To elucidate cardiovascular risks in the homeless population of São Paulo, stratifying through nursing diagnoses. methods This is a field research of a quantitative and transversal character, whose study target is the homeless population in the central regions of São Paulo. A questionnaire containing questions related to cardiovascular health was applied, Blood Pressure (BP) and anthropometric measurements were measured in volunteers aged between 18 and 60 years, between November 2019 and March 2020. the development of CVDs and then the results obtained will be presented.

Results: This population has several RF for cardiovascular diseases such as; the substitution of water for alcohol, insufficient knowledge to the RF, lack of access to health services, indicating the need for education and health prevention. When asked about drinking water consumption, 34% said they consumed more alcohol than water, in which the BP levels were 142 per 94 mmHg and the pulse was 91 beats per minute (bpm). This indicates the influence of exchanging water for alcoholic beverages on the elevation of blood pressure values. Conclusions: Nursing diagnoses: Risk of Unstable Blood Pressure, Risk-prone health behavior characterized by substance abuse. This study was carried out in the pre-pandemic, today São Paulo has more than 31000 PSR. It is evident that this is a matter of public policies and human rights that ensure that all citizens have the right to basic needs.

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### Feasibility and acceptability of involving Bilingual Community Navigators (BCNs) to improve access to health and social care services in general practice setting of Australia

Sabuj Mistry<sup>1</sup>, Elizabeth Harris<sup>1</sup>, Mark Harris<sup>1</sup>

<sup>1</sup>Centre for Primary Health Care and Equity, University of New South Wales, Sydney, Australia

**Background and Objective:** Patients from culturally and linguistically diverse (CALD) Background:s often face difficulties in accessing health and social care services. This is the first research conducted in Australian general practice setting exploring the feasibility and acceptability of involving bilingual community navigators (BCNs) in helping patients from culturally and linguistically diverse (CALD) Background:s access health and social care services.

**Methods:** Informed by the research conducted in overseas and previous phases of the current research, a total of 12 community health Workers (CHWs) were recruited and trained as BCNs. Three of them were placed for 8-10 weeks in two general practices in Sydney where most patients are from specific CALD Background:s (Chinese in one and Samoan in other). A mixed method design including quantitative analysis of a record of services provided by BCNs and post-intervention qualitative interviews with 16 participants including patients, practice staff and BCNs explored the feasibility and acceptability of BCNs' role.

**Results:** BCNs served 95 patients, providing help with referral (52.6%), information about appointments (46.3%), local resources (12.6%) or available social benefits (23.2%) with a critical role overcoming their language barrier. Overall, BCNs fitted in well within the practice and patients accepted them well. Felt need of the service, recruitment of BCNs from the patient community, motivation, and training of BCNs acted as facilitators for their roles. Major barriers included lack of awareness of BCNs' roles among some patients and practice staff, unavailability of information about local culture specific services, and inadequate consultation time of BCNs. Limited funding support and short project timeframe were major limitations.

**Conclusions:** In Conclusions:, while the intervention was found feasible and acceptable, sustainable funding is required to continue the intervention. Future research is needed to scale up this intervention to other culture groups and assess its cost-effectiveness.

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### The mitigating role of sense of belonging on the impact of racism on life satisfaction for Asian communities in Aotearoa New Zealand during the COVID-19 pandemic

Rebekah Jaung<sup>1</sup>, Lynne Park<sup>2</sup>, Changzoo Song<sup>3</sup>, Joohyun Park<sup>4</sup>

<sup>1</sup>Faculty of Medical and Health Sciences, University of Auckland - Waipapa Taumata Rau, New Zealand, <sup>2</sup>Department of Korean Studies, University of Auckland Waipapa Taumata Rau, New Zealand, <sup>3</sup>Asian Studies, University of Auckland Waipapa Taumata Rau, New Zealand, <sup>4</sup>Interdisciplinary Center for East Asian Studies, Goethe University Frankfurt, Germany

**Introduction:** Anti-Asian racism was a feature of the social response to the early phases of the COVID-19 pandemic, and its impact on the wellbeing of Asian communities warrants closer examination. The current study aimed to gauge the extent to which sense of belonging mitigates the adverse effects of racism on life satisfaction for Asian communities in Aotearoa New Zealand.

**Methods:** This analysis included 1,341 responses to a cross-sectional online survey conducted in 2021. Descriptive analyses outlined how components of sense of belonging are distributed among participants, key subgroups and those who experienced racism during the COVID-19 pandemic. Linear regression was used to examine the role of sense of belonging in mediating the association between experiencing racism and since-COVID life satisfaction. **Findings:** In this survey, four out of ten participants reported experiencing racism in the first eighteen months of the pandemic. Overall, respondents' life satisfaction decreased slightly since the start of the COVID-19 outbreak ( $p=0.00$ ). Experiencing racism was associated with a 0.49 unit decrease in since-COVID life satisfaction. (95% CI -0.61 - -0.38). All the components of sense of belonging reduced the magnitude of this association, in particular, feeling comfortable expressing one's own ethnic identity (-0.19, 95% CI -0.29 - -0.09) and belonging in New Zealand (-0.18, 95% CI -0.28 - -0.08).

**Conclusions:** When considering racism as a determinant of wellbeing for minoritised ethnic communities, particularly in times of heightened social tensions such as a global pandemic, strategies to strengthen sense of belonging through thoughtful communications and responsive services may contribute to mitigating the harm of racism. These actions should be included alongside anti-racism initiatives in pandemic and other emergency response planning to support the wellbeing of these communities.

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### Process adaptations in delivering an epidemiological mental health survey for Urban Indigenous Australians

Tabinda Basit<sup>1</sup>

<sup>1</sup>Queensland Centre for Mental Health Research, University of Queensland, Australia

**Background and Objective:** Accurate prevalence rates of mental and substance use disorders amongst Indigenous Australians are largely unknown. The use of accurate and sensitive epidemiological processes and standardised diagnostic assessments with this population requires further exploration. The Queensland Urban Indigenous Mental Health Survey (QUIMHS) pilot study established an approach to data-collection that aimed to improve the cultural suitability of an epidemiological mental health survey in a sample of urban-residing Indigenous Australians.

**Methods:** The pilot was conducted over 10 weeks with Indigenous adult clients of two Aboriginal Medical Services in South-East Queensland. The survey instrument included a standardised diagnostic assessment: the Composite International Diagnostic Instrument v.3.0 (CIDI 3.0). To assess the cultural suitability of both the proposed survey processes and the survey instrument, feedback from project stakeholders, staff, and participants was sought. Additionally, the diagnoses produced by the CIDI 3.0 were compared to diagnostic summaries provided by Indigenous clinical psychologists in order to establish clinical concordance data. **Results:** The processes used for data-collection were deemed culturally appropriate by all survey participants. Several key adaptations and frameworks facilitated the successful delivery of the survey instrument. The diagnostic accuracy of the CIDI 3.0 differed by module. Importantly, the PTSD and Major Depression modules were accurate in their diagnostic utility, while the Mania module was deemed unsuitable for use with this population. **Conclusions:** The application of these processes and recommendations for delivering diagnostic epidemiological surveys using the CIDI 3.0 to Indigenous Australians are discussed.

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### Te Reo Hauora: protecting the prosperity of the māori language in Aotearoa's Health sector.

Janell Dymus<sup>1</sup>

<sup>1</sup>Heath Promotion Forum of New Zealand, Auckland, New Zealand

Aotearoa - New Zealand's colonial history of subjugation from lands, cultural expression, traditional knowledge systems and language has Resulted in abhorrent disparities in health outcomes for its indigenous peoples, Whilst some academic evidence (Dudley et al., 2019) exists that Te Reo Māori is a protective factor for health, it is well known within traditional knowledge systems, held within the proverb "tōku reo tōku ohooho" (My language, my deliverance) that language is a protective factor and a facilitator of wellbeing. 51 years after the Aotearoa Language petition, we are seeing the emersion māori language into white-stream settings. As the indigenous language of New Zealand shifts from a space of revitalisation to prosperity, there are risks associated with the vitality of the language, particularly within health. As new words are created with new technologies (e.g. vaping), and health messaging in te reo becomes critically necessary, there are numerous risks for the commodification of the language, and further challenges for the protection and prosperity of Te Reo Māori in the health sector. Te Reo Hauora looked firstly to collectivise the voices of all people leaning into the linguistic disposition of Te Reo Māori in health, sharing the aspirations and strategic thinking of people from all facets of society who have an impact on the way the Māori language prospers in health. This presentation will share the Findings of Hāpai's work in Te Reo Hauora, drawing on the project and its development, implementation and evaluation.

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### Supporting Syrian refugee mothers in the resettlement period in Canada: a longitudinal study using participatory action research

Joyce O'Mahony<sup>1</sup>, Shahin Kassam<sup>2</sup>

<sup>1</sup>Thompson Rivers University, Canada, <sup>2</sup>University of British Columbia, Canada

**Background and Objectives:** Since 2015, Canada has resettled over 50,000 Syrian refugees in response to persistent humanitarian crises. Refugees may face overwhelming stress related to experiences of forced migration. Many women that have experienced forced migration are of childbearing age, experiencing pregnancy and mothering across their migration journey. Little is known about social factors that support Syrian refugee mothers across migration and resettlement. The aim of this study was to understand in-depth the intersecting contextual factors shaping social support from the perspective of Syrian refugee mothers in the Canadian context. **Methods:** Using a longitudinal intersectionality-framed participatory action research design, Syrian refugee mothers' perspectives

on social support during various phases of resettlement were explored. Four peer research assistants (PRAs) worked collaboratively to champion the research process. Forty Syrian mothers were recruited by PRAs and participated for 18 months. Data sources included in-depth interviews, monthly diaries, and telephone conversations with participants.

**Results:** Multiple themes emerged to impact the social supports of Syrian refugee mothers in resettlement: steps in the migration journey, pathways to integrated holistic health care, intersecting social determinants of refugee health, harnessing strength-based capabilities, pandemic impacts of resettlement and the PRA experience. **Conclusions:** Our in-depth analysis contributes to understanding Syrian mothers' journey's over time and across migration contexts. These findings bring nuanced understanding to Syrian mothers' capabilities and resilience as they intersect with multiple social factors during their integration and resettlement. Issues raised by Syrian mothers, combined with the supportive network of community members and researchers increase the likelihood of a stronger collective voice in enhancing appropriate support and access to community support services.

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### **"My family abandoned me so I have to charge for sex in order to survive": exploring risk sexual behaviors among men who have sex with men in urban Uganda**

Denis Muganga<sup>1</sup>, Rehemah Nabbuye<sup>2</sup>, Quraish Sserwanja<sup>3</sup>, Brendah Eyotaru<sup>4</sup>, Habibu Byamukama<sup>2</sup>

<sup>1</sup>Multitech Business School, Uganda, <sup>2</sup>Men of the Night Uganda, Uganda,

<sup>3</sup>Men of the night Uganda, Relief International, Uganda, <sup>4</sup>Men of the Night Uganda, University Of Kisubi, Uganda

**Background:** Men who have sex with men (MSM) have an increased risk for sexually transmitted infections (STIs) and are disproportionately affected by the human immunodeficiency virus (HIV) Resultsing from risky sexual behaviors (RSB). There is a dearth of information about the prevalence of RSBs among men who have sex with men in Uganda. Therefore, we explored risk sexual behaviors among MSM in urban Uganda.

**Methods:** Using exploratory qualitative design and snowball sampling, 20 men who had sex with men from Lesbian, Gay, Bisexual, Transgender, Queer/Questioning associations around Kampala and Wakiso districts consented to participate in in-depth interviews. The recorded interviews were transcribed verbatim and analyzed using qualitative content analysis. Coding was done using Open Code software version 4.03. Codes and categories were developed.

**Results:** Risky sexual behaviors were highly prevalent, especially among the young men (20-25 years). The most common risky sexual behaviors reported included transactional sex, which was facilitated by dating apps and mediated by the need for financial support because most of them were rejected by their families. Group sex and having sexual intercourse when drunk were commonly reported and were mediated by the need for social acceptance and support. Some respondents reported having sex with females to avoid being suspected by their families. Knowledge of sexually transmitted infections was low, especially for respondents outside of Kampala in Wakiso.

**Conclusions:** There are key implications for HIV/STI transmission Resultsing from RSBs among MSM, worsened by difficulty in obtaining information and implementing preventive measures due to intense social stigma and social isolation. Effective interventions, including the use of social dating apps to ensure increased access to health awareness messages and access to condoms, lubricants, and pre-exposure prophylaxis, are urgently needed to limit the consequences of MSM as a bridge for HIV transmission to the general population.

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### **Predictors of changes in physical activity and sedentary behavior during the COVID-19 pandemic in a Turkish migrant cohort in Germany**

Lilian Krist<sup>1</sup>, Thomas Reinhold<sup>2,3</sup>, Katja Icke<sup>4</sup>, Ina Danquah<sup>5</sup>, Stefan Willich<sup>4</sup>, Heiko Becher<sup>6</sup>, Thomas Keil<sup>4</sup>

<sup>1</sup>Epidemiology and Health Economics, Institute of Social Medicine, Charité-Universitätsmedizin Berlin, Germany, <sup>2</sup>Institute of Social Medicine, Epidemiology and Health Economics, Germany, <sup>3</sup>Charité-Universitätsmedizin Berlin, Germany, <sup>4</sup>Institute of Social Medicine, Epidemiology and Health Economics, Charité-Universitätsmedizin Berlin, Germany, <sup>5</sup>Institute of Global Health (HIGH), University Hospital Heidelberg, Germany, <sup>6</sup>Institute for Medical Biometry and Epidemiology, University Medical Center Hamburg- Eppendorf, Germany

**Background and Objectives:** The new coronavirus (COVID-19) pandemic and the Resultsing response measures have led to severe limitations of people's exercise possibilities with diminished physical activity (PA) and increased sedentary behavior (SB). Since no data is available for migrant groups in Germany, this study aimed to investigate factors associated with changes in PA and SB in a sample of Turkish descent living in Berlin, Germany.

**Methods:** Participants of a prospective cohort study (adults of Turkish descent, living in Berlin, Germany) completed a questionnaire regarding COVID-19-related topics including PA and SB changes since February 2020. Changes in PA and SB were described, and sociodemographic, migrant-related, and health-related predictors of PA decrease and SB increase were determined using multivariable regression analyses.

**Results:** Of 106 participants, 69% reported a decline in PA, and 36% reported an increase in SB. PA decrease and SB increase seemed to be associated with inactivity before the pandemic and the female sex. SB increase appeared to be additionally associated with educational level and BMI. However, no migration-related factors were associated with a decrease in PA or an increase in SB.

**Conclusions:** The COVID-19 pandemic and the response measures had persistent detrimental effects on this migrant population. Since sufficient PA before the pandemic had the strongest association with maintaining PA and SB during the crisis, the German government and public health professionals should prioritize PA promotion in this vulnerable group.

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### **A systematic review of qualitative research on substance use among refugees**

Ebtesam Saleh<sup>1</sup>, Felicia Lazaridou<sup>2</sup>, Felix Klapprott<sup>3</sup>, Mayyada Wazaify<sup>4</sup>, Andreas Heinz<sup>3</sup>, Ulrike Kluge<sup>3</sup>

<sup>1</sup>Department of Psychiatry and Psychotherapy, Charité Universitätsmedizin, Berlin, Germany, <sup>2</sup>Department of Psychiatry and Psychotherapy, Charité University Medical Center, Berlin, Germany, <sup>3</sup>Department of Psychiatry and Psychotherapy, Charité University Medical Center, Campus Charité Mitte (CCM), Berlin, Germany, <sup>4</sup>Department of Biopharmaceutics and Clinical Pharmacy, School of Pharmacy, The University of Jordan, Amman, Jordan

**Aims:** To evaluate qualitative research on substance use and substance use disorders (SUDs) among refugees in terms of practitioners and substance users attitudes, beliefs, and experiences.

**Methods:** Six medical, allied health, and social sciences databases (EBSCO, PubMed, ScienceDirect, Web of Science, Scholar, and the Cochrane Library) were systematically searched in a time frame between January and April 2021 to identify original peer-reviewed articles describing qualitative Findings related to substance use among refugees (alcohol, illicit drugs, tobacco, and prescription drugs). Study selection, critical appraisal and detailed extraction were performed via the Joanna Briggs Institute (JBI) Database of Systematic Reviews and Implementation Reports according to PRISMA (2018). Three independent reviewers selected the relevant abstracts and articles. Synthesis of the evidence identified prominent themes relating to the context and consequences of substance use.

**Results:** Twenty-six studies were included in this review. Twenty-three studies applied qualitative methods and three applied mixed methods. Synthesis of the evidence from the included studies resulted in four main findings: (1) there is a considerable susceptibility of refugees to substance use and SUDs; (2) the harmful consequences of substance use are complicated by the social insecurities of refugees; (3) there are rather high barriers to treatment and health facilities for refugees in many host countries; and (4) there is a strong need to improve effective access to treatment, interventions, and prevention approaches.

**Conclusions:** Refugees are at high risk for substance use and substance use disorders and often face high barriers to treatment and interventions in host countries.

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### **Impact of fairness-based techniques in optimization of vaccine allocation among refugees during pandemics: a scoping review**

Sera Şimşek<sup>1</sup>, Şevval Altay<sup>2</sup>, İlker Kayı<sup>3</sup>

<sup>1</sup>Public Health Department, Koc University Faculty of Medicine, Türkiye, <sup>2</sup>Koc University Faculty of Medicine, Türkiye, <sup>3</sup>Public Health Department, Faculty of Medicine, Koc University, Türkiye

**Objective:** The refugees' access to vaccination is an important operational issue to be solved for fair and equitable public health interventions. The objective is to explore the impact of fairness-based techniques in optimization of vaccine delivery during pandemics on the vaccination rate among refugees. **Methods:**

This is a scoping review conducted by using the Keywords such as modeling, distribution, pandemics, fairness, optimization, vaccine allocation and refugees. A librarian conducted the literature search in Pubmed, Scopus, Web of Science, Cochrane library, and Ovid MedLine databases for the period of 2009-2021. Two researchers completed the screening of the articles after literature search starting from title, abstracts, and full texts. The disagreement on selection of articles were solved by unanimous group decision of all researchers.

Results: A total of 4152 articles were obtained. In the first step, the title screening yielded in 280 articles for abstract screening that resulted in 31 articles for full-text reading. Eight articles published between 2015 and 2021 were included in the study and 23 articles were excluded due to exclusion of refugees in their Discussion on vaccines allocation. The study design used in the articles were cross-sectional (25%), qualitative (25%) and modelling study (12.5%). Half of the articles included only refugees, while the other articles included new arrived migrants. Methods such as community participation, digital health messages and national refugee centers have been used for varying definitions of fairness in vaccine allocation. The three main outcome measure observed in the studies were access to vaccines, vaccine acceptance and vaccination rate.

Conclusions: Studies evaluating fair distribution of vaccines in refugee populations during pandemic periods are scarce. Although they used different Methods, studies have shown that refugees and immigrants have a high intention to vaccinate, and barriers for fair vaccine allocation were the lack of information on vaccination strategy.

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### Experiences and needs of Chilean autistic communities for inclusion and well-being: a phenomenological study

Verónica Velasco<sup>1</sup>, Daniela Martorell<sup>2</sup>, Consuelo Astorga<sup>3</sup>, Mariluz Araya<sup>4</sup>, Caterina Avalos<sup>4</sup>

<sup>1</sup>Department of Epidemiology and Health Studies, School of Speech and Language Pathology, Universidad de los Andes, Chile, <sup>2</sup>School of Occupational Therapy, Universidad de los Andes, Chile, <sup>3</sup>Universidad Católica de Temuco, Chile, <sup>4</sup>Commautis, Chile

Background and Objective: The inclusion of the first-person perspective in the reflection of well-being issues that people on the autism spectrum (AS) faces is an essential aspect of the development of compelling, culturally relevant, and timely responses. However, most of these processes are carried out by neurotypical scholars. Few experiences exist worldwide that incorporate the vision of experts by experience in the research and decision-making processes in autism. Fewer experiences have been documented in Latin America. Due to the cultural and socio-economic differences that the region has concerning the Northern developed countries, revealing the perceptions of local autistic communities is essential. Accordingly, this study aimed to describe the experiences and needs of Chilean communities of people within the autism spectrum around three themes: social inclusion, supports, and accessibility.

Methods: A phenomenological design was employed. Participants were selected according to four statuses: 1) caregivers of children on the AS, 2) adults on the AS, 3) directors of advocacy organizations, and 4) teachers of students on the AS. The participants were grouped by each status in each zone of the country (i.e., north, center, south, and southern) to participate in focus groups. The focus group information was transcribed for further thematic analysis.

Results: Convergent data across participants revealed a great need for awareness, literacy, and education on autism issues for the general population in the communities. Also, more training of professionals and economic resources were stated as a need. Participants described all these elements as barriers that hinder autistic communities' well-being and as priorities that need to be taken by the stakeholders.

Conclusions: First-person perspectives provide relevant insights into the needs of communities. Further actions include strategies to address these needs through alliances with communities and the government.

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### Using eco-map to explore the social network of Ukrainian refugees as a determinant of mental well-being: a pilot study

Roberto Benoni<sup>1</sup>, Anna Sartorello<sup>1</sup>, Elena Paiola<sup>1</sup>, Loretta Berti<sup>1</sup>, Marina Sorina<sup>2</sup>, Francesco Marchiorri<sup>3</sup>, Chiara Postiglione<sup>3</sup>, Stefano Tardivo<sup>1</sup>, Michela Rimondini<sup>1</sup>, Francesca Moretti<sup>1</sup>, Giovanna Varischi<sup>3</sup>

<sup>1</sup>University of Verona, Italy, <sup>2</sup>Malve di Ucraina NPO, Italy, <sup>3</sup>Unità Locale Socio Sanitaria (ULSS) 9, Italy

Following the humanitarian crisis in Ukraine, an estimated 7,710,924 refugees

have fled (19 October 2022). Refugee status leads to a higher prevalence of mental illness, also driven by the process of settling into a new environment. Ecomap is a valuable tool used in qualitative health research. It makes it possible to visualize social relationships' distribution, quantity, and quality. This study aims to analyze the association between mental health and the social network of Ukrainian refugees. We conducted a pilot study on Ukrainian refugees housed in Verona administration (Italy). Mental well-being was assessed through the International Trauma Questionnaire (ITQ) and the General Health Questionnaire-12 (GHQ-12). The social network was explored through a semi-structured ecomap. The study sample sex distribution was 24(96%) females and 1 (4%) male. Median age was 37.0[IQR 29.9-47.2] years. At the GHQ-12, 11(50%) scored as having a severe and 5(23%) as having mild mental health deterioration. Regarding the ITQ, 4(16%) individuals scored positive for PTSD and 5(20%) for complex-PTSD. The highest number of supportive links was found in the micro-system, with a median number of 3.0 (IQR 2.0-4.7). Supportive links were significantly higher in the micro-system compared to both the exo- ( $z=-3.2$ ,  $p=0.002$ ) and macro-system ( $z=4.3$ ,  $p<0.001$ ). The highest number of stressful links was found in the macro-system and was significantly higher compared to the micro-system ( $z=2.7$ ,  $p=0.01$ ). Supportive links in patients with severe and mild mental health deterioration were 4.0[3.3-5.0] and 10.0[4.0-10.0]. The median number of supportive links in patients with complex-PTSD, PTSD, or none was 4.0[4.0-4.0], 7.0[4.5-10.0], and 5.0[4.0-10.0], respectively. Stressful links were more frequent, while supportive links were less, among individuals with complex-PTSD or a severe mental health disorder. The eco-map proved to be a useful tool for exploring the social network of refugees.

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### Promoting cultural safety in health care: co-developing an intervention with three Atikamekw communities in Québec, Canada

Marie-Claude Tremblay<sup>1</sup>, Geneviève D'Avignon<sup>1</sup>, Sandro Echaquan<sup>2</sup>, Eniko Neashish<sup>3</sup>, Yvan-Rock Awashish<sup>4</sup>, Christian Coccoo<sup>5</sup>

<sup>1</sup>Department of Family Medicine and Emergency Medicine, Université Laval, Canada, <sup>2</sup>Centre de Santé Masko-Siwin, Manawan, Canada, <sup>3</sup>Centre de santé de Wemotaci, Canada, <sup>4</sup>Conseil des Atikamekw d'Opitciwan, Canada, <sup>5</sup>Conseil de la Nation Atikamekw, Canada

Background and Objectives: Cultural safety is a decolonizing and transformative approach aimed at achieving health care that recognizes, respects and nurtures the needs, rights and identities of Indigenous peoples. This action-research project is anchored in respectful partnerships with the Atikamekw communities of Manawan, Wemotaci and Opitciwan (Québec, Canada). It aims to co-develop an intervention model to ensure cultural security of health care offered to the Atikamekw peoples.

Methods: The project uses a sequential design with successive stages of research (literature review, environmental scan, talking circles) and intervention development. An advisory committee composed of representatives from the three communities works closely with the research team to guide and orient each step of the project. The intervention model is being developed using a Two-Eyed Seeing approach, allowing for the respectful integration of Indigenous and Western knowledge.

Results: A model of cultural safety rooted in Atikamekw perspectives, values and knowledge has been developed by our collective. The model is based on a mapping that follows the care trajectory of Nin (the individual) and his family, starting from the contexts (family, community, organizational) where his wellness needs are expressed. Based on this mapping, it was decided that the intervention would focus on supporting Nins and the communities self-determination in relation to their care trajectory and health services, in accordance with Atikamekw values and conceptions of well-being and care.

Conclusions: This research project, carried out with and by the Atikamekw Nation, exemplifies how a decolonizing approach centered on the expertise of Indigenous communities can be used to develop culturally safe interventions that respect their needs, values and cultural practices.

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### Migrant status disparities in blood pressure: a multiple mediation analysis of modifiable factors

Teresa Zuanna<sup>1</sup>, Erich Batzella<sup>1</sup>, Gisella Pitter<sup>2</sup>, Francesca Russo<sup>3</sup>, Cristina Canova<sup>1</sup>

<sup>1</sup>Department of Cardiac, Thoracic, Vascular Science and Public Health, University of Padova, Italy, <sup>2</sup>Screening and Health Impact Assessment Unit, Azienda Zero, Veneto Region, Italy, <sup>3</sup>Directorate of Prevention, Food Safety, and Veterinary Public Health, Veneto Region, Italy

**Background and Objective:** We examined differences in blood pressure (BP) levels between first-generation immigrants and native-born in a large population of adult residents in Northeast Italy, and investigated the role of lifestyle behaviours, body mass index (BMI), and education as potentially modifiable mediating factors.

**Methods:** We included 20-69 years-old participant of a Health Surveillance Program of the Veneto Region (n=37,710). Immigrant status was defined by being born in a high migratory pressure country (HMPC) and subdivided by geographical macro-areas. Hypertension was defined as abnormal measured BP values, self-reported diagnosis, or anti-hypertensive drug use. We used t-tests and chi-square tests to assess the association between migrant status and potential mediating factors, and generalized linear models to test the association of each covariate with the outcomes. A multiple mediation analysis including all covariates that satisfied the previous conditions was performed, applying the counterfactual framework by Yu. **Results:** Of the 37,380 subjects included in the analysis, 8.7% were born in a HMPC. BMI, education, alcohol, sweets and meat consumption were included in the models as potential mediators. A tiny advantage in Systolic BP levels was seen for immigrants compared to natives ( $\beta=0.71$ , 95%CI:-1.30;-0.10). The direct effect (net of the included covariates) was a reduction of 1.62 mmHg (95%CI:-2.25;-0.98), among immigrants compared to natives. BMI played the highest suppressive role of this health advantage ( $\beta=1.14$ , 95%CI:0.99;1.35), followed by education. The distribution of alcohol consumption instead increased the health advantage for immigrants. The BMI suppressing effect was particularly evident among females and North African immigrants compared to natives. Similar Results were seen for hypertension rates.

**Conclusions:** Although causation cannot be proven in this cross-sectional study, our findings highlight the important suppression role played by BMI in the differences of BP levels by migrant status, indicating a possible target to preserve the health advantage of immigrants.

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### Gendered differences in experiences of school violence and mental health among transgender and cisgender youth

Laura Sares-Jäske<sup>1</sup>, Mercedesz Czimbalmos<sup>2</sup>, Satu Majlander<sup>3</sup>, Reetta Siukola<sup>3</sup>, Reija Klemetti<sup>3</sup>, Jukka Lehtonen<sup>2</sup>

<sup>1</sup>Institute for Collective Health, Finnish Institute for Health and Welfare, Finland, <sup>2</sup>Finnish Institute for Health and Welfare, Finland, <sup>3</sup>Finnish Institute for Health and Welfare, Finland

**Background and Objective:** Experiences of being bullied are associated with poorer mental health. Previous research shows that transgender youth have more mental health problems and more school violence experiences than cisgender youth. There is, however, limited knowledge on, whether the associations between bullying and mental health differ between gender identity groups. This study aimed to investigate how experiences of school violence are associated with mental health outcomes among different gender identity groups: cisgender girls, cisgender boys, transfeminine youth, and transmasculine youth.

**Methods:** We utilized data from the Finnish School Health Promotion study (N=152 880), conducted in 2021. Information on experiences of being bullied and on five mental health outcomes (self-perceived health, worries about own mood, anxiety disorder, depression symptoms, social anxiety) was collected with self-administered questionnaire. The associations between bullying and mental health outcomes were analyzed with linear and logistic regression.

**Results:** Trans youth had more bullying experiences and poorer mental health than cisgender youth. Transfeminine youth experienced most school violence, and transmasculine youth had most mental health symptoms. In each gender identity group bullying experiences were associated with poorer mental health. Compared to cisgender boys without bullying experiences, odds of poorer mental health were multiple among transfeminine youth and dozens-fold among transmasculine youth with weekly bullying experiences.

**Conclusions:** Our results highlight significant differences in experiences of school violence and in mental health symptoms between the four gender identity groups studied; while transfeminine youth experienced the most school violence, and transmasculine youth had the most mental health symptoms, cisgender boys reported the least of both. Trans youth should not be considered as uniform population group, but heterogeneity exists among the group as well. The results help to identify groups that are particularly vulnerable to the experiences and effects of bullying and violence. This allows for more effective interventions and support.

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### Trends in LGBT+ research: a bibliometric analysis

Aldo Angelis<sup>1</sup>, Giacomo Scaioli<sup>1,2</sup>, Fabrizio Bert<sup>1,3</sup>, Roberta Siliquini<sup>1,4</sup>, Giuseppina Moro<sup>1</sup>, Anna Maddaleno<sup>1</sup>

<sup>1</sup>Department of Public Health Sciences and Paediatrics, University of Turin, Italy, <sup>2</sup>Health Local Unit "ASL T03", Turin, Italy, <sup>3</sup>Health Local Unit ASL T03, Turin, Italy, <sup>4</sup>AOU City of Health and Science of Turin, Italy

**Background and Objective:** Sexual and gender minorities have a higher risk of experiencing certain mental and physical health issues compared with cis-gender and heterosexual population. During the past years, there has been a greater recognition by the medical community of the health needs of LGBT+ persons. However, an updated analysis of medical publications about LGBT+ persons has not yet been carried out since 2007. This work was aimed to analyze scientific literature on LGBT+ population considering the 2008-2021 time range.

**Methods:** A literature search was performed in Web of Science database. Bibliometric data from the selected publications were exported and analyzed using R-Studio, Biblioshiny and VOSviewer software.

**Results:** A total of 31039 articles were found. The publications per year have shown rapid growth, going from 1156 articles in 2008 to 4338 in 2021. The most productive author was Mayer K. with 386 articles, who is also the author with most citations (15748) and the highest h-index (56). The USA were the most productive country with 16249 articles, followed by United Kingdom, Canada, Australia, and China. Co-occurrence analysis of the author's Keywords showed that the most important research focuses were on HIV, sexual transmitted diseases, and sexual identity. Analysis of the thematic map of author's Keywords revealed that the topics "HIV", "Men who have sex with men" and "pre-exposure prophylaxis" were of medium importance and development; the topics "sexual orientation", "lesbian" and "gay" were of high levels of relevance and development, while "transgender", "gender dysphoria" and "gender identity" were less important compared with other themes or may become new hotspots in the near future.

**Conclusions:** This bibliometric study provides an updated perspective on research about LGBT+ persons and may assist researchers in the further understanding of the fields hotspots, thus facilitating future studies.

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### Reflections on an Indigenous Led COVID-19 response in Aotearoa (New Zealand)

Zarah Allport<sup>1</sup>

<sup>1</sup>Te Whanau o Waipareira, New Zealand

This presentation describes an Indigenous led health protection response to COVID-19 in Aotearoa, New Zealand by an urban Māori (Indigenous peoples of New Zealand) health provider. With the arrival of COVID-19 in New Zealand in 2020, deeply entrenched health disparities for Māori became further exacerbated as Government public health responses failed to address Māori and reach effectively into Māori communities. Te Whanau O Waipareira is an urban Māori organisation with a long-standing history of providing health and social services to Māori in West Auckland. Alongside other initiatives rolled out by Iwi (tribe) hapū (subtribe) and communities, Te Whanau o Waipareira launched a Māori public health response to the burgeoning COVID-19 outbreak, which aimed to protect Māori not only in urban centres but across NZ. Te Whanau o Waipareira - as a member of a larger Māori provider network - launched its own COVID response for testing, vaccinating, caring for those isolating and also supporting those suffering from the economic fallout from COVID. This response was driven by whanau (family) and was culturally grounded, meaning it was 'by Māori for Māori' using advocacy, community and collective ideology to deliver care. Using novel frameworks such as lay community vaccinators and rangatahi (youth) vaccinators Waipareira was responsible for delivering over 100,000 vaccine doses for Māori and non-Māori. Since starting in February 2022 Te Whanau O Waipareira's covid care in the community service (Awhina) has supported over 500 vulnerable local Māori isolating with COVID with their physical and mental health as well as practicalities such as food, home supplies etc. This presentation concludes that the New Zealand government's COVID-19 response put indigenous Māori at risk and Māori providers such as Waipareira stepped up to protect communities using a novel indigenous community-based approach that has positively impacted on the health of Māori.

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### Health access for transgender people in Latin America: a scoping review

Livia Gonçalves<sup>1</sup>, Norberto Rech<sup>1</sup>, Luciano Soares<sup>1</sup>

<sup>1</sup>Federal University of Santa Catarina, Brazil

**Background and Objective:** Globally, trans people face barriers in living with

society due to cis-heteronormative standards that also interfere with access to healthcare. This study Aims to map and analyze the evidence on access to health services and goods for transgender people in Latin America.

Methods: A scoping review is being conducted by searching PubMed, SciELO, and LILACS databases on the health of transgender people in Latin America. The selection of studies occurs in three stages, performed in pairs: reading the title, reading the abstract, and floating the complete text, according to inclusion criteria and without language restrictions. Data extraction is conducted in pairs. Data synthesis and analysis comprise the categorization of the data involving facilitating factors, health needs, and individual health behaviors. The review is guided by the Joanna Briggs Institute Scoping Reviews Manual, and the reports follow the PRISMA extension for scoping reviews (PRISMA-ScR).

Results: From the 662 articles found in the bases, 97 were included and published between 2007 and 2021. The data analysis is still ongoing. The preliminary Results indicate frequent reports that trans people avoid seeking health services in Latin America. When they seek, they look for trans-specialized services or highly complex care. Self-medication was also evidenced. The main difficulty of access is: services do not address the integral health and the specific needs; poorly implemented, outdated, or absent public policy; health professionals pathologizing trans identities; discrimination, stigma, and negligence; lack of training and knowledge of health professionals; medical authoritarianism and relationship based on the hierarchy of biomedical knowledge; medicalization of trans identities; and lack of public funding.

Conclusions: Transgender people face difficulties accessing health in Latin America mainly due to economic barriers, unavailability of public politics and services, individual health behaviors, and disqualified training to meet their trans needs.

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### Challenges encountered by female migrants in accessing primary health care services - a case study of an urban informal settlement in South Africa

Joyce Shirinde<sup>1</sup>, Paula Lehmann<sup>2</sup>, Annalena Horst<sup>3</sup>

<sup>1</sup>School of Health Systems and Public Health, Faculty of Health Sciences, University of Pretoria, Gezina, South Africa, <sup>2</sup>Department of Health Sciences, Fulda University of Applied Sciences, Germany, <sup>3</sup>Fulda University of Applied Sciences, Department of Health Sciences, Germany

Background and Objective: South Africa have the highest number of migrants within the Sub-Saharan region of Africa. Feminisation of migration has become more and more prevalent over the last decades. Female migrants are reported to be particularly vulnerable and face many adversities during their migration process. The aim of the study was to investigate the experiences and challenges of female documented/undocumented migrants in accessing primary health care services through clinics and hospitals. Environmental and social drivers were also assessed.

Methods: The study was conducted at an informal settlement located in Pretoria, which falls under Greater Tshwane Metropolitan Municipality, located in the Gauteng Province, South Africa. An exploratory qualitative design was used for the study. Face to face in depth interviews were conducted with 18 female migrants using an interview guide.

Results: Through the interviews the following themes emerged from the analysis of the data, namely 1) Reasons for migration (social, political, economic, and environmental), 2) Migration and environment, 3) Migration process, 4) Living in the host country, 5) Access to health system (health challenges), 6) Right to health, 7) Utilisation of services, 8) Communication, 9) Discrimination and lastly, 10) the impact of riots against migrants at health facilities in the previous year.

Conclusions: This study adds to a growing body of knowledge about challenges faced by female migrants not only in South Africa but globally. The results may assist authorities in developing migrant sensitive policies to lower access barriers to health services in South Africa. The study intends to raise awareness for migrants health and processes of integration into host nations.

Keywords: female migrants, South Africa, access to healthcare services

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### Facing the COVID-19 pandemic: a mixed-method analysis of asylum seekers' experiences and worries in the canton of Vaud, Switzerland

Kevin Morisod<sup>1,2</sup>, Tiffany Martin<sup>2</sup>, Kevin Morisod<sup>3</sup>, Tiffany Martin<sup>4</sup>, Cloé Rawlinson<sup>2</sup>, Véronique Grazioli<sup>1,4</sup>, Christian Plessen<sup>2,5</sup>, Marie-Anne Durand<sup>2,6,7</sup>, Kevin Selby<sup>4</sup>, Marie-Annick Pogam<sup>4</sup>, Javier Zozaya<sup>8</sup>, Murielle Bochud<sup>4</sup>,

Nolwenn Bühler<sup>9</sup>, Patrick Bodenmann<sup>9</sup>

<sup>1</sup>University of Lausanne, Switzerland, <sup>2</sup>Center for Primary Care and Public Health (Unisanté), Switzerland, <sup>3</sup>University of Lausanne and Center for Primary Care and Public Health (Unisanté), Switzerland, <sup>4</sup>Center for primary care and public health (Unisanté), Switzerland, <sup>5</sup>University of Southern Denmark, Odense, Denmark, <sup>6</sup>University of Toulouse III Paul Sabatier, Toulouse, France, <sup>7</sup>Dartmouth College, Lebanon, USA, <sup>8</sup>Lausanne University Hospital (CHUV), Switzerland, <sup>9</sup>University of Lausanne and Center for primary care and public health (Unisanté), Switzerland

Background and objectives: The burden of the COVID-19 pandemic remains high among migrant populations, especially asylum seekers (AS). Moreover, the social impact of COVID-19 public health measures disproportionately affected AS. In this context, we aimed to better understand the pandemic experiences and sources of worries of AS, as well as the associated social and structural factors.

Methods: We conducted a cross-sectional mixed-method study among AS in the canton of Vaud, Switzerland, which combined and integrated the results of the following quantitative and qualitative methods. First, participants answered questions in an online or paper survey about their worries, sleep problems and fear of dying. The associations with their socio-demographic characteristics were investigated using multivariable logistic regressions. Second, we conducted in person semi-structured interviews with participants who had not completed the survey. We performed an inductive thematic analysis focusing on how social and living conditions affected their experiences and worries.

Results: 203 participants answered the surveys and 13 took part in interviews. AS in community centres experienced more sleep disorders related to the COVID-19 pandemic than those living in private apartments. (aOR 2.01, p=0.045). Similarly, those with lower education had greater fear for their life due to the COVID-19 pandemic compared to AS with higher education (aOR 2.31, p=0.015). In addition, interviews showed that having to share living spaces was an important source of worries for AS. Protective measures were perceived to increase social isolation, with negative effects on their pandemic experiences.

Conclusions: Our study results suggest that a better understanding of AS experiences and worries could help decision-makers adapt public health policies for this population. These include avoiding high-density facilities, encouraging the transfer of AS from community centres to private facilities, and tailoring health recommendations to the language, cultural and health literacy barriers of AS.

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### Migration Background and hospital emergency department use by children : evidence from a cohort study in the Metropolitan Area of Lisbon, Portugal, in 2019 and 2020

Zelia Muggli<sup>1</sup>, Zelia Muggli<sup>2</sup>, Regina Amado<sup>2</sup>, Helena Loureiro<sup>3</sup>, Maria Martiins<sup>4</sup>

<sup>1</sup>Instituto de Higiene e Medicina e Tropical, Universidade Nova de Lisboa, Portugal, <sup>2</sup>Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Portugal, <sup>3</sup>Paediatrics Department, Hospital Prof. Fernando Fonseca, Amadora, Portugal, <sup>4</sup>Instituto de Higiene e Medicina Tropical, Universidade de Nova Lisboa, Portugal

Background and Objective: Studies from Europe suggest that immigrant children tend to attend hospital emergency departments (ED) more frequently and more often for less-urgent conditions than non-immigrant children. In Portugal evidence on healthcare utilisation, particularly for immigrant children, is scarce. Objectives: To compare utilisation of ED in the Health trajectories of Immigrant Children (CRIAS) cohort, in 2019 and 2020.

Methods: Data from the 1st and 2nd waves of the CRIAS cohort were analysed. The cohort was set up in 2019 in Amadora municipality, in the Metropolitan Area of Lisbon; 420 children (51.6% immigrant) born in 2015 were recruited.

Results: In 2019, 1.3 times more immigrant children visited ED (53.5%vs40.4%; p=0.010); 19% of immigrant versus 16% of non-immigrant (p=0.006) children were frequent users. Clinical priority was low/moderate in about 90% of visits in both groups. Self-referral occurred in 89.4% of all visits, referrals to ED by an health professional were 3 times more likely among non-immigrant children (13.7%vs4.5%). Inpatient admissions occurred in 2 % of visits, with 2 times more admissions of immigrant children. Difficulties in accessing primary healthcare (48.4%) and perceived urgency (23.2%) were the main reasons given by the parents to attend ED; parents of immigrant children reported 1.3 times more difficulties in accessing primary care. In 2020, a marked reduction in Ed visits were observed: 28.9% immigrant versus 26.7% non-immigrant used ED. There was a 2-fold increase in visits referred by a health professional mainly from the NHS helpline, yet immigrant children continued to use it less frequently (10.3%vs3.8%). Conclusions: Compared with non-immigrant children, Immigrant children have a

higher use of ED with their parents reporting more difficulties in accessing primary healthcare. Results suggest inappropriate use of ED by all children. Strengthening primary care and improving health literacy can address such inappropriate use of ED.

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### Determinants of access to primary healthcare for formerly incarcerated women transitioning into the community: a systematic review

Nisreen Agbaria<sup>1</sup>, Margit Wirth<sup>2</sup>, Marie Hout<sup>3</sup>, Volker Winkler<sup>1</sup>, Heino Stöver<sup>4</sup>  
<sup>1</sup>Heidelberg Institute of Global Health, Heidelberg University Hospital, Germany, <sup>2</sup>Swiss Tropical and Public Health Institute, Switzerland, <sup>3</sup>Public Health Institute, Faculty of Health, Liverpool John Moores University, United Kingdom, <sup>4</sup>Department of Health and Social Work, Frankfurt University of Applied Sciences, Germany

**Background and Objectives:** Women and girls are becoming the fastest growing segment of the global prison population. Women with a history of incarceration experience markedly poorer health and social vulnerability compared to both their male counterparts and women in the general population. Drawing on the patient-centered access to healthcare model, we conducted a systematic review of the literature to answer the following questions: 1) what are the determinants for primary healthcare use among formerly incarcerated women transitioning into the community? 2) What are the challenges and opportunities for access to primary healthcare?

**Methods:** Following the PRISMA guidelines, we applied relevant search terms in five databases, according to the Population, Concept, and Context framework. No restriction for country or language were made. Findings: 180 studies were retrieved for full-text screening, from which 23 studies were identified as eligible for inclusion. Several themes were identified, including: trends of healthcare utilization, compared to the general population; women's perception of their health and healthcare needs; the impact of health on coping and functioning after release; barriers to primary and preventive care; expectations and experiences of general practitioner care; quality and continuity of healthcare upon release, and stigma and perceived discrimination in the healthcare system. Finally, we report interventions that were designed to improve access to health care among formerly-incarcerated women population. To summarize the findings, we map identified determinants of access to care to the five dimensions of the access to healthcare model, and to the corresponding populations abilities to illustrate pathways in which access to primary healthcare for women transitioning from prison into the community can be affected.

**Conclusions:** Women with a history of incarceration have unique health experiences shaped by structural determinants of health during and after incarceration. We suggest areas of priority for future research and practice.

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### Tuberculosis in migrants arriving by boat to Malta, 2011-2021

Tanya Melillo<sup>1</sup>, Tanya Melillo<sup>1</sup>, Elaine Lautier<sup>2</sup>

<sup>1</sup>Infectious Disease Prevention and Control Unit, Health Regulation, Ministry for Health, G'Mangia, Malta, <sup>2</sup>Infectious Disease Prevention and Control Unit, Health Regulation, Ministry for Health, Malta

**Background and Objective:** Tuberculosis (TB) cases have been decreasing in Malta among the local indigenous population in the last decades but increasing among migrants arriving from high-incidence countries. To work towards national TB elimination, Malta implemented TB entry screening for third country nationals from high-incidence countries among other interventions. In this study we look at migrants that arrived at Malta by boat and were screened for active TB upon entry, the profile of cases and the time it took for them to present with active TB after arrival.

**Methods:** A retrospective analysis was done on all cases of active TB among migrants arriving by boat who did the entry screening, reported between January 2011 and December 2021. Incidence of TB of cases among arrivals were calculated overall and by nationality and a median was calculated to track the time to develop TB after arrival.

**Results:** Between 2011 and 2021, 14156 migrants arrived by boats and went through the TB screening process with an average of 1287 migrants per year (range 20-2279) as reported by Ministry of Home Affairs. Through the TB surveillance system 467 cases were reported between January 2011 and December 2021 among our study population. The most common country of origin was Somalia (41.6%), followed by Eritrea (24.5%), and Sudan (8.5%). The median duration of developing TB after arrival in Malta was five months (7.7, 4 and 3 months for

Somalia, Eritrea, and Sudan). All three countries had incidences of TB above 100 per 100000 in 2011.

**Conclusions:** It is important to have information on TB entry screening results and how long it takes for migrants to develop TB after arrival in Malta to target TB elimination programmes and in particular the follow-up of migrants for development of TB.

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### The cultural safety of publicly available maternity services in New Brunswick, Canada

Erika Powell<sup>1</sup>, Jason Hickey<sup>1</sup>, Jessica Webster<sup>1</sup>, Tanisha Sacobie-Gruben<sup>1</sup>  
<sup>1</sup>University of New Brunswick, Canada

**Background:** Pregnant Indigenous women in Canada suffer from a lack of access to culturally safe prenatal care. For prenatal care to become accessible, areas of inaccessibility and opportunities for improvement must be identified. This study was designed to explore how publicly available maternity services could be more culturally safe to Indigenous women in the province of New Brunswick. **Objectives:** 1) Explore the experiences of Indigenous women who have accessed publicly available prenatal care in New Brunswick in the last 5 years 2) Consult with Elders and other Knowledge Holders about traditional maternity practices and the future of maternity care 3) Use Findings to create a model of culturally safe care **Methods:** The research employed a community-based participatory action approach. Eight Indigenous mothers and three Elders shared knowledge (i.e., provided data) through community engagement sessions, group sharing circles, and individual conversations. Collaborative thematic analysis was used to examine the stories told by participants and to group these into themes. Preliminary findings were presented to Elders, whose reactions and commentaries added context to findings.

**Results:** Three overarching themes were identified. This included relationality (relationships with self, body, baby, partner, friends, family, the environment, and care providers); health systems (existing systems of medical care, including national and provincial health networks, hospitals, clinics, and the practices and policies within them); and Indigenous ways of knowing (recognizing that Indigenous people have always known and continue to know best-practice for ourselves and our people). These together with subthemes provide a preliminary model to improve culturally safe care for Indigenous mothers in New Brunswick.

**Conclusions:** Indigenous-specific, community-based prenatal care that is guided by Indigenous nurses, doulas, midwives, Elders, Knowledge Holders, and mothers is needed. Traditional maternity practices should be maintained, revitalized, and available to all Indigenous mothers in New Brunswick.

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### What are effective ways of building trust and increasing inclusion of underserved communities in public health research?

Olatundun Gafari<sup>1</sup>, Mary Barker<sup>2</sup>, Maria Stokes<sup>2</sup>

<sup>1</sup>School of Health Sciences, University of Southampton, United Kingdom, <sup>2</sup>School of Health Sciences, University of Southampton, Southampton, United Kingdom

**Background and Objectives:** Inequalities in public health research engagement have been reported globally; marginalised communities, including ethnic minority groups in the UK, are particularly badly served. This presentation describes co-produced strategies for building trust and increasing inclusion of underserved communities in research.

**Methods:** This study formed one of five Work Packages (WPs) in a nationwide consortium and adopted Community Engagement (CE) and participatory research principles. Distrust caused by previous negative experiences represented major barriers to recruitment from underserved communities. Six actions were taken to build trust and increase inclusion: 1) face-to-face introductory meetings out in the community; 2) early recruitment of CE partners; 3) active involvement of CE partners in project planning, co-chairing and decision-making activities; 4) inviting and responding to feedback about research plans; 5) co-production of participatory workshops; and 6) a transformative action workshop.

**Results:** Widespread inclusion of underserved communities was achieved; six CE partners and 41 research participants from Asian, Black and Mixed ethnicities representing all adult age groups were recruited. Our engagement strategies led to the successful co-production of public health interventions to improve physical activity and healthy eating. This also impacted other WPs resulting in 51 CE partners being enrolled across the consortium. Trust was evident in the active participation of those who had initially declined to take part. Four CE partners attended a policy event at the UK Houses of Parliament. CE partners and

participants reported that ethnic minority representation within the research team contributed to building trust. Qualitative feedback also showed study participation improved CE partners' and participants' confidence, wellbeing and willingness to engage in future research.

Conclusions: Learning from feedback and facilitating underserved communities to actively drive research processes were effective in increasing trust. Such practices are recommended for research in all global contexts to increase inclusion of marginalised communities.

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### Possible Worlds - Where Glances Meet

Raquel Barros<sup>1</sup>, Maysa Mazzon<sup>2</sup>, Tatiana Alecrim<sup>2</sup>, Isis Katayama<sup>2</sup>

<sup>1</sup>Faculdade de Engenharia de Sorocaba (Facens), Sorocaba, Brazil, <sup>2</sup>Facens, Sorocaba, Brazil

Background: Brazil is a culturally and ethnically miscegenated country, with great natural and economic wealth, however, it presents growing social inequalities. According to a report from the Brazilian Institute of Geography and Statistics (IBGE), poverty had record growth in 2021; 62.5 million people live below the poverty line, corresponding to 29.4% of the total population, and 17.9 million survive in extreme poverty. The COVID-19 pandemic intensified social inequalities and the emergence of mental illnesses, highlighting the need for psychology professionals who act beyond specific mental health issues and achieve a practice that guarantees rights and promotes human dignity. Given this scenario, a university extension project was created to contribute to mental health care and rights guarantee. Aim: Promote improved access to health care and better living conditions for vulnerable populations living at risk in communities in Brazil. Methods: Qualitative and descriptive study, professional experience report with cross-sectional time frame.

Results: Students from the second semester of Psychology course worked in different communities, such as: indigenous villages, homeless people, quilombo community, women victims of violence and children. From the territorialization, planning, survey of weaknesses and capabilities, home visits, team's subdivisions, educational groups, dialogue circles, interviews, partnerships with non-governmental organizations and community experience, it was possible to build actions based on Community Treatment, in addition to the records written and photographic, the interventions were recorded in a documentary. Conclusions: Psychology students promoted individual and collective actions that made it possible to discover "invisible" talents; among them dancers, poetesses, painters, musicians, artisans, entrepreneurs, and builders. Interventions contributed to a comprehensive care, acceptance, bonds strengthening, knowledge of rights and cure for mental illnesses through perspectives that make "worlds possible".

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### Mental health status, discrimination experience and resilience level among sexual and gender minorities of Kathmandu Valley

Manisha Hada<sup>1</sup>

<sup>1</sup>Institute of Medicine, Central department of Public Health, Institute of medicine, Maharajgunj, Kathmandu, Nepal

Background: Sexual and gender minorities (SGM) experience an elevated burden of stress, anxiety, and depression compared with heterosexuals. SGM is a hidden population in Nepalese society and there is little known about that burden and the factors generating it in the context of Nepal. The study aimed to identify mental health status and perceived discrimination and resilience among SGM in Kathmandu valley, Nepal.

Methodology: A quantitative cross-sectional study was conducted among 158 SGM. An online self-administered questionnaire was used to obtain the information related to DASS-21 (Depression anxiety stress scale), EOD (Experience of discrimination), and CD-RISC-10 (Connor Davidson Resilience Scale) using a standard tool. Data analysis was done according to the standard scoring procedure to compute the prevalence of stress, anxiety, depression, perceived discrimination, and resilience level among SGM respectively.

Results: Of 158 participants, 48.7% reported gay sexual orientation and 58.2% reported their gender identity as cisgender men. Among the total participants, 53.8% were current smokers and 80.4% had consumed alcohol in the past 12 months. The prevalence of stress, anxiety, and depression among SGM was found 82.3%, 65.2%, and 74.1% respectively. 88.6% of SGM faced discrimination in at least one setting where higher discrimination was reported in a public place like a street or park (63.3%). Nearly 25% of participants showed a low level of resilience. Conclusion: The results highlight a high burden of stress, anxiety, and depression and a higher discrimination among SGM of Kathmandu valley. Further, the mental

health status among SGM needs to be researched and explored by identifying the factors associated with poor mental health outcomes.

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### How can it be also queer? LGBTQIA+ adolescents' perceptions of gender tailoring and portrayal in a generic virtual reality-based alcohol-prevention tool

Christina Prediger<sup>1</sup>, Katherina Heinrichs<sup>1</sup>, Hürrem Tezcan-Güntekin<sup>2</sup>, Gertraud Stadler<sup>3</sup>, Laura Pilz González<sup>1</sup>, Patricia Lyk<sup>4</sup>, Gunver Majgaard<sup>4</sup>, Christiane Stock<sup>1,5</sup>

<sup>1</sup>Institute of Health and Nursing Science, Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Berlin, Germany, <sup>2</sup>Department of Health and Education, Alice Salomon University of Applied Science, Berlin, Germany, <sup>3</sup>Institute of Gender in Medicine, Charité – Universitätsmedizin Berlin, corporate member of Freie Universität Berlin and Humboldt-Universität zu Berlin, Berlin, Germany, <sup>4</sup>SDU Game Development and Learning Technology, Mærsk Mc-Kinney Møller Institute, University of Southern Denmark, Odense M, Denmark, <sup>5</sup>Unit for Health Promotion Research, University of Southern Denmark, Esbjerg, Denmark

Gender-sensitive interventions for alcohol prevention among adolescents often lead to binary tailoring for girls and boys. Increased societal and legal recognition of sexual and gender minorities and participatory research with the target group demand a broader understanding of gender. As a promising educational tool, virtual reality offers opportunities for tailoring interventions, e.g. by using gender avatars and corresponding scenarios. Therefore, the present study explores LGBTQIA+ adolescents' perceptions of gender tailoring and portrayal in the digital application Virtual LimitLab—a virtual reality-simulation to train refusal-skills towards peer pressure regarding alcohol consumption. The study aims at investigating how digital interventions should be further developed to include sexual and gender diversity.

Qualitative interviews with 16 LGBTQIA+ adolescents in Berlin, Germany were conducted after individual simulation testing. The collected data were analysed using Braun and Clarke's thematic analysis with a reflexive orientation.

Four themes were identified: statements on the relevance of gender and opinions on tailoring options, flirt orientation, and the other characters within the simulation. Deviating positions were found on the relevance of gender and different tailoring options by avatars to include queer users. Consensus was expressed on the wish for more representation of diversity among the characters, not only regarding sexual orientation and gender identity, but also regarding e.g. the inclusion of racialised peers among the main actors. Furthermore, the expansion of flirting options in the simulation by adding bisexual and asexual/aromantic options besides same-gender options was suggested.

In the case of the short virtual simulation Virtual LimitLab, no queer avatar is needed, but better representation of diversity among the characters and a more complex understanding of gender that goes beyond binarity and reflects diversity in its intersectionality.

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### Antenatal care, birth outcomes and child survival among immigrants in Brazil: a nationwide data linkage study

Julia Pescarini<sup>1</sup>, Ila Falcao<sup>1</sup>, Enny Paixao<sup>1</sup>, Poliana Reboucas<sup>1</sup>, Nuria Sanchez<sup>2</sup>, Elizabeth Brickley<sup>2</sup>, Mauricio Barreto<sup>1</sup>

<sup>1</sup>Center of Data and Knowledge Integration for Health (CIDACS/Fiocruz) / London School of Hygiene & Tropical Medicine, Brazil, <sup>2</sup>London School of Hygiene & Tropical Medicine, United Kingdom

Background and Objective: Although the health status of immigrants varies according to country of origin and resettlement, limited evidence exists on the health needs of those living in low- and middle-income countries (LMICs). Our study used large-scale linked socioeconomic and health records to understand the perinatal outcomes of immigrant mothers and their children living in Brazil.

Methods: We linked nationwide birth registries to mortality records and socioeconomic data from the CIDACS Birth Cohort and studied singleton live births to low-income women (i.e., monthly familial income)

Results: We studied 11,290,713 live births, of which 9,886 (0.1%) were born to immigrant mothers. Immigrant mothers were more likely older, literate, living in urban areas and less likely to receive social benefits. Immigrant women were more likely to have had a previous stillbirth (ORadj:1.16,95%CI:1.11-1.22), to delay the start of prenatal care (>1st trimester) (1.22,1.16-1.28), less likely to have C-section delivery (0.74, 0.71-0.77), to have a premature birth (0.89,0.82-0.95)

or with low birth weight (0.74,0.68-0.81). However, we found no differences in mortality between children from immigrant and non-migrant mothers. Conclusion: Our results suggest that, although immigrant mothers might face barriers accessing healthcare, their newborns present better birth outcomes, which is possibly related to mothers' health status. However, children born to immigrant mothers seem not to benefit from the same health advantages in their first year of life. The mechanisms underlying these relationships should be further investigated.

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### COVID-19 and health disparities: a bibliometric summary of 5000 research publications by scholars from 165 countries

Barbara Slagel<sup>1</sup>, Lana Ivanitskaya<sup>1</sup>, Rene Shingles<sup>1</sup>, Nina Yamanis<sup>2</sup>

<sup>1</sup>Central Michigan University, United States, <sup>2</sup>American University, United States

**Background and Objective:** Documented prior to the COVID-19 pandemic, many inequities and health disparities persisted during the pandemic. A plethora of pandemic-era studies on disparities, inequities, and inequalities by scholars from several disciplines, including public health, necessitates their systematic summary. We achieve this aim by doing a bibliometric review of English-language publications indexed in the Web of Science.

**Methods:** We summarized and visualized meta-data for a corpus of 5,001 validated publications from 2020-2022, obtained with a comprehensive search query. Performance analysis focused on research proliferation in journals and disciplines; VOSviewer was used to visualize networks of collaborators and terms extracted from titles and abstracts.

**Results:** Public health produced the most research related to COVID-19 health disparities, followed by disciplines related to health care, internal medicine, and psychology. No single journal published more than 4% of publications in our corpus. U.S., British, and Canadian researchers contributed the most articles, sometimes through international collaborations and much more often by co-authoring studies with colleagues from the same country. Compared to their international peers, U.S. authors tended to research COVID-19 disparities among African American, Latino/Hispanic, and sexual/gender minority populations. Bibliometric network analyses showed significant research activity in several distinct areas: COVID-19 predictors and outcomes (focusing on quantitative studies of pandemic disparities), global health (focusing on qualitative studies of pandemic inequities or inequalities), and mental health. We discuss the three areas in depth and show how medical and public health researchers use social science concepts to explain disparities. Funding agencies from the U.S., the European Union, and the UK were most likely to fund health disparities research. Conclusion: Our systematic overview of research that happened over the two pandemic years suggests opportunities for public health researchers to engage in multi-disciplinary studies, building upon the contributions of other disciplines and international scholars involved in disparities research.

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### Calling for a community-driven pandemic response for Indigenous peoples: What can we learn from the HIV pandemic in Vancouver, Canada?

Krisztina Vasarhelyi<sup>1</sup>, Chenoa Cassidy-Matthews<sup>2</sup>, Andreas Pilarinos<sup>2</sup>, Sandra Fox<sup>3</sup>, Brittany Bingham<sup>2</sup>

<sup>1</sup>Simon Fraser University, Faculty of Health Sciences, Simon Fraser University, Blusson Hall, Room 11300, 8888 University Drive, Burnaby, B.C., V5A 1S6, Canada, <sup>2</sup>University of British Columbia, Canada, <sup>3</sup>Vancouver Coastal Health, Canada

**Background and Objective:** Vancouver, Canada was one epicenter of the HIV pandemic with severe waves in the 1980s and 1990s. Community-driven activism combined with innovative interventions led to the elimination of HIV as a major public health threat and demonstrated the power of a community-driven pandemic response. We aimed to assess perceptions within the urban Indigenous community in Vancouver of the appropriateness and effectiveness of the COVID-19 response through the lens of Vancouver's response to the HIV crisis.

**Methods:** We conducted semi-structured interviews with 15 representatives of Indigenous community-based organizations providing health and social services to Indigenous peoples in Vancouver's inner city. Thematic and interpretive analysis of the transcripts identified relevant themes.

**Results:** Indigenous Peoples in Vancouver are disproportionately impacted by the syndemics of opioid overdose and COVID-19 due to ongoing effects of colonialism. Community connection and cultural traditions are critical to the

health and wellbeing of Indigenous Peoples. Indigenous service providers felt that disruption to community supports due to public health restrictions have caused suffering and lack of critical health and social supports to Indigenous People. Participants called for an Indigenous-specific and Indigenous-led pandemic response to future public health emergencies.

**Conclusions:** The lessons of the HIV pandemic have not translated to a robust community-focused pandemic response for Indigenous Peoples in Vancouver. Early on, several rural Indigenous communities imposed strict, culturally appropriate measures beyond the governmental public health measures that initially kept COVID-19 away, demonstrating the value of self-determination and Indigenous knowledge. However, the later sharp rise in COVID-19 infections in Indigenous communities are attributed to persistent social inequities and significant racism in the health system. We need Indigenous-led approaches to pandemic planning and multidisciplinary perspectives to interpret the social context of the pandemic in Indigenous communities and guide the development of an effective pandemic response.

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### COVID-19 infection rates and use of SARS-CoV-2 testing among immigrants in Portugal: a longitudinal study for Amadora, Metropolitan Region of Lisbon, Portugal

Sofia Carmezim Pereira<sup>1</sup>, Maria O Martins<sup>2</sup>, António Silva<sup>3</sup>

<sup>1</sup>Public Health Unit, Amadora Primary healthcare cluster, Lisboa, Portugal, <sup>2</sup>Global Health and Tropical Medicine, GHTM, Instituto de Higiene e Medicina Tropical, IHMT, Universidade Nova de Lisboa, Lisboa, Portugal, <sup>3</sup>Public Health Department, Regional Health Administration of Lisbon and Tagus Valley, Ministry of Health, Lisboa, Portugal

**Introduction:** Available evidence from European countries suggests that migrants are at an increased risk of COVID-19 infection and present higher positivity rates. In Portugal, as in most EU countries, there are no studies on this subject. The aim of this study is to compare COVID-19 infection rates, use of SARS-CoV-2 testing and positivity rate between immigrants, particularly from outside the EU EFTA-UK, and native born in Amadora, Metropolitan Region of Lisbon, Portugal.

**Methods:** A longitudinal study was conducted between 1 May 2020 and 31 December 2021 using monthly data from Amadora residents collected from the National Epidemiological Surveillance System (SINAVE). COVID-19 infection rates, number of tests performed per person, and positivity rates were computed for native born, and immigrants (within EU EFTA-UK and outside) adjusting for sex and age using logistic regression.

**Results:** We analysed 299 272 tests from individuals living in Amadora. The COVID-19 infection rate was 12 890 per 100 000, positivity rate was 7.4% and the average number of tests per resident was 1.74. Native born COVID-19 infection rate was 13 278 per 100 000 compared with 11 329 per 100 000 regarding immigrants outside EU EFTA-UK. While native born performed 1.6 times more tests, immigrants outside EU EFTA-UK positivity rates were higher (9.8% vs 7.2%). When adjusting for sex and age, immigrants outside EU EFTA-UK had a higher odd of testing positive for SARS-CoV-2 when comparing with native born individuals (OR=1.42 [95% CI 1.36-1.49]).

**Conclusions:** Immigrants outside EU EFTA-UK are more likely to test positive for SARS-CoV-2 infection and less likely to perform COVID-19 diagnostic tests. This result suggests an unequal access to COVID-19 testing in Amadora, Portugal. Targeted efforts are needed to improve testing availability for immigrants and to understand reasons underlying these inequalities.

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### A culturally competent systems intervention in primary health care to reduce domestic violence among immigrant communities: HARMONY a pragmatic cluster-randomised controlled trial in Melbourne, Australia

Angela Taft<sup>1</sup>, Kelsey Hegarty<sup>2</sup>, Jane Yelland<sup>3</sup>, Danielle Mazza<sup>4</sup>, Richard Norman<sup>5</sup>, Gene Feder<sup>6</sup>, Douglas Boyle<sup>7</sup>, Cattram Nguyen<sup>8</sup>, Claudia Garcia-Moreno<sup>8</sup>, Felicity Young<sup>9</sup>, Bijaya Pokharel<sup>9</sup>, Molly Allen-Leap<sup>9</sup>

<sup>1</sup>La Trobe University, Melbourne, AUSTRALIA, Judith Lumley Centre for Mother, Infant and Family Health Research, Level 3, GS Building, La Trobe University, BUNDOORA, VIC 3068, Australia, <sup>2</sup>University of Melbourne, <sup>3</sup>Murdoch Children's Research Institute, Australia, <sup>4</sup>Monash University, Australia, <sup>5</sup>Curtin University, <sup>6</sup>University of Bristol, United Kingdom, <sup>7</sup>University of Melbourne, Australia, <sup>8</sup>(formerly) WHO, Switzerland, <sup>9</sup>La Trobe University, Melbourne, Australia

**Methods:** 24 (FP) clinics randomised in 2019. Eligible clinics required  $\geq 1$  SA GPs

using common medical software programs.

Culturally competent DVA training for intervention clinics co-facilitated by a clinical educator and bilingual SA DVA advocate from Oct 2020 - May 2021. With the COVID19 pandemic, online training was implemented emphasising DVA safety. Following training, clinic staff and DVA affected women  $\geq 18$  were supported for 12 months by the caseworker/advocate. All clinics were trained to record ethnicity and DVA data.

Routine data extraction from both arms identified DVA, safety planning, referrals and a SA population estimate among female patients  $\geq 18$ . Outcome data is de-identified and aggregated. Adjusted regression analysis by intention-to-treat.

Outcomes: Despite COVID 19 and the study suspended from May to Sep 2021, with online training, just <70% clinical staff completed all 3 training sessions. The SA advocate supported intervention clinics online. At baseline, the eligible female population included 48,362 women (20% SA) of whom 0.55% were identified in routine data as DVA victim/survivors. Successful outcomes and limitations currently under analysis will be presented.

Conclusion: This is a world first study trialling culturally competent DVA FP care for diaspora communities.

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### Indigenous health and wellbeing program evaluation commissioning models: results from a scoping review

Summer Finlay<sup>1</sup>, Amohia Boulton<sup>2</sup>, Jenni Judd<sup>3</sup>, Margaret Cargo<sup>4</sup>, Yvette Roe<sup>5</sup>, James Smith<sup>6</sup>, Bronwyn Fredericks<sup>3</sup>

<sup>1</sup>University of Wollongong, Australia, <sup>2</sup>Whakauae Research for Māori Health and Development, <sup>3</sup>Central Queensland University, Australia, <sup>4</sup>University of Canberra, Canada, <sup>5</sup>Charles Darwin University, <sup>6</sup>Flinders University, Australia

Background/Objectives: Despite significant ongoing investments in Indigenous health and wellbeing programs, evidence regarding program effectiveness is limited. Where these evaluations occur, the quality of this evidence may be impacted by process stages. Yet little is known about the effect of commissioning practices in the Indigenous space. This scoping review aims to codify the spectrum of commissioning practices used in Australia and internationally in the evaluation of Indigenous health and wellbeing programs.

Method: Arksey and O'Malley and Levac et al. guided the review of literature from 2008 - 2020 that address the commissioning of Indigenous health or wellbeing program evaluations in Australia, New Zealand, Canada and the United States. Forty-three documents were retrieved from four academic databases and the world wide web and coded against 13 Indigenous research and evaluation better practice principles derived from the literature.

Results: The research shows five models used for commissioning evaluations of Indigenous health and wellbeing programs: a) top-down; b) participatory; c) co-design: delegative and e) Indigenous-led. Models range in the level of engagement with, and decision-making power awarded to, Indigenous communities. Levels which have significant influence on the way the findings are perceived by Indigenous peoples. For instance, models negating Indigenous power produce evaluations lacking in cultural safety and reciprocity.

Conclusion: This scoping review, a first of its kind, provides insight into the spectrum of evaluation commissioning practices and how they align with better practice principles. Whilst, research suggests these better practice principles are often not considered, or their adherence hindered by a lack of institutional support, examples exist of commissioning practice supporting Indigenous engagement and leadership, which hold promise for broader application.

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### Global Mental Health: A Systematic Review of Burnout Syndrome in Latin American and Caribbean Teachers

Renan Oliveira<sup>1</sup>, Katerina Lukasova<sup>2</sup>

<sup>1</sup>Federal University of Bahia, International Relations Master's Student, Rua Augusto Viana, s/n - Palácio da Retoria, Canela, Salvador - CEP: 40110-909, Brazil, <sup>2</sup>Federal University of ABC

Objectives: First this paper seeks to theoretically discuss in which job world this Syndrome emerged, contextualizing and defining the BS in Latin America and the Caribbean (LAC) perspective. Secondly, it wants to review the quality of some of the published prevalence articles on BS among LAC teachers and highlight the intersectionalities of the subjects.

Methodology: A Systematic Review was carried out on BS prevalence articles in Education published between 2016 and 2020 and indexed on the LILACS and SCIELO platforms with the keywords: "teacher burnout" in Portuguese, Spanish and English; Works that did not fit (topic, repeated, samples outside LAC,

unavailability, not gone through peer review) were excluded; Out of 416, 46 final articles were selected. Its contents were analyzed with a qualitative analytical approach and tables were used to stratify the data about: sociodemographics, diagnostic instruments, prevalence.

Results: 87% asked sex/gender; 80% age; 74% professional experience; 63% type of contract; 50% marital status; 26% had children; 11% income indicators; 2% race/ethnicity. The most frequent diagnostic instrument was the Maslach Burnout Inventory and its variations (30 articles). 32 articles (out of 46) did not fully show the presence and degree of the condition found.

Conclusions: It is important for scientific research to present their disaggregated data, either within the text or through external links, so that it is possible to develop public policies and/or produce deeper analysis based on these works. LAC teachers were not treated in these articles according to their social, political or territorial specificities enough to establish correlations between the multidimensional intersectionalities faced by this professional class and their struggles against mental illness.

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### Racial harassment and workplace violence in hospitals towards physicians and nurses from Indigenous minority and non-Indigenous groups

Nihaya Daoud<sup>1</sup>, Moatasem Jammal<sup>1</sup>

<sup>1</sup>Ben-Gurion University of the Negev, Israel

Background: Workplace violence (WPV) in healthcare facilities is an increasing global problem, particularly since the emergence of COVID-19. WPV can impact healthcare systems and patient's health, as well as healthcare workers (HCWs) job satisfaction and resignations. Racial harassment (RH) in healthcare services can add complexity to WPV, as it targets more minority HCWs and patients.

Aims

We examined associations between RH and WPV types (physical and psychological or verbal) among physicians and nurses in Israeli hospitals and compared these in different groups (Indigenous Palestinian-Arab citizens versus Jewish).

Methods: An online cross-sectional survey was conducted in July to September 2022, including a sample of 921 physicians and nurses working in ERs and internal medicine departments in four large hospitals. The online questionnaire was distributed via WhatsApp groups of physicians and nurses (response rate= 89.1%). The association between RH and WPV types was examined via multivariable logistic regression analysis for each study groups while considering relevant variables (age, gender, physicians vs. nurses, work position, years of work, education level).

Findings

Palestinian-Arab physicians and nurses reported significantly higher RH based on national identity compared to Jewish counterparts (42.5% vs. 24.3%). However, Jewish HCWs reported higher physical, and psychological WPV (24.9%, and 72.2%, respectively) compared to Palestinian-Arab HCWs (14.6%, and 54.1%, respectively). In the multivariate analysis, RH was associated with higher physical WPV in Palestinian-Arab HCWs (adjusted odds ratio and 95% confidence intervals, AOR, 95%CI=2.55, 1.39-.68) compared to Jewish HCWs (1.06, 0.49-2.26), and higher psychological WPV among Palestinian-Arab HCWs compared to Jewish (3.76, 2.44-5.79 vs. 2.39, 1.12-4.79 respectively).

Significance

RH was significantly associated with higher physical and psychological WPV in Palestinian-Arab minority physicians and nurses compared to their Jewish counterparts. Future research should explore mechanisms connecting RH and WPV in these groups and suggest interventions to eliminate WPV in hospitals.

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### FörGes 5 - An intervention for strengthening self-management competencies of family caregivers of persons with dementia of Turkish origin in Germany

Hürrem Tezcan-Güntekin<sup>1</sup>, Yüce Yilmaz-Aslan<sup>2</sup>, Tugba Aksakal<sup>3</sup>, Kübra Annac<sup>3</sup>, Oliver Razum<sup>2</sup>

<sup>1</sup>Alice Salomon University of Applied Science Berlin, Germany, <sup>2</sup>Bielefeld University, <sup>3</sup>Witten University, Germany

Background and Objective: The majority of persons in need of long-term care who are of Turkish origin in Germany are cared for at home by their relatives. The home care situation can be accompanied by a high physical, psychological and social burden for the caregivers. It is necessary to support family caregivers to counteract possible overload and excessive demands. The aim of the project is the development, implementation, and validation of an intervention to strengthen the

self-management competencies of family caregivers of persons with dementia. Methods: A document analysis of caregiving-related information material in Turkish was conducted, and 10 family caregivers were interviewed about their needs and information wishes. Based on the results of the qualitative content analysis, an individualized participatory intervention was developed, consisting of weekly home visits by a Turkish-speaking specialist over six months. Interviews with participants were subsequently conducted again to evaluate the intervention. Results: Family caregivers often have information deficits on dementia caregiving and are exposed to stresses, e. g. financial worries, and social isolation. Wishes expressed support in everyday caregiving, in applying for services, offers for relief, and care by culturally sensitive professional caregivers. Implementation revealed that different family constellations, age groups, genders, and care situations are associated with different needs and requirements. Further, different stages of self-management support among family caregivers can be identified. The intervention reinforced the self-organization of family caregivers and empowered them to provide mostly independent health and nursing care for their family members.

Conclusion: To support and strengthen family caregivers of persons with dementia of Turkish origin, outreach and native-language interventions adapted to the individual persons and family situations are necessary for acceptance by the family members. The diversity of those affected is a central aspect that can be addressed through a diversity-sensitive orientation of interventions.

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### Differences in preterm births and birth weight between new-borns of roma and non-roma mothers in Slovenia

Tatjana Krajnc Nikolić<sup>1</sup>, Barbara Mihevc Ponikvar<sup>1</sup>, Victoria Zakrajšek<sup>2</sup>

<sup>1</sup>National institute of public health National institute of public health "Trubarjeva 2 1000 Ljubljana Slovenia", <sup>2</sup>National institute of public health

Background: The reproductive health of Roma women is largely influenced by socio-economic determinants, cultural and social values in the Roma community as well as by their lifestyle and use of preventive health services. Health of Roma new-borns is closely linked to health of their mothers. Data from other countries show differences in health between new-borns of Roma origin and others. This research examines whether these differences also exist in Slovenia.

Methods: The research included the analysis of data from the national health statistical database of the Perinatal Information System of the Republic of Slovenia for the period 2012-2014. The women with permanent residence in Roma settlements were defined as Roma women and all other women as non-Roma women. The research compared the incidence of preterm birth (less than 37 gestational weeks) and low birthweight (less than 2.500 grams). The statistical significance of the differences between two groups was verified by  $\chi^2$  Test ( $p < 0,05$ ).

Results: During the period 2012-2014 there were 424 liveborns by women, residents of Roma settlements and 62.816 liveborns by other residents of Slovenia. Roma children had a 59% higher risk of preterm birth than other children and a 2.7 times higher risk of low birth weight than other children did. Only 19,6% of Roma new-borns were in the weight category 3500 grams or more, compared to 40,5% of other new-borns.

Conclusions: Roma new-borns had significantly lower birthweight and were more often born prematurely. More efforts should be directed toward increase of health literacy of Roma women, increased use of preventive health services and improvement of socio-economic determinants of their life.

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### Attitudes and self-assessed knowledge on substance use among people who work in migrant centers in Serbia

Biljana Kilbarda<sup>1</sup>, Aleksandar Medarevic<sup>1</sup>, Perisa Simonovic<sup>1</sup>, Milena Vasic<sup>1,2</sup>, Verica Jovanovic<sup>1</sup>

<sup>1</sup>Institute of Public Health of Serbia "Dr Milan Jovanovic Batut" Serbia,

<sup>2</sup>Faculty of Dentistry, Pancevo, Serbia Serbia

Introduction: Migrant children face different challenges including substance use. Prevention, including detection of early signs of experimentation with substances, and timely provision of treatment is highly dependent on support system including trained professional. For planning response to this issue, Institute of public health of Serbia "Dr Milan Jovanovic Batut" conducted a survey among persons engaged in migrant centers in Serbia on self-perceived knowledge and skills needed for prevention and support to migrants who use drugs.

Method: The survey in migrant centers in Serbia among employees involved in

provision of organisational, healthcare, psychological or social support to migrants. The questionnaire was designed for this survey and within a wider project aimed at improvement of prevention of substance use among migrant population in Serbia. The questionnaire was self-completed anonymously by respondents. In total 188 persons engaged in migrant centers completed the questionnaires.

Results: Results show that 68.9% of respondents agree (fully or partly) with the statement that they could recognize the client under the influence of substances and 40.2% agree they could provide first aid for acute intoxicated clients. Less than half respondents estimate their knowledge as adequate or excellent with regards of drug laws (40.9%) and where people who use drugs can seek help or treatment (39.8%). Only 33.9% fully agree that they would know who should be contacted for further support in case they face challenges in provision of support to migrants and their families. The differences exist according to the level of education and profession.

Conclusion: There is a need for further training of employees in migrant centers in Serbia and strengthening their knowledge and skills for early identification of young people who are addicted or experiment with drugs, existing referral system and legislation in Serbia as well as for procedures and steps in case of acute intoxication.

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### Coming across a hidden problem in an excluded population: professionals' experiences of disclosures of sexual violence by young migrants

Tanya Nystedt<sup>1</sup>, Pia Svensson<sup>1</sup>, Tobias Herder<sup>1</sup>, Benedict Asamoah<sup>1</sup>, Anette Agardh<sup>1</sup>, Pernilla Ouis<sup>2</sup>

<sup>1</sup>Lund University Sweden, <sup>2</sup>Halmstad University Sweden

Background and Objective: International migration has been on the rise over the past decades and is expected to remain high. There is growing evidence on the vulnerability of young migrants including to sexual violence. With increasing numbers of young migrants at heightened risk for sexual violence and often lacking in family and social networks, there is an opportunity for professionals and service providers to be the recipients of disclosures of sexual violence. This study aimed to explore how professionals experience meeting young migrants who disclose experiences of sexual violence.

Methods: It was conducted using a qualitative design based on fourteen semi-structured in-depth interviews with professionals providing a range of services. The data was analysed using qualitative content analysis.

Results: The overarching theme emerging from the study was "coming across a hidden problem in an excluded population" supported by three themes 1) perceiving young migrants as being structurally marginalised and vulnerable to sexual violence; 2) sexual violence is not the point – needing to support young migrants holistically; and 3) trying to help young people who are seen as betrayed by society. Professionals' awareness of the complex vulnerability of young migrants and their lack of options for accessing services contributes to the strong sense of personal responsibility felt for trying to meet their needs. This coupled with the lack of guidelines for how to respond to these needs, including exposures to sexual violence, can lead to moral distress.

Conclusion: There is a need to strengthen support for professionals working with vulnerable young migrants including recognition of the ethical issues involved and establishment of more formal connections between organizations and service providers to make access more predictable. Improving support to professionals providing services to young migrants could facilitate their work supporting young migrants with experiences of sexual violence and improve those outcomes.

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### Towards more effective multilingual crisis communication - applying social marketing principles to the reality of covid-19 epidemic in finland

Laura Musta<sup>1</sup>, Natalia Skogberg<sup>1</sup>, Tomi Mäki-Opas<sup>2</sup>

<sup>1</sup>Finnish Institute for Health and Welfare Finland, <sup>2</sup>University of Eastern Finland Finland

Background and Objective: Effective multilingual crisis communication can improve equity, inclusion, and access to information of linguistic minorities during crises. However, studies examining efficacy of multilingual crisis communications are scarce. This study examines how different strategies for improving effectiveness of multilingual and multichannel COVID-19 communications were utilized in Finland and whether the criteria for effective social marketing methods were fulfilled.

Methods: Data consisted of 25 semi-structured interviews with persons responsible

for development and dissemination of multilingual COVID-19 communications in municipalities (n=8), non-governmental organizations (n=7), and government officials (n=10). The interviews were conducted between April and September 2022. The data were analyzed using deductive theory-based qualitative content analysis. The researcher used social marketing principles as a starting point for analysis and compared findings from qualitative data to those principles.

**Results:** There were several efforts to improve and measure the effects of multilingual communications during the epidemic, but the efforts were inconsistent. The main effort was placed on understanding how to reach the target groups. The key elements for successful multilingual crisis communications mentioned were in consistency with social marketing principles including co-creation and cooperation, using already existing networks, and combining different communication methods. However, interviewees described that there were no resources to collect systematic knowledge to understand the reasoning behind the behavior of the target group nor to evaluate effectiveness of crisis response measures during the epidemic.

**Conclusion:** There were several useful methods for effective multilingual crisis communication utilized and developed during the epidemic, but more effort is needed to utilize those methods more efficiently and coherently in future crisis preparedness. This can be done by creating systematic multilingual crisis communication plans already before crisis. By further improving the plans can significantly improve the effectiveness of multilingual crisis communications and the social equity of linguistic minorities during crises.

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### The russo-ukrainian war crisis and the role of the healthcare services in the health management of ukrainian minors in an italian city

Andrea Gentili<sup>1</sup>, Cecilia Panizzi<sup>2</sup>, Vania Moroni<sup>3</sup>, Daniel Fiacchini<sup>2</sup>, Francesca Diotallevi<sup>2</sup>, Daniela Cimini<sup>2</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore Italy, <sup>2</sup>Department of Prevention - ASUR AV2, <sup>3</sup>it Italy

**Background:** Active call and convocation from the local health agency to test for COVID-19; clinical visit from foreign doctor; access to the Department of Prevention for the acquisition and certification of vaccination schedule, to screen against tuberculosis, and to be vaccinated for routine and COVID-19 vaccines.

**Results:** Of the 239 Ukrainian recruited through active call, 108 (45%) were minors. 224 Ukrainian presented to test for COVID-19, and 8 of them (2,8%) resulted positive. All registered Ukrainians have been called by the Department of Prevention, but only 128 presented to the clinic. Of those, 80 were minors that underwent to the Mantoux test for tuberculosis screening, with 10 positive results (12%). Subsequently, it was checked the vaccination schedule: of the 60 minors in possession of their vaccination schedule, 41 already had all the vaccination identified as mandatory by Italian laws. The remaining 19 accepted to complete the mandatory vaccinations. Finally, 15 out of 60 minors decided to get vaccinated for recommended but not mandatory vaccinations.

**Conclusion:** The proactive call from healthcare services resulted to be the main promotor to reach this vulnerable population. The creation of a solid network between different services demonstrated to achieve excellent results and should be promoted as a best practice.

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### Quality of Life and its influencing Determinants for People with Acquired Brain Injuries

Luise Koch<sup>1</sup>, Mario Biggeri<sup>2</sup>, Federico Ciani<sup>2</sup>

<sup>1</sup>Technical University Munich Germany, <sup>2</sup>Università Degli Studi Firenze Action Research for CO Development (ARCO) Italy

**Background and objective:** A person with an acquired brain injury (ABI) faces multidimensional capability deprivations which in turn affect their well-being and quality of life (QoL). Free time (FT) activities play an important role in subjective well-being as they provide opportunities to meet life values and needs. This is especially relevant for people with disabilities (PwD), as they are often unwillingly confronted with a large amount of FT. The motivation for this work is that health-related indicators are not sufficient to explain the QoL of PwD as their well-being is directly linked to their ability to use their time in a fulfilling way. Applying Amartya's Sens Capability Approach for the first time from a disability perspective allows for illustrating the complexity of the determinants of the well-being of PwD.

**Methods:** Data collected between 2012 and 2014 from a large-scale survey, in-depth interviews and focus group discussions of a sample of 378 families having

one member with an ABI in two districts in Northern and Central Italy, is analysed. The quantitative analysis allows for insights into the quantity and quality of FT in light of well-being indicators. The combination with the qualitative insights of the interviews allows for drawing a conclusion regarding their overall life satisfaction.

**Results and conclusion**

The results indicate that the QoL of both PwD and their families are influenced by the household's economic vulnerability and low quality of social relations. Most importantly the research provides first indications of a negative correlation between the quantity and the quality of FT. This allows the formulation of policy implications for the improvement of the QoL of PwD, specifically that economic support alone is not sufficient. Public interventions must support the capability set expansion of PwD regarding their FT, i.e., the participation in purposeful, goal-oriented leisure activities, to improve their QoL.

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### Differential impact of COVID-19 by citizenship and degree of urbanisation in five Italian regions from February 2020 to July 2021: results of a collaborative study (supported by Ministry of health)

Alice Corsaro<sup>1</sup>, Chiara Girolamo<sup>2</sup>, Raffaella Rusciani<sup>3</sup>, Teresa Spadea<sup>3</sup>, Francesco Profili<sup>4</sup>, Caterina Silvestri<sup>5</sup>, Laura Cacciani<sup>3</sup>, Nera Agabiti<sup>3</sup>, Achille Cernigliaro<sup>6</sup>, Salvatore Scondotto<sup>7</sup>, Stefania D'Amato<sup>8</sup>, Anteo Napoli<sup>9</sup>, Alessio Petrelli<sup>9</sup>, Martina Ventura<sup>9</sup>, Paolo Rossi<sup>10</sup>

<sup>1</sup>Local Health Authority Parma Public Health Department, Local Health Authority Parma Italy, <sup>2</sup>Emilia-Romagna Region / University of Turin Regional Health and Social Care Agency, Emilia-Romagna Region / University of Turin Italy, <sup>3</sup>ASL TO3 Piedmont Region Epidemiology Unit, ASL TO3 Piedmont Region Italy, <sup>4</sup>Regional health agency of Tuscany Italy, <sup>5</sup>Regional health agency of Tuscany Regional health agency of Tuscany, epidemiology observatory, Florence, Italy, <sup>6</sup>Sicily Region / Health Authority, Trapani Province Department of Health Services and Epidemiological Observatory, Health Authority, Sicily Region / Complex Unit of Clinical Pathology, Department of Radiological Sciences and Services, Sant'Antonio Abate Hospital, Health Authority, Trapani Province Italy, <sup>7</sup>Sicily Region Department of Health Services and Epidemiological Observatory, Health Authority, Sicily Region Italy, <sup>8</sup>Ministry of health - Italy Office 05 - Prevention of the Communicable Diseases and International Prophylaxis Directorate-General for Health Prevention - Ministry of Health, Italy, <sup>9</sup>National Institute for Health, Migration and Poverty National Institute for Health, Migration and Poverty (INMP) Italy, <sup>10</sup>Azienda Unità Sanitaria Locale-IRCCS di Reggio Emilia Epidemiology Unit, Azienda Unità Sanitaria Locale-IRCCS di Reggio Emilia Italy

**Background and objective:** The COVID-19 pandemic produced greater negative effects on vulnerable populations, potentially more exposed to contagion and severe outcomes.

This cross-sectional study aimed to compare the impact of the pandemic between Italian and immigrant residents in five Italian regions (Piedmont, Emilia-Romagna, Tuscany, Latium, and Sicily), taking into account the degree of urbanisation.

**Methods:** Age-standardised monthly rates (smR) of positivity, hospitalisations and 30-day mortality were stratified by sex and citizenship and were calculated pooling the data of the 5 regions for all levels of urbanisation and restricting to urban areas only (DEGURBA-EUROSTAT=1); residents were observed until July 2021.

**Results:** Among the 23,098,881 residents as of 31/12/2020, 9.4% had non-Italian citizenship.

Positivity rates were slightly lower among immigrants than Italians at the start of the pandemic (-46.7% and -30.4% smR differences among males and females, respectively, in March 2020) and during the peaks of November 2020 (-17.9% and -19.1%) and March 2021 (-15.0% and -8.4%). Conversely, from July to September 2020, positivity rates (+177.7% and +176.3%), hospitalisation (+88.3 and +53.3) and mortality rates (+253.9% and +260.2%) became higher in the immigrant population, and then tended to be the same as in Italians until early 2021. Since February and during the spring of 2021, the mortality rates among immigrants exceeded that of Italians (+32.5% and +31.0% in April 2022).

Differences by citizenship were more pronounced in urban areas, particularly among males for hospitalisations (+296% in September 2020) and mortality (+103% in April 2021).

**Conclusions:** In the five analysed regions, immigrant residents showed higher rates of hospitalisation and mortality due to COVID-19 in summer 2020 and from February 2021, with greater excesses in urban areas among men and in the last months of the study period, when the impact of vaccination campaign became important in the control of the pandemic.

Nicola Caranci Emilia-Romagna Region Regional Health and Social Care Agency, Emilia-Romagna Region via A. Moro 21, 40127 Bologna. Italy Letizia Bartolini Azienda Unità Sanitaria Locale-IRCCS di Reggio Emilia Epidemiology Unit, Azienda Unità Sanitaria Locale-IRCCS di Reggio Emilia Italy

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### Promoting afghan migrants' health through participatory research

Susan Coan<sup>1</sup>, Louise Warwick-Booth<sup>1</sup>

<sup>1</sup>Leeds Beckett University United Kingdom

**Background and objective:** A UK university collaborated with an NGO which provides housing and support services in a neighbouring city to conduct some participatory research. The NGO invited volunteers and the people they support through the Afghan Relocations and Assistance scheme to undertake some peer research (also called community research).

**Methods:** Four people chose to become Community Researchers on this project: 3 Afghan men living in temporary hotel accommodation and one British woman who volunteers with the NGO. They received training and support from a university health promotion researcher; three training sessions on research, survey design, and research ethics. They chose to do some research on the mental health of Afghan people living for long periods in hotel accommodation. They designed a survey to investigate meaningful occupation that promoted good health and then spent 5 weeks collecting data. The Community and University Researchers analysed the data from the survey together.

**Results:** The Community Researchers spoke to 14 men individually and 15 women in a group. The respondents were aged 16 to 65. Cultural norms meant that the men could not ask women questions directly, so the female volunteer spoke to a group of women with an interpreter.

Respondents reported physical activity, social interaction and developing skills as the most significant factors in maintaining good health. Barriers to taking part in activities to promote health included language, caring responsibilities, and a lack of money. The Community Researchers produced recommendations regarding support which included: offering more opportunities to learn English; supporting independence through use of public transport; and facilitating connections with local people.

**Conclusion:** Community Researchers are experts by experience and bring important community knowledge. They gained a range of skills and increased confidence through the project and provided the NGO with practical advice on how best to support their community's health.

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### Evaluating vaccine and health literacy in European prisons: A cross-sectional study

Davide Petri<sup>1</sup>, Laura Baglietto<sup>1</sup>, Lara Tavoschi<sup>1</sup>, Sara Mazzilli<sup>1</sup>, Nicola Cocco<sup>2</sup>, Roberto Ranieri<sup>2</sup>, Vlad Busmachiu<sup>3</sup>, Babak Moazen<sup>4</sup>, Alicia Rosellò<sup>5</sup>, Fadi Meroueh<sup>6</sup>, Josefina Mavrou<sup>7</sup>

<sup>1</sup>University of Pisa Italy, <sup>2</sup>ASST-Santi Paolo e Carlo, <sup>3</sup>National Administration of Penitentiaries Moldova, Rep, <sup>4</sup>University of Frankfurt Germany, <sup>5</sup>UK Health Security Agency United Kingdom, <sup>6</sup>University Hospital Centre Montpellier France, <sup>7</sup>Cyprus National Addiction Authority Cyprus

**Background and Objective:** Vaccination reduces the risk of getting infectious disease by increasing the body's natural protection provided by the immunity system. Prison population should be a priority target for vaccination, but vaccine coverage is low due to several factors including high turnover and low vaccine literacy. This study is part of RISE-Vac, a 3-year EU co-funded project looking to increase vaccine literacy and uptake in prison populations across Europe. The aim is to evaluate the vaccine literacy among people living in prison (PLP) and custodial staff.

**Methods:** This is a cross-sectional study carried in 18 different European prisons from Italy, France, Germany, Cyprus, Moldova and UK. For each country the sample include 500 PLP and 400 custodial staff; the questionnaire comprises the following sections: lack of confidence, risk perception, general health literacy, vaccine literacy and intention to vaccinate, in addition to some demographic information. The questionnaire has been administered in local languages by trained personnel for PLP or self-administered for custodial staff.

**Results:** Data collection is still ongoing; so far, we collected 142 questionnaires from PLP and staff in Italian prisons and described the principal demographic variables (age, gender, country of birth, education level, previous house and work condition for PLP). For the scores retrieved regarding the parameters described above, we found no differences except for general health literacy section where PLP showed lower scores than staff (Kruskall-wallis p-value: <0.0001).

**Conclusion:** Assessing vaccine literacy in prison population is crucial for advocacy decisions and it is a difficult-to-reach field. This is the beginning of a study that will last until 2024 with a repeated cross-sectional study design. An intervention devoted to increase vaccine and health literacy among PLPs and staff will be carried out between the two cross-sectionals and its effectiveness will be evaluated in the next survey.

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### Oral health socio-epidemiological characterization of an indigenous population in the northeast region of Brazil

Herika Mauricio<sup>1</sup>, Lucas Santos<sup>2</sup>, Tainá Mafra<sup>2</sup>, Thatiana Fávoro<sup>1</sup>, Rafael Fiocruz Pernambuco<sup>3</sup>

<sup>1</sup>Universidade de Pernambuco Professor Brazil, <sup>2</sup>Fiocruz Pernambuco PhD Student Brazil, <sup>3</sup>Researcher Brazil

**Background/Objective:** The Xukuru do Ororubá people, one of the largest indigenous populations in Northeastern Brazil and the largest in the State of Pernambuco, have their Indigenous Land of 27,550 hectares organized into 3 socio-environmental regions (Serra, Ribeira and Agreste) and 24 villages located in the municipality of Pesqueira, sheltering 7,857 people. The aim was to characterize the indigenous people aged 18 to 23 years of age of the Xukuru do Ororubá ethnic group regarding the use of dental services, self-perception of oral health, oral hygiene practices and caries experience, as well as socioeconomic and demographic aspects.

**Methods:** This is a population-based cross-sectional study, nested in a cohort initiated in 2010, developed in the limits of the Xukuru do Ororubá Indigenous Land in 2018. Based on the performance of oral examinations and application of questionnaires, the study involved the participation of 131 indigenous people in the age group of 18 to 23 years old. Data were collected using Epi-Info software, and the statistical program SPSS 20.0 was used to develop descriptive statistics. To compare the pattern of caries experience identified among indigenous individuals with results from the National Oral Health Survey (SB Brazil 2010), graphs were constructed in the R software.

**Results:** The caries experience verified by the DMFT Index obtained a mean equivalent to 7.4 (SD=5.1), with the mean of the components of the Index corresponding to 22.8 for healthy teeth, 2.4 for decayed teeth, 0.2 for filled and decayed teeth, 3.5 for filled teeth, and 1.4 for missing teeth.

**Conclusion:** The oral health status of indigenous people is characterized by significant inequality when compared to the results of epidemiological surveys conducted in the country involving other population groups.

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### Changes in lifestyle habits and sociodemographic characteristics associated with these among migrant origin populations in Finland compared with the general population.

Natalia Skogberg<sup>1</sup>, Tyler Prinkey<sup>1</sup>, Eero Liija<sup>1</sup>, Päivikki Koponen<sup>1</sup>, Anu Castaneda<sup>1</sup>

<sup>1</sup>Finnish Institute for Health and Welfare Finland

**Background and Objective:** Impact of COVID-19 on lifestyles of migrant origin populations has been largely understudied despite evidence that this population group was more strongly impacted by the pandemic. This study compares the impact of COVID-19 on lifestyles of migrant origin population with the general population, and examines the sociodemographic characteristics of those reporting adverse changes.

**Methods:** Data from the Finnish population-based MigCOVID Survey conducted 10/2020-2/2021 among foreign-born persons aged 20-66 years (n=3668) was used, with participants in the FinHealth 2017 follow-up study (n=3490) as the reference group. Lifestyles included physical activity, snacking, and fruit and vegetable intake. Logistic regression was applied to examine the association of sociodemographic characteristics with adverse changes in lifestyles.

**Results:** Physical activity decreased more frequently in migrant (39.5%, 95%CI 36.6-42.6) than general population (30.4%, 95%CI 28.1-32.8), whereas differences in adverse changes in snacking and fruit and vegetable intake were not significant. Tertiary education (OR 2.79, 95% CI 1.71-4.55 for migrant; OR 2.61, 95% CI 1.67-4.08 for general population) and remote work (OR 2.22, 95%CI 1.54-3.20 for migrant; OR 1.53, 95%CI 1.05-2.25 for general population) were associated with decrease in physical activity after adjustment for other sociodemographics. Increase in snacking was more likely in higher education groups in general population only. The association of younger age with adverse lifestyles was more evident in the general population.

**Conclusions:** COVID-19 adversely impacted lifestyles particularly in

sociodemographic groups that generally tend to have more favourable habits, such as those with higher education and non-manual jobs. This was observed both in migrant and general population, however it was more consistent in the latter group. This may be due to some reporting bias, but our results point out the need to identify groups with higher impact when targeting health promotion measures.  
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### Health literacy and COVID-19 in migrants: Results from the sprint2 project

Patrizio Zanobini<sup>1</sup>, Patrizio Zanobini<sup>1</sup>, Chiara Lorini<sup>1</sup>, Giovanna Tizzi<sup>2</sup>, Maria Caldés Pinilla<sup>3</sup>, Guglielmo Bonaccorsi<sup>1</sup>

<sup>1</sup>University of Florence Italy, <sup>2</sup>Oxfam Italia Italy, <sup>3</sup>Centro Salute Globale Spain  
 Background and Objective: Migrants generally reported low levels of health literacy (HL) thus increasing their difficulties in accessing and interacting with the healthcare system. This study aims to assess the HL level of 2 samples of asylum seekers and refugees residing in Tuscany, and to examine the relationship among HL, educational interventions, COVID-19 risk perception and preventive behaviours.

Methods: Questionnaires were administered to a voluntary sample of refugees and asylum seekers (group A) between June and September 2021 and to another sample between April and September 2022 (group B) who participated at least in one out of four health-related educational intervention. HL has been measured by the Italian version of HLS-EU-Q16.

Results: Among 171 subjects belonging to group A 25% had an inadequate HL level. Group B consisted of 102 respondents of whom 37% had an inadequate HL level. Group B compared with group A had higher percentages of respondents who considered COVID-19 a serious health problem (58.8% vs 41.1%), very likely to be infected by SARS-CoV-2 (58.2% vs 29.6%) and who thought quarantine (89.7% vs 75.9%), nasopharyngeal swabs (78.4% vs 61.2%), and to get COVID-19 vaccination (89.4% vs 66.1%) were important preventive measures.

HL level was found to be significantly associated ( $p < 0.05$ ) with COVID-19 risk perception and propensity for handwashing, face mask use, and social distancing. At multivariate logistic analysis, low educational level and residing in Italy for less than 2 years were found to be predictors of inadequate HL level (OR 2.7 CI 95% 1.22-6.13; OR 3.9 CI 95% 1.93-7.79, respectively).

Conclusions: Findings suggest that HL and educational interventions are key to improve healthy behaviours. Structured educational interventions to increase HL levels will give contribution in the process of inclusion and integration of migrants thus reducing health related inequalities.

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### Violence against women by an intimate partner in primary care services: From neglect to medicalization

Dinair Machado<sup>1</sup>, Margareth de Almeida<sup>2</sup>, Elen Castanheira<sup>1</sup>

<sup>1</sup>Faculdade de Medicina de Botucatu - Depto de Saúde Pública Brazil,

<sup>2</sup>Faculdade de Medicina de Botucatu - Depto de Saúde Pública

This article aimed to identify strategies for dealing with situations of violence against women by primary health care professionals, especially physicians. This is a qualitative research that combines documentary sources, medical records and interviews. This study brought together steps 2 and 3 of a larger survey in which reports of occurrences of gender violence perpetrated by an intimate partner were analyzed. Primary information was obtained through interviews with 16 women and secondary information from 14 medical records of the women's referral health services. The information was analyzed according to Bardins content analysis, revealing two main categories of analysis: professionals reiterated violence as a domestic phenomenon restricted to the private environment; and the medicalization of violence. It was found that when violence against women is not made invisible or neglected, it is medicalized.

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### Implementing video consenting for an indigenous Australian diabetes clinical trial

Mariam Hachem<sup>1</sup>, Mariam Hachem<sup>1</sup>, FlashGM Team<sup>2</sup>

<sup>1</sup>University of Melbourne University of Melbourne, Austin Health 7 Finch Street Australia, <sup>2</sup>University of Melbourne Australia

Background: Diabetes is a major problem for Indigenous Australians. Clinical trials specifically for Indigenous Australians are necessary to provide evidence for the use of new diabetes technologies and therapies to reduce diabetes and its complications. However, consenting procedures for clinical trials are often

time-consuming and not culturally specific. We are conducting a national, multi-centre clinical trial using a wearable diabetes technology, flash glucose monitors, for Indigenous Australians with type 2 diabetes across metropolitan, regional, rural and remote Australia (FlashGM Study, in progress) (NHMRC funded). To ensure standardised and culturally specific consenting, we developed an informed consent video.

Objective: To implement an informed consent video as part of a large multi-centre, national, randomised controlled trial for Indigenous Australians. The overarching study aims are to assess the effects of flash glucose monitoring on haemoglobin A1c, time in range, reducing low glucose episodes and cost-effectiveness from baseline to 6 months.

Method: In April 2020, a plain language script was written by Indigenous researchers. An Indigenous artist with lived experience of type 2 diabetes designed the video artwork, with voice-over by an Aboriginal study team member. Video animation and production was facilitated by the University of Melbourne. Video completion occurred in June 2020. Iterative cycles of reviewing and feedback were undertaken by the Study team between May-June.

Results: The video was designed to supplement the participant informed consent form as part of consenting at the first trial visit. The 3-minute video is hosted on YouTube and includes subtitles (English): (<https://www.youtube.com/watch?v=u11T7u6expk> [1]). 100 participants across 10 clinical trial sites were consented using the video with positive feedback from clinical trial participants, staff and communities.

Conclusion: Video consenting is an innovative way of delivering culturally appropriate consent for clinical trials in Indigenous health settings. Consenting for clinical trials must be culturally appropriate and accessible for participants.

<https://www.youtube.com/watch?v=u11T7u6expk>

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### Black women's maternal health in the us and uk

Gwenetta Curry<sup>1</sup>

<sup>1</sup>University of Edinburgh 26 Learmonth Terrace, Flat 6 United Kingdom

Black women's maternal health in the UK and the US has suffered greatly due to the impact of racial inequality and structural racism. In both countries Black women's pregnancy related deaths have exceeded their white counterpart by more than three times the rate. According to the CDC US Black women experience 41.4 pregnancy-related deaths per 100,000 live births compared to 13.7 among white women between 2016-2018. The Mothers and Babies: Reducing Risk through Audits and Confidential Enquiries report show that Black women in the UK experience 40 maternal deaths per 100,000 pregnancies compared to 8 among white women between 2014-2016. Although socioeconomic status has clear links to poor health outcomes Black women experience higher rates of pregnancy-related deaths at every level of education. Black women are more likely to live in areas in low-income areas and work in occupations that put them at higher risk during pregnancy. Some of these deaths have been attributed to the lack of resources in Black communities while others have clear links to racist or discriminatory treatment by medical practitioners. During the COVID-19 pandemic, ethnic minority pregnant women in the UK experienced a higher rate of severe reactions. Previous studies have shown that Black women's pain has not been taken seriously and are assumed to be drug-seeking when requesting assistance with pain management. In this article, I aim to examine the link between maternal mortality in the US and UK and structural racism

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### Ten years (2013-2022) of health research among indigenous minorities in Colombia, Latin America

Marcela Arrivillaga<sup>1</sup>

<sup>1</sup>Pontificia Universidad Javeriana Cali, Cali, Colombia

Objective: This study aimed to describe the health research conducted among indigenous minorities in Colombia between 2013 and 2022. Methods: A scoping review of original research articles that met the criteria of quality, epistemological adequacy, relevance, validity, and reflexivity was conducted.

Results: In 10 years, 49 original studies were identified that reveal that health research has been carried out mainly on the indigenous cosmovision in relation to health and disease understandings, health services, sexual and reproductive health, infectious diseases, nutrition, mental health, non-communicable diseases and oral health. The regions of Colombia where more research has been carried out have been Cauca, Guajira and Amazonas; the studies have been oriented mainly by qualitative methods and techniques. Conclusions: Health research among indigenous minorities in Colombia has recognized intercultural differences linked

to the beliefs and practices of these groups. the authors highlight the importance of guaranteeing equitable access to quality health services. this review can promote research networks in Colombia and in other regions of the world. ethnic minorities require greater efforts to guarantee the right to health, prevent diseases and contribute to their general well-being.

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### The right to be yourself: a comparison of legal gender recognition policies in EU countries. The case of Hungary, the Netherlands and Malta

Juan Barrios<sup>1</sup>

<sup>1</sup>Faculty of Health, Medicine and Life Sciences, Maastricht University, The Netherlands

Background and objectives: "Everybody in the European Union should be safe and free to be themselves." is the initial statement in the European Union (EU) document on the LGBTIQ Equality Strategy 2020-2025. However, this reality does not apply to all. The aim of this study is establishing a comparison on the grounds of LGR procedures between EU member states, specifically Malta, the Netherlands, and Hungary, bringing to Discussion the impact of LGR for trans population across these countries.

Methods: This document has been developed under a two-stage Methodology. A quantitative method was carried out to review the 27 EU Member States' compliance on Legal Gender Recognition indicators for further clustering and country selection. TransRights Map (TRM) is an online database platform on trans rights and protections. This tool was reviewed along with local LGR policies and regulations (qualitative stage).

Results: EU Member States were clustered into three groups according to the indicators they met. Hungary (Cluster 1) has complied with 0 of the indicators for LGR, with a law passed on March 2020 continues to burden trans on their everyday lives. The Netherlands (Cluster 2) with 7 indicators complied, amended the Civil Code in 2014 providing the elimination of the sterilization requirement for LGR. However, it still requires medical and/or psychological diagnosis or testimony to start running the procedure. On the other hand, Malta (Cluster 3), by means of the Gender Identity, Gender Expression and Sex Characteristics Act of 2015 entitles their trans population to update their legal gender based on self-determination and bodily integrity.

Conclusions: Comparisons between the countries vary from existence or disregard for LGR procedures to barriers and difficulties to achieve LGR. Inclusion of transgender population in the professional provision of care and decision-making process should be reinforced through knowledge production of scientific evidence and lived-experience evidence.

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### Health of migrants and ethnic minorities - medical and social aspects in Bulgaria

Mariela Kamburova<sup>1</sup>

<sup>1</sup>Medical University-Pleven, Pleven, Bulgaria

Background: Migrants and ethnic minorities (MEM) often face serious inequities concerning their state of health and their access to health services. These inequities are increasingly being brought to light by public health researchers, but action to tackle them has lagged behind.

Objective: To explore medico-social problems of migrants and persons of Roma origin, aspects of their health care and effects of the COVID-19 epidemic among the Roma ethnic group in Bulgaria.

Materials and Methods: A complex observational cross-sectional study and participatory health research have been conducted. The migrant and minority status of the covered persons as factors determining the health risk factors and the preparedness of the health system in Bulgaria to respond to specific health problems of MEM was analysed. Quantitative and qualitative data were collected through an unstructured interview. Summary criteria for reporting qualitative research: COREQ - checklist was used. Data processing was performed by SPSS v.24.

Results: The study confirms the hypotheses: Roma population is characterized by an unfavourable risk constellation and an unfavourable health profile; the health services provided to the persons of Roma origin are inadequate to their needs; the opinion of the citizens of Roma origin about the effect of the anti-epidemic measures on their lives is negative; the health system in the country is not prepared to meet the health needs of migrants. The study does not confirm the hypothesis that the opinion of the society and front line specialist is that health status of migrants does not affect negatively public health in Bulgaria.

Conclusions: Negative aspects in health status and in the distribution of health determinants are more common among MEM in Bulgaria. In order to establish MEM friendly health system and to improve the quality of services provided development and enhance skills of professionals working at local level is crucial.

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### Impact of work and working conditions on low back pain among fisher women: a cross sectional study in Trivandrum

Jazeela A.<sup>1</sup>

<sup>1</sup>Sree Chitra Institute of Medical Science and Technology, India

Background: Musculoskeletal problems are observed to be higher in the low-income group of people who are engaged in physically demanding jobs. Objectives: The purpose of this study was to find the prevalence of Low Back Pain and associated factors for low back pain in coastal fisherwomen. Methods: Cross-sectional study was conducted among 336 fisherwomen aged 18 to 49 years from 7 out of 16 fishing villages in Trivandrum Corporation which were randomly drawn. Prevalence of Chronic Low Back Pain was estimated using Nordic Body Map and screening questions which rule out pain occurrence in the past 3 months, past 6 months, and past one year. Pearson Chi-Square test and binary logistic regression were performed to understand the association between chronic low back pain and pain severity with associated factors.

Results: The prevalence of low back pain in coastal fisherwomen was determined to be 45%. Higher BMI, histories of UTI, stress induced headaches, fall, physical abuses, higher frequency of drinking water collection, more years of fishing related work, not standing for long while working were found to be associated with chronic low back pain. Lesser income, not standing while working, improper seating while work, not designating stipulated time during work were found to be associated with pain severity in bivariate analysis. In binary logistic regression, all the factors except lesser monthly income and stipulated time for rest became predictors for pain severity. Conclusions: Our study demonstrated that Low back pain is a common problem among fisherwomen. Correcting the working environment and posture gains importance.

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### Evidence on tuberculosis in migrants at Brazil's international borders: a scoping review

Inês Fronteira<sup>1</sup>, Débora Soares<sup>2</sup>, Aline Placeres<sup>3</sup>, Ricardo Arcêncio<sup>4</sup>

<sup>1</sup>Global Health and Tropical Medicine Institute, Lisbon N University, Lisbon, Portugal, <sup>2</sup>Global Health and Tropical Medicine Institute, Universidade Nova de Lisboa, Portugal, <sup>3</sup>Global Health and Tropical Medicine Institute, Universidade Nova de Lisboa, Lisbon, Portugal, <sup>4</sup>Escola de Enfermagem de

Ribeirão Preto, Universidade de São Paulo, Vila Monte Alegre, Brazil

Objectives: To map scientific evidence on the extent of tuberculosis in migrants from the international borders between Brazil and the countries of South America.

Design: Scoping review of quantitative, qualitative and mixed studies. The research was conducted between February and April 2021. The terms "migrants", "tuberculosis", "Brazil", "Uruguay", "Paraguay", "Bolivia", "Peru", "British Guiana", "English Guiana", "French Guiana", "Suriname", "Venezuela", "Argentina", "Colombia" combined with Boolean operators "AND" and "OR" to identified relevant documents. Studies addressing tuberculosis on migrants from international borders of Brazil were included. Pubmed Central (PMC), LILACS (Scientific and technical literature of Latin America and the Caribbean/BVS), Scopus (Elsevier), Scielo (Scientific Electronic Library Online) and gray literature CAPES thesis database were searched. The study was carried out in three stages where the data was selected and extracted by two independent reviewers for full reading.

Results: A total of 705 articles were extracted from the databases chosen for the search, 04 master's dissertations and 01 doctoral thesis. A total of 58 documents were, thus, selected for assessment of the full text. Of these, 40 were further excluded for not meeting at least one of the eligibility criteria. A total of 18 studies were included for data collection: 15 articles, 2 master's dissertations and 1 doctoral thesis, produced between 2002 and 2021.

Conclusions: This scoping review mapped the existing evidence on tuberculosis at the international borders of Brazil and on access of immigrants with tuberculosis to health services in Brazil. Descriptors: tuberculosis; immigrants; public health surveillance; epidemiological surveillance; sanitary control of borders; health services accessibility

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### Perceived importance of interviewees' information when giving

### health support interviews to former prisoners: a cross-sectional study of public health nurses in charge of lifestyle-related diseases in Japan

Ryoko Kawasaki<sup>1</sup>, Mayumi Mohnishi<sup>1</sup>

<sup>1</sup>Graduate School of Biomedical Sciences, Nagasaki University, Japan

**Background and Objective:** This study targeted public health nurses (PHNs) who provide health support in lifestyle-related diseases as public servants of their local government in Japan, and investigated the influence of having or not having experience in providing health support to former prisoners on their perceived importance of collecting information during interviews.

**Methods:** A cross-sectional study was conducted using self-administered questionnaire. Three copies of the questionnaire were mailed to each of the 1,724 municipalities of Japan (5,172 copies in total) from November 5 to December 20, 2021. Responses were obtained on a four-point scale of "very important", "important", "not very important" and "not important" for seven types of information that should be ascertained when interviewing former prisoners. This survey was conducted after review and approval by the Ethics Committee of the presenters institution.

**Results:** A total of 1,371 responses were received (response rate: 26.5%), with 1,324 valid responses. Of the respondents, 204(15.4%) of PHNs indicated that they had experience in providing health support to former prisoners. Logistic regression analysis was conducted using the experience of providing support to former prisoners as the dependent variable, with years of experience and gender as adjustment variables, in relation to the perceived importance of information to be confirmed when meeting with former prisoners. The information that PHNs with experience providing support to former prisoners perceived as "most important" for health support were family structure (AOR:1.52, 95%CI: 1.09-2.10), economic status (AOR:1.64, 95%CI: 1.20-2.25), contact information of supporters (AOR:2.03, 95%CI: 1.48-2.79) and type of crimes (AOR:1.55, 95%CI: 1.10-2.20), while length of prison sentence (AOR:0.96, 95%CI: 0.64-1.45), medical history (AOR:0.97, 95%CI: 0.61-1.53) and educational status (AOR:1.17, 95%CI: 0.85-1.61) were not statistically significant.

**Conclusions:** When providing health support to former prisoners, PHNs more likely addressed type of crimes committed rather than their length of prison sentence.

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### Addressing health inequities using cultural responsiveness in a student-implemented remote area health service

Narelle Campbell<sup>1,2</sup>, Chris Rissel<sup>3</sup>, Chris Hince<sup>3</sup>, Jonathan Karnon<sup>4</sup>, Kylie Stothers<sup>5,2</sup>, Ruth Barker<sup>6,2</sup>, Lipaki Dhamarrandji<sup>3</sup>, Murphy Yunupingu<sup>7,8</sup>

<sup>1</sup>College of Medicine and Public Health, Rural and Remote Health Northern

Territory, Flinders University, Australia, <sup>2</sup>Northern Australia Research

Network, Australia, <sup>3</sup>College of Medicine and Public Health, Flinders

University, Australia, <sup>4</sup>Flinders Health and Medical Institute (FHMRI),

Flinders University, Australia, <sup>5</sup>Indigenous Allied Health Australia, Australia,

<sup>6</sup>College of Healthcare Sciences, James Cook University, Australia, <sup>7</sup>Flinders

University, Australia, <sup>8</sup>Dhupuma Foundational Education Centre, East Arnhem

Land School, Australia

**Background and Objective:** In Australia's most remote regions, insufficient health workforce to prevent and manage serious chronic disease is one contributor to a high burden of poor health. The discourse around Australian First Nations people generally focuses on disadvantage while overlooking their cultural strength, capability and diversity. Our Objective was to co-design and deliver a culturally responsive student-implemented rehabilitation and disability service through a partnership that demonstrated strengths of First Nations Yolŋu culture, while at the same time, filled a workforce gap, addressed health inequities, and educated future clinicians in-place in remote East Arnhem Land (Northern Territory). **Methods:** In 2019, we co-designed, delivered and evaluated a student-implemented service with an emphasis on cultural immersion for the students. Our aim was to understand (via interview and service data) the feasibility and acceptability of the service to Yolŋu community members. Resuming post-covid, a 2022 project has involved an economic analysis of the student implemented service compared with other service models, and in 2023, the evaluation will specifically focus on a culturally responsive cardiac rehabilitation and prevention service. **Results:** To date, 17 students, more than 100 Yolŋu community members, and more than eight organisations have contributed to the service and the students learning. Cultural education and support have been provided through employed Yolŋu cultural experts. The service has been shown to be acceptable and feasible with two-way learning between students and Yolŋu participants as a key underpinning of the service demonstrating cultural responsiveness. The economic analysis is underway with Results available by the conference; the initial implementation of

the cardiac rehabilitation service will also be described. **Conclusions:** Embracing the strengths of First Nations Peoples is a critical component of culturally responsive healthcare to manage and/or prevent decline in chronic disease while addressing health inequities through student-implemented services.

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### Violence against sexual minorities in Brazil: analysis of the National Health Survey, 2019

Deborah Malta<sup>1</sup>, Nadia Vasconcelos<sup>1</sup>, Francielle Alves<sup>1</sup>, Gisele Andrade<sup>1</sup>

<sup>1</sup>Universidade Federal de Minas Gerais, Brazil

**Background and Objective:** Prejudice against sexual diversity is one of the faces of Gender-based Violence. Lesbians, gays, bisexuals, and other sexual minorities (LGB+) are victimized all over the world and Brazil is considered the most violent country against this population. However, there is a lack of data on this condition in the country. Thus, the aim of this study was to analyze the association between self-reported sexual orientation and violence in the Brazilian population. **Methods:** Cross-sectional epidemiological study using the 2019 National Health Survey database. Total violence and its subtypes (psychological, physical, and sexual) in the last 12 months were analyzed. Prevalence and Adjusted Odds Ratio (ORaj) by age group were estimated, with their respective 95% confidence intervals (95%CI), according to self-reported sexual orientation of the population over 18 years in Brazil.

**Results:** The Brazilian population report themselves mostly as heterosexual (94.75%), and 1.89% declaring themselves LGB+. The prevalence of total violence in Brazil was 18.27%, being lower among heterosexual men (16.35%; 95%CI: 15.62-17.11), while LGB+ women had the highest prevalence (42,51%; 95%CI: 36.26-49.01). The LGB+ population was more than twice as likely to experience any type of violence (ORaj: 2.52; 95%CI: 2.08-3.07). LGB+ women were more than three times more likely to experience physical violence compared to heterosexual women (ORaj: 3.18; 95%CI: 2.09-4.83). Meanwhile, LGB+ men were almost eight times more likely to experience sexual violence than heterosexual men (ORaj: 7,76; 95%CI: 3.38-17.81). **Conclusions:** Violence against the LGB+ population was highly prevalent in the country. LGB+ women had the highest prevalence of all subtypes of violence and heterosexual men the lowest. Public Policies aimed at this population are necessary to address prejudice against sexual diversity and guarantee the rights of non-heterosexual people.

**Keywords:** sexual and gender minorities, sexual discrimination, gender-based violence, health surveys

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### Causa-mortis: sex, gender, race, and ethnic disparities in AIDS obituaries in the US: 1982-2000

João Ferreira<sup>1</sup>

<sup>1</sup>Universidade de São Paulo, São Paulo, Brazil

There continue to be disparities in post-mortem descriptions of human immunodeficiency virus-acquired immunodeficiency syndrome (HIV-AIDS) deaths among homosexual men, lesbians, and trans people. In this research, we examined AIDS obituary records in the United States from 1982 to 2000, considering sex, gender, and racial/ethnic differences. To understand how the causes of death were recorded in obituaries of individuals who had died from HIV-AIDS complications, we studied two lesbian, gay, and transgender (LGT) obituary collections: (i) the obituaries from the Bay Area Reporter and (ii) the AIDS archive from the Arthur and Elizabeth Schlesinger Library. Five-thousand-three-hundred-eighty obituaries were extracted. Studying how AIDS deaths were publicised in the press, the intersectional analysis of sex, gender, race, and ethnicity showed that there were continuing inequalities in how post-mortem transcripts were publicised in obituaries in the 1980s and 1990s. Although the cause of death in AIDS obituaries of white homosexual men (n = 4140; 94.20%) was mostly informed by the generic term "cancer" – and its euphemisms and variations – among African Americans (n = 465; 85.30%) and Latino (n = 145; 87.90%) homosexual men, the cause of death transcript from "complications resulting from AIDS" was more prevalent. The obituaries, produced mostly by family members, friends, partners, and journalists, also showed how stigmatised communities learned to name the disease and portrayed it using the current pathological language. Not coincidentally, the more direct transcripts that pointed to the term "AIDS" were more prevalent in the obituaries of people racialised by colour, provenance, and social origin.

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### The impact of the COVID-19 pandemic on the mental health of Filipino migrant domestic workers in Hong Kong

Yeuk Tran<sup>1</sup>, Leonard Lim<sup>2,3</sup>

<sup>1</sup>The Chinese University of Hong Kong, Hong Kong, China, <sup>2</sup>College of Medicine, University of Philippines, Philippines, <sup>3</sup>London School of Hygiene and Tropical Medicine

**Background and Objectives:** During covid-19, Filipino migrant domestic workers' lifestyles were greatly restricted, largely at the discretion of their employers. As these workers usually lived with their employers, they were asked to remain at home 7 days a week and cut off from their social network and other support systems. This study aims to explore the impacts of covid-19 on their mental health.

**Methods:** A territory-wide online survey was distributed to 205 Filipino migrant domestic workers in 2022. Participant's experience and perception of covid-19 were used as the main independent variables. General anxiety disorder-7 (gad-7) and patient health questionnaire-9 (phq-9) were used to assess the participant's anxiety and depression symptoms, respectively. A higher score in both the gad-7 and phq-9 meant worse mental health outcomes. General linear models were performed separately after adjusting for socio-demographic factors.

**Results:** Out of the 205 participants, 32 (15.6%) showed moderate to severe anxiety while 31 (15.1%) showed moderate to severe depressive symptoms. Support from friends in Hong Kong was associated with higher gad-7 ( $\beta$  1.821; ci 0.363, 3.279) and phq-9 ( $\beta$  1.833; ci 0.528, 3.138) scores. Support from employers ( $\beta$  -1.925; ci -3.362, -0.488) and from families in the Philippines ( $\beta$  -1.886; ci -3.334, -0.438) were associated with lower gad-7 scores. Support from family in the Philippines ( $\beta$  -2.389; ci -3.686, -1.093) was associated with lower phq-9 scores. **Conclusions:** There have been relatively high rates of anxiety and depressive symptoms amongst Filipino migrant domestic workers during the pandemic. Their support systems play an influential role in mental health outcomes. The changing nature of these support systems compared to pre-pandemic may affect the way mental health is impacted. Future studies can investigate how these support systems have changed over the pandemic.

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### At all times, we were accompanied by the association: the experiences of refugee families in access to health care in Portugal

Sónia Dias<sup>1,2</sup>, Filipa Rodrigues<sup>3,4</sup>, Sónia Dias<sup>5,6</sup>, Maria Martins<sup>7</sup>

<sup>1</sup>NOVA National School of Public Health, Public Health Research Centre, Universidade Nova de Lisboa, Lisbon, Portugal, <sup>2</sup>Comprehensive Health Research Center, Universidade Nova de Lisboa, Lisbon, Portugal, <sup>3</sup>NOVA National School of Public Health, Public Health Research Centre, Universidade NOVA de Lisboa, Lisbon, Portugal, <sup>4</sup>Comprehensive Health Research Center, Universidade NOVA de Lisboa, Lisbon, Portugal, <sup>5</sup>NOVA National School of Public Health, Public Health Research Centre, Universidade NOVA de Lisboa, Portugal, <sup>6</sup>Comprehensive Health Research Center, Universidade NOVA de Lisboa, Portugal, <sup>7</sup>Portuguese Institute of Hygiene and Tropical Medicine, Universidade NOVA de Lisboa, Lisbon, Portugal

Conflicts worldwide continue to force millions of refugees to displacement. Refugees are a group well known to experience social and health vulnerabilities. Refugee children's health is influenced by complex factors, including healthcare access of caregivers in host countries. Experiences of refugee families in navigating the health services are little known. This study aimed to explore the refugee caregivers' perceptions of their children's access to health care in Portugal. In this qualitative study, semi-structured interviews were conducted between July and November 2022 with n=22 refugee caregivers mainly from Afghanistan, Syria and Ukraine. The interview guide addressed refugee caregivers' opinions and experiences regarding their children access to health care in Portugal. Data were analysed through thematic analysis. Interviews were transcribed and coded independently by two researchers. Three themes emerged from the interviews: refugees' healthcare-seeking behavior, barriers and facilitators in access to health care. Parents reported to seek hospital care for children health emergencies or when were unable to access primary health care. The long waiting times for appointments and language difficulties were pointed out as major barriers. Lack of continuity of care for children and family health problems was reported as a consequence. Facilitators in access to health care included social support from local organizations, family members and community. Caregivers highlighted the role of this social support in helping them in accessing and navigating the health services, in becoming familiar with a new health system, in making appointments and in helping with communication during visits. Refugee families experience

structural barriers that are common to the general population but also specific constraints, such as language and communication difficulties, that must be addressed. Social support networks are crucial for refugee families' access to health care and integrating their resources may contribute to strengthen health systems responsiveness to minorities needs in access to healthcare.

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### Sociodemographic factors associated with the degree of medical knowledge in the care of transsexual and transgender patients in Veracruz, Mexico

Carolina Pérez<sup>1</sup>, Iant Reyes<sup>1</sup>, Josue Villegas-Dominguez<sup>2</sup>, Carolina Taffoya<sup>3</sup>, Carlos Montero<sup>4</sup>

<sup>1</sup>School of Medicine, Universidad Veracruzana, Mexico, <sup>2</sup>Universidad Veracruzana, Mexico, <sup>3</sup>Carolina S.A, Mexico, <sup>4</sup>Carlos Montero Md, Mexico

**Background:** According to a survey carried out by the National Institute of Statistics and Geography, the LGBTI+ community constitutes 5.1% of the population over 15 years of age. Within the medical services that these patients use, 52.2% are treated in public institutions where they are attended by general practitioners. Mexico doesn't have doctors specialized in patients from the Trans community in public health institutions, so knowledge in the management of first contact doctors is essential to provide quality care to this population.

**Objective:** To determine the sociodemographic factors associated with the degree of doctors knowledge about the transsexual and transgender patient

**Methods:** An observational, analytical, cross-sectional and prospective study was carried out applying a Questionnaire of Knowledge about the Care of the Transgender Patient (a Cronbach 0.77) that has a maximum of 42 points. General practitioner, medical interns and family physician from Veracruz, Mexico was included. The variables age, gender, sexual orientation, training on the topic, religion, workplace, university graduation time, previous care of LGBT+ patients and having friends from the LGBT+ community were studied.

**Results:** 116 doctors were included, 54.3% were men, 87.9% were cisgender, 69.0% heterosexual, aged 30.4(±11.2) years. The results of the knowledge test show a score of 16.6 (±5.6) correct answers, with a maximum of 29 and a minimum of 4; 20.7% with a score higher than 21, showing differences (p<0.05).

**Conclusions:** The level of knowledge of primary care physicians is very low, so it is necessary to provide formal training in this area, since despite having factors associated with "higher" knowledge, this level is insufficient for according to the observed scores.

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### Attachment and disordered eating: a cross-sectional study of young Lebanese adults encompassing gender and sexual orientation differences

Rim Nehme<sup>1</sup>

<sup>1</sup>American University of Beirut, Beirut, Lebanon

At present, research indicates that insecure attachment is linked with disordered eating. However, there is no consensus on the potential differences in attachment and disordered eating considering people with conforming and non-conforming gender and sexual orientation. This study aimed to assess the differences among people of different genders and sexual orientations in attachment and disordered eating. In this study, 103 young Lebanese adults aged between 18 and 25 were recruited online and took the Experiences in Close Relationships Scale – Short Form (ECR-S) and Eating Attitudes Test (EAT-26). Conclusively, participants were grouped as either cis-heterosexual (n=62; 59%) or LGBTQ+ (n=41; 39%). Attachment anxiety was more prominent among persons who identify as LGBTQIA+ than cis-heterosexuals (U = 2.35, p = .019). Although there were no differences in levels of disordered eating between the two groups, disordered eating was positively correlated with attachment avoidance in cis-heterosexuals (rs = .27, p = .021) and with attachment anxiety in LGBTQIA+ individuals (rs = .38, p = .008). Women had significantly higher levels of disordered eating than men in the cis-heterosexual group (U = 238.5, p = .023), while this relationship was absent within the LGBTQIA+ group. The findings suggest the possibility of different expressions of attachment and mechanisms for disordered eating based on gender and sexuality. This study may drive future research to understand the expression of eating disorders considering the individual's underlying attachment, gender, and sexuality.

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### Health care access in times of COVID-19: the experiences of

## refugees in Lisbon

Vanessa Portela<sup>1</sup>, Sousan Hamwi<sup>2</sup>, Maria Martins<sup>3</sup>

<sup>1</sup>Institute of Hygiene and Tropical Medicine, Nova University of Lisbon, Portugal, <sup>2</sup>Institute of Public Health of the University of Porto, Portugal,

<sup>3</sup>Global Health and Tropical Medicine, Institute of Hygiene and Tropical Medicine, Nova University of Lisbon, Portugal

**Background and Objective:** To address the health needs of refugees it is essential that health services are culturally competent and facilitate the access of this population to health care, especially in a context prone to the amplification of social inequities as the COVID-19 pandemic. However, no studies exist in Portugal exploring refugees' access to health during COVID-19 pandemic. The Objective of this study is to describe socioeconomic and demographic characteristics of refugees living in Lisbon and to identify their health care patterns during the COVID-19 pandemic.

**Methods:** A cross sectional descriptive study was conducted from May to November 2022. A 38-item questionnaire was applied to 36 refugees living in Lisbon through face-to-face interviews. Descriptive statistics were used to characterize sociodemographic and healthcare access profile during COVID-19.

**Results:** The majority of participants were male (56%), with a mean age of 35 years, 72% were married, most had at least a secondary education (69%), but more than half were unemployed; the respondents came from seven countries and all had been integrated in the Refugee Reception Program; the median length of stay was 17 months. All were registered in a primary care center and during the pandemic, 94% used healthcare services. The majority tested negative for the coronavirus (58%), one was admitted to hospital due to severe COVID-19; most participants were compliant with preventive measures and 97% received COVID-19 vaccination; 69% had an incomplete schedule. More than half didn't seek health care because of structural and cultural barriers and most had difficulty getting medical advice by phone or email (57.7%) during the pandemic.

**Conclusions:** This is the first study exploring health care access among refugees in Portugal during the COVID-19 pandemic. Identified population characteristics and barriers signal the need to devise strategies necessary to the improvement of access to health care.

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## International immigrant health access and vulnerabilities in the context of COVID-19 dissemination in Brazil

Denise Martin<sup>1</sup>, Daniel Granada<sup>2</sup>, Silvia Viodres<sup>3</sup>, Mariá Lanzotti<sup>4</sup>, Nicolas Neves<sup>4</sup>, Regina Matsue<sup>4</sup>, Cássio Silveira<sup>5</sup>

<sup>1</sup>Department of Preventive Medicine, Universidade Federal de São Paulo, Brazil, <sup>2</sup>Universidade Federal de Santa Catarina, Brazil, <sup>3</sup>PROMIGRAS - Unifesp, Brazil, <sup>4</sup>Universidade Federal de São Paulo, Brazil, <sup>5</sup>Faculdade de Ciências Médicas da Santa Casa de São Paulo, Brazil

The aim is to identify the problems related to the health access and social protection of international migrants and refugees regarding the needs of this population during the pandemic of COVID-19 in Brazil. Considering the social and territorial inequalities in Brazil, the consequences of the pandemic are more severe due to critical situations of social vulnerability that intensely harm the most impoverished populations, including international migrants. This research seeks to investigate how confinement and the subsequent health crisis impacted the lives of migrants in terms of healthcare access and their vulnerability, aggravated by the pandemic. We conducted qualitative research based on Anthropology from 14 in-depth interviews and participant observation with migrants and refugees living in Sao Paulo metropolitan area. The interviews were conducted from October to December 2022 with migrants from Bolivia, Venezuela, and Haiti. Preliminary Results show that most live in vulnerable neighborhoods, enhancing structural violence. Migrants shared situations of job insecurity, struggle to maintain household income, and sometimes, cases of bare subsistence. Despite financial emergency assistance from the government, many needed help accessing it due to a lack of access to technology and bureaucratic burdens. Fake News plays an essential role in health misinformation, especially regarding vaccination. Some women interviewed commented about obstetric and domestic violence. Religion is also a resource to deal with fear and losses. Healthcare access in Brazil is universal through the Brazilian Health System (SUS). Many factors interfere with adequate access to healthcare services: cultural and linguistic differences can be a source of stigmatization, and the social vulnerability derived from an indeterminate citizenship status act as a barrier. This research can contribute to identifying problems experienced by these people and provide a map of their social and health needs, enabling the formulation of subsidies for public policies that aim to eliminate inequalities in service access.

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## Surgical-reparative and psycho-social interventions in women with Female Genital Mutilation of III type (deinfibulation)

Sara Riefolo<sup>1</sup>, Silvana Patricelli<sup>1</sup>, Rossella Carnevali<sup>1</sup>, Maria Guerra<sup>1</sup>, Anna Simeone<sup>1</sup>, Francesca Donadio<sup>2</sup>, Marina Marceca<sup>2</sup>, Giancarlo Santone<sup>3</sup>

<sup>1</sup>ASL Roma 1 (Public Local Health Authority), SAMIFO Center, Rome, Italy,

<sup>2</sup>Department of Gynecology and Obstetrics San Filippo Neri Hospital, ASL Roma 1, Rome, Italy, <sup>3</sup>SAMIFO Centre, ASL Roma 1, Rome, Italy

**Background and Objective:** Female Genital Mutilation (FGM) is a procedure involving the modification of the external genitalia, for cultural or other non-therapeutic reasons. In recent years, the SAMIFO Centre (Salute Migranti Forzati) has increasingly received requests from women with FGM, more specifically, with type III FGM (permanent infibulation). Based on this experience, it is therefore deemed necessary to start developing collaboration between public health actors. **Methods:** The verification and typology of FGM is carried out by the obstetric-gynaecological unit at SAMIFO which evaluates the necessary steps. The entire process is coordinated by a case manager. Three different pathways have been envisaged for: (i) pregnant women, (ii) non-pregnant women with physical problems and (iii) non-pregnant women with psycho-sexual problems. The pathway is organized as follows: 1. Identification and Classification of FGM, 2. Obstetrics Gynecological Counseling, 3. Followup meeting, 4. Psychological Counseling, 5. Prehospitalization, 6. Collaboration with S. Filippo Neri hospital for deinfibulation surgery (if patient under pregnancy, preferably in the second trimester of pregnancy), 7. Follow up (both gynaecological and psychological)

**Results:** Starting from 2021, out of a population of 137 women received, 3 have completed the process. 4 patients are at an advanced level of the process.

**Conclusions:** The multidisciplinary approach enabled the women who accepted the pathway to be able to fully recover on both gynaecological and psychological level. In addition, two of them were able to give birth physiologically with a good recovery of the sexual dimension. For all the patients received, it was possible to activate a dialogue on issues of femininity and sexuality during the consultation.

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## Immigration as a determinant of COVID-19 testing among children: a cohort study in Amadora, Lisbon Metropolitan area, Portugal

Iolanda Alves<sup>1</sup>, Iolanda Alves<sup>2</sup>, Maria Martins<sup>2</sup>, Silvia Panunzi<sup>3</sup>

<sup>1</sup>Global Health and Tropical Medicine (GHTM), Institute of Hygiene and Tropical Medicine (IHMT), NOVA University of Lisbon (UNL), Lisbon,

Portugal, <sup>2</sup>Global Health and Tropical Medicine (GHTM), Institute of Hygiene and Tropical Medicine (IHMT), NOVA University of Lisbon (UNL), Portugal,

<sup>3</sup>Unit of Epidemiology and Medical Statistics, Department of Diagnostics and Public Health, University of Verona, Italy

**Background and Objective:** Vulnerable populations, such as adult immigrants, are proportionally over-represented in reported COVID-19 cases and underrepresented in COVID-19 testing rates. Worldwide, evidence is lacking on immigrant children's access to COVID-19 diagnostic tests. Immigrant children (i.e., those born outside or with at least one parent born outside the EU) are subject to adverse social determinants of health. As a result, they tend to use less primary care and more emergency services. This study aimed to analyse immigration as a determinant of COVID-19 testing among children living in Amadora, Lisbon Metropolitan Area, Portugal.

**Methods:** We link data from a prospective cohort study, conducted since 2019, on 420 native and immigrant children born in 2015 and living in Amadora, with administrative health records on COVID-19 tests. Testing data between March 2020 and October 2022 were used to estimate prevalence ratios for having ever done a test (yes/no), through Robust Poisson regression; to estimate determinants of the number of tests a Poisson regression model was used.

**Results:** The sample was balanced between immigrant (52%) and native (48%) children. Overall, 356 (85%) children were tested for COVID-19 during the period considered, among the non-tested group 84% were immigrants. The median number of tests undertaken was 3 tests per child (3 for natives and 2 for immigrants). Models adjusted for children's sex and birthweight, caregiver's sex, age, education level, employment status, and monthly household income, consistently showed higher prevalence ratios of ever being tested for COVID-19 in natives. Analogous results were obtained for the number of COVID-19 tests.

**Conclusions:** This study, the first in Portugal to provide evidence on children's access to COVID-19 diagnostic tests, suggested immigrant children face barriers to this service. Interventions in the large-scale forces that impact health are needed to reduce health inequalities in children.

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### The cedar project: indigenous experiences of connection and survival amidst conflicting colonial responses to the opioid, housing, and health crises of the COVID-19 pandemic

Chenoa Cassidy-Matthews<sup>1</sup>, Chenoa Cassidy-Matthews<sup>1</sup>, Jordan Hendry<sup>1</sup>, Sherri Pooyak<sup>2</sup>, Jeff Reading<sup>3</sup>, Patricia Spittal<sup>1</sup>, Nadine Caron<sup>1</sup>, Martin Schechter<sup>1</sup>, Wayne Christian<sup>4</sup>

<sup>1</sup>University of British Columbia, Canada, <sup>2</sup>CAAN Canada, <sup>3</sup>Simon Fraser University Canada, <sup>4</sup>Splatsin First Nation Canada

**Background and Objective:** Connection is critical to the health and wellbeing of Indigenous Peoples who use drugs (IPWUD) - connection to family, cultural supports, and circles of care. During the COVID-19 pandemic, urban IPWUD are more likely to face multiple harms from ongoing opioid and housing crises in British Columbia, Canada. Despite early, effective Indigenous community-mobilized responses to protect against COVID-19 infection, many urban Indigenous Peoples were disconnected from that support as a result of blanket colonial responses. Indigenous Peoples have always found ways to survive through emergency situations, and this paper uplifts the experiences of urban IPWUD navigating respective colonial responses to COVID-19.

**Methods:** Nineteen semi-structured interviews were completed with Indigenous Peoples enrolled in the Cedar Project COVID-19 Study in Vancouver (n=9) and Prince George (n=10), Canada. Interpretive description was adapted to identify themes across participants' stories. Emerging themes were brought back to participants for member checking using iterative, arts-based techniques.

**Results:** Interviews were conducted in-person between March-May 2022. Median age of participants was 36, with 37% male and 63% female. Four broad themes were identified: 1) colonial responses to COVID-19 have not aligned with the needs of urban IPWUD, forcing people into crisis situations; 2) People in crisis frequently have no place to go: to eat, sleep, for ceremony, to live safely; 3) Connection is protection against the stresses of precarity and isolation; 4) Emotional responses to COVID-19 are rooted in intergenerational trauma, connected to the Indian Act and colonialism.

**Conclusion:** Urban IPWUD face emergencies that threaten daily security, safety, and health. This study amplifies that Indigenous Peoples are the experts in determining how to best survive and thrive through these health emergencies. Further research will inform Indigenous-specific and Indigenous-led responses, and incorporate these findings into quantitative analyses to better understand how to uplift urban IPWUD going forward.

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### The role of socioeconomic situation and social support on health perception among Ukrainian refugees in Czechia

Michala Lustigova<sup>1</sup>, Dagmar Dzurova<sup>2</sup>, Ivana Kulhanova<sup>3</sup>

<sup>1</sup>Charles University, Czechia Faculty of Science, Charles University, Czechia Albertov 6, Prague 2 Czech Republic, <sup>2</sup>Charles University, Czechia, <sup>3</sup>Charles University Faculty of Science, Charles University, Czechia Albertov 6, Prague 2 Czech Republic

**Background and Objective:** Ukrainian refugees have experienced many stressful situations because of war, migration, and resettlement. Besides physical and mental health, social health is also very important in the case of refugees, as they are separated from family members and friends. The main goal of this study is to investigate the effect of socioeconomic situation (SES) and social support on health perception among Ukrainian refugees settled in Czechia after February 2022.

**Methods:** The study is based on the 3rd wave of online interview surveys among refugees from Ukraine. The survey took place in September 2022, and 1,347 respondents participated. Representativeness was ensured by a combination of random stratified sampling and subsequent data weighting. We used binary logistic regression to qualify the effect of several SES and social support characteristics on no-good health perception in an adult population below 65 years of age (N=1,331). All models were controlled for age, sex, education, physical and mental health.

**Results:** We found the effect on no-good health perception in case of low degree of concern by others (final model adjusted for all controlled and independent variables; OR=1.55, 95%CI 1.05-2.27), low ability to get help (OR=1.92, 95%CI 1.23-3.02) and high material deprivation (OR=1.64, 95%CI 1.03-2.59). On the other hand, the number of close persons, knowledge of the Czech language, amount of income and having a job were not found as significant predictors of health.

**Conclusion:** Not only providing material support for refugees is crucial, but also the development of interpersonal relationships based on trust and concern is

essential for improving the social health of refugees so that they receive social support from others in the host country.

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### Violence and depression among men who have sex with men in Tanzania

Lucy Mgopa<sup>1</sup>, Lucy Mgopa<sup>1</sup>, Jessie Mbwambo<sup>1</sup>, Samuel Likindikoki<sup>1</sup>, Pedro Pallangyo<sup>2</sup>

<sup>1</sup>Muhimbili University of Health and Allied Sciences Dr P.O Box 65001, Dar es Salaam, Tanzania Tanzania, <sup>2</sup>Jakaya Kikwete Cardiac Institute Dr P.O Box 65141 Tanzania

**Background and objective:** Men who have sex with men (msm) continue to be at an increased risk of violence, HIV Transmission and mental disorders, as a result of their sexual orientation. In this study, we aimed at determining the magnitude and source of violence, extent of depressive symptoms among MSM

**Methods:** We recruited 345 MSM using a respondent driven sampling Technique. Revised conflict tactic scale, PHQ-9 and questions adapted from the tdhs 2010 were used to assess for violence, depression and HIV-Risk behaviors respectively. Continuous and categorical variables were analyzed with student's T-Test and CHI-Square test respectively. Logistic regression analyses were performed to assess for predictors of depression and HIV-risk behaviors. All tests were two sided and p<0.05 was taken as significance level.

**Results:** Overall, 325 (94.2%) of participants experienced any form of violence, with emotional violence constituting the majority (90.1%), while physical and sexual violence were reported by 254 (73.6%) and 250 (72.5%) of participants respectively. Depressive symptoms were present in 245 (70.0%) and participants who experienced violence had a 3 times increased risk of depressive symptoms compared to their violence-free counterparts, p<0.001. On the other hand, participants who experienced any form of violence displayed an over 11 times increased rate of depressive symptoms compared to their counterparts who were violence free, p<0.001. Violence experience was found to be the strongest associated factor for depressive symptoms.

**Conclusions:** The rates of violence, depressive symptoms and HIV risk behaviors amongst MSM are astoundingly high thus necessitating extensive interventions. In view of this, deliberate measures to deal with the reported high rates necessitate joint intervention efforts from the policy makers, health providers and community at large.

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### Corpus delicti: the medico-legal evaluation of somatic outcomes in asylum seekers victims of torture and other inhuman and degrading treatments in the Metropolitan City of Rome, Italy

Erica Bacchio<sup>1</sup>, Erica Bacchio<sup>1</sup>, Martino Volpatti<sup>1</sup>, Micol Maggio Tummiolo<sup>1</sup>, Carlo Bracci<sup>1</sup>, Giancarlo Santone<sup>1</sup>

<sup>1</sup>Samifo Centre, ASL Roma 1 ( Public Local Health Authority), Via Luigi Luzzatti n°8,, 00185, Rome, Italy

**Purpose**

Migrants applicants for refugee status in Italy are examined through detailed interviews by the Territorial Commission to decide whether the asylum seeker meets the criteria to be granted international protection. Medical reports can decisively influence the result of the application, demonstrating the vulnerability of asylum seekers and assessing the credibility of their narratives when an asylum seeker claims to be a victim of torture or other severe forms of violence in their country of origin. Our goal was to describe the cases of asylum applicants who have suffered from physical violence who were examined in our Health Centre based in Rome (SAMIFO - Forced Migrants Health Centre).

**Methods:** We retrospectively analysed the data from 187 asylum seekers who were examined according to the Istanbul Protocol methods in our Centre during the period between July 2021 and July 2022.

**Results:** The study shows important differences among countries regarding circumstances, methods and sequel of torture. Their homeland is mainly the Sub-Saharan Africa (mostly Nigeria, Gambia and Senegal) while many others are from Middle East. Violence is often perpetrated in the country of origin and along the migratory route, mostly during detention in Libya, where they faced inhuman and degrading conditions and the risk of torture, sexual violence, extortion, and forced labour. Most of the wounds observed were related to blunt force injuries, followed by sharp force injuries, and thermal injuries. In the remaining cases, there were findings of explosion and chemical damage. 39 % of the subjects evaluated showed evident signs of mental distress.

**Conclusion:** This study focuses on our experience in Rome based Health Centre

and concern the medico-legal evaluation of scars and lesions in asylum applicants who have declared themselves to be victims of physical violence.

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### Migration as a health determinant for asthma symptoms in children born in 2015, Lisbon region

Regina Amado<sup>1</sup>, Regina Amado<sup>1</sup>, Cláudia Conceição<sup>1</sup>, Jaime Sousa<sup>2</sup>, Maria Martins<sup>1</sup>

<sup>1</sup>Institute of Hygiene and Tropical Medicine, NOVA University of Lisbon, Global Health and Tropical Medicine, Portugal, <sup>2</sup>School of Medicine, Minho University, Portugal

**Background and Objective:** Asthma is the most common chronic disease affecting children. There is a lack of evidence on the prevalence of asthma symptoms in immigrant children in Europe and no studies exist for Portugal. Asthma prevalence is generally higher in high-income countries and immigrant children tend to have a lower prevalence of asthma symptoms when compared to natives, which increases with the length of stay in the country of origin. The objective of this study is to analyze immigration as a determinant for the development of asthma symptoms in children born in 2015 in Amadora, Lisbon Metropolitan Area.

**Methods:** We are conducting a cross-sectional study since august 2022 nested within a cohort of 420 native and immigrant children, 6 /7 years old, living in Amadora. We implemented the International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire. The main outcome is the frequency of asthma symptoms. Descriptive statistics were used to describe sociodemographic variables and Exact Fisher Test to analyze associations.

**Preliminary: Results:** So far, 208 caregivers have been contacted, with a response rate of 32.2% (n=67). From those who responded, 56 (83.6%) are natives, 11 (16.4%) are immigrant and 41 are boys (61.2%). "Ever had wheezing" is present in 26 natives (46%) and 4 (36%) immigrants (p=0.74). "Wheezing or whistling in the chest in the past 12 months" is present in 5 (8.9%) natives and 3 (27.3%) immigrants (p=.17) and asthma has been previously diagnosed in 6 (10.7%) natives and 2 (18.2%) immigrants (p=0.61).

**Conclusion:** So far, the proportion of children having asthma symptoms in the past 12 months and of children previously diagnosed with asthma is higher in immigrants than in natives. However, the sample size is still very low do inferences. More data is necessary to evaluate the real burden of asthma in this population.

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### A qualitative approach for understanding the health perceptions in a group of women in situation of prostitution

Andres Agudelo-Suarez<sup>1</sup>, Maria Figueroa-Ospina<sup>1</sup>, Manuela Laverde-Zuleta<sup>1</sup>, Maria Perdomo-Ochoa<sup>1</sup>, Kelly Zea-Jimenez<sup>1</sup>, Marta Martinez-Gomez<sup>1</sup>

<sup>1</sup>Universidad de Antioquia, Colombia

**Background and Objective:** Women and trans people who have engaged in sex work are triply vulnerable since they are victims of discrimination due to their employment status, their gender, and the risks that this work entails. This situation impacts their health situation. This study aimed to know the perceptions about health (physical, mental, and oral) of four women who work in prostitution in Medellín, based on their life experiences and those related to their social context. **Methods:** A qualitative research with an ethnographic approach was conducted to analyze the situations mentioned, with the participation of four women; two of Venezuelan nationality and two of Colombian nationality, and semi-structured interviews were carried out. Qualitative content analysis was performed, which allowed the generation of four categories (mental health, oral health, general health, and quality of life).

**Results:** Their speeches made it possible to elucidate the connection between living conditions and the health situation. The lack of job opportunities, a migratory process of profound economic and social changes, and a Colombia with inequities and barriers to access to health and social services are determining processes of a general, particular, and singular order of the precarious conditions of oral health and general.

**Conclusions:** The participating population is in a situation of social and health vulnerability, which shows the need for public policies and strategies based on the social reality that contribute to generating equity in health.

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### Cytology in Brazilian transgender men: reflection of the shortages of health care assistance

Ana Pinheiro<sup>1</sup>, Livia Monteiro<sup>2</sup>, Beatriz Souza<sup>3</sup>, Marcos Pereira<sup>2</sup>, Arthur de

Lima<sup>2</sup>, Silas Ferreira<sup>3</sup>, Camila Araujo<sup>2</sup>, Maite de Lima<sup>3</sup>

<sup>1</sup>Mauricio de Nassau University Center, Brazil, <sup>2</sup>Catholic University of Pernambuco, Brazil, <sup>3</sup>Faculdade Pernambucana de Saúde

**Background and Objective:** Brazil has been expanding the discussions about sexual diversity and gender over the years, but is still not fully inclusive, especially in health promotion for transgender people. The research aims to evaluate the situation of cervical cancer screening in Brazilian transgender men, since, according to the Ministry of Health, it is the third most prevalent type of cancer in the population.

**Methods:** This is a cross-sectional quantitative study. Data were collected regarding the notification of cervical cancer cases in trans men on the DATASUS platform, the official means of government notification, from 2020 to 2022.

**Results:** According to the Brazilian Institute of Geography and Statistics (IBGE), in 2020, the estimated number of trans men in the Brazilian population was 9,905,916, but only 0.0009% performed the cytological exam, about 10 times lower than expected when compared to cis women, according to DATASUS. However, in 2021 and 2022, the percentages reached 0.022% and 0.015%, an increase of 2.4 and 16.6 times, respectively, when compared to cis women. This is possibly due to the lower expected number of exams performed in the pandemic period, with a drop of almost half of the procedures, as well as to the increased registration of the trans population in the official notification systems.

**Conclusion:** Despite the increase of notifications in 2021 and 2022, health information about transgender people in Brazil is almost nonexistent, because even with the numbers presented, there is still a statistical lag in the population census and a lack of public policies, which ends up keeping individuals away from the system and makes health promotion excluding. Thus, more incentives are needed to thoroughly include this population, so that the numbers reflect the reality of the country and resolute measures can be planned to encourage health promotion and preventive care.

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### Care crisis: pandemic repercussions on the experiences of university women-professors in espírito santo - Brazil

Jeanine Pacheco Moreira Barbosa<sup>1</sup>, Yazareni José mercadante urquía<sup>2</sup>, Gabriela De Brito Martins<sup>3</sup>, Jeremias Campos Simões<sup>3</sup>, Fabiane lima simões<sup>2</sup>, Caroline feitosa dibai de castro<sup>4</sup>, Marcos da silva cordeiro<sup>4</sup>, Margareth nunes neves conceição<sup>4</sup>, Dherik fraga santos<sup>5</sup>, Rita duarte lima<sup>4</sup>, Maria carvalho andrade<sup>6</sup>

<sup>1</sup>Universidade federal do espírito santo – ufes programa de pós-graduação em saúde coletiva – ufes Direção do CCS - Prédio do Centro de Ciências da Saúde Av. Mal. Campos, 1468 - Maruípe, Vitória - ES, Brazil. CEP: 29047-105 Telephone: (+55 021 27) 3335-7201 Brazil, <sup>2</sup>Universidade Federal do Espírito Santo, Vitória - ES, Brasil, <sup>3</sup>Universidade Federal do Espírito Santo, Vitória - ES, Brasil programa de pós-graduação em saúde coletiva – ufes Direção do CCS - Prédio do Centro de Ciências da Saúde Av. Mal. Campos, 1468 - Maruípe, Vitória - ES, Brazil. CEP: 29047-105 Telephone: (+55 021 27) 3335-7201 Brazil, <sup>4</sup>Universidade Federal do Espírito Santo, Vitória - ES, Brasil Programa de pós-graduação em Saúde Coletiva, Universidade Federal do Espírito Santo, Vitória - ES, Brasil Direção do CCS - Prédio do Centro de Ciências da Saúde Av. Mal. Campos, 1468 - Maruípe, Vitória - ES, Brazil. CEP: 29047-105 Telephone: (+55 021 27) 3335-7201 Brazil, <sup>5</sup>Universidade Federal de Catalão, Catalão-Go, Brasil. Departamento de Medicina da Universidade Federal de Catalão, Catalão-Go, Brasil. Direção do CCS - Prédio do Centro de Ciências da Saúde Av. Mal. Campos, 1468 - Maruípe, Vitória - ES, Brazil. CEP: 29047-105 Telephone: (+55 021 27) 3335-7201 Brazil, <sup>6</sup>Universidade Federal do Espírito Santo, Vitória - ES, Brasil PROFESSOR Direção do CCS - Prédio do Centro de Ciências da Saúde Av. Mal. Campos, 1468 - Maruípe, Vitória - ES, Brazil. CEP: 29047-105 Telephone: (+55 021 27) 3335-7201 Brazil

**Introduction:** In the context of remote work/classes in universities during the pandemic, the sexual division of workload intensified the "care crisis" experienced by women-professors, perpetuating mechanisms of exploitation.

**Objective:** To give insight into the care crisis experienced by women university professors during the pandemic from a gender perspective.

**Methods:** The following study consists of both a quantitative and qualitative analysis of 642 active professors at the Federal University of Espírito Santo, carried out from May to April 2021, and conducted by the Association of Teachers of the Federal University of Espírito Santo (Adufes). Thus, the data was analyzed from a gender perspective juxtaposed with the concept of differences and sought to question the work overload experienced by women-professors.

**Results:** The work overload women-professors face relates to a sexual disparity

in labor, which imposes on women jobs reproduction labor in household settings, carried out unpaid, devalued and unacknowledged. The idea that social norms are designated by biological sex has led to an overwhelming amount of work for women-professors whom, during the pandemic, had a regular workload of more than 8 hours. This care crisis has denied many women the right to self-protection, making them much more vulnerable in the context of the pandemic.

Conclusion: It is necessary to carry out an analysis considering the different intersections that cross the experience of women-professors from a perspective of differences, revealing the work overload experienced by women. Therefore, the public sphere - production/wage labor - and the private sphere - reproduction/unpaid labor are valued differently. Thus, to acquire equality, it is necessary to welcome the difference between men and women, between women and between the subject woman and her condition in society as a woman.

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### Facilitating access to vaccinations for temporarily present foreigners: the experience of asl roma 4

Maria Sinopoli<sup>1</sup>, Clara Fusillo<sup>1</sup>, Gabriella Belfiori<sup>1</sup>, Daniela Scognamiglio<sup>1</sup>, Francesco Massimo<sup>1</sup>, Simona Ursino<sup>1</sup>, Cristina Matrangola<sup>1</sup>

<sup>1</sup>ASL Roma 4 Italy

Background e objective

The Local Health Authority (ASL) Rome 4 is characterized by the presence of the port of Civitavecchia, one of the largest in Italy, as well as centers for refugees and areas with a high concentration of immigrants. During COVID 19 vaccination campaign, there was a strong request for access by foreigners without health care who, for various reasons, were on Italian territory and were unable to book on the regional portal. The Vaccination Service has tried to make access as easy as possible and to offer the most complete prevention path possible.

Methods: The following actions were carried out:

- \* Dedicate section on the ASL website with all the information
- \* Dedicated email for information and appointments
- \* Connection with port authorities, cruise companies and voluntary associations
- \* Vaccination forms in English
- \* In Hubs: record previous vaccinations done abroad, issue STP code (healthcare assistance to temporarily present foreigner), complete vaccination schedule, offer flu vaccination coadministration, send to vaccination centers for the other vaccinations required by age or health condition
- \* Traveling vaccination campers

Results: Between April 2021 and October 2022, 8277 temporarily present foreigners were taken into care. Only 597 came from European countries. The age most represented was between 20 and 39 years (5758), followed by that between 40 and 59 years (2194), 161 were the under 20s, 158 were between 60 and 79 years and only 6 were over 80 years old. The first 3 doses were equally distributed, mainly linked to the green-pass, while the second booster dose was very little requested. The primary course was completed in 85% of cases. 562 subjects also carried out the other scheduled vaccinations.

Conclusions: To facilitate access to vaccination services for foreigners temporarily present, is required an integrated approach as well as the taking over of all the activities related to prevention.

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### Language barriers during covid-19 vaccination for ukrainian refugees - the perceptions of healthcare professionals

Alessandro Bianconi<sup>1</sup>, Giorgia Zanutto<sup>1</sup>, Gisele Castagna<sup>1</sup>, Angela Coa<sup>1</sup>, Esther De Gioia<sup>1</sup>, Giulia Longo<sup>1</sup>, Gaia Sicari<sup>1</sup>, Giulia Tomaiuolo<sup>1</sup>, Davide Gori<sup>1</sup>

<sup>1</sup>University of Bologna Department of Biomedical and Neuromotor Sciences Italy

Background: The Russian invasion of Ukraine in early 2022 caused a humanitarian crisis, displacing many individuals. COVID-19 vaccination was proposed to Ukrainian refugees arrived in the city of Bologna that had an incomplete vaccination course. To overcome language barriers-related problems, the Local Health Authority provided anamnestic forms in Russian/Ukrainian languages and assured the presence of interpreters at the vaccination centers. This study aims to investigate the perceptions of vaccinators about working with an interpreter in the context of the Ukrainian crisis.

Methods: The study consists of a descriptive analysis of the responses to a questionnaire administered to vaccinators involved in the medical history collection of Ukrainian users. The questionnaire collected data relating to personal perceptions on professionals' experience.

Results: Twenty-four healthcare professionals participated in the survey. 70.8%

(n=17) were female. The mean age was 39 (of=14). 91.7% (n=22) declared they spoke a good level of professional English. Only one participant had specific training in working with interpreters during his/her education. Twelve participants (50%) thought that specific training in working with an interpreter should be integrated into medical education. Difficulties noticed sometimes/often/always by the participants were the uncertainty that the user got all the information (79.2%), uncertainty that the interpreter translated the exact words (66.7%) or the correct medical terminology (75,0%). Only 3 (12,5%) respondents always ask the user if he/she has understood everything. Finally, 66.7% (n=16) very/fully agreed in defining the interventions used as adherence facilitators to other doses/vaccinations.

Conclusion: This study highlighted the quasi-total absence of training in working with an interpreter in the healthcare professionals' curricula. Vaccinators are shown to be unsure about the interpreters' translation during the medical history collection. The Ukrainian refugees' COVID-19 vaccination showed that an ad hoc intervention to overcome the language-related problems was perceived as impactful by the majority of the professionals involved.

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### Healthcare access in people with functional diversity: A comparative health study between Greece and Spain

Jeny Cruz<sup>1</sup>

<sup>1</sup>Maastricht University Governance and Leadership in European Public Health Master, Faculty of Health Medicine and Life Sciences, Maastricht University, Maastricht, the Netherlands Sorbonnelaan 178 C16, 2467 LK Maastricht Netherlands

Background: The Convention on the Rights of Persons with Disabilities was held more than 15 years ago. Contrary to Spain, equitable access to health services for people with functional diversity is still far from being a reality in Greece. The aim of this study is to identify the barriers and factors that influence the high Unmet Needs for Medical Examination or Treatment (UNME/T) among people with functional diversity in Greece and explore what can be learned from Spain. Methods: In October 2022, a literature review was conducted in PubMed, Web of Science, Google Scholar, and grey literature using keywords such as "health services"; "healthcare"; "disability"; "access"; "policy"; "Spain"; and "Greece". Furthermore, the UNME/T indicator in people with functional diversity was compared between Spain and Greece from 2012 to 2021. The data was extracted from Eurostat and disaggregated by sex.

Results: The percentage of UNME/T reported in Greece exceeded by 7 times the UNME/T in Spain in 2021. The difference in UNME/T between men and women with functional diversity is significantly higher in the Greek population than in the Spanish (2.7 vs. 0.2). Both countries shared communicative barriers regarding access to health information by the government, health institutions, and medical professionals. However, Greece specifically faced access obstacles regarding infrastructure, financial support, and social stigma. In contrast, Spain showed barriers to the healthcare waiting list and stigma in decision-making. While the Spanish healthcare system has been characterized by high access to primary care, the Greek system is still developing. Additionally, healthcare access in Greece was affected by budget cuts.

Conclusion: Strengthening primary care through a budget increase for health is paramount to reduce the medical unmet needs in people with functional diversity in Greece. Furthermore, developing intersectoral interventions to attend the health necessities in women are crucial to close the gender gap.

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### Mortality among guarani indigenous peoples in south and southeast Brazil over a 15-year period (2000 to 2015)

Felipe Tavares<sup>1</sup>, Yasmin Farias<sup>2</sup>, Carla Barreto<sup>1</sup>, Lidia Pantoja<sup>3</sup>, Aline Caldas<sup>4</sup>, Marcia Duarte<sup>1</sup>, Andrey Cardoso<sup>5</sup>

<sup>1</sup>UFF Brazil, <sup>2</sup>Municipal Health Foundation of Niterói, <sup>3</sup>COVIG/Niterói Brazil, <sup>4</sup>ENSP/Fiocruz, <sup>5</sup>ENSP/Fiocruz Brazil

Objective: To analyze the causes of mortality and its trends among the Guarani from the South and Southeast of Brazil over a 15-year period (2000-2015).

Method: This is a descriptive study based on data on deaths that occurred among the Guarani from the South and Southeast of Brazil during the years 2000 and 2015 and notified to the Subsystem for Health Care of Indigenous Peoples. For this purpose, the frequencies of deaths were analyzed according to DSEI of residence, age groups, gender and causes of death. Trends in mortality rates were analyzed using health indicators calculated for the years included in the analysis period.

Results: 560 deaths were reported, with an increase in the number of deaths

reported each year. Annual standardized general mortality rates varied around 5 deaths/1000 inhabitants (1.8/1000 to 4.7/1000), being higher in the DSEI Litoral Sul (DSEI LS: 3.8/1000; DSEI IS: 2.7/1000). Most deaths occurred in the first years of life. Respiratory diseases and infectious and parasitic diseases were the main defined causes of mortality, especially in children under 5 years of age. The IMR showed higher values for the DSEI Litoral Sul, reaching 48.8/1000 live births, higher in the post-neonatal period. There was an upward trend in the IMR, ranging from 10.3/1000 live births to 72.7/1000 live births. The need for improvements in primary health care directed to indigenous peoples is evident, the strengthening of the Indigenous Health Care Subsystem and the increase in health promotion actions, in order to prevent avoidable deaths in the population, particularly in the child population, and contribute to overcome ethnic-racial inequalities in mortality in the country.

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### Practices to enhance diversity, equity, and inclusion in the health services research workforce: An environmental scan of us veterans health administration research centers.

D. Keith McInnes<sup>1</sup>, Angela Kyrish<sup>2</sup>, C. Blessing Egbuogu<sup>2</sup>, Sierra Ferris<sup>2</sup>, Leah Cubanski<sup>2</sup>, Lynn Garvin<sup>2</sup>, Marva Foster<sup>2</sup>, Emma Quach<sup>2</sup>, Ida Griesemer<sup>2</sup>, Sarah Cutrona<sup>2</sup>

<sup>1</sup>U.S. Department of Veterans Affairs & Boston University School of Public Health 2745 Turk Blvd. San Francisco, California 94118 United States, <sup>2</sup>US Department of Veterans Affairs United States

**Background:** Healthcare-related research institutions are working to increase diversity among their researchers and staff. However, data on effective practices to grow and support a diverse health services research (HSR) workforce is sparse. Our study objective was to identify, describe, and evaluate practices that enhance hiring, promotion, and retention of employees from underrepresented groups (URGs) (such as race/ethnicity, gender identity, disabilities) in the HSR workforce. **Methods:** US Veterans Health Administration (VHA) oversees hospitals, health care clinics, and research centers. We reviewed the websites of VHA Centers of Innovation (COIN) research centers and documented practices to increase the hiring, promotion, and/or retention of URG employees. Additionally, we conducted semi-structured interviews with research center representatives to gather information on diversity, equity, and inclusion (DEI) practices, outcome measures, and barriers and facilitators to implementation and sustainment.

**Results:** Several themes emerged. For hiring, funding fellows and scholars from URGs often led to the hiring of trainees from URGs.

In the area of retention, anti-racism/diversity trainings, mentoring programs, and DEI advisory groups contributed to a culture welcoming to URG researchers. Promotion often entailed mentoring initiatives to assist staff and investigators with career advancement.

Sustainment of DEI was supported by financial resources (e.g. providing attractive start-up packages to URG candidates), institutional leadership support, and sharing of DEI responsibilities among staff and investigators across the institution.

Barriers to sustainment included lack of financial resources, faculty/staff resistance to change, and burnout among individuals leading DEI initiatives. Measurement of DEI progress often involved surveys of research center employees to understand institutional climate and contributors to negative perceptions, such as micro-aggressions.

**Conclusions:** Initiatives to improve workforce diversity within VHA COIN research centers are common. However, hinderances include lack of staffing of DEI positions, insufficient financial resources, and inadequate leadership support. Additionally, much progress is needed in effective measurement of diversity activities.

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### Diversity, equity and inclusion in public health: a multidisciplinary analysis

Chiara Cadeddu<sup>1</sup>

<sup>1</sup>Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy

Public health crises like COVID-19 pandemic have demonstrated more than ever how different racial, ethnic, religious and cultural communities can be differently affected. All these determinants are proven to play an important role in relation to the susceptibility to certain illnesses or how people react in getting sick. For these reasons, it is particularly important to address issues related to diversity, equity and inclusion among different disciplines in order to find the best way to address the health needs of every individual. **Aims and Components:** The present

workshop is aimed at discussing among different perspectives the concepts of diversity, equity, and inclusion in Public Health, analysing which can be the multidisciplinary tools and approaches for analysis and successful interventions, with practical cases showed as examples. A first presentation will be focused on how the different stakeholders in public health could have a role in behavioural change towards more inclusive interventions to help people in need such as minorities, migrants, refugees, and how the different health systems answer to these needs, especially for prevention activities (speaker Dr. Chiara Cadeddu). The second presentation will deal with the contribution of digital technology, in terms of targeted solutions depending on sociodemographic factors, with a view to diversity and inclusion, and the new perception of reality, values, and relationships that it could generate (speaker Dr. Roberto Ascione). The third presentation is aimed at improving the health education and training of professionals in the matters related to diversity, equity and inclusion. Professionals include not only healthcare professionals, but also science journalists and administrative officers involved in the health sector and the private sector. Multidisciplinary team culture is a core competence for those involved in health promotion and educational paths must ensure the inclusion of this culture (speaker Prof. Marta Bertolaso). The final presentation will describe the role of communication in public health and how different approaches such as targeted communication campaigns, the use of diverse cognitive styles and digital tools could help in reaching the objective of contrasting infodemic and fake news and make that every individual feels as a part of an inclusive healthcare system (speaker Prof. Pierluigi Lopalco). **Key questions:** 1. Which multidisciplinary competencies in terms of stakeholders should be involved to develop the process of overcoming barriers and be more inclusive with minorities, hard-to-reach groups, marginalized identities, etc.? 2. Digital tools could really help to contrast obstacles in terms of diversity, equity and inclusion in health or could be a further obstacle in some populations? 3. How to improve cross fertilization in the different sectors of education in health and how to integrate diverse approaches used in academia or private companies or other areas? 4. A targeted communication in public health is an issue to be soon actualized and applied for the improvement of the access of every individual to health or are we still far from this goal?

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### Queering global public places for health and wellbeing

Andrew Gorman-Murray<sup>1</sup>, Evelyne Leeuw<sup>2</sup>, Rebecca Cadorn<sup>3</sup>, Pippa Catterral<sup>4</sup>, Jason Prior<sup>5</sup>, Alice Vincent<sup>6</sup>, Arne Scheuermann<sup>7</sup>

<sup>1</sup>Discipline of Geography, Western Sydney University, Australia, <sup>2</sup>Healthy Urban Environments Collaboratory, Maridulu Budyari Gumal, Australia, <sup>3</sup>Arup NSW Lighting, Australia, <sup>4</sup>University of Westminster, United Kingdom, <sup>5</sup>Institute of Sustainable Futures, University of Technology Sydney, Australia, <sup>6</sup>ARUP Resilience Security and Risk, Australia, <sup>7</sup>Swiss Centre for Design and Health, Bern University of Applied Sciences, Switzerland

The health and wellbeing of people with queer identities (more commonly designated as LGBTIQ, LGBTQ2S+ or LGBTIAQ+ communities) is increasingly becoming a spatially determined global health issue. This adds to a longer existing recognition of particular health care (access) needs of queer people. This workshop invites colleagues to engage with a growing and strengthening global research and practice agenda that represents a unique and powerful partnership between Arup (a multinational professional design and engineering services firm), universities, health services, and local governments. We draw on two recent reports. 'Queering Public Space' resulted from collaboration between Arup and the University of Westminster (UK), while the 'Queering Cities in Australia' report is the results of a collaborative research project between Arup, Maridulu Budyari Gumal Healthy Urban Environments Collaboratory, Western Sydney University, the University of Technology Sydney and the University of New South Wales. The two reports focus on London and on Sydney, Melbourne and Brisbane respectively, they examine how public spaces could be more inclusive for LGBTIAQ+ individuals, families and communities through better accommodation in design, policy and practice for local areas. Follow-up research is currently being developed and implemented. A third study will examine these factors from 2023 onwards, using three urban municipalities in Switzerland (Zurich, Bern, Basel) as an example. Both the British and Australian arms of the project also plan further detailed engagements. Research across various countries has identified how public spaces can be dangerous and exclusionary for LGBTIAQ+ individuals, families and communities. Less work has focused on how to make public spaces safe, welcoming and inclusive, or to 'usualise' queerness in the use and design of public spaces. This is important for secure access to public spaces, including: 1. A sense of self-security in public spaces, 2. Safe access to social networks and interaction, 3. Safe access to employment and education opportunities, and 4.

The use of open spaces (e.g. parks) for therapeutic and recreational purposes. In the next phase of this work – to commence in 2023 – we will see the report's recommendations framework taken to a series of workshops with LGBTIAQ+ communities, policymakers and public space planners to develop solutions that might be implemented by local councils to improve the inclusivity of local areas and public spaces. The Bern University of Applied Sciences is continuing this approach in a project together with the University of Bern to investigate design and architectural interventions in public spaces. These outcomes, it should be noted, will be importance in improving access to and enjoyment of the public realm for all users. We hope to engage with the global public health and health promotion community and explore further iterations of this important research and development work.

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### New methods and tools to monitor health outcomes among minorities and indigenous people

Natalia Skogberg<sup>1</sup>, Nina Rehn-Mendoza<sup>2</sup>, Leuconoe Grazia Sisti<sup>3</sup>

<sup>1</sup>Finnish Institute for Health and Welfare Finland, <sup>2</sup>Public Health Agency of Sweden Sweden, <sup>3</sup>Italian National Institute for Health, Migration and Poverty Italy

Health inequalities are preventable disparities that affect the burden of disease and the opportunities to achieve optimal health. In many countries the COVID-19 pandemic demonstrated how the consequences of health inequalities affect our societies. Reducing inequalities is also central in the sustainable development goal framework.

Inequalities are observed both between countries and within countries. Population groups such as ethnic minorities and indigenous people, are reported to be at high risk to experience health inequalities. For some of these groups, research clearly indicates higher rates of poor health while for others there is insufficient evidence and data to scientifically track their health status. Reaching minorities and indigenous populations with traditional methods, for example with national health surveys, is usually limited at best. These population groups are generally hard to reach, both in terms of research and public health interventions. To further develop the capacity of public health and research institutions to systematically track the health status of hard-to-reach groups as well as to identify the health needs of people invisible to health services, new research methods and tools need to be identified and shared.

It is important to recognize that a further burden on the health of these population groups comes from the discrimination, violence and abuse (physical or psychological) to which they are often subjected. How to measure that impact on the health status of these hard-to-reach individuals is an additional part of the workshop.

The specific aim of this workshop is to explore new and innovative methods to measure and monitor the health status of hard-to-reach groups. Different methods to identify and define these groups, effective tools/methods to reach them, and to encourage their involvement and engagement in both research and health programmes are the main objectives of the workshop. In the discussions we will include how to also measure the impact of different types of discrimination.

Sharing among us studies and experiences with different methods will revitalize and push this area forward. This is especially welcome in an era with new digital tools such as smart phones and social media.

The workshop is organized jointly by Sweden, Finland and Italy (Public Health Agency of Sweden, Finnish Institute for Health and Welfare and Italian National Institute for Health, Migration and Poverty).

The presentations will be followed by small group discussions on the topic of the presentations and brainstorming around new ways or methods to systematically assess the health of the hard-to-reach-groups.

The focus is on transferring knowledge through intensive interaction with the audience.

Minority health data is vital for the identification and monitoring of health inequalities that stem from racism, bias and discrimination, and from other health determinants. Data on the hard-to-reach populations is also needed to inform interventions to improve equity in health-care access, quality, and outcomes. The workshops aim is to increase the capacity and knowledge of participants on the latest innovative methods to implement research to monitor the health status of minority and hard-to-reach groups.

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### Health needs of newly arrived forced migrants: ethical, legal, and policy considerations

Nadav Davidovitch<sup>1</sup>, Elena Petelos<sup>2</sup>, Samia Latif<sup>3</sup>, Mathura Kugan<sup>4</sup>, Rosemary James<sup>4</sup>, Kerrie Stevenson<sup>5</sup>, Farhang Tahzib<sup>6</sup>, Bernadette Kumar<sup>7</sup>

<sup>1</sup>Ben Gurion University, Israel, <sup>2</sup>University of Crete, Greece, <sup>3</sup>UK Health Security Agency, United Kingdom, <sup>4</sup>Lancet Migration European Hub, United Kingdom, <sup>5</sup>University College London, United Kingdom, <sup>6</sup>UK Faculty of Public Health, United Kingdom, <sup>7</sup>Norwegian Institute of Public Health, Norway

Outline

According to the UNHCR, there are 89 million forced migrants, of whom 36 million are displaced to other countries. Most are displaced to neighboring regions, but some make perilous journeys to distant countries in the hope of finding safety. Forced migration is recognised as a major global public health issue, particularly in relation to the care of newly arrived forced migrants. Forced migrants represent a heterogeneous group with a range of trajectories, stress exposures, and health needs, ultimately leading to highly divergent outcomes. Sadly, not all forced migrants are treated equally. For example, in the UK and other European countries Ukrainian refugees are offered a temporary protection directive giving them the ability to work whilst other forced migrants must enter a slow asylum process which can leave them in a state of limbo which further exacerbates previous trauma. In some countries newly arrived migrants face harmful and unethical detention with poor access to health care. They are met with hostility and suspicion, and in some cases moved to remote locations which can have long term impacts on their mental and physical health. This raises questions as to the public health impact of the handling of newly arrived migrants around the world. This is a joint roundtable workshop organized by the UK Faculty of Public Health, the EUPHA Migration and Health, and the EUPHA Ethics in Public Health Sections, including Lancet Migration. It brings together a multidisciplinary team of senior public health practitioners, ethicists, policymakers, and scholars working on migration, ethics, and public health.

**Aims:** The workshop will explore the ethical, legal, and health consequences of the handling of newly arrived forced migrants. It is hoped this will enable participants to apply the learning from these contexts to their settings to safeguard the wellbeing of newly arrived migrants across the world.

**Component Parts**

Summary of international best practice guidance and regulations for safeguarding the health and welfare of newly arrived forced migrants. Current barriers and facilitators to ensuring the welfare of newly arrived forced migrants through the presentation of results of a recent systematic review. Case studies from various countries responding to an influx of forced migrants. A panel discussion with questions from the audience to further explore the case studies and to consider the ethical, legal, and healthcare dimensions of these issues.

**Key Questions:** What are the legal and ethical considerations surrounding healthcare for newly arrived forced migrants, and how can an integrated approach be promoted? What are existing recommendations for ensuring access to primary care, public health services, routine health and social care for newly arrived migrants? How can health protection and infectious disease control be managed in an ethical and respectful manner for newly arrived migrants? How is mental health to be promoted and assessed for newly arrived migrants? How can human rights and the safeguarding of children and other groups with additional needs be upheld in initial accommodation centers?

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### Strengthening Pathways to High Quality Maternity Care for Migrant Women in Europe: Taking an Equity Lens

Kerrie Stevenson<sup>1</sup>, Shuby Puthussery<sup>2</sup>, Louise Teschemacher<sup>3</sup>, Martha Engelhardt<sup>4</sup>, Razan Al Munjid<sup>1</sup>, Maria Marti Castaner<sup>5</sup>, Maria Marti castaner<sup>5</sup>, Theda Borde<sup>4</sup>

<sup>1</sup>University College London, United Kingdom, <sup>2</sup>University of Bedfordshire, United Kingdom, <sup>3</sup>Charité Universitätsmedizin Berlin, Germany, <sup>4</sup>Alice Salomon Hochschule Berlin, Charité Universitätsmedizin Berlin, Germany, <sup>5</sup>Copenhagen University, Denmark

Outline of the overall workshop

Compared to non-migrants, migrant women are less likely to have adequate information about maternity care, experience suboptimal communication with care staff, and are less involved in decisions about their care due to difficulties in understanding information, socio-cultural beliefs, and experiencing racism. Some migrant groups (i.e. forced migrants) are also at particularly high risk of poor perinatal outcomes including mental illness, morbidity, and mortality due to larger contextual factors including poverty and poor access to host country healthcare services. In recent years, there have been increasing efforts to improve maternity care for migrant and refugee women across Europe. However, evidence is sparse and strategies to strengthen maternity care pathways are limited.

We will present research aimed at improving maternity care amongst migrant women across various European contexts, including Germany, the UK, and Denmark. We will consider how equity and co-production play an important role in improving these pathways. This will include a presentation from an Expert-by-Experience (a forced migrant mother), and a panel discussion with audience participation.

**SPECIFIC AIMS AND COMPONENT PARTS:** Based on recent empirical evidence, including new findings from a European-wide systematic review, this workshop aims to critically discuss the best approaches to improve maternity care pathways (including mental health care provision) for migrant women in Europe. We will take an equity lens by focusing on co-creation, holistic approaches, and the impact of wider socio-economic, political, and structural factors.

**Component Parts:** The Pregnancy and Obstetric Care for Refugees research team, led by Prof. Theda Borde, will present new insights on different maternity care pathways amongst forced migrants in Germany, and the role that institutional 'othering' and socio-political factors play in shaping women's experiences and mental health. Dr Kerrie Stevenson will present the preliminary results of a systematic review identifying effective interventions to improve maternity outcomes for migrant women in high-income countries. This review will also assess the use of co-production in intervention studies. Dr Shuby Puthussery will discuss the power of co-production in pathway development, based on findings from a community-based intervention to enhance antenatal care initiation and uptake in a low-income and ethnically diverse area in the UK. Dr Maria Marti Castaner will focus on the importance of holistic approaches to maternity care by presenting the qualitative findings of an evaluation of a nurse home visiting program for refugees in Denmark.

In the discussion, panellists and the audience will consider the most effective and equitable ways to strengthen maternity care pathways for migrant women by reflecting on the evidence presented and experiences from the field.

**Key questions:** How does 'othering' impact maternity care pathways for forced migrant mothers and how it can be tackled? Which maternity care interventions are most effective in improving maternal health outcomes and equity for migrant women? What role can Experts by Experience play in co-producing maternity care interventions and improving pathways to maternity care? How can maternity care pathways strengthen their focus on prevention of perinatal mental health problems by addressing wider socioeconomic factors?

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### The way forward: strengthening health equity through social justice-based approaches in public health education

Diana Podar<sup>1</sup>, Karl Conyard<sup>2</sup>, Emma Schlegel<sup>2</sup>, Mary Codd<sup>3</sup>, Udit Namer<sup>1</sup>, Lisa Wandschneider<sup>1</sup>

<sup>1</sup>School of Public Health, Bielefeld University Germany, <sup>2</sup>Institute of Nursing Science, University of Cologne, Germany, <sup>3</sup>School of Public Health Physiotherapy and Sports Science, University College Dublin Ireland

Brief outline of the overall workshop

While health inequities in minoritised groups are increasingly well conceptualised and documented in public health research, the translation into public health education practice is still evolving. By now, several approaches have been developed to overcome this gap in public health education. Prominent approaches include, but are not limited to Diversity, Equity and Inclusion (DEI), cultural competence programmes, intersectionality as an analytical framework and decolonisation based on scholarship activism. While these approaches differ in their theoretical underpinnings and address different levels of action needed, they ultimately aim to dismantle stigmatising practices and structures in public health institutions and promote health equity through social justice. Their implementation however comes with several challenges for public health professionals and academic institutions. In this workshop we propose to shed light on how such approaches can be implemented on a broader scale while remaining true to their underlying goal of promoting social justice.

**Specific aims/objectives and component parts:** Using a round table format, we present three exemplary projects with a focus to strengthen health equity through social justice-based approaches. Together, we aim to reflect on barriers as well as potential synergistic effects that help to move forward in a sustainable way. The three presentations aim to reflect voices at different stages of their career and the public health workforce.

First, Emma Schlegel presents results from an online survey among ASPHER (Association of Schools of Public Health in the European region) members on barriers and enablers in implementing diversity-driven and intersectional approaches in public health education. The perceived challenges included feeling overwhelmed by the range of topics, the lack of one's own competence and of

faculty expertise. As for enablers, participants reported that personal interest, interest from students on the topics and sufficient personal resources acted as enablers to implement these topics in teaching.

Second, Karl F. Conyard and Prof Dr Mary Codd give insights on how social justice-based approaches are represented in the 6th edition of the ASPHER Core Competencies (to be launched in 2023) and how they can be linked to existing as well as new elements. Additionally, they discuss the role of ASPHER in this endeavor and its role as an exemplary guiding institution for the European context. Third, Diana Podar discusses the challenges, opportunities and lessons learned in incorporating a decolonial lens in public health education and research within (European) schools of public health (SPHs) at the institutional level.

Based on these three inputs addressing multiple levels including perspectives from public health professionals, the Core Competencies as an organizational guideline and SPHs as institutional contexts, we conclude the session with an interactive discussion with the audience, creating a space for interdisciplinary exchange and reflections on international experiences.

The key questions that the workshop will address

\* How can we ensure to implement social justice based approaches promoting health equity sustainably in public health education?

\* What kind of action is needed in our teaching practices, the institutional context and from associations like ASPHER?"

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### Development process of a clinical guideline to manage type 2 diabetes in adults by Ayurvedic practitioners

Kaushik Chattopadhyay<sup>1</sup>, Michael Heinrich<sup>2</sup>, Nitin Kapoor<sup>3</sup>, Achintya Mitra<sup>4</sup>, Madhukar Mittal<sup>5</sup>, Sarah Lewis<sup>1</sup>, Sheila Greenfield<sup>6</sup>, Shyamalendu Mukherjee<sup>7</sup>, Ivo Pischel<sup>2</sup>, Jeemon Panniyammakal<sup>8</sup>, Nikhil Tandon<sup>5</sup>, Sanjay Kinra<sup>9</sup>, Tuhin Biswas<sup>10</sup>, Jo Leonardi-Bee<sup>1</sup>

<sup>1</sup>University of Nottingham, United Kingdom, <sup>2</sup>University College London, United Kingdom, <sup>3</sup>Christian Medical College, India, <sup>4</sup>Central Ayurveda Research Institute, India, <sup>5</sup>All India Institute of Medical Sciences, India, <sup>6</sup>University of Birmingham, United Kingdom, <sup>7</sup>West Bengal State Medicinal Plants Board, India, <sup>8</sup>Sree Chitra Tirunal Institute for Medical Sciences and Technology, India, <sup>9</sup>London School of Hygiene and Tropical Medicine, United Kingdom, <sup>10</sup>J B Roy State Ayurvedic Medical College and Hospital, India

**Background and Objective:** In the Indian subcontinent, Type 2 Diabetes Mellitus (T2DM) is a common disease for which people consult Ayurvedic (traditional medical system) practitioners and use Ayurvedic medicines. To date, a high-quality clinical guideline, based on the best available scientific evidence, to manage T2DM by Ayurvedic practitioners is not available. Therefore, the study aimed to systematically develop a clinical guideline for managing T2DM in adults by Ayurvedic practitioners.

**Methods:** The clinical guideline was developed guided by the Grading of Recommendations, Assessment, Development and Evaluation (GRADE) approach, the UK's National Institute for Health and Care Excellence manual for developing guidelines, and the Appraisal of Guidelines for Research and Evaluation II instrument. Initially, we conducted a comprehensive systematic review assessing the effectiveness and safety of Ayurvedic medicines for managing T2DM and the certainty of the Findings using the GRADE approach. Subsequently, based on the GRADE approach, we developed the Evidence-to-Decision framework, focusing on glycaemic control and adverse events. Based on the Evidence-to-Decision framework, a Guideline Development Group, comprising 17 international members, made recommendations on the effectiveness and safety of Ayurvedic medicines in T2DM. The recommendations formed the basis of a clinical guideline, with further generic content and recommendations being adapted from the T2DM Clinical Knowledge Summaries of the Clarity Informatics (UK). The Guideline Development Group gave feedback on the draft version, which was used to finalise the clinical guideline.

**Results:** The clinical guideline provides basic information on T2DM, how it should be diagnosed and managed through lifestyle changes like diet and physical activity and Ayurvedic medicines, how the acute and chronic complications of T2DM should be detected and managed (including referral to specialists), and advice on topics like driving, work, and fasting including during religious/socio-cultural festivals.

**Conclusions:** We systematically developed a clinical guideline for managing T2DM in adults by Ayurvedic practitioners.

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### A qualitative meta-synthesis of women's critical experiences with

### The Pap smear for the development of a novel cervical cancer screening device

Marcela Arrivillaga<sup>1</sup>

<sup>1</sup>Pontificia Universidad Javeriana Cali, Cali, Valle, Colombia

**Objective:** This qualitative study and systematic review examines women's critical experiences with the Pap smear in order to identify opportunities for the development and improvement of cervical cancer screening devices (e.g., Citobot, Pocket Colposcope, and others). **Methods:** Eighteen studies were assessed based on the Critical Appraisal Skills Program. Qualitative meta-synthesis was used to integrate the study Findings, and the experiences were classified into four categories: fear and embarrassment during the procedure, pain and discomfort from the speculum, distress about the Results, and barriers to health services. Critical experiences before, during, and after the test were analyzed.

**Results:** Previous experiences comprised a lack of instruction and misinformation, administrative barriers in health services, and behaviors and perceptions associated with gender roles. During the Pap smear, women experienced fear, embarrassment, and pain, associated in particular with the inappropriate use of the speculum. Experiences after the test included delays in the delivery of Results, anxiety associated with a lack of understanding of the Results, delays in treatment, and consequences affecting sexual relationships and life as a couple. **Conclusions:** Technologies with the potential to replace the traditional speculum and allow immediate delivery of both cervical imaging and HPV testing would benefit significantly from addressing these critical experiences to increase the acceptability of pap smears for women.

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### Health litigation and cancer survivorship in patients treated by the Brazilian public health system in a big Latin-American city

Rômulo Paes-Sousa<sup>1</sup>, Monica Castro<sup>1</sup>

<sup>1</sup>Oswaldo Cruz Foundation, Belo Horizonte, Brazil

**Introduction and Objectives:** Litigation for health care, also known as health judicialization, is frequent in Brazil. It involves recourse to the court system to access health services. The study aimed to evaluate whether cancer patients in Belo Horizonte, Minas Gerais, Brazil, increased their overall survival by increasing access to certain drugs or treatments through litigation, controlling for the effect of demographic and disease-related variables. **Methods:** Patients with breast, prostate, brain, lung, or colon cancers from 2014 to 2019 were included. A retrospective cohort study was conducted. Survival analysis was performed using the Cox proportional hazards model.

**Results:** In the multivariate analysis, litigation was significantly associated with increased survival in cancers of breast (HR=0.51, 95%CI 0.33-0.80), prostate (HR=0.50, 95%CI 0.30-0.85), colon (HR=0.59, 95%CI 0.38-0.93), and lung (HR=0.36, 95%CI 0.22-0.60). Five-year survival rates of patients who sued for treatment were 97.8%, 88.7%, 59.3%, and 26.0%, compared to median survival of 95.7%, 78.7%, 41.2%, and 2.4%, respectively, among patients that did not resort to court action. The study suggests that litigation for access to cancer treatment may represent a step forward in obtaining more effective treatment. This study's main limitations are the lack of patient clinical information and data regarding the patients' quality of life. The study also found that many cases involved claims that could have been solved by administrative rather than legal action. Some claims thus reflect the lack of adequate administrative procedures. **Conclusions:** When based on scientific evidence, access to new therapies, combined with other technologies already available, can favor patient survival. Access to new therapies through litigation may increase health inequalities since low-income patients have limited access to legal recourse against the State to meet their needs. The timely approval of new effective therapies can mitigate the judicialization of cancer treatment.

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### Assessment of awareness about the impact of tobacco on head and neck cancers via mass media: a case-control study from India

Bhawna Gupta<sup>1</sup>

<sup>1</sup>Torrens University, Australia

**Objective:** Mass media channels like Television, cinema, radio and newspapers have been widely used to spread awareness amongst large populations about the tobacco consumption in any form causing head and neck cancers. In this study, it was aimed to measure the impact of mass media channels on this awareness among the people of Pune, India.

**Methods:** A frequency matched hospital-based case-control with face to face interviews for the purpose of data collection was conducted on 225 cases and 240 controls.

**Results:** Controls as compared to cases had good awareness scores for chewing (59.9%) and smoking tobacco (63.7%), P

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### What happens with cancer screening participants with a positive faecal test that do not complete colonoscopy?

Gonzalo Garcia<sup>1</sup>, Maria Villares<sup>2</sup>, Urko Aguirre<sup>3</sup>, Covadonga Audicana<sup>4</sup>, Juan Herrero<sup>5</sup>, Ainhoa Elozegi<sup>6</sup>

<sup>1</sup>Medical Resident of Preventive Medicine and Public Health, Spain,

<sup>2</sup>Colorectal Cancer Screening Program, Osakidetza, Spain, <sup>3</sup>Biostatistics, OSI Barrualde Galdakao, Osakidetza, Spain, <sup>4</sup>Euskadi's Mortality Registry, Departamento de Salud, Spain, <sup>5</sup>Bilbomatica SA, Spain, <sup>6</sup>Preventive Medicine and Public Health, Osakidetza, Spain

**Introduction:** Colorectal cancer (CRC) was the second deadliest cancer for both sexes in 2020. The importance of having an effective CRC Screening Program is vital because it can reduce CRC's burden of disease by decreasing its incidence and mortality. In the Basque Country, everyone between 50 and 69 years old is biannually sent a Fecal Immunochemical Test (FIT) to their address and if it comes out positive is invited to book a colonoscopy. Colonoscopy is the gold standard test due to its capacity to be a diagnostic and therapeutic test able to remove pre-cancerous lesions. A problem we must face is what to do when an individual cannot undergo a colonoscopy after a positive FIT test.

**Objective:** Determine if there are differences in mortality rates between the different diagnostic pathways in Basque's Country CRC Screening Program. **Materials and methods:** The study is a retrospective cohort of participants in the Screening Program who have tested positive in FIT and after the have not completed a colonoscopy or have undergone another test. We received anonymized and untraceable data from 922 participants. We made a descriptive analysis of the data and then we used Cox's Regression and a Competitive risk's model to evaluate global mortality and CRC's specific mortality.

**Results:** After statistical analysis we found significant differences in three variables. The first one is that people who cannot undergo a colonoscopy have 3.47 times more risk of global mortality than people who underwent an incomplete colonoscopy. The second one is that men in our cohort have 2.31 times more increased risk of global mortality than women and finally that age, regardless of sex, increases a 5% the mortality risk per increase of age unit.

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### Deaths caused by non-communicable disease among people with a history of youth justice system contact

Lucas Ferreira<sup>1</sup>, Stuart Kinner<sup>2</sup>

<sup>1</sup>Melbourne School of Population and Global Health, The University of Melbourne, Melbourne, Australia, <sup>2</sup>School of Population Health, Curtin University, Perth, Australia, Ireland

**Background and Objective:** Social determinants of health are strongly associated with an increased risk of contact with the criminal justice system, especially at a younger age. People who have had contact with the youth justice system are at increased risk of death from external causes such as homicide, suicide, and accidents, but their burden of non-communicable disease (NCD) mortality is still largely unknown. We aimed to characterise NCD mortality and identify its associated risk factors for NCD deaths in a large sample of young people with a history of youth justice contact.

**Methods:** This was a retrospective cohort of all young people charged with a criminal in Queensland, Australia, between June 1993 and July 2014 (N=49,011), aged 10-18 years at baseline and censored on 31 January 2017 or at death. Youth justice records were linked to adult correctional records and death records. We estimated crude mortality rates (CMRs) and standardised mortality ratios (SMRs) by age, sex, and Indigenous identification, and identified risk factors for NCD deaths using competing risk regression models.

**Results:** There were a total of 121 NCD deaths in the cohort, occurring at a median age of 26.8 years (interquartile range=22.7-31.8). The overall CMR from NCDs was 18.5 (95% Confidence Interval: 15.5-22.1) per 100,000 person-years, which was 67% (95%CI: 39-99) higher than in the general population of the same age and sex. Having two or more episodes of adult incarceration (compared to none) was a risk factor for NCD death (aHR=1.75, 95%CI: 1.15-2.64).

**Conclusions:** Youth justice contact might offer a window of opportunity to connect vulnerable young people – who may be less likely to engage with primary and preventative care due to the high prevalence of substance use disorders and unstable accommodation – with services, support and social networks that can facilitate timely access to health care.

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### Impact of oral diseases on oral health-related quality of life among Indians: a systematic review and meta-analysis

Anju James<sup>1</sup>, Chandrashekar Janakiram<sup>2</sup>, Vijay S.<sup>1</sup>, B.Y. Yuvraj<sup>3</sup>, Meghana R.V.<sup>1</sup>, Anitha Sagarkar<sup>4</sup>

<sup>1</sup>Amrita School of Dentistry, Amrita Vishwa Vidyapeetham, Ernakulam, India,

<sup>2</sup>Amrita School of Dentistry, Amrita Vishwa Vidyapeetham, Kerala, India,

<sup>3</sup>Department of Public Health, Rajiv Gandhi University of Health Sciences,

Bangalore, India, <sup>4</sup>Faculty of Dental Sciences, Ramaiah University of Applied Sciences, Bengaluru, India

**Background:** Oral Health-Related Quality of Life (OHRQoL) Results from the relationship between and among oral health problems, contextual and social factors, and the body as a whole. Several studies have been conducted to investigate the effect of oral conditions on OHRQoL in the Indian population, with inconclusive Findings.

**Objective:** This review will assess the impact of oral diseases on OHRQoL compared to individuals without oral disease among Indians.

**Methods:** PubMed and Scopus, CINAHL, Web of Science, and PsycInfo were systematically searched for english language studies conducted among Indians up to July 2022. Two independent reviewers performed the study search and screening through covidence software. The data extraction and quality assessment was facilitated using JBI SUMARI. PROSPERO registration Number: CRD42021277874.

**Results:** Fourty one publications were included in this review (N= 23,090). Studies include both cross-sectional studies and randomized controlled trials. Based on the JBI critical appraisal tools, the quality of the included studies was low to high. Most of the studies fail to address the confounding issues. Thirty-seven studies were considered for the meta-analysis. Dental caries have nearly four times the chances of having a poor OHRQoL compared to those without dental caries [OR: 3.54 (95% CI 2.24- 5.60), ten studies, 4945 participants]. Periodontal disease assessed by Loss of attachment affects OHRQoL [ OR: 1.63 (95% CI 0.49, 5.51), three studies, 1364 participants]. Edentulism has 2.49 odds of having a poor OHRQoL compared to those without functional Edentulism [ OR: 2.49 (95% CI 1.27, 4.90), two studies, 368 participants].

**Conclusions:** Despite the various definitions of the exposures and instruments used to assess OHRQoL, our review found that people with dental caries, periodontal disease, functional edentulism, and prosthetic needs have a significantly higher experience of poor quality of life.

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### Long-term consumption of ten food groups and cardiovascular mortality: a systematic review and dose response meta-analysis of prospective cohort studies

Buna Bhattarai<sup>1</sup>, Zhixin Liu<sup>2</sup>, Sophia Lin<sup>3</sup>, Rona Macniven<sup>3</sup>, Blessing Akombi-Inyang<sup>3</sup>, John Hall<sup>3</sup>, Xiaoqi Feng<sup>3</sup>, Aletta Schutte<sup>3</sup>, Xiaoyue Xu<sup>3</sup>

<sup>1</sup>Central Department of Public Health, Tribhuvan University Institute of Medicine, Kathmandu, Nepal, <sup>2</sup>Stats Central, University of New South Wales, Sydney, Australia, <sup>3</sup>School of Population Health, University of New South Wales, Sydney, Australia

**Background and objectives:** A large body of evidence exist on diet and cardiovascular mortality, but limited studies have investigated the long-term intake of food groups, which may have cumulative effects on cardiovascular health. This review, therefore, evaluated the relationship between long-term consumption of food groups and cardiovascular mortality. **Methods:** We conducted a systematic search in Medline, Embase, Scopus, CINAHL and Web of Science up to January 2022. With a total of 5,318 studies identified from the initial search, 22 studies with a total of 70,273 participants with cardiovascular mortality were included. Summary Hazard Ratios (HR) and 95% CIs were estimated using a random effects model.

**Results:** We found that a long-term high intake of whole grains (HR: 0.87; 95% CI:0.80, 0.95), fruits and vegetables (HR: 0.72; 95% CI:0.61, 0.85) and nuts (HR: 0.73; 95% CI:0.66, 0.81) significantly reduced cardiovascular mortality. Each 10-gram increase in whole grain consumption per day was associated with a 4% reduction in the risk of cardiovascular mortality, whilst each 10-gram increase in red/processed meat consumption per day was associated with a 1.8% increase in the risk of cardiovascular mortality. Compared to the lowest intake category, red/processed meat consumption in the highest category was associated with an increased risk of cardiovascular mortality (HR: 1.23; 95% CI:1.09, 1.39). High intake of dairy products (HR: 1.11; 95% CI: 0.92, 1.34) and legumes (HR: 0.86;

95% CI:0.53, 1.38) were not associated with cardiovascular mortality, but in the dose-response analysis, each 10-gram increase in legume intake per week was associated with a 0.5% reduction in cardiovascular mortality. **Conclusions:** We conclude that the long-term high intake of whole grains, vegetables, fruits, and nuts and low intake of red/processed meat is associated with reduced cardiovascular mortality. More data on the long-term effects of legumes on cardiovascular mortality are encouraged. PROSPERO registration number: CRD42020214679

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### Multimorbidity and adverse longitudinal outcomes among patients attending chronic outpatient medical care in Bahir Dar, northwest Ethiopia

Fantu Eyowas<sup>1</sup>, Fentie Ambaw<sup>1</sup>

<sup>1</sup>Bahir Dar University, Bahir Dar, Ethiopia

**Background:** Multimorbidity, the occurrence of two or more chronic conditions is becoming more prevalent in low-and middle-income countries (LMICs). However, the evidence base on the burden and trajectories of multimorbidity, and its longitudinal adverse outcomes are limited. This study aimed at understanding the development and progression of multimorbidity and associated adverse consequences among individuals living with chronic conditions in Bahir Dar, Ethiopia. **Methods:** A facility-based longitudinal study was conducted among 1123 participants aged 40+. Data were collected both at baseline and after one year through standardized interviews and record reviews. Data were analyzed using STATA V.16. Descriptive statistics and longitudinal panel data analyses were ran to describe independent variables and identify factors predicting outcomes. Statistical significance was considered at P-value <0.05.

**Results:** The magnitude of multimorbidity has increased from 54.8% at baseline to 56.8% by the end of the follow up. About four percent (n=44) of patients were diagnosed with one or more new NCDs and those having multimorbidity at baseline were more likely than those without multimorbidity to develop new NCDs. In addition, 106 (9.4%) and 22 (2%) individuals, respectively were hospitalized and died during the follow up period and living with multimorbidity was a risk factor for hospitalization and mortality. **Conclusions:** The prevalence of multimorbidity was high. Living with multimorbidity was associated with poor progress, hospitalization and mortality. If health systems are to meet the needs of the people with multimorbidity, it is essential to understand the impacts of multimorbidity and devise mechanisms to improve outcomes of patients over time.

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### Recommendations to guide implementation of palliative care services among patients with cervical cancer

Tolcha Motuma<sup>1</sup>, Azwihangwisi Mavhandu-Mudzusi<sup>2</sup>, Annah Mosalo<sup>2</sup>

<sup>1</sup>University of South Africa (UNISA) - Ethiopia Regional Learning Center, Addis Ababa, Ethiopia, <sup>2</sup>University of South Africa (UNISA), Pretoria, South Africa

**Background and objectives:** Due to increasing trends in non-communicable diseases and the aged population, our community has a high demand for palliative care. The World Health Organization (WHO) estimates that over 40 million people need palliative care, among which only 14% receive it. In this study, we studied the palliative care service provision for cervical cancer patients and provided pertinent recommendations on how best the service could be provided.

**Methods:** A cross-sectional study was conducted at a tertiary hospital in Addis Ababa, Ethiopia, in 2019 to evaluate the level of palliative care for patients with advanced cervical cancer. Using a pretested and structured questionnaire, a random sample of patients was interviewed by trained hospital nurses. A review of literature, including WHO guidelines, national palliative care strategies, and country-level guidelines, was also systematically conducted to identify critical areas recommended for implementation. Experts from the ministry of health, hospitals, and universities reviewed and provided comments on this study.

**Results:** A total of 385 patients were successfully interviewed for this study. Only about a quarter of the patients have adequate knowledge of comprehensive palliative care; however, over three-quarters reflected a positive attitude. The provision of comprehensive palliative care, including pain control, symptom management, and psychosocial, economic, and spiritual support, was poor. Triangulation of the research Findings with literature review and expert opinion identified critical areas for implementation. These include need-based planning, training of multi-disciplinary palliative care providers and recipients, strengthening advocacy and partnership, generating evidence for decision-making, and integrating palliative care at all levels of the healthcare system.

Conclusions: The knowledge and practice of comprehensive palliative care service delivery to patients with cervical cancer in Ethiopia were poor. This study has identified key areas for improvement to strengthen palliative care and improve the patients and their families quality of life.

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### Disability-adjusted life years (DALYs) avoided by quitting smoking after acute coronary syndrome

Wafa Dhouib<sup>1</sup>, Hela Abroug<sup>1</sup>, Manel Fredj<sup>1</sup>, Imen Zemni<sup>1</sup>, Cyrine Bennasrallah<sup>1</sup>, Amel Gara<sup>1</sup>, Amani Maatouk<sup>1</sup>, Ines Bouanene<sup>1</sup>, Asma Belguith<sup>1</sup>  
<sup>1</sup>Department of Preventive Medicine, Monastir, Tunisia

Background: Smoking was the third largest contributors to the disability adjusted life years (dalys) attributable to Acute Coronary Syndrome (ACS) worldwide. The aim of this study was to assess the burden benefits from smoking cessation in patients with ACS. Methods: A longitudinal observational study among ACS inpatients attending the smoking cessation clinic between 2015 and 2018 at the university hospital of Monastir. Cox models were used to quantify the relation between smoking status and risk of recurrent Major Adverse Cardiac Events (MACES). DALYS were calculated by the Sum of Years of Life Lost (YLLS) and Years Lived with Disability (YLLDS).

Results: The quarter of 158 smokers stopped after their first ACS. Twelve died and 91 maces occurred. Compared to patients who continued to smoke, ex-smokers had a lower risk of recurrent maces (adjusted HR=0.56; 95%ci (0.32-0.98)). After the fifth year of follow up the adjusted HR was of 0.31; 95% ci (0.88-1.11). DALYS were greater in persistent smokers. Conclusions: Continuing smoking was associated with large numbers of DALYS after ACS. However, the success of smoking cessation remains minimal in these patients. Thus, our findings lend additional support to efforts that encourage smoking cessation in patients with or without cardiovascular events.

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### Polarization of body mass index among adults in Finland

Hanna Tolonen<sup>1</sup>, Jaakko Reinikainen<sup>1</sup>, Tiina Laatikainen<sup>2</sup>

<sup>1</sup>Finnish Institute for Health and Welfare (THL), Finland, <sup>2</sup>University of Eastern Finland, Finland

Background and Objectives: Obesity has become a global pandemic, affecting millions of people worldwide. It is a known risk factors for several non-communicable diseases and caused mainly by unhealthy diet and sedentary lifestyle. The risk of developing obesity has also changed over time. However, less is known how it affects men and women in different birth cohorts. This study estimated how body mass index (BMI) distribution has changed among adult Finnish population over the past 20 years.

Methods: Data from Finnish health examination surveys on adults was used. A series of cross-sectional surveys were conducted between 1997-2017 every 5-years among population living in mainland Finland covering age group 25-64 years. In all surveys, trained nurse measured height and weight using standardized protocol and calibrated measurement devices. The proportion of participants in different BMI categories was calculated by survey year, sex, age group, and birth cohort.

Results: The prevalence of obesity has increased in both men and women over the 20 years being 24% for men and 21% for women in 2017. Change has not happened uniformly in the distribution of BMI. We observed that the proportion of normal weight population has remained relatively unchanged over the years but the proportion of population with obesity has increased. The upward shift of the upper tail of the BMI distribution has been the greatest among the age groups under 45 years, but among older people there has also been polarization development to the opposite direction in normal weight persons. Conclusions: Increase in obesity and especially polarization of BMI at young age is of concern and has significant impact on incidence of non-communicable diseases such as diabetes, cardiovascular diseases, and several cancers. This will cause increased demand for healthcare services and increase both direct health care costs but also indirect cost of informal care.

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### Evaluation of the level of knowledge, attitudes, and behaviors about cancer screening tests in individuals over 30 years of living in the Aydınevler District

Şükran Peker<sup>1</sup>, Ahmet Topuzoğlu<sup>2</sup>, Cemre Kesen<sup>3</sup>, Elif Eyiğün<sup>4</sup>, Zeynep Geldi<sup>5</sup>, Doğukan Öksüz<sup>5</sup>, Enes Şaşkın<sup>5</sup>, Bartu Cansu<sup>5</sup>

<sup>1</sup>Department of Public Health, Marmara University School of Medicine, Istanbul, Türkiye, <sup>2</sup>Marmara University School of Medicine, Department of Public Health, Marmara Üniversitesi Tıp Fakültesi, Maltepe, Türkiye, <sup>3</sup>Department of Public Health, School of Medicine, Marmara University, Türkiye, <sup>4</sup>Marmara University School of Medicine, Istanbul, Türkiye, <sup>5</sup>Marmara University School of Medicine, İstanbul, Türkiye

Background:and Objectives: Cervical, breast, and colon cancer screening programs are included in preventive health practices in Turkey. Cancer screening for the population in the risk group can contribute to the reduction of morbidity and mortality through early diagnosis. This study aimed to evaluate the knowledge, attitudes, and behaviors of individuals over 30 living in a district with a cancer screening center in Istanbul toward current cancer screening programs. Methods: The cross-sectional type of research was carried out between 05.04.2022 and 19.04.2022 by face-to-face survey method. The universe of the research was determined as 210 people selected from individuals aged 30 and over living in the chosen district using the World Health Organizations rapid assessment system, 30x7 clustering method.

Results: The research was carried out with a total of 159 (75.7%) volunteers. The mean age of the participants was 49.2±13.4%, and 50.9% (n=81) were women. 56% (n=89) of the participants stated that they knew that there was a cancer screening center in their district, and 10.7% (n=17) stated that they were informed about cancer screening methods by their family physicians.. 32.1% (n=51) of the participants had previously had any cancer screening. Among the individuals in the age group where screening is recommended; 23.5 % (n=16) of individuals had a colonoscopy, 21.2% (n=14) had stool occult blood test, 75.9 % (n=41) had a mammography examination for breast cancer, 67.9% (n=4) for cervical cancer 53) had smear test, 9.1% (n=7) had HPV DNA tests they had it done. Conclusions: This study showed that although access to the cancer screening center is easy and free in terms of physical conditions, the rates of colon and cervical cancer screening are low. Referring individuals at risk of colon, cervix, and breast cancer to cancer screening by family physicians may contribute to an increase in cancer screening rates.

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### Abdominal obesity according to the conicity index in a renal population on hemodialysis

Luciane Salari<sup>1</sup>, José Rocha<sup>2</sup>, Cleodice Martins<sup>3</sup>, Monica Cattafesta<sup>4</sup>, Júlia Ferreira<sup>5</sup>, Camila Prado<sup>4</sup>, Edson Neto<sup>4</sup>

<sup>1</sup>Graduate Program in Nutrition and Health, Health Sciences Center and Graduate Program in Collective Health, Health Sciences, Brazil, <sup>2</sup>Program in Nutrition and Health, Universidade Federal do Espírito Santo, Brazil, <sup>3</sup>Nutrition and Health, Health Sciences Center, Universidade Federal do Espírito Santo, Brazil, <sup>4</sup>Graduate Program Collective Health, Universidade Federal do Espírito Santo, Brazil, <sup>5</sup>Program in Collective Health, Universidade Federal do Espírito Santo, Brazil

Background and objective: The conicity index is indicated as a tool for assessing the nutritional status of renal individuals undergoing hemodialysis. The objective of the study was to estimate the prevalence of abdominal obesity using the conicity index in a renal population on hemodialysis to verify its association with sociodemographic and clinical factors and lifestyle habits. Methods: This a cross-sectional study with 941 individuals undergoing hemodialysis in a metropolitan region southeastern Brazil. The conicity index was calculated and cutoffs of 1.275 and 1.285 for men and women, respectively, were used. For the analysis of the results, binary logistic regression was performed and the odds ratio (OR) was calculated with their respective confidence intervals (95% CI).

Results: The conicity index was high in 56.54% (95% CI: 34.34-70.16) and 43,46% (95% CI: 38.45-55.20) of men and women, respectively. It was found that the adult age group in men (OR=3.71; p<0.001; 95% CI: 2.27-6.07) and women (OR=4.06; p<0.001; 95% CI: 2.41-6.84) were more likely to have abdominal obesity, as well as self-declared brown race (OR=1.74; p=0.046; 95% CI: 1.01-3.00) and being single (OR=1.64; p=0.047; 95% CI: 1.00-2.68) in males. Conclusions: The conicity index is an important anthropometric indicator to estimate the prevalence of abdominal obesity in individuals with chronic kidney disease on hemodialysis.

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### Comparative analysis of knowledge, attitudes, behavior and practices of self breast examination in Mexico and Nicaragua

Thankam Sunil<sup>1</sup>, Igor Ramos<sup>2</sup>, Karen Castro<sup>3</sup>

<sup>1</sup>Department of Public Health, University of Tennessee, Knoxville, United States, <sup>2</sup>Department of Public Health, University of Guadalajara, Mexico,

### **<sup>3</sup>Quality Department, Hospital Military Escuela Dr. Alejandro Davila Bolaños, Nicaragua**

**Background:** The importance of self-breast examination (SBE) to identify early signs of breast abnormality and as a significant preventative practice for early identification of breast cancer have been widely recognized among the scientific community. However, in many developing countries with varied health care practices, women's understanding about knowledge, attitudes, and practices (KAP) of SBE is still far from known. In the present study, we made a comparative analysis of KAP of SBE among women in Mexico and Nicaragua.

**Methods:** We conducted a cross-sectional survey of women aged 18 years and over living in selected urban and rural areas of the State of Jalisco, Mexico (n=547) and Nicaragua (n=500). Measures included in the survey reflected KAP related to SBE. We compared these measures between women living in urban and rural areas and women aged 18-39 years and 40+ years in both countries. Using t-tests, we evaluated the significance of these differentials. **Results:** Study results indicated widespread and significant differentials in basic knowledge and behaviors on SBE practices among women living in rural and urban locations both in Mexico and in Nicaragua. For example, while younger women reported significant and lower overall knowledge about breast cancer (BC), and purpose and reasons for SBE compared to women who were in the 40+ age group in Nicaragua, however, there is no significant difference in knowledge, attitudes, behavior, and practices regarding self-breast examination between women living in urban and in rural areas of Jalisco, Mexico. **Conclusions:** Study results call for location and population-specific programs and policies addressing disparities in breast cancer prevention and detection efforts in each country. While Jalisco has taken significant steps toward promoting cancer prevention, further attention to women in the older cohort is recommended, particularly for geographical relocation of mammography equipment and technicians.

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### **Utilization of dental health services and its associated factors among adult population in Ernakulam district, Kerala, India: a mixed-method analysis**

Venkitachalam Ramanarayanan<sup>1</sup>, Saanu Sidharthan<sup>2</sup>, Vineetha Karuveetil<sup>3</sup>

<sup>1</sup>Amrita School of Dentistry, Amrita Vishwa Vidyapeetham, Kochi, India,

<sup>2</sup>Amrita Institute of Medical Sciences, Amrita Vishwa Vidyapeetham, Kochi, India, <sup>3</sup>Amrita School of Dentistry, Amrita Vishwa Vidyapeetham, India

**Background and Objective:** Oral diseases are highly prevalent also there exists an inequality in dental healthcare utilization in India, further complexed by its excessive diverse population characteristics. Understanding patterns and why/why not individuals utilize dental healthcare resources is an essential requirement for effective public health-policy interventions for the equitable distribution of oral health outcomes. Our objective was to assess the utilization of dental health services and its associated factors along with barriers and facilitators among adults in a district in India using the Anderson healthcare model for healthcare utilization. **Methods:** A community-based mixed-method concurrent study was conducted among adults in selected urban and rural district wards using cluster sampling method. The quantitative part was carried out with a pre-validated questionnaire assessing the pre-disposing factors, enabling resources, need for care, health behaviors and oral health outcomes. Qualitative arm was based on in-depth interviews for assessing the barriers and facilitators for oral health utilization. Univariate and multivariate analysis were used for the former and thematic analysis for the latter, meta inferences followed.

**Results:** A total of 544 participants were included. The dental health utilization was found to be 15.4% among the participants. Age and education were significantly associated with dental healthcare utilization. The level of education, presence of pain and self-consciousness of oral diseases were independent predictors (p<0.05). In-depth interviews among 27 participants identified financial concerns and structural factors, dental service provider factors and individual factors as key themes. Financial restraints and access difficulties were some of the barriers and trust in service provider and availability were facilitators. **Conclusions:** There exists a gap between the perceived need and actual utilization of dental health care. To increase the utilization of dental health services it is necessary to improve the availability of public dental health care facilities and promote oral health awareness at all levels.

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### **Incidence of cerebrovascular accident (CVA) and its factors among hypertensive patients in a community hospital setting in Thailand: a retrospective cohort study from 2011 to 2022**

### **Naruporn Krungkraipetch<sup>1</sup>, Sidaporn Srirojanakul<sup>1</sup>, Nachaok Sutthiopad<sup>1</sup>, Kanlaya Jongcherdchootrakul<sup>1</sup>**

<sup>1</sup>Phramongkutklo College of Medicine, Thailand

**Background:** Hypertension is a global concerned problem brings about a majority disability and mortality as well as in Thailand. Moreover, one of the sequelae among hypertensive patients is stroke or cerebrovascular accident (CVA) which an incidence rate is greater than the rate among general population. Nevertheless, there is lack of information indicating incidence rate and risk factors of CVA in Thai hypertensive patients.

**Objective:** To evaluate incidence and risk factors of cerebrovascular accident among hypertensive patients

**Methodology:** A retrospective cohort study was conducted in 2022 by recruiting 2578 hypertensive patients during 2011 – 2022 from Tha Wung hospital. Participants under 18 years old with previous CVA history before hypertension diagnosis were excluded from this study. The primary outcome of this research was the first CVA. For descriptive statistics, demographic data including the age of first hypertension diagnosis, gender, health insurance, and occupation were described in percent, mean and standard deviation. For analytic statistics, demographic data and predictive factors including BMI, uncontrolled hypertension, smoking status, alcohol consumption, diabetes mellitus, high cholesterol, and chronic kidney disease were calculated by a multivariate Cox Proportional Hazards regression model.

**Results:** There were 83 confirmed new CVA cases among 2578 eligible participants with follow-up. The incident rate of CVA was 8.05 per 1000 person-years [95% CI: 6.49–9.99]. Risk factors of CVA among hypertensive patients were being male with adjusted HR (95% CI) of 1.86(1.09 - 3.15), age at hypertension diagnosis above 80 years old, 4.39(1.79 - 10.74), and current smoking, 2.41(1.04 - 5.55).

**Conclusions:** CVA incidence among Thai hypertensive patients is more considerable than the normal population. A smoking cessation program should be initially recommended to decrease the risk of CVA.

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### **Decrease in oncological surgery activities during pandemic: a retrospective study from an Italian Southern Region**

Giuseppe Di Martino<sup>1</sup>, Fabrizio Cedrone<sup>2</sup>, Pamela Giovanni<sup>3</sup>, Ferdinando Romano<sup>4</sup>, Tommaso Staniscia<sup>5</sup>

<sup>1</sup>Department of Medicine and Ageing Sciences, G. d'Annunzio University of Chieti, Pescara, Italy, <sup>2</sup>ASL Pescara, Italy, <sup>3</sup>G. d'Annunzio University of Chieti-Pescara, Italy, <sup>4</sup>La Sapienza University of Rome, Italy

**Background:** The pandemic had a strong impact on healthcare for other diseases, the so-called collateral damage. This situation heavily impacted the health care system, causing a deferment of surgical admissions. This situation had an immediate and long-term impact on millions of patients with surgical diseases all over the world. The objective of this study was to evaluate the incidence of hospitalizations for colorectal and breast cancers in an Italian region during 2020 and to compare it with years 2018–2019.

**Methods:** This retrospective study was performed in the Abruzzo region, Italy. All admissions occurred during years 2018–20 for colorectal and breast cancers were considered. Data were extracted from hospital discharge records. Monthly number of hospitalizations for both diseases in the year 2020 was compared with a control period consisting of the average of admissions that occurred in the years 2018–2019 using Poisson regression.

**Results:** In the Abruzzo region, during the year 2020, a total of 604 patients were admitted for colorectal cancer surgery, and 1012 patients were admitted for breast cancer surgery. A reduction in hospital admissions for all diseases considered was found. In particular, compared with years 2018–2019, admissions for colorectal cancer were 35.71% lower (HRR 0.915; 95% CI: 0.914–0.916; p < 0.001), and admissions for breast cancer were 10.36% lower (HRR 0.895; CI: 0.894–0.897; p < 0.001). Considering the monthly incidence of hospitalization, a significant reduction was observed particularly between March and June 2020, and during the last two months of the year 2020, for both cancers compared to previous years.

**Conclusions:** The results of this study showed the impact of the COVID-19 pandemic on surgery volume for two common oncological surgeries. These results highlighted the need of strategic measures to deal with new cancer diagnoses and surgery overload during the coming years.

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### **The burden of leading sites of cancer in India in terms of Disability-Adjusted Life Years (DALYs)**

Koushik Pramanik<sup>1</sup>

**<sup>1</sup>International Institute for Population Sciences (IIPS), India**

**Background and Objective:** Cancer is a generic term for many diseases affecting any body part. Other terms used are malignant tumors and neoplasms. Disease elimination is an attempt to reduce the number of people who die from a particular cause. In practice, diseases like cancer can't be eliminated, and their effects will vary from person-years lived to the amount of money spent on managing them. Thus, in the study, we have estimated the burden of cancer in terms of DALYs.

**Methods:** To calculate YLL, we need the number of deaths due to cancers and standard life expectancy. Firstly, the age-sex-specific death rate (ASDR) from SRS was multiplied by the projected population, giving the age-sex-specific numbers of total deaths. Then, the number of cancer deaths was multiplied by standard life expectancy, giving YLL. To calculate YLD, we have multiplied the prevalence cases of cancer and the disability weights. Disability was estimated based on data for countries classified as Established Market Economies (EME) in the GBD study. Then the prevalence cases of cancer were multiplied by disability weights to obtain YLD. And lastly, DALYs were estimated by adding YLL and YLD.

**Results:** The total number of DALYs for three leading cancer sites was 5380.95 and 4735.57 per 100000 in males and females, respectively. Ranked by the age-standardized DALY rate, the top three cancers were lung (2500.58/100000 population), mouth (1430.83/100000 population), and stomach (1449.53/100000 population) in males and breast (2622.33/100000 population), cervical (1346.38/100000 population), and ovary cancer (766.86/100000 population) in females.

**Conclusions:** This disease burden estimate approach is incredibly beneficial for monitoring services and conducting health economic analyses such as cost-effectiveness studies. In addition, once results from DALY analyses are available in other developing countries, similarities and differences should be examined in more detail.

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**Economic burden for the Brazilian Health System attributable to excessive sodium consumption**

Isis Machado<sup>1</sup>, Aline Vegi<sup>2</sup>, Larissa Guedes<sup>2</sup>, Mariana Felisbino-Mendes<sup>3</sup>, Gabriel Vieira<sup>2</sup>

<sup>1</sup>Institute for Collective Health, Universidade Federal de Ouro Preto, Brazil,

<sup>2</sup>Universidade Federal de Ouro Preto, Brazil, <sup>3</sup>Universidade Federal de Minas Gerais, Brazil

**Background and Objective:** Excessive sodium consumption (ESC) is associated with increased blood pressure, the main risk factor for cardiovascular diseases, and predisposes to kidney disease and gastric cancer. We aimed to estimate the burden of non-communicable diseases attributed to ESC and costs to the Nacional Unified Health System (SUS), in Brazil and Federative Units (FU), in 2019. **Methodology:** Ecological study that used the population attributable fraction (PAF) of the ESC estimated by the Global Burden of Disease 2019, considering the theoretical minimum risk exposure level (intake of up to 3g of sodium/day); the average consumption in the population; and the relative risks of risk-outcome pairs. The PAFs were applied to the total costs of hospitalizations and procedures of medium and high complexities (MAC) for each outcome related to the ESC paid by SUS, obtained from databases of the Outpatient and Hospital Information Systems. The amounts were converted to international dollars (US\$).

**Results:** ESC was responsible for 30814 deaths, 699119 DALY (disability-adjusted life year) and US\$57,163245 spent of which US\$2,275994 in hospitalizations and US\$4,887,251 with MAC procedures in Brazil in 2019. Ischemic heart disease, stroke and chronic kidney disease represented more than 86% of this amount. The costs of hospitalizations and MAC procedures were higher for men, and almost 50% of the costs attributable to ESC were between 55-69 years. São Paulo and Minas Gerais were the FU's that spent the highest values for the treatment of diseases attributable to ESC, while Roraima and Acre the lowest. **Conclusions:** The ESC causes a significant burden to the SUS, mainly among men and in the Southeast region. Research using health and economic modeling approaches provides important evidence for the implementation of regional public policies and cost-effective strategies for ESC reduction favoring better allocation of public resources to SUS.

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**Differences in incidence trends (1987-2018) of cancers by sex in the Veneto Region, North-East Italy**

Giuseppe Luca<sup>1</sup>, Manuel Zorzi<sup>2</sup>, Alessandra Buja<sup>3</sup>, Massimo Rugge<sup>4</sup>, Claudia Cozzolino<sup>5</sup>, Emanuela Bovo<sup>4</sup>, Stefano Guzzinati<sup>4</sup>, Vincenzo Baldo<sup>3</sup>

<sup>1</sup>Department of Cardiological, Thoracic, Vascular Sciences and Public

Health, University of Padova, Padova, Italy, <sup>2</sup>Azienda Zero, Registro Tumori Veneto, Italy, <sup>3</sup>Department of Cardiological, Thoracic, Vascular Sciences and Public Health, University of Padua, Padua, Italy, <sup>4</sup>Veneto Tumor Registry, Azienda Zero, Italy, <sup>5</sup>University of Padua, Italy

**Background:** This is an observational study aimed at analysing the incidence trends of 18 different types of cancer, classified by site, in a population cohort of over 4 million residents in the Veneto region of north-eastern Italy over a period of almost 30 years.

**Methods:** This population-based observational study is based on epidemiological data on cancer incidence collected by the Veneto Regional Cancer Registry for the years 1987-2018. A joinpoint regression analysis was performed to identify significant changes in annual cancer incidence (Annual Percent Change - APC) by sex and tumour site. The average Annual Percent Change (APC) was also calculated for each trend.

**Results:** Overall, the APC of all cancers (excluding non-melanoma skin cancer) shows significant differences between the sexes (-1.7 males, -0.9 females). In addition, the APC of the incidence of tumours, classified by site, shows differences between males and females in 9 tumours (brain, larynx, lung, skin melanoma, oesophagus, colorectum, liver, bladder and oral cavity), while the remainder show similar trends (thyroid, stomach, pancreas, biliary tract, kidney and urinary tract, leukaemia, multiple myeloma non-Hodgkin lymphoma, Hodgkin lymphoma).

**Conclusions:** This study has shown that sex differences in cancer incidence trends still remain of concern for several malignancies. These observations should guide policy makers to adopt differentiated strategies to maximise the effectiveness of primary and secondary prevention.

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**Epidemiology, quality of care, and costs of a soft tissue sarcoma cohort: results from a high-resolution regional registry**

Carlo Formaro<sup>1</sup>, Alessandra Buja<sup>2</sup>, Claudia Cozzolino<sup>3</sup>, Massimo Rugge<sup>2</sup>, Saveria Tropea<sup>4</sup>, Manuel Zorzi<sup>5</sup>, Antonella Vecchiato<sup>4</sup>, Paolo Fiore<sup>4</sup>, Antonella Brunello<sup>6</sup>, Vincenzo Baldo<sup>6</sup>, Carlo Rossi<sup>7</sup>, Simone Mocellini<sup>7</sup>

<sup>1</sup>Hygiene and Public Health Unit, Department of Cardiological, Vascular and Thoracic Sciences and Public Health, University of Padova, Padova, Italy,

<sup>2</sup>University of Padua, Padua, Italy, <sup>3</sup>Surgical Oncology Unit, Veneto Institute of Oncology IOV-IRCCS, Padua, Italy, <sup>4</sup>Veneto Institute of Oncology IOV-IRCCS, Padua, Italy, <sup>5</sup>Veneto Tumor Registry, Azienda Zero, Padova, Italy,

<sup>6</sup>Hygiene and Public Health Unit, Department of Cardiological, Vascular and Thoracic Sciences, and Public Health, University of Padua, Padua, Italy,

<sup>7</sup>Veneto Institute of Oncology IOV-IRCCS Padova, Padova, Italy

**Background and Objective:** Soft tissue sarcomas (STS) are rare malignancies. Their low incidence and the complexity of their management demand their treatment at high-volume multidisciplinary centers to ensure an adequate quality of care. This study aimed to assess the epidemiology, quality of care, and costs of care for cases of STS in the Veneto Region. **Methods:** This retrospective, population-based study included all incidental cases of STS recorded in the Veneto Region (northeast Italy) in 2017 and 2018. The 1990-2018 temporal trends in the age-standardized incidence of STS were also obtained by sex. Then significant changes in yearly rates for males and females were identified using a joinpoint regression. The quality of care in different phases of the STS clinical pathway was assessed by computing the real-practice values of a set of indicators established by a regional multidisciplinary working group. The average survival-weighted, real-world costs per patient at 2 years after their diagnosis were extracted from regional administrative databases and stratified by sex and TNM stage.

**Results:** The incidence of soft tissue sarcoma was generally higher in males than in females. The temporal trends were flat for women, and rose slightly trend for men (APC = 0.9, p-value = 0.001). The survival-weighted mean total cost per patient amounted to €22,183 (€40,042 for stage IV disease and €10,379 for stage I). Adherence to diagnostic procedures, such as the proportion of initial anatomopathological diagnoses supported by a second opinion, was poor. Indicators concerning the surgical treatment of intermediate/high-grade and retroperitoneal STS were still significantly lower than the thresholds as only 37% of the latter were treated with multivisceral surgery. **Conclusions:** The availability of a high-resolution registry enabled a population-based epidemiological investigations on the direct costs of illness for patients with STS, affording an overview of the quality of their clinical care pathways.

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**Sex-related difference in the risk of second primary cancers among cutaneous malignant melanoma survivors**

Giulia Grotto<sup>1</sup>, Alessandra Buja<sup>2</sup>, Massimo Rugge<sup>3</sup>, Mariagiovanna Manfredi<sup>2</sup>, Claudia Cozzolino<sup>4</sup>, Stefano Guzzinati<sup>3</sup>, Emanuela Bovo<sup>3</sup>, Manuel Zorzi<sup>3</sup>, Paolo Fiore<sup>4</sup>, Saveria Tropea<sup>4</sup>, Luigi Dall'Olmo<sup>5</sup>, Carlo Rossi<sup>6</sup>, Simone Mocellin<sup>4</sup>

<sup>1</sup>Department of Cardiologic, Vascular and Thoracic Sciences and Public Health, University of Padova, Padova, Italy, <sup>2</sup>Department of Cardiac, Thoracic and Vascular Sciences, and Public Health, University of Padova, Italy, <sup>3</sup>Veneto Tumor Registry, Azienda Zero, Italy, <sup>4</sup>Soft-Tissue, Peritoneum and Melanoma Surgical Oncology Unit, Veneto Institute of Oncology IOV-IRCCS, Italy, <sup>5</sup>Faculty of Medicine and Surgery, Department of Surgical, Oncological and Gastroenterological Sciences, University of Padova, Italy, <sup>6</sup>Faculty of Medicine and Surgery, Department of Surgical, Oncological and Gastroenterological Sciences, University of Padova, Padova, Italy

**Background and Objective:** Personalized precision preventive medicine is a new public health challenge that demands a definition of target populations at greater risk of disease from a gender-sensitive perspective. Cutaneous malignant melanoma (CMM) survivors are more likely to develop second primary cancers than the general population. This study aims to identify any sex-related difference in this risk of second primary cancers (other than CMM) in patients diagnosed with CMM.

**Methods:** A retrospective cohort study was conducted using data from a high-resolution, population-based cancer registry covering the Veneto Region (in Italy). The cohort included all CMM patients diagnosed between 1999 and 2018. All subsequent primary cancers occurring in this cohort, and the specific sites involved were considered. Cancer incidence rates were calculated stratifying the cohort by sex and tumor site, and standardizing patients by age and calendar-year group. Then the Standardized Incidence Ratio (SIR) was calculated as the ratio between the number of second cancers observed and the number that would be expected if CMM patients experienced the same cancer rates as the general reference population.

**Results:** Data for 9,726 CMM survivors were analyzed. Males were at higher risk of subsequent prostate, thyroid, kidney and urinary tract cancers, while the risk for females was significantly higher for second breast cancer, non-Hodgkin lymphoma, and kidney and urinary tract cancers.

**Conclusions:** Being diagnosed with CMM raises the risk of developing other subsequent primary cancers. Health care systems should offer patients who have been diagnosed with melanoma a tailored, specific cancer screening program and a generally greater commitment to proactive secondary prevention efforts to enable an early diagnosis of potentially gender-specific second primary tumors.

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### Association between body mass index and dental caries among adolescents

Manal Awad<sup>1</sup>, Wegdan Issa<sup>2</sup>, Hadia Radwan<sup>3</sup>, Randa Fakhry<sup>3</sup>, Nabeel Yateem<sup>3</sup>, Rachel Rossiter<sup>4</sup>

<sup>1</sup>University of Sharjah, College of Dental Medicine, United Arab Emirates, <sup>2</sup>College of Health Sciences, University of Sharjah, Sharjah, United Arab Emirates, <sup>3</sup>College of Health Sciences, University of Sharjah, Sharjah, United Arab Emirates, <sup>4</sup>Faculty of Science and Health, Charles Sturt University, Australia

**Background:** Body mass index (BMI) and dental caries among adolescents is a growing worldwide public health issue. They share some common and modifiable influences. The objective of this study was to evaluate the association between BMI and dental caries among adolescents in the United Arab Emirates (UAE).

**Methods:** This cross-sectional study enrolled 478 adolescents 13-19 years old from private and public schools in the UAE. Participants were classified as underweight, normal weight, overweight, and obese. Dental caries was diagnosed according to the criteria recommended by the World Health Organization (WHO). Independent t-tests were used to compare average number of decayed, filled and missing surfaces (DMFS) by age, sex, school type, mothers' employment, BMI categories, fruit and vegetable intake (F/V intake) and plaque index. Additionally, a multiple linear regression model was applied to analyze the association between BMI categories and dental caries, adjusted for confounding factors considered in this study.

**Results:** The average age of the participants was 16.2 ± 1.4. Prevalence of underweight, normal, overweight, and obesity was 14.6%, 46.4 %, 17.6%, and 21.4%, respectively. Overall, the average DMFS score was 4.35 ± 4.5, with lower dental caries rates among girls than boys. The linear regression model revealed that, being a male, attending a public school and being underweight were all positively and significantly associated with dental caries.

**Conclusions:** Underweight is associated with dental caries among adolescents

in the UAE. Further research is required to investigate the complex association between obesity and dental caries and how dietary habits, oral hygiene habits, and parental socioeconomic status mediate the association between BMI and dental caries.

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### Adherence to Mediterranean diet and risk of pancreatic cancer: systematic review and meta-analysis

Vincenza Gianfredi<sup>1</sup>, Andrea Cinnirella<sup>1</sup>, Emanuela Campagnoli<sup>1</sup>, Manuel Maffeo<sup>1</sup>, Pier Perrone<sup>1</sup>, Viiktorija Shishmintseva<sup>1</sup>, Francesca Grosso<sup>1</sup>, Ambra Castrofino<sup>1</sup>, Silvana Castaldi<sup>1</sup>, Luisa Romanò<sup>1</sup>, Mariateresa Nardi<sup>2</sup>, Daniele Nucci<sup>2</sup>

<sup>1</sup>University of Milan, Italy, <sup>2</sup>Nutritional Support Unit, Veneto Institute of Oncology IOV-IRCCS, Italy

**Background and Objective:** Pancreatic cancer (PC) still represents one of the gastrointestinal cancers with the highest burden both in terms of incidence, prevalence and mortality rate. However, despite efforts in deeply understanding the aetiology of PC, it still remains unclear, with several identified potential risk factors, among them diet. However, little is known about the association between Mediterranean Diet (MedDiet) and risk of PC. **Methods:** A systematic review with meta-analysis has been carried out according to The Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 (PRISMA) guidelines, searching on three scientific databases (PubMed/MEDLINE, Scopus, and EMBASE). The protocol was registered in PROSPERO (ID number: CRD42022367497). Newcastle-Ottawa Scale was used to assess methodological quality. Both fixed and random effect models were performed. The effect size was reported as hazard ratio (HR) with a 95% Confidence Interval (CI). I<sup>2</sup> test was performed to measure the heterogeneity. Funnel plot and the Egger's regression asymmetry test (p < 0.10) were used to assess publication bias. Prometa3® software was used to perform the statistical analyses.

**Results:** A total of 8 articles were included. The methodological quality of the included meta-analyses was high. Our results show that higher adherence to MedDiet is associated with a lower risk of PC [HR:0.82 (0.76-0.88) p<0.001, based on 1,301,320 subjects]. Results were also confirmed in sensitivity and subgroups analyses (avoidance of potential overlapping effects, type of tools to assess dietary intake and the diagnosis of PC, prevalent and incident PC risk, country where the studies took place, sex and cancer site). **Conclusions:** Based on our results, and according to the NOURISHING framework developed by the World Cancer Research Found, investing public money in educating about healthy food choices might maximize healthier food choices. In this case higher adherence to MedDiet reduces risk of PC.

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### Is reformulation capable of changing the nutritional quality of diets at population-level? A modeling study using real food market data

Barthélemy Sarda<sup>1</sup>, Emmanuelle Kesse-Guyot<sup>2,3</sup>, Morgane Fialon<sup>2,3</sup>, Melanie Deschasaux<sup>2,3</sup>, Bernard Srour<sup>2,3</sup>, Pilar Galan<sup>4</sup>, Serge Hercberg<sup>4</sup>, Mathilde Touvier<sup>4</sup>, Chantal Julia<sup>4</sup>

<sup>1</sup>Sorbonne Paris Cité Epidemiology and Statistics Research Center (CRESS), Inserm U1153, Inrae U1125, Cnam, Université Sorbonne Paris Nord University, Bobigny, France, <sup>2</sup>Cité Epidemiology and Statistics Research Center (CRESS), Inserm U1153, Inrae U1125, Cnam, Université Sorbonne Paris Nord University, Bobigny, France, <sup>3</sup>Nutritional Epidemiology Research Team (EREN), France, <sup>4</sup>Nutritional Epidemiology Research Team (EREN), CRESS, Inserm U1153, Inrae U1125, Cnam, Paris 13 University, Bobigny, France

**Background:** Reformulation policies have been implemented to improve the nutritional quality of diets through the modification of the food offer. To assess the potential effects of reformulation policies, past research analyzed the impact of interventions in specific food sectors or for specific nutrients, using generally theoretical approaches. This study used branded food composition data to model potential effects on dietary intakes of widespread reformulation based on the composition of existing products.

**Methods:** Dietary data were retrieved from the Nutrinet-Santé cohort at inclusion (N=100,418), providing detailed information regarding participants' diet (N>3,000 unique generic food items). Each food consumed was matched with data from OpenFoodFacts, providing composition information from the French food market (N=119,060 products used) and products were classified as low, medium, or high quality for each generic food item according to FSAm-NPS. Three scenarios were

constructed: a baseline scenario in which products were selected from the entire range of food, two counterfactual scenarios with a food selection restricted only to products of higher nutritional quality, or poorer nutritional quality. For each scenario, a product of the corresponding selection was randomly attributed to each individual and dietary intakes were then assessed.

Results: We found that substitution from overall to products of higher nutritional quality led to improvement in diets for energy (-55 kcal/day,-2.9%), saturated fat (-2.4g/day,-7.6%), sugar (-4.8g/day,-5.3%) and salt (-0.54g/day,-8.3%) intakes. Improvements in diet quality were observed across all population strata. Food groups for which changes in composition contributed the most to improvements at the population level were: 1) sweets/confectionary, sweetened beverages, biscuits for sugars; 2) dairy desserts, processed meats, biscuits for saturated fat; 3) breads, cheeses, prepared dishes for salt.

Conclusions: Our study showed that replacing food consumed by similar one (intra-group substitutions) with different composition allows to substantially improve the overall quality of the diet.

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### COVID-19 diagnosis and mortality in patients with Acute Myocardial Infarction admitted in Italy during the National Outbreak

Paola D'Errigo<sup>1</sup>, Stefano Rosato<sup>2</sup>, Leonardo Luca<sup>3,4</sup>, Barbara Giordani<sup>5</sup>, Marcello Cuomo<sup>5</sup>, Giorgia Duranti<sup>5</sup>, Gian Mureddu<sup>6</sup>, Andrea Tavilla<sup>7,8</sup>, Gabriella Badoni<sup>2</sup>, Fulvia Seccareccia<sup>2</sup>, Giovanni Baglio<sup>5</sup>

<sup>1</sup>National Centre for Global Health, Istituto Superiore di Sanità, Rome, Italy, <sup>2</sup>National Center for Global Health, Istituto Superiore di Sanità, Italy, <sup>3</sup>Department of Cardio-Thoracic and Vascular Medicine and Surgery, Division of Cardiology, A.O. San Camillo-Forlanini, Rome, Italy, <sup>4</sup>UniCamillus-Saint Camillus International University of Health Sciences, Rome, Italy, <sup>5</sup>Italian National Agency for Regional Healthcare Services, Italy, <sup>6</sup>San Giovanni Addolorata Hospital, Italy, <sup>7</sup>National Centre for Disease prevention and health promotion, Italy, <sup>8</sup>Istituto Superiore di Sanità, Italy

Background and Objective: There are limited data on the clinical impact of COVID-19 in patients with acute myocardial infarction (AMI). Aim of this work is to assess the impact of COVID-19 infection on mortality in AMI patients admitted during the national outbreak in Italy. Methods: Retrospective nationwide cohort study enrolling consecutive AMI patients admitted between March,11st and May 3rd, 2020 (national outbreak) and the equivalent periods of the previous 5 years in Italy. The main outcomes were 30-day and 6-month all-cause mortality.

Results: The actual number of AMI admission during the 2020 outbreak in Italy was significantly reduced as compared to that expected based on the trend of the previous 5 years (STEMI: 4048 vs 5523,  $p < 0.0001$ ; NSTEMI: 4981 vs 8633,  $p < 0.0001$ ). A COVID-19 diagnosis was reported in 4.2% of STEMI and 3.5% of NSTEMI patients. In STEMI patients the 2020 expected rate of 30-day and 6-month mortality was 9.2% and 12.6%, compared to observed rates of 10.8% ( $p = 0.016$ ) and 14.4% ( $p = 0.017$ ), respectively. In NSTEMI patients the 30-day and 6-month expected mortality rates in 2020 were 6.5% and 12.2%, compared to observed rates of 8.3% ( $p = 0.001$ ) and 13.6% ( $p = 0.041$ ), respectively. Excluding patients diagnosed with COVID-19, the mortality rates become consistent with the trend of the previous 5-year for STEMI, but remain higher for NSTEMI. After multivariate adjustment, diagnosis of COVID-19 resulted an independent predictor of both 30-day mortality (OR=4.7,  $p < 0.0001$  for STEMI; OR=4.5,  $p < 0.0001$  for NSTEMI) and 6-month mortality (OR=3.6,  $p < 0.0001$  for STEMI; OR=3.8,  $p < 0.0001$  for NSTEMI). Conclusions: During the 2020 national outbreak in Italy, a concomitant diagnosis of COVID-19 was associated with a significantly higher rate of mortality in both STEMI and NSTEMI patients. Excluding patients diagnosed with COVID-19, the mortality rates become consistent with the previous 5-year trend for STEMI, while they remain higher for NSTEMI.

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### Impact of national smoking bans on per-capita tobacco consumption, in Europe: a time trend analysis

Roberta Pastorino<sup>1</sup>, Michele Sassano<sup>2</sup>, Marco Mariani<sup>2</sup>, Stefania Boccia<sup>2</sup>

<sup>1</sup>Institute for Collective Health, Università Cattolica del Sacro Cuore, Italy,

<sup>2</sup>Università Cattolica del Sacro Cuore, Italy

Introduction: Tobacco is a major public health threaten and several policies and laws were enacted to reduce the burden of tobacco-related diseases and deaths. We aimed to assess the impact of national smoking bans on per-capita cigarette consumption and mortality of acute myocardial infarction (AMI) in the European Union (EU) and in the United Kingdom (UK) and to assess which factors influence

their effectiveness.

Methods: We carried out an interrupted time series analysis including data of 27 Member States of the EU and the UK on per-capita cigarette consumption and AMI mortality. A multivariate meta-regression was carried out to investigate whether some factors influenced the effectiveness of smoking bans in terms of level and slope changes following interventions.

Results: Around half of the interventions analyzed led to a level or slope change, or both, of per-capita cigarette consumption (17 out of 35) and AMI mortality (18 out of 36). As for cigarette consumption, the strongest level reduction was observed for the smoking ban issued in 2010 in Poland (rate ratio, RR: 0.47; 95% confidence interval, CI: 0.41, 0.53). Instead, the highest level reduction of AMI mortality was observed for the intervention introduced in 2012 in Bulgaria (RR: 0.38; 95% CI: 0.34, 0.42). Bans issued more recently or by countries with a lower human development index were found to be more effective at reducing per-capita cigarette consumption. In addition, smoking bans applying in bars were found to be associated with a higher effectiveness related to both cigarette consumption and AMI mortality.

Conclusions: The results of our study suggest that smoking bans are effective at reducing per-capita cigarette consumption and AMI mortality. It is of extreme importance to monitor and register data on tobacco, its prevalence and consumption in order to be able to tackle with concerted efforts its health effect.

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### The role of human rights law in preventing oral NCDs: states' imperative to regulate the cariogenic (living) environment

Dominique Mollet<sup>1,2</sup>, Brigit Toebes<sup>3</sup>

<sup>1</sup>Joint Research Center, European Commission, Italy, <sup>2</sup>Rijksuniversiteit Groningen, <sup>3</sup>Rijksuniversiteit Groningen, The Netherlands

Background and Objective: Protecting oral health is of increasing concern: 3.5 billion people worldwide suffer from oral non-communicable diseases (NCDs). Consensus has emerged that strategies must bypass individual responsibility and further systemic policies. The World Health Organization has recently adopted a Global Strategy on Oral Health, recognizing the fundamental right to oral health. Although previous research clarified the importance of human rights law in NCD prevention, the content of the right to oral health and the benefits of a rights-based approach for oral health remain unclarified.

Methods: Our methodology is firmly grounded in public health legal research. To identify the content of the right to oral health and the resulting State obligations, we conducted legal doctrinal research integrating dental sciences. First, we established the subject of regulation, namely behavioural risk factors of poor oral health. Subsequently, we signalled and interpreted relevant human rights law provisions. The Findings, namely the State obligations, were tested in light of available knowledge in the field of dentistry.

Results: Human rights treaties create legal obligations for States vis-à-vis individuals. The right to health is central and offers a framework for a comprehensive oral health strategy, covering both the underlying determinants of health and the healthcare system. The behavioural risk factors of poor oral health, including sugars ingestion, hygiene practices, fluoride exposure and dental attendance, have clear human rights dimensions: States must ensure access to essential medicines including fluoride, nudge individuals into healthy behaviour, and provide for an economically accessible healthcare system: omissions in these areas can amount to violations of human rights.

Conclusions: The right to oral health and the incorporation of human rights law in international and domestic strategies on oral health is a promising tool to further upstream policies, ensure equal oral health protection and hold governments accountable for lacking such strategies.

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### Associated factors to known but non-controlled high blood pressure in Senegal: a secondary analysis of the WHO STEPwise survey

Pengd-Wende Traore<sup>1</sup>, Jean Tine<sup>1</sup>, Adama Faye<sup>1</sup>

<sup>1</sup>Institute of Health and Development, Public Health Service, Faculty of Medicine, Pharmacy and Odontology, Cheikh Anta Diop University, Dakar, Senegal

Introduction: In Africa, in 2015, the prevalence of known hypertension under treatment but not controlled was 93%. The Objective of the study was to estimate its prevalence and identify its associated factors in Senegal.

Methodology: This secondary analysis of the WHO STEPwise survey was descriptive and analytical. Data were collected from August 1st to December 15th,

2015. All subjects between the ages of 18 and 70 and residents of the territory were included. Those in a state of pregnancy, incapacity (mental, physical), absence from the household, or non-consent were not included. The sample size had been calculated with the WHO formula. Sampling was done by stratification in three sampling stages. Data collection was done on the WHO STEPS form. The statistical analysis of the data was done on Rstudio 4.0.2. with descriptive, bivariate, and multivariate analyzes by binary logistic regression.

Results: The prevalence of known but non-controlled hypertension was 56.9%. The associated factors were: The "Very important" degree of personal perception of the importance of reducing salt consumption (ORa = 21.7; 95% CI = [2.49; 601]); the advice received to reduce salt consumption (ORa = 12.1; 95% CI = [1.81; 144]); physical activity when moving only (ORa = 0.11; 95% CI = [0.02; 0.58]); limiting the consumption of savory cooked meals (ORa=0.04; 95% CI=[0.00; 0.57]).

Conclusions: We recommend that health practitioners go to populations to develop primordial and primary prevention of arterial hypertension, researchers conduct mixed studies on bad attitudes regarding salt consumption, administrative authorities develop cities where the practice of physical activity when moving is more easy and political authorities to issue mandatory warnings on the salt concentration of foods sold.

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### An e-learning course to support monitoring of food industry compliance with regulation to promote healthier diets in South-East Asia

Damian Maganja<sup>1</sup>, Alexandra Jones<sup>1</sup>, Angela Silva<sup>2</sup>

<sup>1</sup>The George Institute for Global Health, Australia, <sup>2</sup>South-East Asia Regional Office, World Health Organization, India

Background and Objective: The World Health Organization (WHO) recommends governments introduce regulations to support healthier food environments and address the growing burden of diet-related disease. Monitoring and enforcing food industry compliance with regulation is critical. However, guidance to support the development, implementation and improvement of monitoring systems is limited, particularly in low- and middle-income country (LMIC) settings. The George Institute for Global Health and WHO South-East Asia Regional Office collaborated to develop technical tools for countries across the region to support monitoring and enforcement efforts.

Methods: This work was undertaken in several phases. Firstly, relevant literature and frameworks for monitoring food regulation and other related areas such as alcohol control were reviewed. An initial set of monitoring methods was then developed, including consideration of relevant applications, authority and resources required, strengths and weaknesses, and potential barriers to implementation. The feasibility of application in LMICs was tested through targeted consultation with government and non-government stakeholders across the region. This informed a final, tailored set of recommendations for building monitoring systems. Materials were then translated into an e-learning course, further tested with stakeholders, to facilitate engagement with the policy recommendations.

Results: An e-learning course on monitoring food industry compliance with regulation is now available on the OpenWHO platform. This provides an overview of principles that support effective regulation, outlines a stepped set of recommendations for effective monitoring methods that can be adapted to country contexts, and discusses the need for effective enforcement and reporting systems. Case studies of regional and global practices are provided as examples. Conclusions: These practical and accessible materials will support governments across the South-East Asia region and elsewhere to strengthen monitoring and enforcement of regulations to address diet-related disease. Overall, we suggest a risk-based approach that considers country priorities and available resources is likely to be most effective.

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### Cervical cancer screening based on urine self-sampling to reach un(der)-screened women: study protocol of the ScreenUrSelf trial

Severien Keer<sup>1</sup>, Eliane Kellen<sup>2</sup>, Patrick Martens<sup>2</sup>, Marc Arbyn<sup>3</sup>, Cindy Simoens<sup>3</sup>, Elke Smits<sup>4</sup>, Iris Verhaegen<sup>4</sup>, Joke Bilcke<sup>1</sup>, Philippe Beutels<sup>1</sup>, Annemie Smet<sup>1</sup>, Pierre Damme<sup>1</sup>, Alex Vorsters<sup>1</sup>

<sup>1</sup>University of Antwerp, Belgium, <sup>2</sup>Centre for Cancer Detection, Belgium, <sup>3</sup>Sciensano, Belgium, <sup>4</sup>Antwerp University Hospital, Belgium

ScreenUrSelf aims to verify whether the offer of urine or vaginal self-sampling is more effective than an invitation letter to contact a physician for a Pap smear or no intervention, to generate participation in cervical screening without negatively impacting compliance to follow-up. Would home-collected urine sampling be more

preferred by un(der)-screened women than vaginal self-sampling? Could as such more women be reached that currently do not participate in organized screening? To define which intervention is most effective to reach un(der)-screened women, a trial will be embedded in the organized cervical screening program in Flanders (Belgium). 48000 women (30-64y) will be included, who are eligible for screening but were not screened for at least six years (two screening rounds). Women will be randomized in six arms each comprising 8000 women: two control (no intervention; recall letter) and four intervention arms. Interventions consist of receipt of a urine or vaginal self-sampling kit (opt-out) or receipt of a letter to order a urine or vaginal self-sampling kit (opt-in). The primary outcome will be the response rate: proportion of women that participate in each study arm within twelve months after initiation of the intervention. Response is defined as having a preventive cervical screen, by the self-sample or a Pap smear. Secondary study outcomes will include percentage of screened positive women with follow-up, percentage of women with a positive screen test, positive predictive value of a positive screen test, detection rate of high-grade cervical neoplasia, preference and attitudes of women, age- and socioeconomic status-related differences in response rates, and cost-effectiveness outcomes. Offering a cost-effective approach that reaches un(der)-screened women and assures compliance to follow-up should impact significantly on the burden of cervical cancer. If embedded in an organized screening program, this could positively impact both the patient's health and reduce costs for the healthcare system.

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### Sexually and non-sexually transmitted infections and the risk of Prostate Cancer: results from the EPICAP study

Melissa Sawaya<sup>1</sup>, Emilie Cordivadverger<sup>2,3</sup>, Pierre-Jean Lamy<sup>4,5,6</sup>, Xavier Rebillard<sup>5,7</sup>, Brigitte Tretarre<sup>8</sup>, Florence Menegaux<sup>2</sup>

<sup>1</sup>Université Paris-Saclay, UVSQ, Exposome, Hérité, Cancer et Santé team, CESP (Center for Research in Epidemiology and Population Health), UMR 1018 Inserm, Villejuif, France., <sup>2</sup>Université Paris-Saclay, UVSQ, Exposome, Hérité, Cancer et Santé team, CESP (Center for Research in Epidemiology and Population Health), UMR 1018 Inserm, Villejuif, France, <sup>3</sup>Institut Gustave Roussy, Villejuif, France, <sup>4</sup>Institut Médical d'Analyse Génomique-Imagename, Labosud, Montpellier, France, <sup>5</sup>Service Urologie, Clinique Beau Soleil, Montpellier, France, <sup>6</sup>Groupe INOVIE, France, <sup>7</sup>IMM de la Clinique Beau Soleil, France, <sup>8</sup>Cancéropôle Grand Sud-Ouest (GSO), Montpellier, France

Introduction: Prostate cancer (PCa) is by far the most common type of cancer among men in Western countries. However, relatively little is known about its etiology despite the high morbidity and mortality rates, where only advanced age, ethnicity, and family history of prostate cancer are well-established non-modifiable risk factors. It has been suggested that chronic inflammation may be involved in the development of prostate carcinogenesis. Therefore, our objective was to investigate the role of sexually and non-sexually transmitted infections in the occurrence of prostate cancer with a specific interest in the aggressive types based on data from EPICAP.

Methods: EPICAP is a population-based case-control study conducted in the département of Hérault, France, between 2012 and 2014. A total of 819 incident cases and 879 controls have been interviewed face-to-face using a standardized questionnaire gathering information on known or suspected risk factors of prostate cancer and personal history of specific sexually and non-sexually transmitted infections: Gonorrhea, Syphilis, Trichomonas, Herpes, Mononucleosis, Epstein Barr, Varicella-zoster, and Dengue. Odds Ratios (OR) and their 95% confidence interval were estimated using multivariate unconditional logistic regression.

Results: No association emerged for the history of sexually transmitted infections (OR 1.04, 95%CI: 0.84-1.25) and non-sexually transmitted infections (OR1.09, 95%CI: 0.89-1.34) and the risk of prostate cancer. Even for all the infections studied separately, there was no association with the risk of low-grade or high-grade prostate cancer.

Conclusions: Our results showed that sexually or non-sexually transmitted infections do not seem to be risk factors for prostate cancer in the EPICAP study. Therefore, further investigation is needed to help advance our understanding of the role of chronic inflammation in the etiology of prostate cancer, with a particular focus on its most aggressive types.

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### Capitalizing experiential knowledge from interventions promoting breast and cervical cancers screening to enhance uptake in France

Hélène Vandewalle<sup>1</sup>, Sandrine Halphen<sup>1</sup>, Béatrice Georgelin<sup>2</sup>, Frédéric Bouhier<sup>2</sup>, Timothée Delescluse<sup>2</sup>, Samuel Gaspard<sup>2</sup>, Benjamin Soudier<sup>2</sup>,

François Berdougo<sup>2</sup>, Emmanuel Rush<sup>2</sup>

<sup>1</sup>Institut National du Cancer, France, <sup>2</sup>French Society for Public Health, France

**Background:** The latest French National Cancer Control Strategy makes improving access to Cancer Screening programs (CS) a public health priority, as inequalities regarding CS uptake persist. From 2020 to 2022, we carried a project to document Interventions Promoting CS Participation (IPCSP) for vulnerable groups, for both breast and cervical cancers. To build up experiential and practical evidence from IPCSP, we used an innovative approach in France called capitalization.

**Methods:** The project aimed at capitalizing, i.e. collecting, documenting and circulating, experiential knowledge from practitioners who implement IPCSP at a local level and followed 6 steps: 1/ identify promising IPCSP nationwide; 2/ meet with IPCSP practitioners and users; 3/ document and analyze the key mechanisms impacting how IPCSP unfold; 4/ write a summary form for each IPCSP; 5/ publish them on an online portal; 6/ conduct a cross-case analysis to investigate key or recurring levers and barriers and design recommendations for public policy.

**Results:** 20 IPCSP were selected, including projects aimed at women in low-income neighborhoods, healthcare deserts' inhabitants, allophone women, handicapped women, etc. Most IPCSP targeted groups, not individuals. Strategies included: outreach strategies, peer prevention, training workshops, on-site screenings, etc. All IPCSP promoted informed choice. The analysis highlights issues regarding implementation design, partnerships, and evaluation. Most IPCSP had to adapt the tools of the national CS campaign. Most IPCSP reached out to women rather than remodel access to regular sites of prevention to facilitate CS uptake. Partnerships, between medical experts and professionals involved with targeted women, provided population-specific and context-specific levers. Fruitful partnerships dedicated time to co-construct interventions and to cross-train practitioners.

**Conclusions:** The selected IPCSP were small-scale programs showing positive results and offering insights for others to put into practice and disseminate strategies recommended in the National Strategy. New research is necessary to measure their cumulative impact on national uptake goals.

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### It takes two to tango: a couples-based lifestyle approach to reducing multigenerational risk of metabolic syndrome

Sundus Nizamani<sup>1</sup>, Ro McFarlane<sup>2</sup>, Cathy Knight-Agarwal<sup>3</sup>, Shawn Somerset<sup>1</sup>

<sup>1</sup>Health Research Institute, University of Canberra, Australia, <sup>2</sup>Health Research Institute, University of Canberra, Bruce, Australia, <sup>3</sup>Faculty of Health, University of Canberra, Bruce, Australia

**Background and Objective:** Metabolic Syndrome (MetS) is a major risk factor for non-communicable diseases, including type 2 diabetes mellitus, cardiovascular disease, and cancer. Although MetS risk is transferred via the epigenome from both biological parents, periconceptional lifestyle interventions are generally directed towards mothers. This study Aims to assess the feasibility of targeting both members of a couple in a periconceptional nutrition quality and physical activity intervention.

**Methods:** A non-randomised, non-blinded, single-arm couples-based nutrition quality and physical activity intervention was commenced in October 2022. Over a ten-week period, couples (n=10) will meet the study facilitator, via an online platform, for five healthy lifestyle sessions. Nutrition assessment will be undertaken using a combination of diet diaries, and 24-hour diet recalls. Physical activity will be measured with a Physical Activity Diary and the International Physical Activity Questionnaire. Individualised feedback will be given at each session. The primary outcome measure is changes in the quality of nutrition and physical activity levels and adherence to the study. Data will be analysed using a combination of qualitative and quantitative techniques.

**Results:** This pilot is currently underway. Preliminary results indicate that targeting both members of a couple simultaneously improves adherence to the program and encourages members of a couple to work together to potentially enhance post-intervention adherence to healthy habits.

**Conclusions:** To date, the results supporting targeting both members of a couple are at least as effective as targeting one member. Following the socio-ecological model of health, targeting both members of a couple would increase the post-intervention adherence to the newly learned healthy habits. Therefore, by targeting pre-conception couples, we have the potential to reduce the multigenerational risk of metabolic syndrome and in return the overall global burden of disease.

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### Policies to reduce tobacco availability through regulating retail environment: a scoping review

Raouf Alebshehy<sup>1</sup>, Zara Asif<sup>2</sup>, Melanie Boeckmann<sup>3</sup>

<sup>1</sup>Bielefeld University, Germany, <sup>2</sup>King's College London, United Kingdom, <sup>3</sup>University of Bremen, Germany

**Background:** The World Health Organization Framework Convention on Tobacco Control (FCTC) includes measures to reduce demand for and supply of tobacco. The measures related to demand reduction include raising taxes, providing cessation services, promoting smokefree public places, banning advertising, and raising awareness. However, there are a limited number of measures for supply reduction, and these mainly include fighting illicit trade, banning sales to minors and providing alternatives to tobacco workers and growers. This scoping review Aims to identify additional potential measures of retail environment regulations to reducing tobacco supply and consequently reducing tobacco use.

**Methods:** This scoping review examines interventions, policies, and legislation to regulate the tobacco retail environment to reduce tobacco availability. FCTC and its Conference of Parties decisions, grey literature including tobacco control databases and the databases PubMed, EMBASE, Cochrane Library, Global Health, and Web of Science were systematically searched, complemented by a scoping communication with the focal points of the 182 FCTC Parties.

**Results:** Themes of potential measures to reduce tobacco availability by regulating retail environment were identified among both FCTC and non-FCTC measures. Studies show the effects of regulation of the retail environment in influencing overall tobacco purchases, and there is strong evidence that having fewer retail outlets reduces the level of impulse purchasing of cigarettes and tobacco goods. The measures covered by FCTC are more implemented than ones not covered by it. **Conclusions:** Further studies to assess effectiveness and implementation of such measures, and the adoption of the effective ones to be covered under FCTC decisions would probably increase their adoption globally and may reduce tobacco availability.

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### Depression increased the incident risk of obesity among a community population in southwest China

Tao Liu<sup>1</sup>, Chaowei Fu<sup>2</sup>, Bo Wu<sup>2</sup>, Yun Chen<sup>2</sup>

<sup>1</sup>Guizhou Province Center for Disease Control and Prevention, China, <sup>2</sup>Fudan University, China

**Background and Objective:** The association between depression and obesity remains uncertain so far. This study aimed to investigate associations between depression and the risk of incident obesity among residents in Southwest China. **Methods:** A 10-year prospective cohort study of 4745 non-obese adults was conducted in Guizhou Province, southwest China from 2010 to 2020. Depression was assessed by the Patient Health Questionnaire-9 (PHQ-9) while the incident obesity was identified by waist circumference (WC) and/or body mass index (BMI). Cox proportional hazard models were used to estimate adjusted hazard ratios (aHR), and 95% confidence intervals (CIs) of depression and incident obesity.

**Results:** A total of 1115 incident obesity were identified over an average follow-up of 7.19 years, with an incidence of 32.66 per 1000 PYs for any obesity, 31.14 and 9.40 for abdominal and general obesity, respectively. After the adjustment for covariates, risks of incident abdominal obesity for subjects with minimal (aHR: 1.22, 95%CI: 1.05, 1.43), and mild or more advanced depression (aHR: 1.27, 95%CI: 1.01, 1.62) were statistically higher than those undepressed, while there was no significant association with incident general obesity. The risks of any incident obesity among subjects with minimal (aHR: 1.21, 95% CI: 1.04, 1.40), mild or more advanced depression (aHR: 1.30, 95% CI: 1.03, 1.64) were significantly higher than those undepressed and positive association was found for PHQ score per SD increase (aHR: 1.07, 95%CI:1.01, 1.13), too. The association was stronger significantly in Han Chinese (minimal: aHR: 1.27, 95%CI:1.05, 1.52; mild or more advanced: aHR: 1.70, 95%CI:1.30, 2.21) and farmers (minimal: aHR: 1.64, 95%CI:1.35, 2.01; mild or more advanced: aHR: 1.82, 95%CI: 1.32, 2.51). **Conclusions:** Depression increased the risk of incident obesity among adults in Southwest China, especially among Han Chinese and farmers. This finding suggests that preventing and controlling depression may benefit the control of incident obesity.

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### Validity of Finnish diabetes risk score in Turkish population and developing a predictive model for Type 2 diabetes mellitus

Neslişah Şiyve<sup>1</sup>, Ahmet Emecen<sup>1</sup>, Belgin Ünal<sup>2</sup>

<sup>1</sup>Department of Public Health, Medical Faculty, Dokuz Eylül University, Türkiye, <sup>2</sup>Department of Public Health, Medical Faculty, Dokuz Eylül University, Türkiye

**Background and Objectives:** Diabetes is a major health problem in Turkey as well as all over the world and its prevalence is increasing. The aim of this study is to evaluate the validity of the Finnish Diabetes Risk Score (FINDRISC) in Turkish population and develop a Turkish Diabetes Prediction (TDP) model.

**Methods:** The participants of the Turkey Chronic Diseases and Risk Factors study-2011 (TCDRF) were followed up through electronic health records until 2017 for incident type 2 diabetes (t2dm, ICD codes: E10, E11, E13, E14). After excluding 4997 people with a diabetes history and 1231 with missing data; a total of 12249 participants older than 14 years of age were included in the analysis. The performance of FINDRISC in predicting t2dm was evaluated according to c-index. We identified the final variables for the TDP model using backward stepwise logistic regression.

**Results:** Out of 12249 participants (mean age: 40±16.7, women: 53%); 505 developed t2dm within six years (cumulative incidence rate: 4.1%). The c-index of the FINDRISC was 0.75 (95% confidence interval: 0.73-0.77) with sensitivity and specificity of 78.4% and 59%. TDP model identified age (odds ratio: 1.02, 95% CI: 1.01-1.03), female gender (OR:1.48, 95% CI:1.17-1.86), university graduation (OR:1.91, 95% CI:1.24-2.94), BMI>30kg/m<sup>2</sup> (OR:1.89, 95% CI:1.33-2.70), waist circumference (OR:1.03, 95% CI:1.02-1.03), having hypertension (OR:1.70, 95% CI:1.34-2.15), impaired fasting glucose (OR:1.73, 95% CI:1.40-2.13) and family history of diabetes (OR:1.40, 95% CI:1.15-1.71) as significant predictors for t2dm. The c-index of TDP model was 0.77 (95% CI: 0.75 to 0.79) with sensitivity, specificity, positive and negative predictive values of 66.7%, 75.3%, 10.4% and 98.1%, respectively.

**Conclusions:** FINDRISC had good validity in Turkish population. Compared with FINDRISC, TDP model showed similar results in terms of model performance. TDP model had a good predictive ability for the population who had a low risk of developing t2dm.

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### Potential impact fractions of body mass index reductions on the non-communicable disease burden in Belgium using G-computation

Ingrid Pelgrims<sup>1</sup>, Ingrid Pelgrims<sup>2</sup>, Eva Clercq<sup>1</sup>, Brecht Devleeschauwer<sup>3</sup>, Stefanie Vandevijvere<sup>3</sup>, Vanessa Gorasso<sup>3</sup>, Johan Heyden<sup>4</sup>, Stijn Vansteelandt<sup>5</sup>

<sup>1</sup>Service Risk and Health Impact Assessment, Sciensano, Brussels, Belgium, <sup>2</sup>Service Risk and Health Impact Assessment (Sciensano), Brussels, Belgium, <sup>3</sup>Department of Epidemiology and Public health, Sciensano, Brussels, Belgium, <sup>4</sup>Department of Epidemiology and public health, Sciensano, Brussels, Belgium, <sup>5</sup>Applied Mathematics, Computer Science and Statistics, Ghent University, Ghent, Belgium

**Background:** Overweight is the fourth most common risk factor for non-communicable diseases (NCDs) in Europe, affecting almost 60% of all adults. In Belgium, as in many high-income countries, average body mass index (BMI) has significantly increased over the past decades. Tackling obesity is therefore vital to reduce premature mortality from NCDs. This study aims to assess the relative contribution of overweight as a risk factor for NCDs and the potential health impact of four BMI reduction scenarios in the Belgian adult population.

**Methods:** Data from the Belgian health interview surveys 2013/2018 (n=18 212) were linked with objective environmental factors based on the residential address. Self-reported BMI and diabetes were corrected based on information from the 2018 Belgian health examination survey and a random-forest multiple imputation process. A G-computation approach was used to calculate the potential impact fractions of four BMI reduction scenarios on diabetes prevalence. The logistic regression model included several confounders related to socio-economic factors, lifestyle and environment. In the first scenario, the BMI distribution among people with overweight was shifted to the BMI distribution of people with "normal" BMI. In the second scenario, the BMI of people with overweight was reduced by one unit. In the third and fourth scenarios, the BMI of people with overweight was modified based on a weight loss of 5 and 10%, respectively.

**Results:** Under the four scenarios, the proportion of diabetes cases prevented would be respectively 29.9% (SE 4.7), 4.2% (SE 0.77), 6.43% (SE 1.48), and 12.5% (SE 2.2).

**Conclusions:** This study highlights the importance of overweight on the diabetes burden. Our results suggest that weight loss intervention programs among people with overweight could significantly reduce the prevalence of diabetes in the Belgian population. Further analyses will be performed for other NCDs and using a larger set of scenarios.

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### Assessing cervical precancer treatment rate among people utilising the Johannesburg public sector through record linkage of laboratory data

Amilcar Juggernath<sup>1,2</sup>, Chodziwadziwa Kabudula<sup>3</sup>, Pamela Michelow<sup>4,5</sup>, Leena Thomas<sup>1,6,7</sup>, Mary Kawonga<sup>1,2</sup>

<sup>1</sup>Department of Community Health, Wits School of Public Health, University of the Witwatersrand, <sup>2</sup>Charlotte Maxeke Johannesburg Academic Hospital, Gauteng Department of Health, <sup>3</sup>Medical Research Council/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), Wits School of Public Health, University of the Witwatersrand, <sup>4</sup>Department of Anatomical Pathology, School of Pathology, University of the Witwatersrand, <sup>5</sup>Cytology Unit, National Health Laboratory Services, <sup>6</sup>Public Health Unit, Ekurhuleni Health District, Gauteng Department of Health, <sup>7</sup>School of Health Systems and Public Health, University of Pretoria

**Background and Objectives:** Cervical cancer, the commonest cause of cancer deaths in women in South Africa, is preventable through screening. Reductions in incidence are only possible if women who screen positive undergo precancer treatment. Routine monitoring of the screening cascade does not take place, presenting an opportunity to use sources outside the health information system to assist programme monitoring. This study analysed the follow-up, over two years, of people who screened positive in Johannesburg, 2017.

**Methods:** A retrospective cohort of 67208 people was performed using probabilistic record linkage of laboratory records – cytology with high-grade squamous intraepithelial lesions (HSIL) and histology results – as a proxy for follow-up. HSIL prevalence; follow-up, confirmation, and precancer treatment rates; and time between procedures were calculated. Variables were analysed for significant differences across age, HIV status, screening facility type and subdistrict, and through logistic regression for association.

**Results:** HSIL prevalence was 6.2% with greatest odds in people with HIV (OR:3.02; 95%CI:2.75-3.31). Of 4182 people who screened positive (HSIL), 26.6% underwent follow-up procedures. People had greatest odds of follow-up and treatment when screened at community health centres (CHCs) (follow-up OR:1.28, 95%CI:1.03-1.58; treatment OR:1.34, IQR:1.04-1.72) or hospitals (follow-up OR:1.61, 95%CI:1.26-1.90; treatment OR:1.63, IQR:1.28-2.09), or in subdistrict B (follow-up OR:2.68, 95%CI:2.02-3.45; treatment OR:2.47, IQR:1.70-3.58). Treatment at first follow-up was received by 475 (62.0%) people, and the remaining 38.0% had confirmatory tests, of which 49.5% subsequently received treatment. Precancer treatment rate overall was 16.1%. Median times from the screening test to any follow-up procedure was 131 days (IQR:80-189); to confirmatory test, 123 days (IQR:51-175); and overall time to precancer treatment was 151 days (IQR:101-246).

**Conclusions:** Precancer treatment rates are far below WHO's elimination target. Simpler screening cascades; benchmarking against high-performing subdistricts; and monitoring through record linkage may assist increase precancer treatment, reducing cervical cancer incidence.

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### Association entre l'âge à la première utilisation des contraceptifs oraux et la survenue de cancer du sein chez les femmes, Nouakchott, Mauritanie, Mai - Octobre 2021

Mohamedou Maham<sup>1,2</sup>, Meda Nicolas<sup>3,4</sup>, Jean Kaboré<sup>3,4</sup>, Pauline Yanogo<sup>3,4</sup>

<sup>1</sup>Direction Générale des Services de Santé des Forces Armées et de Sécurité en Mauritanie, Mauritanie, <sup>2</sup>Burkina Field Epidemiology and Laboratory Training Program (BFELTP), Nouakchott, Mauritanie, <sup>3</sup>BFELTP, Burkina Faso, <sup>4</sup>Faculté de Médecine, Université Joseph KI ZERBO, Burkina Faso

**Introduction:** En Mauritanie, le cancer du sein touche 44,9 femmes pour 100 000 habitants en 2020 et constitue le cancer le plus fréquent. Dans un contexte où deux tiers des femmes utilisent des contraceptifs oraux et près d'un tiers des mariages sont précoces, cette étude examine l'association entre l'âge de la première utilisation des contraceptifs oraux et le cancer du sein chez les femmes en Mauritanie. **Méthodes:** Une étude cas-témoins (192 cas pour 192 témoins) a été réalisée au centre d'oncologie de Nouakchott du 01 mai 2021 au 31 octobre 2021. Un cas était défini et un témoin aussi. Une régression logistique a été réalisée avec le logiciel SAS® 9.4 pour estimer l'odds ratio de cancer du sein associé à l'âge de la première utilisation des contraceptifs oraux indépendamment des autres caractéristiques. **Résultats:** La moitié des patientes étaient originaires de Nouakchott (50,5 %), 41,7 %, 57,8 % et 85,4 % étaient respectivement mariées, sans instruction et ménager. L'âge médian était similaire chez les cas et les témoins. Environ 11 % des cas et 18,7 % des témoins utilisaient des contraceptifs oraux pour la première fois avant l'âge de 24 ans, et plus de 64 % n'avaient jamais utilisé de contraceptifs oraux. Après ajustement pour ses facteurs de confusion possibles, l'âge à la première utilisation de contraceptifs oraux (<24 ans) était

significativement associé au cancer du sein (OR ajusté = 3,07, IC 95% 1,09-8,82;  $p = 0,0372$ ) indépendamment des autres caractéristiques. Conclusions: L'étude montre que l'âge de la première utilisation des contraceptifs oraux, inférieure à 24 ans, est un facteur de risque de cancer du sein chez les femmes suivies au Centre d'Oncologie de Nouakchott. La sensibilisation des femmes aux méthodes contraceptives alternatives et au mariage précoce est recommandée.

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### Predictors of eating behaviour in patients with type 2 diabetes and/or coronary heart disease

Lisa Giesen<sup>1</sup>, Larisa Pilic<sup>2</sup>, Helene Könnecke<sup>1</sup>, Lara Schneider<sup>1</sup>, Jonas Werle<sup>1</sup>, Marcus Redaelli<sup>1</sup>, Stephanie Stock<sup>1</sup>, Arim Shukri<sup>1</sup>, Angeli Gawlik<sup>3</sup>, Nihal Ünlü<sup>4</sup>, Martina Heßbrügge<sup>4</sup>, Sibel Altin<sup>5</sup>

<sup>1</sup>Cologne Institute for Health Economics and Clinical Epidemiology, The University Hospital of Cologne, Cologne, Germany, <sup>2</sup>Institute of General Practice, Faculty of Medicine, University Hospital Cologne, University of Cologne, Cologne, Germany, <sup>3</sup>Department of Health and Social Psychology, Institute of Psychology, German Sport University, Cologne, Germany, <sup>4</sup>Institute of General Practice, Medical Faculty, University of Duisburg-Essen, Essen, Germany, <sup>5</sup>AOK Rheinland/Hamburg, Düsseldorf, Germany

**Background and Objective:** The WHO points out the importance to reduce modifiable risk factors for non-communicable diseases (NCDs) and monitor the underlying trends and determinants. Since diet has been identified as one of the key modifiable behavioural risk factors, it is crucial to examine associated patient characteristics that increase adherence and create long-term behaviour change. Consequently, the following research investigates possible demographic and psychosocial predictors for dietary behaviour, particularly the Mediterranean diet, in patients with type 2 diabetes (T2D) and/or coronary heart disease (CHD). **Methods:** A cross-sectional analysis was conducted with 792 patients at baseline (2021) of a randomised controlled trial targeting the improvement of self-management through peer-support<sup>1</sup>. Eating behaviour was analysed using an adapted adherence screener of the Mediterranean diet. Mediterranean dietary pattern score associations with sex, age, employment, migration status, education, BMI, health literacy, patient activation (level of engagement and participation in one's own care), self-efficacy, psychological well-being, quality of life, personality traits and loneliness were investigated using multiple regression analysis.

**Results:** Age ( $\beta=0.234$ ,  $p<0.001$ ), migration background ( $\beta=0.180$ ,  $p<0.001$ ), level of patient activation ( $\beta=0.294$ ,  $p<0.001$ ) and the personality trait openness ( $\beta=0.234$ ,  $p=0.004$ ), were predictors for Mediterranean dietary pattern score ( $R^2=0.194$ ). Subgroup analyses resulted in the same predictors in the T2D group ( $R^2=0.182$ ), whereas the CHD group showed additional significant positive associations with gender, education and the personality trait extraversion ( $R^2=0.363$ ). **Conclusions:** Predictors for eating behaviour were identified. To maximise the success and adherence of dietary interventions, identification of predictors for eating behaviour and subsequent individualised adaptation, such as the application of an integrated approach to strengthen patient activation and self-management, could prove as a useful tool to create long-term and sustainable behaviour change and reduce the preventable burden of NCDs.

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### Individual, contextual, organisational and structural factors associated with the primary healthcare use of acute myocardial infarction patients in French region

Sandrine Domecq<sup>1</sup>, Elodie Richard<sup>2,3</sup>, Floriane Sevin<sup>4</sup>, Emilie Lesaine<sup>5</sup>, Mireille Plas<sup>6</sup>, Stéphanie Vandentorren<sup>7</sup>, Florence Saillour-Glénilsson<sup>8</sup>, Hasnae Ben-Roumane<sup>9</sup>

<sup>1</sup>Bordeaux Population Health, Centre Inserm U1219, Université de Bordeaux, Bordeaux, France, <sup>2</sup>FNASAT, France, <sup>3</sup>Bordeaux Population Health, Center Research U1219, France, <sup>4</sup>Bordeaux Population Health - Center research U1219, University of Bordeaux - Centre Hospitalier Universitaire (CHU) de Bordeaux, France, <sup>5</sup>Center research U1219, Bordeaux Population Health, CHU de Bordeaux, University of Bordeaux, France, <sup>6</sup>CH Mont de Marsan, France, <sup>7</sup>Center research U1219, Bordeaux Population Health, Santé Publique France, France, <sup>8</sup>Center research U1219, Bordeaux Population Health, CHU de Bordeaux, France, <sup>9</sup>Bordeaux Population Health, Center Research U1219, University of Bordeaux - CHU de Bordeaux, France

**Background:** Acute myocardial infarction (AMI) is a life-threatening and highly time-sensitive emergency. Management is initially based on the use of the emergency medical service (EMS) system by patients. We aimed to identify individual (sociodemographic and clinical), contextual (socio-economic level of

place of residence), organisational (healthcare services) and structural (hospital facilities) factors associated with the primary healthcare use for patients with AMI. **Methods:** The factors were identified in two steps: 1) construction of a healthcare utilization conceptual model focused on AMI using a scoping review; 2) assessment of the association between individual and collective factors and healthcare utilization of AMI patients included in a French regional registry between 1st January and 31st December 2019, before the COVID-19 pandemic. The statistical model was a multivariate logistic multinomial mixed model with a random effect on health territory. The variable to explain was the effective use of care in three modalities: mobile intensive care units (MICU) after EMS-calling (optimal pathway), direct arrival in the emergency unit after EMS-calling, direct arrival in the emergency unit without EMS-calling.

**Results:** Among the 1665 patients included, 54% were managed by MICU and 19% arrived at the emergency unit after EMS-calling. Factors associated with direct arrival at the emergency unit after EMS-calling were advanced age (OR=1.15 -  $p=0.015$ ), being a woman (OR=1.85 -  $p<0.001$ ), history of coronary heart disease (OR=0.57 -  $p=0.006$ ) and presence of a cathlab in the hospital (OR=1.44 -  $p=0.020$ ). Rurality of residence was associated with direct arrival at the emergency unit without EMS-calling (most rural level: OR=3.43 -  $p=0.005$ ). **Conclusions:** This study has made it possible to identify AMI populations outside the optimal access to care pathway. Awareness-raising actions are needed in the general population and among emergency health professionals in order to reduce age or gender inequalities and territorial inequalities in care.

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### Evaluation of the impact of the COVID-19 pandemic on routine care of people with chronic disease: a qualitative study

İlknur Ayvaz<sup>1</sup>, Zeynep Meva Altaş<sup>1</sup>, Burak Tunahan Ekincikli<sup>2</sup>, Hasan Orkun İpsalalı<sup>2</sup>, Salim İdris Turan<sup>2</sup>, Kezban Sila Kunt<sup>2</sup>, Dilşad Save<sup>1</sup>

<sup>1</sup>Department of Public Health, Marmara University, School of Medicine, Istanbul, Turkey, <sup>2</sup>School of Medicine, Marmara University, Istanbul, Turkey

**Background and Objective:** Restrictions in the COVID-19 pandemic have affected access to healthcare and caused delays in the routine care of people with chronic diseases. The aim of our study is to reveal the impact of the COVID-19 pandemic on routine care of people with chronic diseases.

**Methods:** Our qualitative study was carried out with 12 people who came to the Cardiology outpatient clinics of tertiary Training and Research Hospital in June 2022 for a routine care due to their chronic diseases. As a data collection tool, a semi-structured questionnaire was used. The data were collected through face-to-face interviews with the participants by taking the necessary protective measures. Thematic analysis method was used in the analysis of the data. After the interviews were transcribed, each transcript was coded using the ATLAS.ti program. The ethics committee approval of the study was obtained.

**Results:** The ages of participants were between 34-73, and 8 of them were male. Participant experiences were categorised into four themes: General Health Status, Routine Care during the Pandemic, Chronic Disease Management during the Pandemic and Patient Expectations of Healthcare. Most of the patients delayed their routine care during the pandemic and their chronic diseases worsened. Among the reasons for not going to the controls, the fear of contagion came to the fore, while some participants mentioned that they could not find an appointment. In terms of their expectations of healthcare, they stated that health institutions should give priority to those with chronic diseases and home health services and online services will provide convenience for them.

**Conclusion:** Delaying hospital admissions for routine care made the management of chronic diseases difficult and worsened the chronic diseases of patients in the long term. Implementation of online health services such as telemedicine can facilitate chronic disease management.

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### The potential impact of achieving Kenya's obesity reduction target on health outcomes, healthcare costs, and productivity: a modelling study

Mary Wanjau<sup>1</sup>, Mary Wanjau<sup>2</sup>, Leopold Aminde<sup>3</sup>, Lennert Veerman<sup>4</sup>

<sup>1</sup>Griffith University Griffith University "401A/ 96 High Street 96 High Street" Australia, <sup>2</sup>Griffith University Public Health & Economics Modelling Group, School of Medicine & Dentistry, Griffith University, Gold Coast, Queensland, Australia "401A/ 96 High Street 96 High Street" Australia, <sup>3</sup>Griffith University, <sup>4</sup>Griffith University Public Health & Economics Modelling Group, School of Medicine & Dentistry, Griffith University, Gold Coast, Queensland, Australia. Gold Coast campus, Parklands Drive, Southport, QLD, 4222 Australia

**Background:** Globally, the rising trend in mean body mass index has resulted in a substantial increase of the burden of non-communicable disease attributable to high BMI. Kenya has adopted the WHO target of halting the rise of overweight, including obesity, by 2025. This paper assesses the potential impact of achieving the set target on health, healthcare cost, and productivity.

**Methods:** We used a proportional multistate life table model to quantify health outcomes, healthcare costs and productivity. We modelled the 2019 population of Kenya over their lifetime, comparing a scenario in which BMI distributions stabilise in 2025, against one in which BMI distributions stabilise in 2044. We identified estimates of the total health expenditure and disease specific healthcare costs in Kenya from literature. We used the Human Capital Approach to estimate productivity gains.

**Results:** Halting the rise of overweight in the year 2025 is estimated to save 6.8 million HALYs (95% uncertainty interval [UI] 5.8- 7.9 million) over the lifetime of the 2019 Kenyan population (135 HALYs per 1,000 persons). Up to the year 2044, the leading contributors of the health gains were musculoskeletal diseases (537,052 new cases avoided; 95% UI 444,361- 639,460), followed by T2DM (466,030; 95% UI 360,103- 597,378) and cardiovascular diseases (301,729; 95% UI 248,559- 367,949). A total of US\$ 755 million in body mass-related healthcare costs could be saved by 2044 (US\$ 15 per capita) translating to 16% of Kenya's annual healthcare expenditure or 1% of gross domestic product. Over the lifetime, over US\$ 3 billion healthcare costs could be saved. In 2044, the total productivity gains resulting from a reduction in obesity-related mortality and morbidity (combined) could be as high as ~US\$ 5.8 billion.

**Conclusion:** Halting the rise of overweight and obesity not only improves health outcomes but also yields healthcare cost savings and productivity gains.

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### Preventing non-communicable diseases through the law: the role of civil society and academia. Experiences from East Africa and South Asia

Maria Campisi<sup>1</sup>

<sup>1</sup>International Development Law Organization Italy

**Background:** According to World Health Organization (WHO) figures, Noncommunicable diseases (NCDs) cause 17 million premature deaths each year among people between the ages of 30 and 69. The great majority of these deaths are preventable through cost-effective interventions that aim to address the main modifiable behavioural risk factors. Many of these interventions are implemented through legal measures.

Since 2019, the International Development Law Organization (IDLO) has undertaken a project, in collaboration with WHO and other partners, to enhance Low and Middle-Income Countries (LMICs) capacities to design, implement and monitor legal and policy measures to address two of the main NCD risk factors: unhealthy diets and insufficient physical activity.

This presentation will describe the approach, methodology and key results of the project implemented in East Africa and South-East Asia, with a specific focus on the role of civil society and academia in creating an enabling environment for regulatory and policy reforms for NCD prevention.

**Methods and**

**Results:** The methodology combines three complementary components: i) capacity building; ii) social mobilization; iii) evidence generation. The project has supported the engagement of civil society organizations (CSOs) in policy discussion to advocate for legal and policy reforms for NCD prevention. Six CSOs from five LMICs have been provided with technical and financial assistance, as well as with capacity building to call for action on NCD prevention measures. The project has also fostered collaboration between legal and public health scholars from local universities to promote research, publication and teaching on legal avenues for NCD prevention at local level. In East Africa, an academic working group has been created as the first of its kind to promote inter-disciplinary collaboration on Law and NCD issues in the Region.

**Conclusions:** The project has shown the critical role that civil society and academia play in addressing NCDs through legal avenues.

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### Improved self-care practices among people with type-2-diabetes following a low budget health literacy intervention; evidence from a before and after quasi experimental study

Stephen Kibusi<sup>1</sup>, Zacharia Panga<sup>2</sup>, Stella Mushy<sup>3</sup>

<sup>1</sup>The University of Dodoma Department of Public Health Department of Public Health, The University of Dodoma, P.O.Box 259, Dodoma, Tanzania

Tanzania, <sup>2</sup>The University of Dodoma Department of Nursing Management and Education Department of Nursing Management and Education, The University of Dodoma, P.O.Box 259, Dodoma, Tanzania Tanzania, <sup>3</sup>The Muhimbili University of Health and Allied Sciences

**Background:** The role of health literacy based interventions have not been well documented in improving self-care practices among patients with type-2-diabetes. This study aimed at exploring the effectiveness of a low budget educational intervention on improving self-care knowledge, attitude, and practice (KAP) among people with type 2 diabetes mellitus in Tanzania.

**Methods:** A quasi-experimental study of 165 randomly selected participants with type 2 diabetes mellitus from different clinics in the Tabora region, Tanzania. A structured questionnaire collected data on knowledge, attitude and self-care practices at baseline and after the intervention. Paired t-test and linear regression were used to test the effect of the intervention on the outcome variables.

**Results:** The mean age was 55.5±13 years and the majority 55.8%, were women. Only 40% of the participants reported good level of knowledge at baseline compared to 87% after intervention. Participant's attitude towards self-care was overall negative at baseline (87%) and decreased to 33% after the intervention. Overall reported self-care practices increased from 9% to 48% after the intervention. Paired t-test and linear regression were used to test the effect of the intervention on the outcome variables.

**Results:** The mean age was 55.5±13 years and the majority 55.8%, were women. Only 40% of the participants reported good level of knowledge at baseline compared to 87% after intervention. Participant's attitude towards self-care was overall negative at baseline (87%) and decreased to 33% after the intervention. Overall reported self-care practices increased from 9% to 48% after the intervention. Paired t-test showed significant mean differences before and after the intervention; Knowledge score pre-intervention was (n=165, M=64.00, SD=10.92) and post-intervention was (n=165, M=76.21, SD=8.24), mean difference of (12.21, t (164) =15.60, p<0.001). Attitude, pre-intervention was (n=165, M=61.02, SD=9.10) and post-intervention was (n=165, M=71.74, SD=6.47) mean difference of (10.72, t (164) =16.27, p<0.001). Self-care practice, pre-intervention was (n=165, M=54.60, SD=9.66) post-intervention was (n= 165, M=68.02, SD=8.00) whereby, the mean differences was (13.42, t (164) =18.26, p<0.001) respectively. Furthermore, change in knowledge predicted the observed change in self-care practices after the intervention (p<.05).

**Conclusion:** The study demonstrated high potential of the intervention in improving self-care practices in a cohort of predominantly aged diabetic patients in a low resource setting. Effect of the intervention on self-care practice was positively moderated by the observed changes in knowledge.

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### Association between continuity of primary care and health outcomes among people with type 2 diabetes and/or hypertension at primary care settings in Central Vietnam

Quynh-Anh LE Ho Thi<sup>1</sup>, Minh-Tam Nguyen<sup>1</sup>, Quoc-Huy NGUYEN Vu<sup>2</sup>, Peter Pype<sup>3</sup>, Anselme Derese<sup>3</sup>, Wim Peersman<sup>4</sup>, Johan Wens<sup>5</sup>, Thanh-Huyen NGUYEN<sup>6</sup>, Nhon Bui<sup>7</sup>

<sup>1</sup>Hue University of Medicine and Pharmacy, Hue University, Vietnam; <sup>2</sup>Ghent University, Belgium Family Medicine Center, Hue University of Medicine and Pharmacy, Hue University, Vietnam; <sup>3</sup>Department of Public Health and Primary Care, Faculty of Medicine and Health Sciences, Ghent University, Ghent, Belgium 06 Ngo Quyen street, Hue city, 49000 Thua Thien Hue province, Vietnam, <sup>4</sup>Hue University of Medicine and Pharmacy, Hue University, Vietnam, <sup>5</sup>Ghent University, Belgium Department of Public Health and Primary Care, Faculty of Medicine and Health Sciences, Ghent University, Ghent, Belgium Campus UZ-Ghent, Entrance 42, 6th Floor, Corneel Heymanslaan 10, 9000 Gent, Belgium, <sup>6</sup>Ghent University, Belgium, <sup>7</sup>University of Antwerp, Antwerp, Belgium Department of Primary and Interdisciplinary Care, University of Antwerp, Belgium Universiteitsplein 1, Antwerp, Wilrijk, 2610, Belgium, <sup>8</sup>Hue University of Medicine and Pharmacy, Hue University, Vietnam; <sup>9</sup>Antwerp University, Belgium "Family Medicine Center, Hue University of Medicine and Pharmacy, Hue University, Vietnam; <sup>3</sup> Department of Primary and Interdisciplinary Care, University of Antwerp, Belgium" 06 Ngo Quyen street, Hue city, 49000 Thua Thien Hue province, Vietnam, <sup>7</sup>Phu Vang District Health Center, Vietnam Phu Vang District Health Center, Vietnam Phu Da commune, Phu Vang district, Thua Thien Hue 49000, Vietnam

**Background:** An alarming rise of poor control of non-communicable diseases (NCDs) calls for a comprehensive response of the health systems to strive towards universal health coverage. Better continuity of care (COC) is an important

benchmark for high-quality and efficient health systems. This study aimed to explore the COC for type 2 diabetes mellitus (T2DM) and hypertension across primary care and its association with health outcomes and disease control.

**Methods:** A total of 602 people with T2DM and/or hypertension managed in primary care were included. The Nijmegen continuity of care questionnaire (NCQ) valued from 1-5 was used to examine the relational continuity and team/cross-boundary continuity across care levels, the Bice - Boxerman continuity of care index (COCI) valued between 0-1 was used to measure the dispersion of health visits to different providers. Multivariate logistic regression analysis was performed to examine the predictors of COC.

**Results:** Mean values of COC indices were COCI 0.77 and NCQ 3.59. The NCQ showed higher relational continuity and team/cross-boundary continuity within primary care compared to specialist care. People with T2DM were more likely to have higher COC regarding specialist care than hypertension and both diseases. Gender, living areas, usual health facility, hospital and emergency department admission, frequency of health visits, disease duration, blood pressure and blood glucose levels, and disease control were demonstrated to be statistically associated with COC.

**Conclusions:** COC of Vietnam primary care is not sufficiently achieved for hypertension and diabetes. Strengthening robust primary care services is an essential strategy for chronic care. Our findings reflect that as a multi-dimensional construct, COC is needed to be measured using a robust and integrated assessment approach. More efforts are necessary to geographically align the imbalance of care delivery and increase the efficiency of virtual chronic services, and multidisciplinary and coordinated care for NCDs in primary care.

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### Early childhood caries: exploring the ethical implications for dental neglect in South Africa

Nashna Rampersad<sup>1</sup>, Nadia Mohamed<sup>1</sup>

<sup>1</sup>University of the Western Cape "Tygerberg Oral Health Centre, Francie Van Zijl Drive, Parow, Cape Town, 7500", South Africa

**Background:** Child neglect is a significant public health issue. South Africa (SA) has a significant burden of early childhood caries (ECC). The ECC prevalence raises a concern. This presentation aims to explore if ECC constitutes as child neglect in SAs context?

Child neglect is an act of "deliberate neglect" of a child. Untreated caries is the most common type of dental neglect. Dental neglect is based on the root causes of the neglect and is an indication of broader child neglect. A high ECC prevalence and unmet treatment needs among SA children was reported. The lifetime prevalence of ECC was 44.94% in SA children below 6 years. A study on children of a low socio-economic area in SA reported that 67.5% of the children (> 6 months-<6 years old) had ECC.

Considering SA's socio-economic context, the public health problem of ECC is part of a broader social problem and has a degree of societal neglect as a result of the political, social, and economic forces which shape families' living conditions and the range of opportunities and services available. Thus, neglect shifts focus away from parents or guardians and toward the policies and actions of governments, service providers, and public utilities which harm children through the conditions and constraints imposed on families. The health promotion levy, integrated school health programmes, improving oral health services, targeted preventive programmes, early intervention and inter-professional screening can aid this problem.

**Conclusion:** As SA prepares for a health system overhaul through the National Health Insurance, child protection, care and the prevention of neglect should be at the forefront. A more workable, context-specific and integrated oral health policy could provide the appropriate resources and realise the implementation of a proper prevention programme against ECC, and prevent the prevalence of this passive form of child neglect in SA.

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### Trends in the Extent and Nature of Food Advertising Targeted to Children and Adolescents in Uganda (The FAcE-U project protocol)

Florence Tushemerirwe<sup>1</sup>, Maureen Maureen<sup>1</sup>, Josá Peñalvo<sup>2</sup>, Stefanie Vandevijvere<sup>3</sup>, Gloria Seruwagi<sup>4</sup>, Henry Wamani<sup>1</sup>, Gershim Asiki<sup>5</sup>

<sup>1</sup>Makerere University School of Public Health, "New Mulago Hill Road, Mulago, P. O. Box 7072, Kampala", Uganda, <sup>2</sup>Institute of Tropical Medicine, Department of Public Health, Institute of Tropical Medicine (ITM), "Doornstraat 331, 2610 Wilrijk", Belgium, <sup>3</sup>Sciensano, Belgian Institute Health, Brussels, "Rue Juliette Wytsmanstraat 14, 1050 Brussels, Belgium",

Belgium, <sup>4</sup>Makerere University School of Social Sciences, College of Humanities and Social Sciences, <sup>5</sup>African Population and Health Research Center (APHRC), "APHRC Campus, Manga Close, Kirawa Road, P. O. Box 10787-00100, Nairobi, Kenya

**Introduction:** A major driver of the rising childhood obesity in Uganda is an unhealthy food environment arising partially from an increase in advertising of unhealthy food. This project aims to examine the trends in the extent and nature of food and beverage advertisement to young children and adolescents (2- 18 years) in Uganda.

**Materials and Methods:** Mixed-methods study design involving a first secondary retrospective content analysis of national data from media monitoring (television, radio, and newspapers) from October 2018 to September 2019. Recorded data from 8 randomly selected days (four weekdays and four weekend days) in each of the four advertising seasons will be sampled from the top three national television and radio stations, plus the three most-read newspapers in the three study regions. Second, primary data is collected from 427 households with children (under 18 years) in 2022/3, using semi-structured questionnaires for self-reported consumption of the food items identified in the first phase and anthropometric measurements. Further, stakeholder attitudes, perceptions, and experiences with food advertising towards children will be captured using standardized International Network for Obesity Research Management and Action Support tools. The WHO Nutrient Profile model for the African region will be used to classify advertised foods into permitted/not permitted to marketing to children; and the NOVA system to classify foods into four groups: unprocessed/minimally processed foods, processed culinary ingredients, processed foods, and ultra-processed foods. Rates and trends of food advertising to children by type of food will be studied.

Makerere University School of Public Health Research and Ethics Committee and the National Council for Science and Technology approved this study.

**Results (Anticipated Benefits)**

The study findings will inform government policy priority actions to create healthy food environments that reduce childhood obesity risk.

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### Role of purchasing agreements for quality of chronic disease care: systematic scoping review

Jyoti Tyagi<sup>1</sup>, Siyuan Wang<sup>2</sup>, Samiksha Ingale<sup>2</sup>, Manveen Kaur<sup>2</sup>, Gill Schierhout<sup>2</sup>, David Peiris<sup>3</sup>, Jaime Miranda<sup>3</sup>, Soumyadeep Bhaumik<sup>2</sup>, Inke mathauer<sup>4</sup>, Megumi Rosenberg<sup>5</sup>, Lei Si<sup>3</sup>, Stephen Jan<sup>4</sup>

<sup>1</sup>The George Institute for Global Health, "308, Third Floor, Elegance Tower Plot No. 8, Jasola District Centre, New Delhi", India, <sup>2</sup>The George Institute for Global Health India, <sup>3</sup>The George Institute for Global Health, Australia, <sup>4</sup>World Health Organisation Switzerland, <sup>5</sup>World Health Organization Japan

**Background and Objective:** Chronic disorders adversely affect the quality of life of patients living with illnesses and create a substantial financial burden. We aimed to assess how purchasing agreements have been used to promote quality in chronic disease care and understand its role in promoting quality of chronic disease care.

**Methods:** We searched for research studies published over the past 10 years in nine electronic databases in English, Chinese, French, and Spanish languages, supplement by grey literature searches and reviews of reference lists. We identified key characteristics of these arrangements and conducted narrative syntheses of the barriers and enablers to implementation.

**Results:** We retrieved 6486 records. Of them, 88 studies (80 quantitative and eight qualitative studies) met our eligibility criteria. They were predominantly from high income countries with the main payment method being pay for performance. The purchasing arrangements were generally set within national insurance or government funded programs. Quality of care was generally measured in terms of intermediate health outcomes, processes and efficiency. Adverse selection ('cherry-picking' of patients) was observed in some studies resulting in bias against socioeconomically disadvantaged and high-risk groups. The main barriers/enablers reported were the cultural shifts required to transition from a funding organisation into one with a purchasing role, added investment in infrastructure and training required to enable purchasing, and the need to engage patients and other stakeholders.

**Conclusions:** Evidence majorly from high income settings suggested pay for performance arrangement as one of the widely used strategic purchasing as a means of improving quality outcomes in chronic disease management. There is a need to address adverse selection and work towards improving the quality aspect.

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### Inequities in breast cancer screening utilisation in Spain - Using decision trees to identify intersections

Núria Pedrós Barnils<sup>1</sup>, Núria Pedrós Barnils<sup>1</sup>, Benjamin Schüz<sup>2</sup>

<sup>1</sup>University of Bremen, Institute for Public Health and Nursing Research, University of Bremen; <sup>2</sup> Leibniz ScienceCampus Digital Public Health Bremen, Grazer Str. 4, 28359 Bremen, Germany, <sup>3</sup>University of Bremen, Germany

**Background and Objective:** Organised breast cancer screening programmes can be effective in reducing incidence, mortality and illness burden. Currently in Spain, women between 50-69 are invited to attend screenings bi-annually. However, roughly 25% do not utilise this free service. Here, we take an intersectional perspective using machine learning techniques to identify social groups at risk of not utilising breast cancer screening.

**Methods:** Women were drawn from the 2020 European Health Interview Survey in Spain, which targets the (young) adult population > 15 years old living in private households (N = 22,072; 59% response rate). Using available indicators of socioeconomic status based on the PROGRESS-Plus framework, we applied machine learning (Classification and Regression Trees (CART), Chi-square Automatic Interaction Detector (CHAID), and Conditional Inference Trees (CIT)) to data from the target population (women 50-69) to estimate models that disentangle existing social intersections. We then used accuracy, sensitivity and specificity indicators to identify the best-fitting tree.

**Results:** A non-parametric CHAID model suggests (overall accuracy of 75.07%) primary education or below to be the strongest discriminating factor for not attending screening (n=1,060 Pr=0.3448 vs n=2,790 Pr=0.2462). The second strongest factor was country of birth (lower education group, born in Spain: n=983 Pr=0.3313 vs born outside Spain n=77 Pr=0.5195; higher education group, born in Spain: n=2,596 Pr=0.2369 vs born outside Spain: n=194 Pr=0.3711). Finally, for those born in Spain with lower education, being married, widowed or divorced predicted attendance compared to being single or separated (n=869 Pr=0.3026 vs n=124 Pr=0.5081).

**Conclusion:** In order to reduce inequities in screening attendance, programs in Spain should particularly support women with lower education and migration background, and potentially focus on social support measures. CHAID is a useful tool to identify groups at higher risk of not utilising an organised public health program and inform tailored prevention programs.

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### Patients' and caregivers' perspectives on outcomes of self-management interventions for type 2 diabetes mellitus: an overview of reviews

Javier Bracchiglione<sup>1</sup>, Ena Niño de Guzmán<sup>2,3</sup>, Carola Orrego Villagrán<sup>4</sup>, Pablo Alonso-Coello<sup>1</sup>, Claudio Rocha Calderón<sup>5</sup>, Monique Heijmans<sup>6</sup>, Laura Martínez García<sup>5</sup>

<sup>1</sup>Iberoamerican Cochrane Centre, Sant Pau Biomedical Research Institute (IIB-Sant Pau), CIBER de Epidemiología y Salud Pública (CIBERESP), Spain, <sup>2</sup>Cancer Prevention and Control Programme, Catalan Institute of Oncology, IDIBELL, Hospitalet de Llobregat, Barcelona, <sup>3</sup>Unitat Cribratge Càncer Granvia de L'Hospitalet 199-203, 08908 L'Hospitalet de Llobregat, Spain, <sup>4</sup>Avedis Donabedian Research Institute (FAD), Barcelona, <sup>5</sup>Iberoamerican Cochrane Centre, Sant Pau Biomedical Research Institute (IIB-Sant Pau), Spain, <sup>6</sup>Netherlands Institute for Health Services Research (Nivel), Utrecht

**Background and Objective:** Self-management interventions (SMI) are core components of high-quality care in type 2 diabetes mellitus (T2DM). T2DM patients' experiences and perceptions of self-management and their disease can help to inform decision-making processes. We aimed to identify and summarise the perspectives of patients with T2DM and informal caregivers on SMI outcomes. This study is part of the COMPAR-EU project. This European initiative aims to identify, compare, and rank the most effective and cost-effective self-management interventions (SMIs) for adults in Europe living with type 2 diabetes, among other chronic conditions.

**Methods:** We searched MEDLINE, CINAHL and PsycINFO up to June 2021 for systematic reviews exploring the perspectives of adults with T2DM and their informal caregivers regarding self-management. Two reviewers independently conducted study selection, data extraction and quality assessment. We estimated the degree of overlap and used a thematic synthesis approach for the analysis.

**Results:** We identified 54 reviews, corresponding to 1,031 studies, with a slight overlap. Most reviews (48/54, 89%) were considered high quality. We developed summaries for 22 outcomes. The main themes were 1) the diabetic identity; 2) health literacy and access to care; 3) SMI requirements; 4) outcomes awareness and perceived risk; 5) challenges of adhering to SM, and 6) adequate support in

the SM process.

**Conclusion:** Our results represent what patients with T2DM and their caregivers perceive as most important when dealing with SMI. Our findings are informative for researchers developing and evaluating new SMI and for guideline developers and policy-makers formulating decisions, including recommendations.

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### Inborn errors of metabolism: systematic review and meta-analysis of gut microbiome in patients with phenylketonuria treated with dietary therapies

Federica Valeriani<sup>1</sup>, Claudia Frangella<sup>2,3</sup>, Francesca Ubaldi<sup>1</sup>, Paola Fortugno<sup>4</sup>, Vincenzo Romano Spica<sup>2</sup>

<sup>1</sup>Department of Movement, Health and Human Sciences, University of Rome, Italy, <sup>2</sup>Department of Movement, Health and Human Sciences, University of Rome "Foro Italico", Rome, Italy, <sup>3</sup>Department of Movement, Health and Human Sciences, University of Rome, Italy, piazza Lauro De bosis, Italy, <sup>4</sup>Dipartimento di Scienze Umane e di Promozione della Qualità della Vita, Università Telematica San Raffaele Roma Via di Val Cannuta, 247, 00166 Roma - Italy, <sup>3</sup> Human Functional Genomics Laboratory. IRCCS San Raffaele Roma Via di Val Cannuta, 247 00166 Rom, Italy

**Background:** Inborn errors of metabolism (IEMs) are a heterogeneous group of monogenic disorders caused by defects in metabolic enzymes resulting in the accumulation of toxic substrates or a deficiency of essential metabolites. Diet therapies aimed at removal of harmful substances is the main and crucial intervention in some IEMs, such as phenylketonuria (PKU). However, the IEM-induced metabolic dysfunction, as well as the dietary interventions, impact the gut microbiota resulting in exacerbation of the clinical phenotype.

**Objectives:** We aim to increase the knowledge of the structure of the microbiota in patients affected by PKU and of how the various therapeutic interventions modify its composition in order to define a personalized dietary interventions on a genetic and metagenetic basis.

**Methods:** We performed a systematic review and meta-analysis to examine gut microbiota in PKU patients with dietary treatment. The review was conducted according to the Meta-analysis of Observational Studies in Epidemiology (MOOSE) and Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) criteria.

**Results:** A significant reductions in several taxa at the phyla and genus levels were observed in patients with PKU compared to controls. The synthesis of the meta-analysis shows a difference in terms of biodiversity between PKU subjects respect the control population (SMD = -0,067; IC 95%, da -0,113 a .0,021) and performing a meta-regression starting from the data relating to the Firmicutes/Bacteroidetes ratio, it is possible to highlight a role for the type of diet followed by the patients (p = 0.050).

**Conclusion:** The increase in knowledge on the variations of the intestinal microbiota in response to treatments in subjects with PKU can be useful to improve therapies but, due to the limited number of studies, further researches are needed.

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### Prevalence and predictors of waterpipe/shisha use smoking among youths in Senegal: global youth tobacco survey, 2020

Bai Cham<sup>1</sup>

<sup>1</sup>Georgia State University, School of Public Health, 140 Decatur St, 30303

Atlanta GA, United States

**Background and Objectives:** Shisha smoking has become a global epidemic despite the declining trend of cigarette smoking. Despite the health risk associated with shisha smoking, there are few studies on shisha smoking in West Africa and none in Senegal. Our study assessed the prevalence and predictors of shisha smoking among youths aged 13-15 years in Senegal.

**Methods:** We use the 2020 Global Youth Tobacco Survey (GYTS) data of Senegal covering a sample of 4320 youths 11-17 years. However, we restricted our analysis to youths 13-15 years (n=2524) because GYTS is design to be representative of this age cohort. We calculated the weighted prevalence (with 95% confidence intervals) of ever and current smoking of shisha. We conducted multivariable logistic regression analysis to identify factors associated with ever current shisha use among youth.

**Results:** The prevalence of ever and current use of shisha were 9.8% (CI:7.7-12.3) and 2.2% (CI:1.5-3.1) respectively. More than half of current cigarette smokers ever tried or experimented with shisha smoking (50.5%, CI:36.9-63.9) and 26.6% (CI:15.4-42.0) were current users of shisha. In our fully adjusted models, higher grade (AOR=2.54, 1.25-5.15), gender (AOR=2.15, 95% CI:1.47-3.14), higher pocket

money (AOR= 2.92, CI:1.63-5.23), current cigarette smoking (AOR=8.36(3.97-17.65), close friends' smoking status (AOR= 2.61, CI:1.01-6.73), use of smokeless tobacco (AOR=9.52, CI:4.67-19.37) and exposure to second hand smoke (AOR=1.85, CI:1.22-2.83) were significantly associated with experimentation of shisha. Likewise, higher pocket money, current cigarette smoking, exposure to second and parents' smoking status were significantly associated with current use of shisha.

Conclusion: Our findings suggest shisha is being sold/served to youths in Senegal despite laws prohibiting the importation, distribution, and sale of shisha in the country. The Senegalese government should make more efforts in implementing tobacco control laws that protect them.

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### Profile of risk factors for Non-Communicable Diseases (NCDs) in a highly urbanized district of India: findings from Puducherry district-wide STEPS Survey, 2019-20

Parthibane Sivanantham<sup>1</sup>, Jaya Sahoo<sup>1</sup>, Subitha Lakshminarayanan<sup>1</sup>, Zachariah Bobby<sup>1</sup>, Sitanshu Kar<sup>1</sup>

<sup>1</sup>Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), JIPMER, Puducherry-605009, India

Background and Aim: In India, the prevalence of various Non-Communicable Diseases (NCDs) and its risk factors shows wide variations across geographic regions necessitating region-specific evidence for population-based prevention and control of NCDs. Therefore, we undertook this study to estimate the prevalence of behavioral and biological risk factors of NCDs among adult population (18-69 years) in Puducherry district located in Southern part of India.

Methods: We surveyed adults using the World Health Organization (WHO) prescribed STEPwise approach to NCD surveillance (STEPS) during February 2019 to February 2020. A total of 2560 individuals were selected from urban and rural areas (50 clusters in each) through multi-stage cluster random sampling method. STEPS instrument was used to assess behavioral and physical measurements. Fasting blood sample and a spot urine sample were collected to estimate biochemical risk factors of NCDs. Categorical variables are summarized using proportions with 95% CI. P-value  $\leq 0.05$  was considered statistically significant.

Results: Among men, alcohol use 40.4% (95% CI: 37.4-43.4) was almost twice higher compared to tobacco use 24.4% (95% CI: 21.7-26.9). About half of the population was physically inactive 45.8% (95% CI:43.8-47.8) and obese 46.1% (95% CI: 44-48.1), nine out of ten people 86.8% (95% CI:85.5-88) were taking unhealthy diet and almost whole of the population 98.7% (95% CI:98-99.3) were taking salt more than the daily recommended levels. Hypertension and diabetes mellitus were present among one-third 33.6% (95% CI:31.6-35.5) and one-fourth 26.7% (95% CI: 24.1-29.1) of the population which were significantly higher among men (37.1% vs 30.8% and 31.6% vs 23.2% respectively). Physical inactivity and overweight/obesity increased with increasing education levels. Tobacco and alcohol use was more common among men, whereas physical inactivity with obesity and hypercholesterolemia was higher among women.

Conclusion: We found high prevalence of various NCDs and its risk factors among the adult population of Puducherry district

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### Effectiveness of individual compared to group dietary intervention in patients with type 2 diabetes: a systematic review and meta-analysis

Halimatou Alaofe<sup>1</sup>, Waliou Amoussa Hounkpatin<sup>2</sup>, Abidemi Okechukwu<sup>1</sup>, Sarah Yeol<sup>1</sup>, Carmelle Mizehoun<sup>2</sup>, Jules Gninkoun<sup>2</sup>, John Ehiri<sup>1</sup>

<sup>1</sup>University of Arizona, Drachman Hall A208, 1295 N. Martin Ave, P.O. Box 245209, United States, <sup>2</sup>University of Abomey-Calavi, Benin

Background and Objective: With the rise of type 2 diabetes (T2D) worldwide, dietary interventions are becoming increasingly important for disease control. However, despite the differing potential advantages of individual and group dietary interventions, there is limited evidence regarding the effectiveness and cost-effectiveness of individual compared to group dietary interventions. The objective of this review is to compare the effectiveness of individual versus group dietary intervention for T2D adults on metabolic parameters and dietary adherence.

Methods: Cochrane CENTRAL, CINAHL, EMBASE, MEDLINE, and Psych INFO were searched for studies comparing the effects of individual versus group T2D dietary intervention. Our search focused on randomized controlled trials and controlled before-and-after studies of at least six months duration measuring glycemic control. Trials were included when diet modification was the main component, either through direct prescription of a diet or meal replacement or

nutrition education of T2D adults. Intervention assessed was individual dietary education, while the comparator was group-based dietary intervention, including family, peers, or laypeople (neighbors, friends, or coworkers). Data generated from the search were managed using Endnote Version 7. Quantitative data synthesis were performed where studies were homogenous in characteristics and provided adequate outcome data for meta-analysis. Otherwise, data were synthesized using the narrative synthesis approach. Trials were assessed for risk of bias (Cochrane Risk-of-Bias, version 2.0) and overall certainty of evidence (GRADE).

Discussion

Poor dietary adherence can severely affect a T2D patients health and well-being; therefore, the best method of delivering dietary education is a critical component of preventing and managing the disease. This review will provide a crucial summary of evidence regarding the effectiveness and/or cost-effectiveness of individual versus group delivery of patient dietary intervention. Implications for T2D prevention, policy, practice and future research will be discussed.

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### Association between screen time, weight trajectory, and perception of weight change during the COVID-19 pandemic

Sheila Alvim Matos<sup>1</sup>, Maria Chagas de Almeida<sup>1</sup>, Sandra Rego de Jesus<sup>1</sup>, Maria Fonseca<sup>2</sup>, Rosane Griep<sup>2</sup>, Maria Molina<sup>3</sup>, José Mill<sup>3</sup>, Luana Giatti<sup>4</sup>, Sandhi Barreto<sup>4</sup>, Maria Schmidt<sup>5</sup>, Bruce Duncan<sup>5</sup>, Yukari Figueroa Mise<sup>1</sup>, Ciro Queiroz<sup>6</sup>, Rogério Tosta<sup>7</sup>, Estela Aquino<sup>1</sup>

<sup>1</sup>Universidade Federal da Bahia-UFBA, Brazil, <sup>2</sup>Fiocruz, Brazil, <sup>3</sup>UFES, Brazil, <sup>4</sup>UFMG, Brazil, <sup>5</sup>UFRGS, Brazil, <sup>6</sup>UESB, Brazil, <sup>7</sup>UEFS, Brazil

Background: The prevalence of excess body weight in the Brazilian adult population has been increasing even before the restriction of social mobility due to the COVID-19 pandemic. In the period of social restriction, an increase in time in front of screens has been observed, whether for work or leisure, a practice that favors weight gain. The self-perception of greater weight gain in this period has been reported by adults as a consequence of social distancing. We aimed to estimate the association between screen time and perception of weight change, stratified according to gender and weight trajectory during the COVID-19 pandemic.

Methods: From the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil), we included 5.080 participants aged 39–78 (2012–2014) who attended a follow-up visit (2017-2019) and ELSA-COVID wave in 2020. Standardized questionnaires were used to record sociodemographic data, perception of weight change, and screen time. Height and weight were measured on all participants during in-person visits at research centers. The weight trajectory was calculated by large annual weight gain since 20 years old at follow-up moments. We used Poisson regression with robust variance to estimate the association.

Results: Obesity rates were high in women (36.6%) and men (31.5%) and the weight trajectory increased 35% in women and 27.4% in men. During the social distancing period, perception of higher weight change was observed in 49% of women and 37.7% of men. Screen time increased in 53.7% of women and 41.7% of men who perceived higher weight change. The increase in screen time during this period was associated with a 21% (IC95%=1.09-1.35) perception of weight gain in women and 18% (IC95%=1.04-1.33) in men.

Conclusions: The higher screen time in the period of social restriction was associated with a perception of weight gain but no significant association was observed for weight trajectory.

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### The right to palliative care: the state of art in the Reggio Emilia province, Northern Italy

Camilla Lugli<sup>1</sup>, Camilla Lugli<sup>1</sup>, Federica Violi<sup>2</sup>, Simone Storani<sup>2</sup>, Maurizio Cocchi<sup>2</sup>, Vittorio Foroni<sup>2</sup>, Sonia Romani<sup>2</sup>, Marco Vinceti<sup>1</sup>, Marina Greci<sup>2</sup>, Nicoletta Natalini<sup>2</sup>

<sup>1</sup>University of Modena and Reggio Emilia, Residency Program in Hygiene and Preventive Medicine, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Italy, <sup>2</sup>Azienda USL - IRCCS di Reggio Emilia, Primary Care Department, Azienda USL - IRCCS di Reggio Emilia; Clinical and Experimental Medicine PhD Program, University of Modena and Reggio Emilia, Italy

Background and Objectives: In Italy, Palliative Care (PC) is included in the set of healthcare services guaranteed by the National Health Service (law 38/2010). Local Health Authority can adapt the PC system according to Regional guidelines. In the Emilia-Romagna Region, the PC network (PCN) consist of 4 knots: hospital, medical office, hospice and homecare. In Reggio Emilia province, PC services are built on multidisciplinary teamwork since 1988.

**Methods:** All the patients with oncologic or non-oncologic disease and approaching end of life can enter the local PCN. The approach to care and its setting is evaluated by a multidisciplinary team, according to patient's wishes. The place of care can be one of the PCN knots. Specialists in PC (including trained general practitioners), psychologists and nurses teamwork in PCN. The Primary Care Department of the Local Health Authority collects data and evaluate process and outcome indicators of the quality of care provided.

**Results:** In 2021, 45 nurses and 33 PC specialists worked for the network, 70% and 50% part-time, respectively. In the same year, 2.017 patients were enrolled (+5% from 2020, +9% from 2019), 70% of them affected by cancer. Of all the oncologic patients died in 2021, 70% were taken care by PCN and 42% of them died at home. Patients that were taken care at home were followed for a median of 60 days.

**Conclusion:** PC system plays an important role in ensuring the best quality of life for patients approaching end of life. Moreover, PC allows patient to die at home surrounded by their loved ones. An efficient teamwork and strong relationships between hospital and territory is the keystone to its success and to guarantee uniformity to care access. Cultural interventions towards the acceptance of palliative care should be considered in order to reach patients not enrolled.

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### Reform of the health insurance funding model to improve the care of noncommunicable diseases patients in Saudi Arabia

Ahmed Hazazi<sup>1</sup>

<sup>1</sup>Saudi Electronic University, Department of Public Health, College of Health Sciences, Riyadh, Saudi Arabia, Saudi Arabia

**Background and Objective:** The funding model for a health system has significant impacts on how health care is delivered. Health insurance models are being considered as part of health system reforms in Saudi Arabia. This paper assesses the attributes of health funding models that support better control of Non-communicable Diseases (NCDs) and perspectives on health insurance as a model from the perspective of patients, clinicians, and managers.

**Methods:** The study employs a mixed-methods research design that included quantitative and qualitative data gathering and analysis. The study combined semi-structured interviews with health care professionals and managers as well as a cross-sectional survey of NCDs patients who received treatment at primary health care chronic disease clinics.

**Results:** Study findings indicated concerns that the current health funding mechanism is financially unsustainable and as a result there will be a greater reliance on personal health insurance to support government spending on healthcare. Essential elements of any health insurance model to support effective NCDs management identified from a review of the literature and interviews include: ensuring continuity of care and equity; funding chronic disease prevention interventions; prioritising primary health care; and maintaining the principle of community rating to prevent insurers from discriminating against members. Other desirable attributes for the funding model includes collaboration across primary, secondary, and tertiary care.

**Conclusion:** The health care financing system in Saudi Arabia faces many challenges and is thought to be unsustainable. Healthcare finance reform aimed at adopting and increasing personal health insurance coverage may play a critical role in extending access to health care, eliminating health inequities, enhancing population health, and reducing government spending on healthcare if appropriately considered. Managing the health needs and rising expenses associated with the increasing incidence of NCDs are major challenges for governments and health insurers.

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### Enhanced measurement of sugar sweetened beverages marketing in grocery store environments

Hadis Elyaderani<sup>1</sup>, Rachael Dombrowski<sup>2</sup>

<sup>1</sup>University of South Carolina, United States, <sup>2</sup>California State University-San Marcos

**Background and Objectives:** Grocery stores are the primary venues that can have a vital role in overall health. This is especially true for immigrant families, who often have limited access to healthy foods and are burdened by many diet-related diseases. Sugar-Sweetened Beverages (SSB) marketing within grocers is an obesogenic environmental factor that negatively impacts childrens eating practices. Currently, little is known about different aspects of SSB marketing to young children that influence minority parents to purchase SSBs for their children. We aimed to assess community and consumer eating environments by 1) developing a methodology that describes the price, placement, and promotion

of SSBs 2) recognizing the differences in the landscape of SSB marketing within Metro Detroit grocers when compared across grocers in immigrant enclaves.

**Methods:** The original Nutrition Environment Measure Survey (NEMS) could not identify SSBs marketing aspects targeted young children. To enhance the NEMS, 1) organic, plant-based, unsweetened toddler and infant beverages and marketing questions to capture the SSBs promotion tactics were added; 2) enhanced NEMS was conducted in 78 grocers in immigrant enclaves (n=30) of Dearborn, Warren, Hamtramck, Detroit in Michigan and scores were compared with the scores of the grocers in Metro Detroit (comparison group (n=48)).

**Results:** One-way analysis of variance revealed that grocers in immigrant enclaves have a lower NEMS score (-2.38) compared to the comparison group (-0.52), which indicated significantly higher availability of cheaper SSBs. Availability of organic, plant-based, and unsweetened toddler and infant beverages was zero in all participating grocers. Signage of cartoon characters was the most frequent retail SSB marketing tactic.

**Conclusions:** Living in immigrant enclaves is linked with lower access to unsweetened and healthy beverages for toddlers, which could cause a high prevalence of early childhood obesity among this population. The findings can assist in developing and implementing healthy eating interventions in high-need areas.

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### An integrated healthy lifestyle toolkit for the Pacific Islands region

Judith McCool<sup>1</sup>, Nuhifisa Williams<sup>2</sup>, Leroy Tatu<sup>3</sup>, Chris Bullen<sup>1</sup>, Vili Nosa<sup>1</sup>,

Troy Ruhe<sup>4</sup>, Sally Mackay<sup>1</sup>, Amio Ikihele<sup>5</sup>, Maryann Heather<sup>1</sup>

<sup>1</sup>University of Auckland, 32 Cambourne Road, New Zealand, <sup>2</sup>Te Marae Ora, Cook Islands, <sup>3</sup>Ministry of Health Niue, <sup>4</sup>University of Otago, <sup>5</sup>Moana Connect, New Zealand

**Background:** Noncommunicable Diseases (NCDs) including cardiovascular diseases, cancer, diabetes, chronic respiratory diseases, and mental disorders are the leading causes of death in the Pacific Island Countries and Territories (PICTS). The PICTs are especially hard hit by the NCD crisis due to several factors, not the least being trade of unhealthy commodities.

A review of existing NCD resources for primary care providers was conducted to describe the resources available to support those working alongside families and individuals in the region to reduce NCD risk factors.

**Aims:**

To collate and critically appraise the NCD risk factors related resources for primary care providers to promote healthy lifestyles in the PICTs. To systematically appraise the content in respect to access, focus, cultural relevance, tone, practicality of advice and translation (for other countries) within each resource.

**Method:** Resources (guides, toolkits, advice kits) were collected through a search of all 14 PICTs Ministry of Health (MoH), NGO and primary care providers using predefined search terms. An Excel file was constructed by country and by category: healthy lifestyle guidelines, diabetes management (two of the most used general categories) physical activity, nutrition, alcohol, and tobacco. Resources relevant to all 22 PICTs including those prepared by the Intergovernmental and NGOs were included.

**Results:** Our review reveals the scope of existing materials including the gaps and potential opportunities for integration, alignment, and innovation available to primary care health workers. The review is testament to investment afforded to NCDs risk reductions via behaviour change techniques. The language and framing reflect a preference for individual choice and decision making in taking actions to live healthy lives.

**Conclusions:** Healthy lifestyle-related resources for primary care providers need to reflect cultural and practical realities for context and adapt to changing modalities to ensure resources are accessible and outcomes, equitable.

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### Performance of world health organization updated cardiovascular disease risk prediction charts in a low-resource setting - findings from a community-based survey in Puducherry, India

Sitanshu Kar<sup>1</sup>, Parthibane Sivanantham<sup>1</sup>, Subitha Lakshminarayanan<sup>1</sup>, Jaya Sahoo<sup>1</sup>, Zachariah Bobby<sup>1</sup>, Cherian Varghese<sup>2</sup>

<sup>1</sup>Jawaharlar Institute of Postgraduate Medical Education and Research (JIPMER), JIPMER, Puducherry-605009, India, <sup>2</sup>World Health Organization | CH-1211 Geneva 27, Switzerland

**Background and Aim:** The World Health Organization revised the cardiovascular disease (CVD) risk prediction charts in 2019 for each of the 21 Global Burden of

Disease regions. These charts (non-lab and lab versions) estimate the total CVD risk in an individual, of which the non-lab is for low-resource settings. We aimed to estimate the burden of ten-year risk of fatal or non-fatal CVD event in the district of Puducherry in India using 'non-lab' and 'lab' versions of WHO CVD risk prediction charts, and to evaluate the agreement between them.

**Methods:** We included 710 individuals aged 40-69 years who participated in a district-wide non-communicable diseases survey conducted in Puducherry, India, during 2019-20. Both charts use information on age, gender, systolic blood pressure and smoking status. Additionally, lab-chart requires individual's status on diabetes mellitus and total cholesterol, while non-lab requires body mass index. Population in different CVD risk levels (<5%, 5%-9%, 10%-19%, 20%-29%, ≥30% risk) was presented using proportions with 95% confidence intervals. Agreement between lab and non-lab charts was evaluated using Cohen's Kappa (K).

**Results:** The mean (SD) age of study participants was 53.5 (8.4) years, and the majority (58%) were women. The lab and non-lab charts estimated 3% (95% CI: 1.7-4.2) and none in the population at ≥20% CVD risk, respectively. Both charts showed 89.4% (95% CI: 87.2%-91.7%) concordance in CVD risk prediction indicating a good level of agreement ( $\kappa=0.653$ ). One in five individuals identified to have 10%-19% CVD risk using non-lab chart were having ≥20% CVD risk when assessed using lab-chart.

**Conclusion:** WHO updated CVD risk prediction charts are feasible to apply when data is available, and we found a good level of agreement between non-lab and lab-based charts. We call for large-scale studies across geographic locations to verify the pattern

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### Descriptive epidemiology of gynaecologic cancers in southern Ethiopia: Retrospective cross-sectional review

Achamyelesh Tekle<sup>1</sup>, Netsanet Bogale<sup>1</sup>, Dubale Dula<sup>2</sup>

<sup>1</sup>Hawassa University, Ethiopia, School of Medicine, College of Medicine and Health Sciences, Hawassa University, Hawassa, SNNPR, Ethiopia, <sup>2</sup>Hawassa University, Ethiopia, Department of Midwifery, College of Medicine and Health Sciences, Hawassa University, Hawassa, SNNPR, Ethiopia

**Objective:** To determine the epidemiology of gynecological cancer among patients treated at Hawassa University Comprehensive and Specialized Hospital (HUCSH) from 2013 to 2019.

**Design:** a retrospective cross-sectional review.

**Setting, participants, and outcome measure:** a total of 3002 patients' cards with a diagnosis of cancer at a tertiary hospital named Hawassa University Comprehensive and Specialized Hospital were reviewed between February to May 2020. HUCSH is the only oncologic care center in the southern region of Ethiopia. Of this all-gynecologic cancer charts were extracted and descriptive and trend analyses were done. The review was conducted between February to May 2020.

**Result:** Out of all 3002 cancer cases, 522(17.4%) cases of gynecologic cancers were identified in seven years. Cervical cancer accounted for 385(73.8%) of all gynecologic cancers in this study, the next most common gynecologic cancers were ovarian cancer (55%) and endometrial cancer (51%) respectively. The mean [SD] age was 44.84[12.23]. Trends of all identified gynecological cancers showed continuous increments of caseload year to year. Since 2016 increment of cervical cancer is drastically vertical compared to others.

**Conclusion:** Despite the limited use of a registration and referral system in primary health institutions, the burden of gynecological cancers has increased over time. Treatment steps should be taken as soon as possible after a cancer diagnosis to prevent the disease from progressing.

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### Prevalence of Metabolic Syndrome According to ATP III, IDF and Harmonized Criteria Among Adults Aged 18-40 Years in the United Arab Emirates: The UAE Healthy Future Study

Shamma AlMuhairi<sup>1</sup>, Aminu Abdullahi<sup>2</sup>, Fatma AlMaskari<sup>1</sup>, Javaid Nauman<sup>1</sup>, Luai Ahmed<sup>2</sup>, Raghieb Ali<sup>3</sup>, Syed Shah<sup>1</sup>

<sup>1</sup>United Arab Emirates University, "UAE AlAin", United Arab Emirates, <sup>2</sup>United Arab Emirates University, <sup>3</sup>New York University Abu Dhabi "UAE Abu Dhabi" United Arab Emirates

**Background & Objective:** Metabolic syndrome (MetS) is a clustering of cardiometabolic risk factors and has many different definitions according to different international organizations. The presence of multiple risk factors simultaneously in Metabolic Syndrome has been shown to increase the risk for atherosclerosis development in young and middle-aged adults and the risk of cardiovascular disease in middle age.

This study aimed to estimate the prevalence of MetS using Adult Treatment Panel III (ATP III), International Diabetes Federation (IDF), and Harmonizing criteria of Joint Interim Statement (JIS) and to explore the level of agreement between them among young adults in the UAE.

**Methods:** Data were drawn from the UAE Healthy Future Study participants aged 18 to 40. Demographic and health information was collected through self-reported questionnaires. Anthropometric data and blood pressure were measured, and blood samples were also collected for biochemical parameters.

**Results:** The overall prevalence of metabolic syndrome was estimated at 14.7%, 19.5%, and 22.4% according to ATP III, IDF, and JIS respectively. The agreement between IDF and JIS was strong (Kappa: 0.89) and the agreement between ATP III and JIS (Kappa: 0.74) was considered moderate. Metabolic syndrome was more prevalent among men and older subjects. The significant risk factors of MetS in the studied cohort included male gender, older age group, being married, and a lower level of education.

**Conclusion:** In this young population, MetS is highly prevalent with about one in four young Emiratis being affected. JIS definition identified more Emirati adults with MetS, therefore, should be recommended as the preferred diagnostic criterion.

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### Study on Depletion of ovarian function and Late-life chronic diseases in India

Sampurna Kundu<sup>1</sup>, Sanghmitra Sheel Acharya<sup>1</sup>

<sup>1</sup>Jawaharlal Nehru University, JNU Campus, New Mehrauli Road, New Delhi 110067, India

**Background:** Depletion of ovarian function which occurs due to menopause can affect multiple organs leading to multimorbidity. Women with extreme menopause ages (early or late) suffers from increased accumulated risk of multimorbidity than women who experience natural menopause. Hence, the study aims to understand the menopausal age in association which chronic conditions or multimorbidity.

**Methods:** The present study analyses the nationally representative data, Longitudinal Aging Study in India (LASI), 2017-2018, Wave 1. Bivariate analysis was carried out to examine the significant association between the covariates and the dependent variables which are the number of chronic diseases. Independent t-tests were used for continuous variables, and chi-square tests were used for categorical variables. Further regression analysis has been done to observe the effect of menopausal age on various chronic diseases, controlling the socio-economic and demographic variables, lifestyle and bio-physical factors.

**Results:** The results show that 15.8% of the women experienced premature menopause (50). Women with premature or early menopausal age are at higher risk of developing more chronic diseases such as heart diseases, whereas late menopausal age showed risk of high cholesterol. Women who had premature menopause, showed elevated risk of psychiatric disease.

**Conclusion:** The findings depict the relation of early or late depletion of ovarian function through menopause leads to chronic health conditions. A significant amount of risk of developing chronic diseases has been observed in the case of premature or early menopause. The loss of estrogen levels at an early age cause an alteration on the functioning of the organ systems that leads to chronic health conditions. Comprehensive strategies in the form of lifestyle changes may regulate the hormonal levels and allow body to reach menopause at the right age.

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### Epidemiology of Anaplastic Large Cell Lymphoma Associated with Breast Implants: a quantitative analysis

Santo Fruscione<sup>1</sup>, Walter Mazzucco<sup>2</sup>, Daniele De Bella<sup>3</sup>, Sergio Mazzola<sup>4</sup>, Claudio Costantino<sup>2</sup>, Davide Costanza<sup>3</sup>, Nicole Bonaccorso<sup>2</sup>, Miriam Belluzzo<sup>2</sup>, Mariachiara Lo Porto<sup>2</sup>, Arianna Di Napoli<sup>5</sup>, Francesco Vitale<sup>2</sup>, Martina Vittorietti<sup>6</sup>

<sup>1</sup>University of Palermo, Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties "G. D'Alessandro", Via Enrico Albanese, 31, Italy, <sup>2</sup>University of Palermo, Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties "G. D'Alessandro", Italy, <sup>3</sup>University of Palermo, <sup>4</sup>A.O.U.P. Paolo Giaccone, Italy, <sup>5</sup>Sapienza University of Rome, Department of Clinical and Molecular Medicine, Italy, <sup>6</sup>University of Palermo, Economics, Business and Statistics, Italy

**Background and Objective:** Breast implant-associated anaplastic large-cell lymphoma (BIA-ALCL) is a rare non-Hodgkin T-cell lymphoma arising in patients with breast reconstruction post-mastectomy or undergoing cosmetic-additive mammoplasty. Due to widespread use of implantations for cosmetic purposes,

BIA-ALCL cases are expected to increase. We aimed at investigating main characteristics of the disease and factors predicting BIA-ALCL onset in patients with and without implant replacement.

Method: A quantitative analysis was performed on cases extracted from primary studies published until April 2022 and searched in PubMed, Scopus and Google-Scholar databases, using "Breast-Implant" AND/OR "Associated" AND/OR "Anaplastic-Large-Cell-Lymphoma".

Statistical significance was verified by Student-T test for continuous variables, while Fisher's exact test was applied for qualitative variables. Cox model with time-dependent covariates was applied to estimate BIA-ALCL's onset time.

Results: 232 patients with BIA-ALCL (mean age at diagnosis: 55 years-old; mean time to disease onset from first implant: 10.3 years) were extracted from 52 selected studies. Patients with cosmetic implants were younger than patients with post-mastectomy implants but no difference was showed for median time to onset. Patients with implant replacement were significantly older than patients without previous replacement at the diagnosis, having a median time to diagnosis since first implant of 13 years (7 years in patients without replacement). Hazard of developing BIA-ALCL resulted significantly lower in patients having a previous implant replacement as compared to patients who did not (HR= 0.03; 95%CI: 0.005-0.19; p-value= <0.01).

Conclusion: Exposure time to prosthesis, regardless of the age at implant and any possible condition associated with the disease, may play a role in BIA-ALCL induction. We provided evidence to be suggested for a proper information on breast implant use and for updating follow-up guidelines. Linkage between prosthetic implants registries and population-based cancer registries will help to better estimate the epidemiological impact over time of both BIA-ALCL and other lymphomas.

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### Inequalities in the burden of noncommunicable diseases across European countries: a systematic analysis of the 2019 global burden of disease study

Carlos Andrade<sup>1</sup>, Nour Mahrouse<sup>2</sup>, Brigid Unim<sup>3</sup>, Sarah Cuschieri<sup>4</sup>, Diana Aleksandra Grad<sup>5</sup>, Isola Gaetano<sup>6</sup>, Carl Baravelli<sup>7</sup>, Florian Fischer<sup>8</sup>, Periklis Charalampous<sup>9</sup>, José Chen-Xu<sup>10</sup>, Enkeleint Mechili<sup>11</sup>, Romana Haneef<sup>12</sup>, Nanna Weye<sup>13</sup>, Jinane Ghattas<sup>14</sup>, Tina Lesnik<sup>15</sup>, Elena von der Lippe<sup>16</sup>, Juanita Haagsma<sup>17</sup>, Orsolya Varga<sup>1</sup>

<sup>1</sup>Department of Public Health and Epidemiology, Faculty of Medicine, University of Debrecen Hungary, <sup>2</sup>Department of Public Health and Epidemiology, Faculty of Medicine, University of Debrecen, <sup>3</sup>Department of cardiovascular, endocrine-metabolic diseases and aging, Istituto Superiore di Sanità Italy, <sup>4</sup>Faculty of Medicine & Surgery, <sup>5</sup>Grad Department of Public Health, FSPAC, Babes-Bolyai University, <sup>6</sup>Department of General Surgery and Surgical-Medical Specialties, School of Dentistry, University of Catania Italy, <sup>7</sup>Norwegian Institute of Public Health Norway, <sup>8</sup>Charité - Universitätsmedizin Berlin Germany, <sup>9</sup>Department of Public Health; Erasmus MC University Medical Center Netherlands, <sup>10</sup>Public Health Unit, Primary Healthcare Cluster NOVA National School of Public Health, Public Health Research Centre, Universidade NOVA de Lisboa, Lisbon Portugal, <sup>11</sup>Department of Healthcare, Faculty of Health, University of Vlora, Vlora, Albania School of Medicine, University of Crete, Heraklion, Greece Albania, <sup>12</sup>Department of Non-communicable diseases and injuries, Santé Publique France, Saint-Maurice France, <sup>13</sup>Department of Clinical Epidemiology, Aarhus University and Aarhus University Hospital, Denmark Department of Disease Burden, Norwegian Institute of Public Health, Norway Denmark, <sup>14</sup>Institute of Health and Society (IRSS), Université Catholique de Louvain Belgium, <sup>15</sup>Health Analysis and Development Centre, National Institute of Public Health Of Republic Slovenia, Ljubljana Slovenia, <sup>16</sup>Robert Koch Institute Germany, <sup>17</sup>Erasmus MC University Medical Center Netherlands

Background and objectives: High disease burden due to non-communicable diseases (NCDs) and the associated health inequalities are major problems in Europe. This study aimed to assess health inequalities in NCDs by Disability-Adjusted Life Years (DALYs) rates across 30 member states of the European Economic Area (EEA) between 1990 and 2019.

Methods: The Global Burden of Disease (GBD) 2019 estimates were used for a descriptive longitudinal systematic analysis. Age-standardized DALYs rates and 95% Uncertainty Interval (UI 95%) were used. For inequality analysis, we performed DALYs rate ratios between all countries in 2019 by sex, ratio between highest and lowest-ranking country by year, annual rate-of-change between 1990 and 2019 by sex, Gini Coefficient (GC), and Slope Index of Inequality (SII).

Results: In 2019, DALY rate of NCDs ranged from 24342 in Bulgaria (95%UI: 20406-

28775) to 14845 in Iceland (95%UI: 12379-17682). The ratio between highest and lowest-ranking country in terms of NCD DALY rates was higher for males (1.90: Bulgaria/Iceland) compared to females (1.49: Bulgaria/Slovenia). The annual rate-of-change indicated DALY rate decrease in all countries between 1990 and 2019. For females it ranged from -0.12 in the Netherlands to -0.28 in Slovenia, while for males from -0.10 in Bulgaria to -0.40 in the Czech Republic. NCDs with highest GCs and ratios over the studied period were cardiovascular diseases (GC: 0.283; ratio: 5.89), digestive diseases (GC: 0.244; ratio: 6.29), diabetes and kidney diseases (GC: 0.194; ratio: 4.97), substance use disorders (GC: 0.224; ratio: 5.10), and chronic respiratory diseases (GC: 0.160; ratio: 3.45). The SII was 0.85 in 1990 and 0.59 in 2019.

Conclusion: Although the DALY rate of NCDs decreased between 1990 and 2019 in all EEA countries, the level of inequality between countries is not decreasing. Targeted policies can help tackle NCDs with particularly high levels of inequality in EEA countries.

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### Genetic susceptibility to Insulin resistance and its association with estimated longevity in the Hungarian general and roma populations

Peter Piko<sup>1</sup>, Nardos Werissa<sup>2</sup>, Roza Adany<sup>1</sup>

<sup>1</sup>University of Debrecen Hungary, <sup>2</sup>University of Debrecen

Background and objective: Diabetes mellitus is a major public health problem with a wide range of prevalence among different ethnic groups. Early recognition of pre-diabetes is important to prevent the development of the disease, its complications, co-morbidities, and consequently early death. Insulin resistance (IR) is considered a condition that precedes type 2 diabetes (T2DM); thus, understanding its underlying causes will bring us closer to preventing it.

Methods: The present study aimed to investigate the genetic susceptibility to IR and its impact on longevity in populations with different origins using samples of 372 Hungarian general (HG) and 334 Roma participants. In the present study, we used the Homeostasis Model Assessment—Insulin Resistance (HOMA—IR) to identify people with IR (>3.63). To investigate the genetic predisposition to IR, 29 single nucleotide polymorphisms (SNPs) were selected and genotyped.

Results: Of these SNPs, the commutative effects of fifteen, showing the strongest association with HOMA—IR, were used to calculate an optimized genetic risk score (oGRS). The oGRS was found nominally significantly (p = 0.019) higher among Roma compared to HG, and it was strongly correlated with IR. Therefore, it can be considered as a stronger predictor of the presence of IR among the Roma (AUCRoma = 0.673 vs. AUCHG = 0.528). Furthermore, oGRS also showed a significant correlation with reduced estimated longevity in the Roma population ( $\beta = -0.724$ ; p = 0.005), but not in the HG one ( $\beta = 0.065$ ; p = 0.779). Overall, IR shows a strong correlation with a genetic predisposition among Roma, but not in the HG population. Furthermore, the increased genetic risk of Roma is associated with shorter longevity.

Conclusion: Increased genetic susceptibility to IR should be considered in preventive programs targeting the development of T2DM, which may also reduce the risk of preventable premature death among them.

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### Flash glucose monitoring for indigenous Australians with type 2 diabetes: a randomised pilot and feasibility study

Digsu Koye<sup>1</sup>, Elif Ekinci<sup>1</sup>, Audrey Eer<sup>2</sup>, Mariam Hachem<sup>1</sup>, Tracey Hearn<sup>3</sup>, Sharon Atkinson-Briggs<sup>4</sup>, Jessica Jones<sup>1</sup>, Sandra Eades<sup>1</sup>, Sabine Braat<sup>1</sup>, Stephen Twigg<sup>5</sup>, Ashim Sinha<sup>6</sup>, Anna McLean<sup>6</sup>, Richard O'Brien<sup>1</sup>, Phillip Clarke<sup>1</sup>, David O'Neal<sup>1</sup>, David Story<sup>1</sup>, Jeffrey Zajac<sup>1</sup>, Megan Freund<sup>7</sup>, Ray Kelly<sup>1</sup>, Luke Burchill<sup>1</sup>

<sup>1</sup>The University of Melbourne Australia, <sup>2</sup>The University of Melbourne, <sup>3</sup>Rumbalara Aboriginal Co-operative Australia, <sup>4</sup>Rumbalara Aboriginal Co-operative, <sup>5</sup>Royal Prince Alfred Hospital Sydney Australia, <sup>6</sup>Cairns Hospital Australia, <sup>7</sup>The University of Newcastle Australia

Background and objective: In non-Indigenous populations with diabetes, knowledge gained from continuously monitoring of blood glucose levels has led to behavioural change and a reduction in blood glucose levels. However, this has never been studied in Indigenous Australians. We therefore conducted a pilot and feasibility study aimed to assess the feasibility of performing a larger multicentre trial using flash glucose monitoring (FGM) compared to standard care in Indigenous Australians with type 2 diabetes on injectable therapies.

Methods: In this non-masked, individually randomised controlled pilot and feasibility study, Indigenous people with type 2 diabetes were randomised to FGM

or standard care for 6 months. Eligible participants were Indigenous Australians aged  $\geq 18$  years with type 2 diabetes, have high blood glucose (defined as HbA1c of  $\geq 7.0\%$ ) and on diabetes treatment that included injectable therapies. Primary effectiveness outcome was change in HbA1c from baseline to 6 months.

Results: We randomly assigned 40 participants, with 20 allocated to the intervention device (FGM) and 20 to the control arm, and 39 completed the study. Participants' baseline characteristics were similar between groups except for sex and body mass index. The primary outcome, mean difference in HbA1c at 6 months was 0.19% (95% confidence interval -1.20 to 0.81). No participants experienced a severe hypoglycaemic event during the study period.

Conclusions: This is the first randomised controlled pilot and feasibility study comparing FGM to standard care in Indigenous Australians with type 2 diabetes. The high recruitment and retention rates show promise for a larger multicentre randomised controlled trial which is currently in progress. REGISTRATION Registered at the Australian and New Zealand Clinical Trials Registry (ACTRN12621000021875).

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### Vegetable and high sodium food intake, nutritional status and metabolic syndrome among adolescents in Makassar, Sulawesi Selatan, Indonesia

Suryani Tawali<sup>1</sup>, Suryani Tawali<sup>1</sup>, Irene Leonardy<sup>2</sup>, Ari Junaedi<sup>1</sup>, Nurul Qalby<sup>1</sup>

<sup>1</sup>Department of Public Health and Preventive Medicine, Faculty of Medicine Hasanuddin University, Makassar Indonesia Faculty Of Medicine, Hasanuddin University, Makassar Indonesia Jl.Perintis Kemerdekaan Km. 10, Makassar Indonesia, <sup>2</sup>Bachelor of Medicine Study Program

Background and Objective: Noncommunicable diseases (NCDs) account for 74% of total deaths in the world. Around 77% NCDs death occurred in low- and middle-income countries including Indonesia. Adolescents are among those who are at risk to develop NCD due to unhealthy diet and lack of physical activity. These may lead to obesity, a rise in blood pressure, and increased of blood glucose and blood lipids levels, which are known as metabolic syndrome. This study aimed to determine the vegetable and high sodium food, nutritional status and metabolic syndrome among high school adolescents in Makassar

Methods: This cross-sectional observational study was conducted in August to October 2022 in an urban public high school in Makassar, Indonesia. Vegetable and high sodium food intake were measured through questionnaire. Anthropometric measurement (weight and height) was performed to obtain the nutritional status of the students. Metabolic syndrome were characterized through measurement body mass index (BMI), blood pressure, and blood glucose level.

Results: Among 390 high school children, 11.8% were overweight and 10% were obese. On the other hand, 16% students were underweight. Further analysis among 104 students showed that the majority of students had inadequate intake of vegetable (84.6%). For high sodium food, more than 50% students consumed at least three kinds of high sodium food and 58.7% students consumed more than 5 g salt per day. In term of the risk of metabolic syndrome. 48 (46.2%) students had one risk of metabolic syndrome, either of obesity and hypertension, and 3 students (2.9%) had two risks of metabolic syndrome

Conclusion: In view of the fact that vegetable consumption as the protective factor for developing metabolic syndrome were severely inadequate and the intake of high sodium food were above the normal, therefore, multisectoral intervention are urgently needed to prevent the development of metabolic disease among adolescents.

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### Assessing the predictive performance of published polygenic scores for prevalent and incident coronary artery disease in multiple genetic ancestries

Luca Regazzi<sup>1</sup>, Chiara Cadeddu<sup>1</sup>, Stefania Boccia<sup>1</sup>, George Busby<sup>2</sup>, Alessandro Bolli<sup>3</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore "1) Section of Hygiene, Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy" Italy, <sup>2</sup>Allelica, Inc. Allelica, New York, NY, USA United Kingdom, <sup>3</sup>Allelica, Inc.

Background and Objective: Polygenic scores (PGS) for coronary artery disease (CAD) measure an individual's genetic liability for CAD. Multiple PGSs for CAD have been published and whilst they are generally considered predictive in individuals of European ancestry, performance is attenuated in non-European ancestry groups (AG). Here we collate publicly available CAD PGS and benchmark their performance across several AGs to evaluate their utility for personalized

prevention.

Methods: We queried the "PGS Catalog" to extract standardized odds/hazard ratios (OR/HR) for published CAD PGSs across multiple AGs (European, African, Hispanic, South-Asian, East-Asian, Greater-Middle-Eastern). We restricted our analysis to PGSs specifically developed for prevalent and/or incident CAD and analyzed AG-specific PGS performance to identify the five best-performing PGSs in each AG to include in a comparative analysis.

Results: In general, PGS applied to the European AG had the highest OR/HRs per standard deviation of the PGS (min: 1.74[1.61-1.89]; max: 1.89[1.75-2.03]), while the African AG had the lowest performances overall (min: 1.05[0.94-1.17]; max: 1.40[1.30-1.52]). PGSs applied to Hispanic, East-Asian and Greater-Middle-Eastern AGs exhibited highly heterogeneous performance overall, although their absolute best performance was comparable to those in Europeans with OR/HRs of 1.93[1.67-2.22], 1.84[1.74-1.94] and 1.81[1.66-1.98] respectively. PGS000018 demonstrated the best performance in both Africans (1.40[1.03-1.52]) and Hispanics (1.93[1.67-2.22]), while PGS000013 was the best performing PGS in Europeans (1.89[1.75-2.03]) and ranked second in Hispanics (1.52[1.43-1.62]), East-Asians (1.66[1.47-1.86]) and South-Asians (1.58[1.42-1.76]). Furthermore, PGS000337 was best in East-Asian (1.84[1.74-1.94]) and Greater-Middle-Eastern AGs (1.81[1.66-1.98]), while PGS000296 performed best in South-Asians (1.66[1.53-1.81]).

Conclusion: There is currently no gold-standard CAD PGS that can be applied with equal predictive performance across all AGs. However, performance of CAD PGS in different AGs can be optimized by applying different ancestry-specific CAD PGSs to achieve the best possible predictive performance in every individual, an essential prerequisite towards implementing PGSs in CAD personalized prevention protocols.

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### Lunch dietary pattern in association with overweight in Brazilian adults

Valéria Baltar<sup>1</sup>, Ana Lima Ferreira<sup>2</sup>, Bruna Hassan<sup>1</sup>

<sup>1</sup>Universidade Federal Fluminense Brazil, <sup>2</sup>Universidade Federal do Rio de Janeiro Brazil

Background and Objective: In Brazil, lunch is the most consumed meal and it is the meal with the highest energy intake of the day. The combination of food items in this meal, provides the main nutrients among Brazilian adults. We aimed to investigate the relationship between lunch dietary patterns and overweight among Brazilian Adults.

Methods: We used 28,191 individuals aged 19-59 years (excluding pregnant and breastfeeding) from the National Dietary Survey (2017-2018). We included the food items consumed at lunch in 14 food groups. Lunch dietary patterns were derived by principal component factor analysis (Varimax rotation). The patterns scores were classified accordingly to terciles (lower, median, and higher adherence to the pattern). To assess the association between overweight (BMI  $\geq 25$  kg/m<sup>2</sup>) and the dietary patterns we applied logistic regression adjusted by age, schooling, sex, region and total energy intake. All analysis were made considering the study design.

Results: Only 3.27% of the adults did not mention having lunch. Among the those that consumed lunch we found three patterns: Traditional Brazilian (rice, beans and red meat), Vegetable and Salads (vegetable, salads, oils, red meat, and processed meat) and protein dish with side dishes (white meat, juices and sweets). We found that adults with higher adherence to the Vegetable and Salads lunch patterns are associated to 18% higher chance of overweight in comparison to the lower adherence (OR=1.18 [1.08; 1.30]).

Conclusions: Despite that the Vegetable and Salad lunch pattern includes health food, it also contains fat and oil and red meat/processed meat, and is directly associated to overweight in Brazilian adults.

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### Law and Policy Gap Analysis to promote physical activities in Bangladesh Context

Syed Alam<sup>1</sup>, Syed Alam<sup>1</sup>

<sup>1</sup>Center for Law and Policy Affairs-CLPA Secretary Center for Law and Policy Affairs-CLPA Flat-A3, House-49, Road-13, Block-D, Banani-1213, Dhaka Bangladesh

Background: Bangladesh is one of the leading vegetables and fruit-producing countries in the globe,[1] [2] being now the world's third-largest producer of vegetables.[2] [3] Although Bangladesh has entered the list of top 10 countries in the production of seasonal fruits,[3] [4] Bangladeshi people tend to consume very

little fruits and vegetables. Given this evidence, it is important to understand the reasons behind the population's low consumption of nutritious food, vegetables, and fruits despite the country's adequate supply. However, it will be impossible to effectively promote healthy diets unless a set of different laws and policies that govern the healthy food supply chain is implemented simultaneously.

**Intervention Method:** This policy briefing grounds on law and policy analysis, review of existing research and publications, and consultations with a variety of stakeholders. We are exploring the policy situation and analyzing thirty two (32) policies related to food from eleven (11) different ministries so far. During the policy analysis, it was determined whether any form of subsidy or assistance was provided to improve production, storage, transportation, marketing, and distribution of food. Six laws have been identified that regulate the promotion, advertising, and sale of unhealthy foods.

**Results/Impact:** CLPA developed this policy brief to inform country stakeholders on the legal basis for the promotion of healthy diets as a policy tool to prevent NCDs in Bangladesh.

**Conclusions:** The law, through the adoption of regulation and fiscal policies, is a crucial part in this effort to transform food consumption patterns to promote healthy diets.

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### Acute myocardial infarction in a decade in Italy: Impact of age, gender and heart failure

Stefano Rosato<sup>1</sup>, Stefano Rosato<sup>1</sup>, Leonardo De Luca<sup>2</sup>, Gian Mureddu<sup>3</sup>, Stefano Cicala<sup>4</sup>, Barbara Giordani<sup>5</sup>, Giorgia Duranti<sup>4</sup>, Gabriella Badoni<sup>1</sup>, Alice Maraschini<sup>1</sup>, Fulvia Seccareccia<sup>1</sup>, Paola D'Errigo<sup>1</sup>, Giovanni Baglio<sup>4</sup>

<sup>1</sup>Italian National Institute of Health Italy, <sup>2</sup>A.O. San Camillo-Forlanini, Rome, <sup>3</sup>San Giovanni Hospital, Rome Italy, <sup>4</sup>Italian National Agency for Regional Healthcare Services Italy, <sup>5</sup>Italian National Agency for Regional Healthcare Services

**Background and Objective:** The outcome of patients with acute myocardial infarction (AMI) may vary substantially based on baseline risk. This work aims to analyse the impact of gender, age and heart failure (HF) on mortality trends, based on a nationwide, comprehensive and universal administrative database of AMI.

**Methods:** This is a nationwide cohort study enrolling patients admitted with AMI from 2009 to 2018 in all Italian hospitals. The main outcomes were in-hospital mortality rate (I-MR) and 1-year post-discharge mortality rate (1-Y-MR).

**Results:** Among the 1,000,965 AMI events included in the analysis, 43.6% occurred in patients aged  $\geq 75$  years, 34.7% in females and 21.8% in AMI complicated by HF at the index hospitalization. Both I-MR and 1-Y-MR significantly decreased over time (from 8.87% to 6.72%; mean annual change - 0.23%; confidence intervals (CI): - 0.26% to - 0.20% and from 12.24% to 10.59%; mean annual change - 0.18%; CI: - 0.24% to - 0.13%, respectively). This trend was confirmed in younger and elderly AMI patients, in both sexes. Since I-MR has decreased more than 1-Y-MR, the ratio between 1y PD-MR and I-MR increased over time.

In AMI patients complicated by HF, both I-MR and 1-Y-MR were markedly high, regardless of age and gender.

**Conclusions:** This contemporary, nationwide study suggests that I-MR and 1-Y-MR are still elevated, albeit decreasing over time. Elderly patients and those with HF at the time of index admission, present a particularly high risk of fatal events, regardless of gender.

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### Does the healthcare system sufficiently promote cancer screening among those in its care?

Allegra Ferrari<sup>1</sup>, Thuy Tran<sup>2</sup>, Sarah Hoeck<sup>3</sup>, Marc Peeters<sup>4</sup>, Mathieu Goossens<sup>2</sup>, Guido Van Hal<sup>5</sup>

<sup>1</sup>University of Antwerp Social Epidemiology and Health Policy, Family Medicine and Population Health (FAMPOP), University of Antwerp, 2610 Antwerp, Belgium; Department of Health Sciences (DISSAL), University of Genoa, 16123 Genoa, Italy, <sup>2</sup>Centre for Cancer Detection, <sup>3</sup>Centre for Cancer Detection Social Epidemiology and Health Policy, Family Medicine and Population Health (FAMPOP), University of Antwerp, 2610 Antwerp, Belgium; Centre for Cancer Detection, 8000 Bruges, Belgium, <sup>4</sup>Antwerp University Hospital (UZA) Department of Oncology, Antwerp University Hospital,

2650 Antwerp, Belgium; Integrated Personalized & Precision Oncology Network (IPPON), University of Antwerp, 2610 Antwerp, Belgium, <sup>5</sup>University of Antwerp Social Epidemiology and Health Policy, Family Medicine and Population Health (FAMPOP), University of Antwerp, 2610 Antwerp, Belgium; Centre for Cancer Detection, 8000 Bruges, Belgium

Despite the recognized benefits of organized cancer screening programs, tests outside screening programs are common. Downsides to this practice include the lack of quality control and disparities in participation patterns based on one's perception of risk and willingness/ability to pay. While comprehensive reports on outside program screening in Europe are lacking, the Flemish breast (BC) and colorectal cancer (CRC) screening programs monitor data on non-organized tests prescribed by GPs and specialists. Using multivariate logistic regression, we examined the relationship between health care utilization and BC and CRC screening coverage in 308 Flemish municipalities between 2015–2018. With regards to BC, municipalities with a higher rate of visits with gynecologists have a lower coverage inside (-8%) and higher coverage outside (+17%) the program. By contrast, municipalities with a higher rate of GP visits, have a higher coverage inside (6%) and a lower coverage outside (-7%) the program. As for CRC, municipalities with a higher rate of visits with gastroenterologists have a lower coverage inside the program (-3%). Instead, municipalities with a higher rate of GP visits, have a higher coverage both inside (+2%) and outside (+5%) the program. Municipalities with a higher percentage of people with chronic conditions have a higher coverage within both the BC and CRC programs (+5% and +3%), and lower rates of outside screening (-7% and -6%). Municipalities with a higher percentage of people 65+ affected by dementia, partially overlapping with the target population, have higher inside coverage in both the BC and CRC screening (+13% and +5%, respectively). Finally, a higher percentage of people with mood disorders was associated with lower inside coverage of BC and CRC screening (-3% and -4%). Providers should remain aware of their role in facilitating patients' decision-making process, especially among vulnerable groups, and attempt to increase participation in the organized programs.

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### Madodiet: Comparison of dietary habits and lifestyles between residents of madonie mountain area and those of the metropolitan area of palermo

Martina Sciortino<sup>1</sup>, Claudio Costantino<sup>1</sup>, Nicole Bonaccorso<sup>1</sup>, Livia Cimino<sup>1</sup>, Arianna Conforto<sup>1</sup>, Daniele De Bella<sup>1</sup>, Santo Fruscione<sup>1</sup>, Walter Mazzucco<sup>1</sup>, Francesco Vitale<sup>1</sup>

<sup>1</sup>University of Palermo Department of Health Promotion, Maternal and Infant Care, Internal Medicine and Excellence Specialties (PROMISE), University of Palermo, Palermo, Italy

**Background:** We compared dietary and lifestyle habits in a sample population living in the small cities of the Madonie Mountains (MM), Palermo's Province, an Italian area characterized by one of the highest prevalence of centenarians and in a sample of residents living in the Metropolitan Area of Palermo (PA) to highlight any difference of public health interest.

**Methods:** A cross sectional study was conducted administering an anonymous questionnaire in digital format since August 2022 and still ongoing.

The questionnaire includes items which explore socio-demographic features, lifestyle, eating habits and supplement use. A MD adherence score was calculated based on fruit, vegetable, red meat intake, and walking habit.

**Results:** Overall, 749 subjects were enrolled (RR 74%), with an average age of 38.6 years: 526 living in MM and 223 in PA.

Only 21% of sample showed good adherence to MD, with young individuals having a statistically significant lower adherence to MD.

Wholegrain flours consumption was found to be significantly associated with greater adherence to MD (Adj-OR: 2.04; CI95%:1.41-2.96)

Residents in MM showed a significantly higher consumption of fruits (61.2% vs 52% - Adj-OR:1.45; CI95%:1.06-2.00) and vegetables (80.7%vs.50.9% - AdjOR:4.02; CI95%:2.86-5.65), mainly coming from local or homegrown production.

Lastly, MM subjects were found to eat red meat mainly from local or household production as comparison with urban residents (Adj-OR:4.77; CI95%:3.32-6.85).

**Conclusion:** Our findings confirmed the central role played in dietary habits by local and household production.

Because of important role played by seasonality of fruits and vegetables and local production on MD food pyramid, data collected should encourage public health Authorities to promote proper lifestyle and nutrition also in Metropolitan Areas.

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### Mapping of the state-of-the-art and bottlenecks for the adoption of personalised preventive approaches in health systems

Sara Farina<sup>1</sup>, Nicolò Scarsi<sup>2</sup>, Tommaso Osti<sup>1</sup>, Cosimo Savoia<sup>1</sup>, Leonardo Villani<sup>2</sup>, Martina Porcelli<sup>2</sup>, Luigi Russo<sup>2</sup>, Roberta Pastorino<sup>2</sup>, Stefania Boccia<sup>2</sup>  
<sup>1</sup>Università Cattolica del Sacro Cuore Section of Hygiene, University Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>2</sup>Università Cattolica del Sacro Cuore

**Background:** Personalised medicine, especially in the field of prevention, is one of the priorities on the research agenda of the European Commission, which has funded the project "a Personalised Prevention roadmap for the future HEalThcare" (PROPHET), a Coordination and Support Action of the International Consortium for Personalised Medicine (ICPerMed). This project has the objective to support health systems in the implementation of innovative, sustainable, and high-quality personalised strategies for preventing chronic diseases. In the PROPHET context, a scoping review was performed to map the state-of-the-art and bottlenecks for the adoption of these approaches in health systems.

**Methods:** The search, which followed the latest PRISMA-ScR checklist, was conducted until November 2022 on Pubmed, Web of Science, Scopus, Google Scholar databases and national and international official repositories. All documents published in the last five years, concerning personalised prevention approaches for common chronic diseases were included.

**Results:** Of the 8990 results obtained, 18 articles were included. Among these, 30% concerned primary prevention, including genomic screening approaches for cardiovascular or cancer risk prediction; 55.5% were related to secondary prevention, i.e. cancer screening with omic biomarkers; 14.5% focused on tertiary prevention, encompassing pharmacogenomics and nutrigenomics. The main bottlenecks were data analysis and management, high costs of technology, education of healthcare workforce in omics science and public health literacy. However, limited examples of personalised prevention were in place in high developed countries, mainly limited to international-funded research projects.

**Conclusions:** Personalised prevention has great potential, both for improving the health of population and reducing the burden of chronic diseases on health systems. Several bottlenecks currently limit full implementation, but some approaches, especially including genomics, have been deployed in clinical practice. Therefore, it is necessary to ensure that personalised prevention is consistently adopted and becomes a priority on the health agendas of all countries in Europe and beyond.

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### Health seeking behaviour among cancer patients using Geographic Information System: A Mixed-Methods study from Western India

Garima Singh<sup>1</sup>, Pankaja Raghav<sup>2</sup>, Neeti Rustagi<sup>1</sup>  
<sup>1</sup>Lady Hardinge Medical College, New Delhi India, <sup>2</sup>All India Institute of Medical Sciences, Jodhpur

**Background and objective:** Cancer prognosis is dependent on early diagnosis and treatment as well as on awareness, beliefs, accessibility, and affordability of the health services. Delay in seeking health care by patients increases mortality risk. This study has been undertaken in rural Jodhpur (Rajasthan, Western India) to determine health-seeking behavior related to common cancers and the factors affecting them.

**Methods:** A community-based mixed-methods study was conducted in randomly chosen one-third villages (37 villages out of total 113 villages were included in the study) of Mandore block of Jodhpur. Data was collected from individuals diagnosed with cancer/their relatives. In-Depth Interviews (IDI) were conducted with frontline workers, cancer survivors, and their caregivers. A geographic information system (GIS) was also used to depict health care facilities accessed by cancer patients.

**Results:** A total 82983 population was covered in 37 villages. Among the population covered, 146 participants were diagnosed cancer cases. About one-third (34.2%) preferred alternative medicine along with allopathic medicine. The behavior of changing hospitals frequently was depicted maximum by patients suffering from primary brain tumors (62.5%, 5). Forty-five (31%) participants did not continue their treatment after initiation. From the content analysis of IDI, major factors for delays in health-seeking were misconceptions, superstitions, stigmatization, financial burden, miscommunication from doctors, no proper referral mechanism, unfelt need to visit healthcare. Awareness of risk factors was limited to tobacco and alcohol. None of the participants were aware of screening services provided and the benefits of screening services. Availability of initial treatment at peripheral centers, and training activities for frontline workers and teachers were the major recommendations to improve cancer prevention and control.

**Conclusions:** Alternative medicine usage was common among cancer patients.

Leaving treatment in-between was also observed among one-third of participants. Misconceptions, superstitions, stigmatization, financial burden were major factors enlisted for health-seeking delays.

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### The characteristics and outcomes of COVID-19 positive Haematology patients at a Tertiary Hospital in Western Cape South Africa

Lwando Maki<sup>1</sup>, Lwando Maki<sup>2</sup>, Vernon Louw<sup>3</sup>, Cecile Toit<sup>1</sup>, Kudakwashe Simba<sup>1</sup>, Erma Poulet<sup>3</sup>, Perry Loebeberg<sup>1</sup>, Yusrah Kheir<sup>1</sup>, Jenna Oosthuizen<sup>4</sup>, Karryn Brown<sup>1</sup>, Estelle Verburgh<sup>1</sup>

<sup>1</sup>University of Cape Town Barnard Fuller Building, Anzio Rd, Observatory, Cape Town, 7935 South Africa, <sup>2</sup>University of Cape Town The characteristics and outcomes of COVID-19 positive Haematology patients at a Tertiary Hospital in Western Cape South Africa, <sup>3</sup>University of Cape Town, <sup>4</sup>University of Cape Town Barnard Fuller Building, Anzio Rd, Observatory, Cape Town, 7935 South Africa

**Introduction:** Patients with haematological diseases, commonly have lasting immunodeficiency due to their disease or related treatments. Research suggests that COVID-19 positive patients with haematological diseases have worse outcomes than non-haematological patients however, there is limited data from Africa and South Africa.

**Methods:** A retrospective review of all COVID-19 positive patients with an existing Haematology diagnosis from January 2020 to April 2021 (encompassing two waves of COVID-19), at Groote Schuur Hospital. Descriptive and inferential statistics to evaluate data.

**Results:** A total of 53 patients with the haematological disease were identified (35 infected in the first wave and 18 in the second wave). Of these participants, 51% were male with a median age of 47.5 years (IQR:35.6-60.3); half were because of severe COVID-19 illness (47%), 28% were diagnosed during non-covid admission and 25% were outpatients. Lymphoma was the most common haematological diagnosis (45%), followed by those with cytopenias or myeloma/plasma cell disorders (each 13%). The majority of cases had more than one comorbidity (62%), were HIV negative (81%), were non-smokers (77%) and had an ECOG (Eastern Cooperative Oncology Group) score of 0 (40%). The most commonly reported symptoms were shortness of breath (53%), cough (51%) and fever (38%) while 17% of patients reported no symptoms. Prior to COVID-19 infection, 40 patients (75%) had a survival prognosis of >12 months of whom 13% succumbed to COVID-19. Of the 13 patients (25%) with a survival prognosis of

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### Challenges in access to care among diabetes patients during COVID-19 pandemic: A hospital based mixed method study

Namuna Shrestha<sup>1</sup>, KC Dirghayu<sup>2</sup>, Ingrid Miljeteig<sup>3</sup>, Krishna Aryal<sup>4</sup>  
<sup>1</sup>Public Health Promotion and Development Organization Nepal, <sup>2</sup>Public Health Promotion and Development Organization, <sup>3</sup>Bergen Centre for Ethics and Priority Setting in Health, Department of Global Public Health and Primary Care, University of Bergen Norway, <sup>4</sup>Bergen Centre for Ethics and Priority Setting in Health, Department of Global Public Health and Primary Care, University of Bergen Nepal

**Background:** The COVID-19 pandemic challenged the capacity of health system to deliver essential health services worldwide, including Nepal. Hindrances in access to care had substantial impact on people suffering from chronic non-communicable diseases (NCDs), and the most critical cases of COVID-19 were found among those with co-morbid. We aimed to identify challenges of diabetes mellitus (DM) patients in accessing health care during COVID-19 pandemic.

**Methods:** We conducted a hospital-based cross-sectional study using a mixed-method approach in two hospitals in Kathmandu, Nepal and interviewed 134 participants employing structured questionnaire in August - September 2021. Further, we conducted in-depth interview with patients (10) and key informant interview with service providers (5). Study received ethical approval from the national Ethical Review Board at Nepal Health Research Council. Quantitative data was analyzed using descriptive statistics. The audio records of qualitative interviews were transcribed, translated, and analyzed using thematic analysis.

**Results:** Many DM-patients struggled to access care, and 14% participants reported they were unable to get healthcare needed in previous two months. Among them, nearly 60% reported COVID-19 pandemic to be the cause. People from low socio-economic background, with chronic diseases, particularly elderly, and from rural areas were the ones most affected. Hindrance on follow up visits, delay in seeking care, fear of COVID-19 transmission and shortage of medications

were reported as main challenges. With fear of COVID-19 transmission many regular follow-up was missed; some reported later with very low sugar level and some with very high endangering them of severe complications.

Conclusion: Access to care for people with DM was affected due to COVID-19 pandemic with the effects mostly noticed among people from low-socioeconomic background. Distance modalities such as telemedicine and mHealth would help maintain the required access to care for patients with chronic NCDs such as DM during such emergencies.

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### Transforming multiple sclerosis care in Italy through Integrated Care Pathways and local networks of service providers. A survey on clinical centres

Tommaso Manacorda<sup>1</sup>, Michela Ponzio<sup>1</sup>, Federica Terzuoli<sup>2</sup>, Piero Lamendola<sup>2</sup>, Daiana Bezzini<sup>3</sup>, Mario Battaglia<sup>1</sup>

<sup>1</sup>FISM - Italian MS Foundation Italy, <sup>2</sup>AISM - Italian MS Society Italy, <sup>3</sup>University of Siena

Background and Objective: 240 specialised clinical centres (CCs) provide diagnosis and treatment of multiple sclerosis (MS) within the Italian National Health System (SSN). Mostly based in neurology departments, CCs were authorised in the mid '90s by SSN to administer the first Disease Modifying Treatments (DMTs). Increasingly widespread Integrated Care Pathways (ICPs) require CCs to coordinate multidisciplinary care and to ensure collaboration across hospital, community and social care for people with MS (PwMS). Understanding whether CC led local networks of services exist and what factors hinder of facilitate establishing them is key to design policies aimed at support transformation of MS care.

Methods: The Italian MS Society (AISM) carried out a survey in early 2022 inviting all Italian CCs. The questionnaire was designed in collaboration with an advisory board including representatives from the Ministry of Health, relevant professional bodies, academics and researchers.

Results: 70% of Italian CCs (n=169) completed the questionnaire and reported to follow 102,246 PwMS overall (77% of the estimated prevalent cases in Italy). 25% of participating CCs provide care based on a local ICP while 44%, 11% and 20% respectively mentioned a regional, an informal or no ICP. Presence of a local ICP was significantly associated with more collaboration with community and social care services and with reported existence of a local network of providers, compared both to no ICP and to regional ICP. Staff shortage and suboptimal IT infrastructure are reportedly the main factors hindering transformation.

Conclusion: Most CCs struggle to build relationship with other providers, especially with those farther from the hospital setting and the healthcare domain. A minority of CCs reports the existence of networks in MS services. Local ICPs are effective vehicles to formalize collaboration across hospital, community and social care providers, and to facilitate the leading role of CCs' in transforming MS care.

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### Association between diet and circulating bile acids in an Italian general population

Francesco Gianfagna<sup>1</sup>, Valentina Mascolo<sup>2</sup>, Giovanni Veronesi<sup>3</sup>, Selene Genova<sup>4</sup>, Paolo Lasalvia<sup>5</sup>, Ramona Maio<sup>6</sup>, Mauro Borella<sup>3</sup>, Simone Delaiti<sup>7</sup>, Andrea Mancini<sup>7</sup>, Kieran Tuohy<sup>8</sup>, Licia Iacoviello<sup>9</sup>, Marco Ferrario<sup>3</sup>

<sup>1</sup>EPIMED Research Center, University of Insubria, Varese, and Clinica Mediterranea, Napoli Italy, <sup>2</sup>Public Health School, University of Milano Bicocca, Milano Italy, <sup>3</sup>EPIMED Research Center, University of Insubria, Varese Italy, <sup>4</sup>Public Health School, University of Insubria, Varese Italy, <sup>5</sup>Department of Research, Fondazione IRCCS Istituto Nazionale dei Tumori, Milano Italy, <sup>6</sup>Occupational and Preventive Medicine and Toxicology, ASST Sette Laghi, Varese Italy, <sup>7</sup>Research and Innovation Centre, Fondazione Edmund Mach, Trento Italy, <sup>8</sup>School of Food Science and Nutrition, University of Leeds, Leeds United Kingdom, <sup>9</sup>EPIMED Research Center, University of Insubria, Varese, and Department of Epidemiology and Prevention, IRCCS Neuromed, Pozzilli Italy

Background and objective: Bile acids (BAs) are synthesized in the liver as primary BAs, to facilitate absorption of dietary fat. In the intestinal lumen, primary BAs are partially converted by gut microbiota in secondary BAs, then excreted to feces or reabsorbed in blood. Literature suggests that circulating BA levels could have effects on metabolic health and could be modulated by diet. We investigated the association between habitual diet and fasting levels of circulating BAs in Italian adults.

Methods: A subsample of 1080 subjects was randomly selected from the RoCAV

population-based study (men and women 60-75 years, recruitment period 2013-2016). Dietary habits (previous year) were collected using the EPIC questionnaire. BAs were measured from frozen plasma samples, collected after overnight fasting, using HPLC MS/MS. Cross-sectional association analyses between dietary data (dietary patterns and total food, macronutrient and food group intakes) and BA levels were performed using multivariable regression models.

Results: In the age- and sex-adjusted model, we found a negative association between total food intake and secondary BAs (for increase of 1 SD of edible part: Est=-0.14 SDs of BAs, p=0.0004) or specific BA (DCA, secondary: -0.14, p=0.0002; CDCA, primary: -0.13, p=0.0005). When total food intake was added as covariate, chronic alcohol consumption was associated with primary BAs (0.17, p=0.0002; wine: 0.13, p=0.0006), while not with secondary BAs, despite the dependence of secondary BAs on their substrates, the primary BAs.

Conclusion: These results showed associations between total food intake and fasting circulating BAs. Moreover, wine consumption was associated with selected BA groups, independently on total food intake. Further prospective studies should be designed to investigate the cause-effect relationship between diet and BAs, to establish circulating BA profiles as potential mediators of the effect of diet on health.

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### Public health interventions to promote oral health and well-being in patients with type 2 diabetes: a systematic review

Jacopo Garlasco<sup>1</sup>, Maanasa Koripalli<sup>2</sup>, Gemma Bridge<sup>3</sup>

<sup>1</sup>Department of Public Health Sciences and Paediatrics, University of Turin 5/bis, Via Santena, I-10126 Turin Italy, <sup>2</sup>Department of Epidemiology, Biostatistics and Occupational Health, McGill University, Montréal, Quebec, <sup>3</sup>York St John University Lord Mayor's Walk, York, YO31 7PJ United Kingdom

Background and objective: Poor oral health and type 2 diabetes mellitus (T2DM) are chronic conditions affecting a wide proportion of the population. Both conditions share many risk factors and are linked by a chronic inflammation state. This review aimed at identifying public health interventions that could promote oral health and diabetes control in patients with poor oral health and T2DM.

Methods: The systematic review was performed according to the PRISMA Statement and registered in the International Prospective Register of Systematic Reviews (PROSPERO registration: CRD42022310974). Seven electronic databases were searched (PubMed, Scopus, Embase, Web of Science, CINAHL, PsycInfo, Cochrane Library) from inception to 21 January 2022, and additional hand searching was performed across reviews' references. A qualitative analysis was conducted, including all primary studies on diabetic patients, about interventions whose effectiveness and/or feasibility was measured for at least one outcome related to oral health or T2DM.

Results: Of the 3153 records obtained after deduplication, 89 studies were considered eligible for inclusion. The most frequently evaluated outcomes were HbA1c and fasting glucose for T2DM, and parameters such as probing depth, bleeding on probing and clinical attachment loss for periodontitis. Most studies assessed the use of non-surgical periodontal treatment (especially scaling and root planing, sometimes corroborated by antibiotics): evidence confirmed effectiveness on periodontal parameters, but was more contrasting regarding T2DM outcomes. Three studies evaluated interventions involving group education for lifestyle modification, which showed to be effective on both outcomes. Also, community-based oral hygiene interventions and glycaemic control appeared to improve T2DM and periodontal outcomes.

Conclusions: A variety of interventions are described in the literature. Of those included in this review, many indicated that there is a potential opportunity to promote good oral health alongside T2DM. An integrated approach involving health education, oral hygiene and glycaemic control may offer synergic improvement of both conditions.

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### Risk stratification of non-communicable diseases with sars-cov-2 virus disease severity in Dubai, United Arab Emirates

Najwa Bastaki<sup>1</sup>, Basema Saddiq<sup>2</sup>, Mohamud Hussein<sup>3</sup>

<sup>1</sup>Dubai Health Authority Dubai Government Al-Jaddaf, AlNawras Road, Dubai, UAE United Arab Emirates, <sup>2</sup>University of Sharjah United Arab Emirates, <sup>3</sup>United Arab Emirates University

Background: During the COVID-19 pandemic, emphasis was placed on morbidity and mortality due to COVID-19 infections, with less emphasis on COVID-19 patients with comorbid non-communicable diseases (NCDs). The high rate of

people of underlying condition NCDs in the United Arab Emirates places the country at higher risk of disease infection and worse clinical outcomes.

**Objective:** This study aimed at determining the prevalence of non-communicable diseases among SARS-CoV-2 infected patients in Dubai, United Arab Emirates to identify predictors for COVID-19 disease severity and clinical outcomes.

**Methods:** A retrospective observational study was conducted on patients admitted to Dubai hospitals between January 28, and September 30, 2020. The clinical and demographic data for 34,687 hospital records were analyzed. Bivariate analysis determined associations between comorbidities and COVID-19 severity and multivariable logistic regression analysis identified predictors of COVID-19 severity.

**Results:** All co-morbidities were significantly associated with COVID-19 severity in the bivariate analysis ( $p < 0.05$ ) except for vitamin-D deficiency and chronic lower respiratory diseases. Patients with ischemic heart diseases (AOR: 2.08; 95% CI: 1.37, 3.15), pulmonary and other heart diseases (AOR: 2.13; 95% CI: 1.36, 3.32), and chronic kidney diseases (AOR: 1.81; 95% CI: 1.01, 3.25), had higher odds of severe COVID-19 symptoms. Suffering from multiple co-morbidities increased the odds of developing severe COVID-19 symptoms substantially in comparison to having only one co-morbidity, (AOR: 2.33; 95% CI: 1.37, 3.97) and (AOR: 1.52; 95% CI: 1.76–2.60) respectively.

**Conclusion:** This study demonstrates that COVID-19 patients with pre-existing comorbidities require continuous monitoring. The identification of risk factors associated with SARS-CoV-2 infection will facilitate the early identification of high-risk populations and ensure the most appropriate preventive measures and medical management for these patients.

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### Residential segregation, breast cancer mortality and the effect of a conditional cash transfer (bolsa família) programme: Results from the 100 million Brazilian cohort

Joanna Guimarães<sup>1</sup>, Julia Pescarini<sup>2</sup>, J Filho<sup>3</sup>, Andréa Ferreira<sup>3</sup>, Gervasio Santos<sup>3</sup>, M de Almeida<sup>4</sup>, Ligia Gabrielli<sup>5</sup>, Emanuelle Goes<sup>2</sup>, Dandara Ramos<sup>6</sup>, Mauricio Barreto<sup>2</sup>, Estela Aquino<sup>6</sup>

<sup>1</sup>Cidacs - Fiocruz, Salvador, Brazil Brazil, <sup>2</sup>Faculty of Epidemiology and Population Health, London School of Hygiene & Tropical Medicine, London, UK, <sup>3</sup>Cidacs - Fiocruz, Salvador, Brazil, <sup>4</sup>Gonçalo Muniz Institute - Fiocruz, Salvador, Brazil, <sup>5</sup>Secretaria de Saúde do Estado da Bahia - Centro de Diabetes e Endocrinologia do Estado da Bahia, Salvador, Brazil, <sup>6</sup>Instituto de Saúde Coletiva - Universidade Federal da Bahia, Salvador, Brazil

**Background and objective:** Women living in economically segregated areas are less likely to receive adequate breast cancer care and access community resources, which may heighten breast cancer mortality risk. We investigated whether the conditional cash transfer programme Bolsa Família (BFP) could mitigate the detrimental effects of living in segregated areas on breast cancer mortality.

**Methods:** We analysed data on 20,680,930 adult women from the 100 Million Brazilian cohort, linked to nationwide mortality registries (2004-2015). The association between women's residential segregation at the municipality level (using the dissimilarity index in tertiles: low/medium/high) and breast cancer mortality was analysed using Poisson regression adjusted for age, race/ethnicity, education, area of residence (rural/urban), municipality's area size and population density. Multiplicative interactions between residential segregation and BFP receipt (yes/no) were assessed.

**Results:** Breast cancer mortality rates were greater among women living in high (adjusted Mortality rate ratio=1.18, 95%CI 1.12-1.23) and medium (1.07, 1.03-1.12) vs low segregated municipalities. Women not receiving BFP had higher breast cancer mortality rates (1.12, 1.08-1.17) than BFP recipients. Stratified analysis by BFP receipt showed that among BFP recipients, women living in high vs low segregated municipalities had a 12% (1.12, 1.06-1.19) greater risk of dying from breast cancer; among non-recipients of BFP, the risk of dying for women living in high vs low segregated municipalities was 23% higher (1.23, 1.14-1.33) (P for interaction=0.008). When stratifying by the time in years receiving the benefit, associations between segregation and mortality were stronger for women receiving BFP benefit for less time (<4 years:1.10, 1.01-1.20; 4-7 years: 0.97, 0.89-1.07; 8-11 years:1.09, 0.95-1.25) (P for interaction<0.001).

**Conclusion:** Place-based inequities in breast cancer mortality due to residential segregation might be attenuated through the BFP, possibly by improving women's familial income and access to preventive cancer care services, leading to early detection and treatment and ultimately reducing mortality.

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### Unmet dental needs and impact on the oral health related quality of life of adolescents in Ibadan, Nigeria

Folake Lawal<sup>1</sup>, Ejiro Idiga<sup>2</sup>, Gbemisola Oke<sup>3</sup>, Taiwo Lawal<sup>4</sup>

<sup>1</sup>University of Ibadan University of Ibadan and University College Hospital, Ibadan, Nigeria <sup>1</sup>Department of Periodontology and Community Dentistry, University of Ibadan and University College Hospital, Ibadan, Nigeria, <sup>2</sup>University College Hospital, Ibadan, Nigeria, <sup>3</sup>University of Ibadan, Nigeria University of Ibadan and University College Hospital, Ibadan, Nigeria <sup>4</sup>Department of Periodontology and Community Dentistry, University of Ibadan and University College Hospital, Ibadan, Nigeria <sup>4</sup>University of Ibadan University of Ibadan and University College Hospital, Ibadan, Nigeria <sup>4</sup>Division of Paediatric Surgery, Department of Surgery, University of Ibadan and University College Hospital, Ibadan, Nigeria

**Background and objectives:** SUSTAINABLE DEVELOPMENT GOAL 3 (healthy life and general well-being for all) cannot be accomplished without focus on oral health of adolescents, a major segment of the population and transition to adulthood. Oral health is often neglected in developing countries despite being integral to general well-being. The objective of this study was to determine the unmet dental needs and evaluate the impact on oral health related quality of life (OHRQoL) of adolescents in Ibadan, Nigeria.

**Methods:** This cross-sectional study was conducted among 700 randomly selected adolescents attending 14 secondary schools in Ibadan. Data were obtained using pretested self-administered structured questionnaire and by oral examination. The Oral Health Impact Profile 5 (OHIP-5) was used to assess the OHRQoL of the adolescents. Oral examination included assessment of oral hygiene using the Simplified-Oral Hygiene Index (OHI-S), dental caries using the Decayed, Missing and Filled Teeth (DMFT) index, gingival bleeding, pathologic periodontal pocketing and traumatic dental injuries. Data was analyzed with SPSS and p value was

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### Non-communicable disease risk factors and mental health status among school students in nepal: a mixed-method study

Pratik Khanal<sup>1</sup>, Kiran Paudel<sup>2</sup>, Arpana Adhikari<sup>3</sup>

<sup>1</sup>Nepal Public Health Association Lalitpur, Nepal Nepal, <sup>2</sup>Institute of Medicine, Tribhuvan University Nepal, <sup>3</sup>Nobel College, Pokhara University, Nepal Nepal

**Background and objective:** This study aimed to determine the prevalence of behavioral risk factors of non-communicable diseases (NCDs) and mental health problems among school students. Perception of stakeholders regarding contributing factors and strategies to reduce the burden of NCDs and mental health problems was also explored.

**Method:** This study used explanatory sequential research method which included school-based survey with 415 higher secondary school students, four focus group discussions with students, and seven in-depth interviews with community stakeholders. The study was conducted in Kathmandu, the capital city of Nepal in between February-April 2021. Data collection tools included the WHO STEPS survey, Hospital Anxiety and Depression Scale, Insomnia Severity and Young's Internet Addiction Test. Both descriptive and inferential analysis was conducted for quantitative data while thematic analysis using deductive approach was done for qualitative data.

**Result:** The proportion of current alcohol users and tobacco users was 8% (10.8%-male and 4.7%-female) and 7.2% (11.7%-male and 2.1%-female) respectively. Fifty-seven percent students consumed fruits and vegetables less than five servings per day and 32.5% were physically active. Overall, 41%, 62.7%, 47.5%, and 48.2% had symptoms of depression, anxiety, insomnia, and internet addiction, respectively.

The stakeholders suggested strict implementation of tobacco and alcohol control regulations, subsidy on the price of fruits and vegetables, restricting junk foods, and establishment of parks and open spaces for promoting the physical activity to curb NCD risk factors. Similarly, interventions focusing on creating a safe space for sharing mental problems and ensuring the availability of mental health services at the community level was also sought.

**Conclusion:** This study found a considerable proportion of students with NCD risk factors and mental health problems. Policy makers and programmatic managers need to focus on both behavioral and environmental interventions for promoting physical and mental health of young people in Nepal.

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### Oral contraceptive use and breast cancer risk: A link beyond hormones

Sanne van Weers<sup>1</sup>

**<sup>1</sup>Maastricht University Netherlands**

Background: Breast cancer is a heterogeneous disease with distinct molecular signatures of disease aetiology, evidenced by the joint expression of molecular tumour markers. Differential effects of oral contraceptive (OC) use on breast cancer risk by molecular subtypes have been reported. This is the first meta-analysis to investigate the associations between OC use and subsequent breast cancer risk stratified by combined estrogen receptor (ER) and progesterone receptor (PR) status alongside the Luminal A and B subtypes, which additionally consider the human epidermal growth factor receptor 2 (HER2) status.

Methods: A systematic review and meta-analysis of case-control and cohort studies was conducted in PubMed and Web of Science. The odds ratios (ORs) were summarized using a random-effects model.

Results: Eleven studies were analysed. Random-effects meta-analyses revealed significant increasing effects for ever-users of OCs on ER-PR- breast cancer compared to never-users (OR = 1.30, 95% CI: 1.07 -1.56, p 4 years compared to never-users (OR = 1.74, 95% CI: 1.15-2.63, p 4 years is associated with an increased breast cancer risk, pertaining to the estrogen and progesterone double negative breast cancer subtype. Large-scale prospective observational studies comprising more comprehensive molecular signatures of breast cancer aetiology, including HER2 status, are needed.

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**The use of mobile app survey data to examine compliance with occupational smoking bans: A case study of seven countries**

Gabriela Gil<sup>1</sup>, Louisa Johnson<sup>2</sup>, Emmanuela Gakidou<sup>1</sup>, Luisa Flor<sup>1</sup>

<sup>1</sup>Institute for Health Metrics and Evaluation (IHME) Institute for Health Metrics and Evaluation (IHME), University of Washington, Seattle, WA United States, <sup>2</sup>Institute for Health Metrics and Evaluation (IHME)

Background and Objective: Secondhand smoke (SHS) endangers the health of individuals who do not smoke and poses a significant public health risk. Protecting individuals from SHS through smoking bans is a key tobacco control measure, but timely data on the degree of compliance is needed. We used a mobile app-based survey platform, Premise, to assess compliance with smoking bans in workplaces in Brazil, Indonesia, Mexico, the Philippines, South Africa, Turkey, and Venezuela. Methods: Data were collected through Premise between April and June 2022 for a minimum of 900 adult respondents meeting age and sex quotas. Countries represent diverse levels of tobacco control and smoking prevalence. In this descriptive analysis, we included only respondents who reported working outside their homes. Respondents were asked whether their workplace allowed smoking everywhere inside and how often and where they saw folks smoking at their workplace.

Results: Analysis samples ranged from 373 (South Africa) to 604 (Brazil). Respondents in Venezuela and South Africa reported the greatest proportion of workplaces with indoor smoking restrictions (97%), followed by Brazil, Mexico, and the Philippines (96%). 98% (Venezuela and South Africa) and 97% (Brazil) reported compliance with these restrictions. Reported compliance rates in Mexico and the Philippines were lower (94% and 96%, respectively). Indonesia (86%) and Turkey (93%) had the lowest rates of reported workplace indoor smoking bans, with compliance rates at 91% and 85%, respectively.

Conclusion: Our findings suggest that there are high levels of workplace smoking restrictions overall. However, even with high levels of tobacco control, lapses in compliance may still result in exposure to SHS in occupational settings, particularly in contexts with higher smoking prevalence. Despite the limitations of mobile app-based data collection, this study highlights the potential usefulness of such innovative approaches to capture real-time compliance to tobacco control measures in different contexts.

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**Public health and clinical utility of "dica" classification, "coda" score and fecal calprotectin in the management of patients with diverticular disease**

Gabriella Nasi<sup>1</sup>, Frank Lambert<sup>2</sup>, Francesco Di Mario<sup>3</sup>, Tomas Poskus<sup>4</sup>, Matthias Reichert<sup>5</sup>, Jaroslaw Regula<sup>6</sup>, Stefanos Bonovas<sup>7</sup>, Martina Sapienza<sup>8</sup>, Giovanni Brandimarte<sup>9</sup>, Antonio Tursi<sup>10</sup>

<sup>1</sup>Cristo Re Hospital - Rome Direction of Health Management Cristo Re Hospital - Rome Via delle Calasanziane 25 - 00167 Rome Italy, <sup>2</sup>Department of Medicine II Saarland University Medical Center Homburg Germany, <sup>3</sup>Gastroenterology Maggiore Hospital - Parma Italy, <sup>4</sup>Institute of Clinical Medicine Vilnius University Hospital Vilnius Lithuania, <sup>5</sup>Gastroenterology Medical Centre for Postgraduate Education Warsaw Poland,

<sup>6</sup>Gastroenterology Maria Sklodowska-Curie Memorial Cancer Centre Warsaw Poland, <sup>7</sup>Department of Biomedical Sciences Humanitas University Rozzano Italy, <sup>8</sup>Department of Life Sciences and Public Health Catholic University Rome Italy, <sup>9</sup>Internal Medicine and Gastroenterology Cristo Re Hospital - Rome Italy, <sup>10</sup>Territorial Gastroenterology Service ASL BAT - Andria Italy

Background and objective: The Diverticular Inflammation and Complication Assessment (DICA) classification and the Combined Overview on Diverticular Assessment (CODA) score are valuable prognostic tools for diverticulitis, providing new risk stratification tools useful for everyday clinical practice and also with a significant public health impact in terms of treatment effectiveness and decision making. Our aim was to assess the net benefit of management strategies based on DICA and CODA and to see whether fecal calprotectin (FC) can further aid improving risk stratification.

Methods: 871 participants with diverticular disease who underwent FC dosing were included in this international, multicentre, prospective cohort study. Survival methods for censored observations were used to estimate the 3-year risk of diverticulitis according to basal FC, DICA and CODA. The net benefit of management strategies based on DICA, CODA, and FC in addition to CODA, was assessed with decision curve analysis.

Results: FC was associated with the risk of diverticulitis at 3 years (HR per each base 10 logarithm increase: 3.29; 95% CI, 2.13-5.10) and showed moderate discrimination (c-statistic: 0.685; 0.614-0.756). DICA and CODA were more accurate predictors of diverticulitis than FC. However, FC showed high discrimination capacity to predict acute diverticulitis at 3 months, which was not maintained at longer follow-up times. A decision curve analysis, which incorporates the harms and benefits of using a prognostic model for clinical decisions, comparing the combination of FC and CODA with CODA alone did not clearly indicate a larger net benefit of one strategy over the other.

Conclusion: CF could be useful as a complementary tool to evaluate the early risk of diverticulitis in patients with long-standing diverticular disease in whom performing further colonoscopy is considered inconvenient or not feasible. In all other cases, management strategies based on the CODA score alone should be suggested.

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**Improving access and information with and for people with inflammatory bowel disease: co-design using the Ophelia (Optimising Health Literacy and Access) process**

Melanie Hawkins<sup>1</sup>, Wayne Massuger<sup>2</sup>, Hailey Fisher<sup>2</sup>, Christina Cheng<sup>1</sup>, Sanne Elbrink<sup>1</sup>, Ranjit Nadarajah<sup>1</sup>, Leanne Raven<sup>2</sup>, Richard Osborne<sup>1</sup>

<sup>1</sup>Swinburne University of Technology Australia, <sup>2</sup>Crohn's & Colitis Australia

Background and objective: The quality of care and information for people living with inflammatory bowel disease (IBD) in Australia is inconsistent, often sub-optimal, and does not meet the prevailing Australian IBD Standards. Crohn's and Colitis Australia (CCA), using the Ophelia (Optimising Health Literacy and Access) process, aims to co-design improvements to the delivery of information, services and resources with and for people with IBD and their carers.

Methods: Vignettes were developed from interviews (n=17) and cluster analysis outcomes of health literacy data from surveys (n=868). Using the vignettes in participatory co-design (online workshops and an online activity) with consumers (n=38) and health professionals (n=38), the Ophelia process facilitated the generation of ideas to improve access to IBD information and services. These ideas were collated and coded into specific activities then prioritised for implementation.

Results: Ideas generation with consumers and health professionals led to 883 ideas that were collated and coded (removing duplicates and grouping similar ideas) to 70 ideas. Of these, 29 were deemed within the scope of this CCA project, with 11 ideas already part of daily CCA business and 30 ideas allocated to other CCA projects or to future projects. Grouping of the 29 ideas into prioritised activities for implementation resulted in 13 activities in 3 categories: 1) National leadership (n=2 activities); 2) Improvement of services and access (n=1 activity); and 3) Improvement of information, tools, and processes for consumers (n=10 activities).

Conclusion: The ideas for improvement were derived from data generated by the intended recipients of the project activities and were grouped and prioritised for implementation by CCA. The program of work will forge pathways for health literacy development for CCA, its members, and the wider IBD community.

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**Forecasting smoking deaths to 2050: a forecasting analysis for**

### the global burden of disease study

Dana Bryazka<sup>1</sup>, Marissa Reitsma<sup>2</sup>, Stein Vollset<sup>1</sup>, Emmanuela Gakidou<sup>1</sup>

<sup>1</sup>Institute for Health Metrics and Evaluation United States, <sup>2</sup>Stanford University United States

**Background and objective:** Smoking caused 8.96 million deaths in 2022 worldwide, representing the second largest modifiable risk factor. Although global smoking prevalence declined by 34.8% since 1990, it remains high in many countries. The objective of our study is to forecast cause-specific smoking attributable deaths, under reference and alternative scenarios.

**Methods:** Our forecasts of cause-specific mortality to 2050 for 204 countries by age and sex are based on past trends in risk factors and other drivers of health from the Global Burden of Disease Study. Estimates of smoking attributable deaths use dose-response relative risk curves and continuous exposure distributions among both current and former smokers. In the reference scenario, we forecasted current and former smoking prevalence given past trends. To estimate avoidable deaths, we implemented a scenario eliminating smoking immediately. In this scenario, forecasted smoking attributable deaths are entirely due to past smoking exposure; the difference in deaths compared to the reference are deaths avoidable through tobacco control. Finally, we model an accelerated progress scenario that simulates linear elimination of smoking prevalence by 2050.

**Results:** If past trends persist, we estimate 12.2 million deaths due to smoking in 2050, with a cumulative 310 million deaths over the next 28 years. Of these, 162 million deaths are potentially avoidable. We estimate 84.0 million lives could be saved by 2050 with accelerated progress, 66.7% of which would be in lower- and middle-income countries. In this scenario, deaths due to cardiovascular disease and lung cancer will be reduced by 25.9% and 23.0%, respectively.

**Conclusion:** Smoking will continue to cause enormous health burden in the coming decade. Accelerated progress in tobacco control is necessary to maximize prevention of smoking deaths.

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### The effect of spirituality and health perception on screening behavior of people with and without a family history of cancer

Ali Özer<sup>1</sup>, Pinar Soylar<sup>2</sup>, Ali Özer<sup>1</sup>

<sup>1</sup>İnönü University Turkey, <sup>2</sup>Firat university Turkey

**Background:** Family cancer history increases the chance of developing cancer and contributes to all other risk factors. Our research question was: Do health perceptions and spiritual beliefs affect the participation of individuals with and without first degree relatives (FDR) in cancer screening?

**Methods:** A cross-sectional study was conducted in Elazığ, Turkey with 150 individuals (75 individuals without a family history of cancer and 75 individuals with a family history of cancer). Demographic characteristics, cancer screening behaviours, spiritual wellbeing and health perception of participants were measured through survey in in Firat University Hospital. Univariate analysis (independent t-test/chi-square test) was applied first to identify the candidate independent variables. Then, multivariate logistic regression was used to examine the association between independent variables and participation in cancer screenings.

**Results:** People with cancer in FDR participated more cancer screening such as mammography and colonoscopy than those without FDR ( $p=0.002$  and  $p=0.001$ , respectively). People with cancer in FDR participated have a better health perception of than without FDR ( $p=0.001$ ). Women (OR, 3.694; 95% CI, 1.207-11.301;  $p = 0.022$ ), perceived health (OR, 1.480; 95% CI, 1.290-1.697;  $p=0.001$ ), and spiritual beliefs (OR, 1.074; 95% CI, 1.028-1.122;  $p = 0.001$ ), were positively associated with the likelihood participating cancer screening.

**Conclusions:** Being a woman, spiritual beliefs and health perception are the main factors associated with screening participation. Future studies with large sample size are suggested to examine on cancer screening behaviours for Turkish at-risk populations due to family history.

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### Prediabetes in Delaware: a snapshot and a wake-up call

Sangeeta Gupta<sup>1</sup>

<sup>1</sup>Delaware State University, Dover, United States

**Background and Objective:** Prediabetes implies blood glucose levels being higher than normal—but not high enough to be diagnosed as diabetes. 1 in 3 American adults have pre-diabetes and more than 8 in 10 of them are unaware of their condition. Prediabetes can lead to heart disease, stroke, and type 2 diabetes. If detected early, prediabetes can often be reversed. Without aggressive lifestyle changes, 15 percent to 30 percent of people with prediabetes will develop type

2 diabetes within five years. The Objective of this study was to investigate the sociodemographic, behavioral, and comorbid chronic conditions in Delaware adults diagnosed with prediabetes.

**Methods:** We used Delaware Behavioral Risk Factor Surveillance System (BRFSS) data from 2018 through 2021 (N = 17,180). Descriptive statistics explored sociodemographic characteristics and comorbid chronic conditions in Delawareans with prediabetes. Data were weighted on the basis of Delaware population estimates accounting for the complex sampling BRFSS Methodology. **Results:** Overall, 10.5% (CI: 9.6–11.4) of Delaware adults reported prediabetes. Delawareans with prediabetes were more likely to be females; predominantly White; less educated, with low income, and less than 65 years of age. Prevalence of comorbid chronic conditions (angina, heart attack, stroke, arthritis, cancer chronic obstructive pulmonary disease and depression) was significantly higher as was the prevalence of obesity, tobacco smoking and lack of exercise among Delawareans with prediabetes. **Conclusions:** Results from this study puts a spotlight on a greater need for a rigorous diagnosis and screening for prediabetes in Delaware. Of great concern is the significantly higher prevalence of comorbid chronic conditions that can further complicate the management of prediabetes. This snapshot could serve as the driver of targeted public health programs to not only prevent but reverse prediabetes thus improving the overall health of Delawareans.

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### Road traffic injuries in the National Capital Region, Philippines (2011-2020)

Jonathan Guevarra<sup>1</sup>

<sup>1</sup>College of Public Health, University of the Philippines Manila, Manila, Philippines

**Introduction:** The burden of injuries due to road traffic is a major development and health issue in the Philippines, in general, and the National Capital Region (NCR), in particular. This current study is being conducted in order to describe the most recent trend (2011-2020) in road traffic injuries in the National Capital Region as well as to uncover information on why road traffic injuries continue to persist in spite of the fact that the national government has enacted statutes addressing road traffic injuries and road safety and crafted a national road safety plan **Objective:** Describe the trend (2011-2020) and risk factors in road traffic injuries in the National Capital Region, Philippines

**Methods:** Using secondary data obtained from a government agency from 2011-2020, proportion of yearly road traffic injuries were calculated. Key informant interviews shed light on risk factors contributing to road traffic injuries in the Metropolitan Manila, Philippines.

**Results:** The Results show that Quezon City had the highest road traffic fatality followed by Manila for the period under consideration. Motorcycle road crashes consistently topped the number of cases for fatal and nonfatal road collisions closely followed by incidents involving cars. Risk factors identified were mainly related to road safety behaviors, road infrastructures, vehicle conditions.

**Conclusions:** The trend in road traffic injuries continues to increase in the National Capital Region in the last decade with the exception of the year 2020 when the COVID 19 pandemic began. Motorcycle is the type of motor vehicle that is most commonly involved in road traffic injuries in the National Capital Region. Human, vehicular, and tenvironmental factors were contributors to road traffic mortality in the study site. A comprehensive road safety program needs to be put in place in order to address road traffic injuries in the National Capital Region, Philippines.

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### Perceptions of barriers towards dental appointment keeping among patients of a tertiary care setting: a mixed method exploration

Vineetha Karuveetil<sup>1</sup>

<sup>1</sup>Department of Public Health Dentistry, Amrita School of Dentistry, Amrita Vishwa Vidyapeetham, Kochi, India

**Background and objectives:** Dental appointment keeping is an important aspect of patient care, influencing the effectiveness of health care delivery. Since this behavior is setting-specific, a gap in knowledge is observed on the barriers to appointment keeping in a dental tertiary care center. Therefore, a sequential mixed method study was adopted to explore the barriers governing dental appointment keeping among patients reporting to a tertiary care setting and to assess the prevalence of missed dental appointments in a tertiary care center. **Methodology:** Quantitative data recorded six months of retrospective data on missed appointments in the center. Prevalence was estimated in percentages, and

descriptive statistics were used to summarize data. The Chi-square test was used to determine the association between categorical variables. For the qualitative arm, focus group Discussions and in-depth interviews were conducted among dental health professionals and patients. Data were transcribed, and thematic content analysis was performed using NVivo software.

Results: The prevalence of missed appointments in the tertiary care center was reported to be 8.4%. Education was negatively correlated with missed appointment rates. Barriers identified for appointment keeping include personal/health issues, socioeconomic status, health system, communication, and accessibility barriers. Qualitative data revealed information on the appointment systems, experiences, consequences, responsible factors, management, and prevention of missed appointments in a tertiary care dental center. Conclusions: and recommendations: Multiple barriers to dental appointment keeping in the tertiary care center are identified. Missed appointments are prevalent in the study setting, as dental treatments require multiple sittings to complete. Tailor-made interventions are suggested for tertiary care settings to manage and prevent missed appointments, thereby paving the way for successful health care delivery.

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### How does sugar-sweetened beverages consumption impact health costs in Brazil?

Mariana Menezes<sup>1</sup>, Joice Leal<sup>2</sup>, Aline Vegi<sup>3</sup>, Adriana Meireles<sup>3</sup>, Ísis Machado<sup>3</sup>

<sup>1</sup>Universidade Federal e Ouro Preto (UFOP), Ouro Preto, Minas Gerais, Brazil,

<sup>2</sup>Universidade Federal de Ouro Preto (UFOP), Ouro Preto, Brazil,

<sup>3</sup>Universidade Federal e Ouro Preto (UFOP), Ouro Preto, Brazil

Background and Objective: Scientific evidence suggests a relationship between regular consumption of sugar-sweetened beverages (SSB) and the increased prevalence of type 2 diabetes mellitus (DM2) and ischemic heart disease (IHD). Although this association has been well reported in the scientific literature, there are few studies that estimate the impact of this risk factor on the costs of health services, which subsidize the treatment of these diseases. Thus, this study aims to estimate the financial costs for the treatment of DM2 e IHD attributed to the consumption of SSB in the Brazilian Unified Health System (SUS) in 2019. Methods: This is a descriptive ecological study using secondary and public domain data. The costs of DM2 e IHD attributable to the consumption of SSBs were estimated from the Population Attributable Fraction (PAF), extracted from the Global Burden of Disease (GBD) 2019 study, whose parameters are the prevalence estimates of SSB consumption in the population, the relative risks related to the risk-outcome pairs, and the minimum risk exposure level. The PAF was multiplied to the total spent for treatment of DM2 and IHD in secondary and tertiary health care according to the Brazilian ambulatory and hospital healthcare information systems. The analysis were stratified by sex, age groups.

Results: In 2019, in Brazil, the treatment of attributed to the consumption of sugar-sweetened beverages costed US\$14,116,240.55. These costs were higher in males (US\$8,469,265.14) compared to females (US\$5,646,975.42) and greater for older age groups (over 60 years). Conclusions: This study revealed the high economic impact of high and medium complexity treatment of DM2 e IHD attributed to the consumption of SSBs in Brazil. The results demonstrated the urgency and the need for the expansion of public policies to reduce the consumption of SSBs in Brazil.

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### Prevalence and associated clinical factors of GERD (Gastroesophageal Reflux Disease) in Filipino hemodialysis patients: a cross sectional study

Kento Takahashi<sup>1</sup>

<sup>1</sup>Philippine College of Physicians, Tarlac City, Philippines

Objectives: This study aimed to determine the prevalence of GERD in Filipino patients on maintenance hemodialysis (HD) and to investigate demographic, clinical, and renal profiles of HD patients with and without GERD. Methods: This was a cross-sectional, multicenter study using a validated GERDQ questionnaire with a Filipino translation. Patients above 18 years-old undergoing hemodialysis as outpatients were included. A GERDQ score of  $\geq 8$  was regarded having GERD. Logistic regression analysis was conducted using variables which exhibited a significant correlation coefficient on two group comparison as factors, with the presence or absence of GERD as the dependent variable.

Results: Included in our analysis are 264 patients, from which 36 had GERDQ score of  $\geq 8$  (13.64% 95%CI 9.98-18.35). Factors associated with having score of  $\geq 8$  includes the following: (1) having CHD (COR 4.041, 95%CI 1.89-8.64,  $p < 0.001$ ), (2) being on insulin (COR 2.599, 95%CI 1.25-5.42,  $p = 0.011$ ), (3) anemia (COR 4.508, 95%CI 1.91-10.64,  $p = 0.001$ ) (4) diagnosis of both HTN and DKD (COR 3.853,

95%CI 1.15-12.96,  $p = 0.029$ ), (5) previous diagnosis of GERD (COR 6.655, 95%CI 3.18-13.91,  $p < 0.001$ ), (6) previous intake of antacids (COR 2.622, 95%CI 1.17-5.89,  $p = 0.020$ ), (7) those employed (COR 2.332, 95%CI 1.15-4.75,  $p = 0.020$ ) (8) alcohol consumption (COR 2.477, 95%CI 1.23-5.01,  $p = 0.012$ ), and (9) smoking (COR 2.405, 95%CI 1.19-4.86,  $p = 0.014$ ). Conclusions: The prevalence of GERD in Filipino HD patients from three centers in Tarlac City is 13.64% and may be associated with several clinical factors such as heart disease, insulin use, anemia, hypertensive and diabetic kidney disease, previous diagnosis of GERD, use of antacids, with employment, smoking, and alcohol use. A comprehensive understanding of relationship between these clinical factors awaits further studies in a larger number of patients. Keywords: prevalence, GERD, GERDQ, Filipino, Chronic Kidney Disease, hemodialysis

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### Prevalence and associated factors of hypertension among women in Southern Ghana: evidence from 2014 GDHS

Ahlem Silini<sup>1</sup>, Salsabil Rejaibi<sup>1,2,3</sup>, Majdi Zid<sup>1</sup>, Sarra Ben Youssef<sup>1</sup>, Nada Zoghalmi<sup>1</sup>, Rym Mallekh<sup>1</sup>, Ibrahim Ben Slema<sup>1</sup>, Nabil Ben Salah<sup>3,4</sup>, Hajer Aounallah-Skhiri<sup>1,2,3</sup>

<sup>1</sup>National Institute of Health, Epidemiology Department, Tunisia, <sup>2</sup>SURVEN, Research Laboratory, Nutrition Surveillance and Epidemiology, Tunisia,

<sup>3</sup>Medical Faculty of Medicine Tunis El Manar University, Tunisia, <sup>4</sup>Intensive Care Unit department, Center for Urgent Medical Assistance, Tunis, Tunisia

Background and Objective: Hypertension, coupled with prehypertension and other hazards such as high blood pressure, is responsible for 8.5 million death from stroke, ischemic heart disease, other vascular diseases and renal diseases worldwide. Hypertension is the fifth commonest cause of outpatient morbidity in Ghana. Some evidence has illustrated geographical variation in hypertension and it seems to have a heavy toll on women in southern Ghana compared to the north. This study seeks to determine the prevalence and associated factors of hypertension among women in southern Ghana using the most recent demographic and health survey (DHS) data set. Materials and Methods: This study used data of 5662 women from the current DHS data from Ghana that was conducted in 2014. Data were extracted from the women's file of the 2014 Ghana DHS. The outcome variable of this current study was hypertension and it was measured by blood pressure, according to guidelines of the Joint National Committee Seven (JNC7). Multivariable binary logistic regression analyses were performed to establish the factors associated with hypertension at the individual and community levels. Results: Prevalence of hypertension among women in southern Ghana was 16%. Women aged 40–44 years (aOR=8.04, CI=4.88–13.25) and 45–49 years (aOR=13.20, CI=7.96–21.89) had the highest odds of hypertension relative to women aged 15–19 years. Women with two births (aOR=1.45, CI=1.01–2.07) and those with three births (aOR=1.47, CI=1.01–2.15) had a higher likelihood of being hypertensive. Greater Accra women had higher odds (aOR=1.35, CI=1.02–1.79) of being hypertensive relative to the reference category, women from the Western region. Conclusions: This study has revealed the prevalence of hypertension among women in southern Ghana. The associated factors include age, parity, region, and occupation.

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### The feasibility of applying individual patient data to assess inequity in cancer treatment retention in Northern Ghana - early results

Chloe Tuck<sup>1</sup>, Abubakari Baba<sup>2</sup>, Richard Cooper<sup>1</sup>, Laura Gray<sup>1</sup>, Robert Akparibo<sup>1</sup>, Richmond Aryeetey<sup>3</sup>, Abdul Timoni<sup>4</sup>, Tampuri Rahman<sup>4</sup>

<sup>1</sup>School of Health and Related Research, University of Sheffield, United Kingdom, <sup>2</sup>Ghana Regional Health Directorate, Ghana, <sup>3</sup>School of Public Health, University of Ghana, Ghana, <sup>4</sup>Tamale Teaching Hospital, Ghana

Background: Cancer poses an increasing burden in the Africa, associated with an epidemiological transition. Despite the high contribution of preventable cancers, survival rates are low, reflecting limitations in screening, diagnosis, resources and treatment access. One reason for poor cancer outcomes in the Ghana is poor engagement with treatment. We previously conducted a critical interpretive synthesis of literature on access to cancer treatment in Ghana and found barriers across the social ecological system (Tuck et al., BMJ Open 2022). However, there was a gap in understanding what influenced treatment completion in the northern region. Objectives: 1. To assess the feasibility of using digital patient records to assess cancer treatment completion in Northern Ghana. 2. To apply the data to understand social, economic and demographic characteristics influencing completion of cancer treatment.

**Methods:** Secondary data analysis of routinely collected cancer treatment data, retrieved from the cancer registry of the Oncology Department of Tamale Teaching Hospital (TTH) (the largest referral hospital in the northern Ghana) will be undertaken. Variables required to perform analysis to address the study objectives include outcome variables: completion of chemotherapy and radiotherapy and explanatory variable: demographics and social economic status. These variables are currently being extracted from anonymised medical records of patients with cancer. Data will be cleaned and sorted in R. Descriptive analysis will estimate the proportions of patients completing chemotherapy and radiotherapy and logit regression conducted to identify characteristics associated with incompleteness. Finally, the feasibility of applying multi-level modelling approaches for the intersectionality of social characteristics will be assessed.

**Results:** The results will be presented as summary statistics for the single level and multiple level logit regression models to assess the discriminatory accuracy and intersectionality of characteristics on treatment completion.

**Conclusions:** The key findings and feasibility of using the clinical dataset in future equity research will be discussed.

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### Prevalence, awareness, treatment and control of diabetes among Iranian population: results of the national cross-sectional STEPwise approach to surveillance survey

Zhaleh Abdi<sup>1</sup>

<sup>1</sup>National Institute of Health Research, Tehran University of Medical Sciences, Tehran, Iran

**Background:** Diabetes as a leading cause of death imposes a heavy burden on health systems worldwide. This study investigated the prevalence, awareness, treatment and control of diabetes among Iranian population aged 25 to 65 years at the national level in 2021. **Methods:** Secondary data analysis was performed using data from a national population-based survey, STEPwise approach to surveillance (STEPS) for non-communicable diseases performed in across the country in both rural and urban areas. The survey had a sample size of 27874 individuals and performed by Iran's National Institute of Health Research (NIHR). Data were analyzed using descriptive statistics and a logistic regression model with odds ratio at a significance level  $\leq 0.5\%$ . Logistic regression was used to identify socio-demographic factors (i.e. gender, age, place of residence, wealth quintile and having health insurance) associated with the levels of diabetes mellitus control.

**Results:** The prevalence of diabetes was 14.2% among people with diabetes, 73.2% were aware of their condition and 68.1% were treated for this condition. Almost 27.4% of all diabetic patients had adequate glycemic control. In the multivariable logistic regression analysis, there was a significant relationship between female gender, older age, and living in urban areas with controlled diabetes ( $p < 0.001$ ). **Conclusions:** The prevalence of diabetes in Iran has increased over recent years, which is currently higher than the estimated prevalence of raised blood glucose worldwide. Despite the great awareness of the disease, receiving treatment and effective control of the disease are suboptimal. While several national policies to improve diabetes screening and care have been passed in recent years, it seems large gaps remain in disease detection and treatment. It is suggested that more attention be paid to the treatment and control of diabetes by NCDs national policies to prevent the growing burden associated with the disease.

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### Multilingual campaign encourages smoking cessation in Arabic.

Anette Jansson<sup>1</sup>

<sup>1</sup>Swedish Heart Lung Foundation, Stockholm, Sweden

**Background and objectives:** The COVID Pandemic had caused concern among many smokers after reports that smoking may be a risk factor for more severe disease with covid-19. To reach the general health benefits of smoking cessation, Sluta-Röka-Linjen (Quit smoking telephone line) and the Swedish Heart Lung foundation developed a joint campaign in Arabic. Statistics from the Public Health Authority show that foreign-born Swedes are over-represented among those infected by the coronavirus. Smoking is also more common among foreign-born, especially men.

**Methods:** The campaign reaches out to those who wanted to quit, both during and after the pandemic. Smoking contributes to unequal health. The campaign, which had by the name "Smoking cessation improves your health directly", highlighted the positive health benefits a smoking cessation entail. The campaign was run in social media such as Facebook, Instagram and Alkompis.se from May to September 2020. The message was focused on improvements a smoking cessation makes in the short and long term.

**Results:** The campaign has had a major effect on the number of new clients on the Stop Smoking line, especially in the Arabic-speaking. The Arabic-speaking clients increased by 1486. Compared with the same period last year, this is an increase of 754 percent. **Conclusions:** There seems to be a great potential to reach and a great willingness among the Arabic-speaking population to get help by telephone to quit smoking.

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### Content and quality of clinical practice guidelines for managing type 2 diabetes in India: a systematic review

Kaushik Chattopadhyay<sup>1</sup>, Oluwasegun Olujide<sup>1</sup>, Mariama Olujide<sup>2</sup>, Jo Leonardi-Bee<sup>1</sup>

<sup>1</sup>University of Nottingham, United Kingdom, <sup>2</sup>Waziri Shehu Gidado General Hospital, Nigeria

**Background and Objective:** Over the last few decades, India has witnessed an increase in the number of people with type 2 diabetes mellitus (T2DM). Consequently, several clinical practice guidelines (CPGs) have been developed to assist Western and traditional Indian medicine practitioners in managing this disease. This systematic review aimed to evaluate and synthesise the content and quality of these CPGs.

**Methods:** Several databases and sources were searched from inception to 20th May 2022, to identify CPGs for managing adults with T2DM in India. The screening of titles and abstracts and full texts, data extraction and quality assessment were conducted by two independent reviewers. Any disagreements were resolved through discussion or by involving a third reviewer. A data extraction tool from a previous study was adapted to extract the content of the included CPGs, and the Appraisal of Guidelines for Research and Evaluation II (AGREE II) tool was used to assess the quality of the included CPGs. A narrative synthesis was conducted. **Results:** Of 3350 records identified, 11 were retrieved for full-text screening and five CPGs were included in this systematic review - three focused on traditional Indian medicine (Ayurveda) and two focused on Western medicine. These two Western medicine CPGs contained comprehensive recommendations for managing T2DM but only one of these, the Research Society for the Study of Diabetes in India/Endocrine Society of India (RSSDI/ESI) CPG, was of high quality.

**Conclusions:** Only one CPG can be recommended for managing T2DM by Western medicine practitioners in India. Future CPGs, especially for traditional Indian medicine practitioners, should be developed and updated using the standard CPG manuals and quality appraisal tools.

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### Assessment of the Israeli healthcare system's functionality among Ultra-Orthodox Jews and Non-Ultra-Orthodox Jews

Anat Romem<sup>1</sup>, Ronit Pinchas-Mizrachi<sup>2</sup>, Beth Zalcman<sup>1</sup>, Zvika Orr<sup>1</sup>

<sup>1</sup>Jerusalem College of Technology, Israel, <sup>2</sup>Global Public Health Department, Jerusalem College of Technology, Israel

**Background:** Ultra-Orthodox Jews constitute approximately 13% of the Israeli population. A previous study based on the 2017 Central Bureau of Statistics (CBS) Social Survey found a lower level of trust in the Israeli healthcare system among ultra-Orthodox Jews compared to non-ultra-Orthodox Jews. During the COVID-19 pandemic, compliance rates with health regulations were relatively low among ultra-Orthodox Jews; numerous interventions were introduced to increase compliance. This study aimed to evaluate ultra-Orthodox Jews' and non-ultra-Orthodox Jews' assessment of the Israeli healthcare system's functionality based on data from the 2021 Social Survey.

**Methods:** Data collected from the 2021 CBS Social Survey examined the associations between sociodemographic variables and assessment of the healthcare system's functionality.

**Results:** 5995 Israeli Jews participated in the study, of which 81% were non-ultra-Orthodox Jews and 9% were ultra-Orthodox Jews. Associations between age, income, education, religious level, self-reported health status, feelings of discrimination in the previous year, and trust in the healthcare system and assessment of healthcare system functionality were found. 16.2% of non-ultra-Orthodox Jews and 27.4% of ultra-Orthodox Jews gave high scores to the functionality of the healthcare system. Multivariate regression showed higher scores of functionality among ultra-Orthodox Jews compared to non-ultra-Orthodox Jews (OR=1.89, 95%CI=1.87,1.91), even after adjusting for sex, age, income, education, self-reported health status, use of healthcare services, trust in the healthcare system, and feelings of discrimination in the previous year. Differences were found between the groups in relation to the position of the sociodemographic variables in predicting higher assessment of healthcare

system functionality.

Conclusions: Further research is required to investigate the changes that occurred in the level of trust in the healthcare system among different groups following the pandemic. These must also account for population-based interventions introduced by the healthcare system.

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### Assessment of women's autonomy towards oral care utilization and its association with cognizance, attitude, and oral hygiene practices in Sri Ganganagar, India

Manu Batra<sup>1</sup>

<sup>1</sup>Surendera Dental College & Research Institute, India

Background and Objective: Oral health, though an integral part of general health, yet it is accorded low priority and remains an issue of neglect. Gender disparity in Oral health-seeking behaviour and utilization of dental services have been observed, therefore understanding factors affecting among females is necessary. Women's autonomy which suggests the power to alter one's fate and environment, among other things may have a role in their dental health-care utilization in India. The objective of the study was to assess women's autonomy towards oral care utilization and its association with cognizance, attitude, and oral hygiene practices in Sri Ganganagar, India.

Methods: A cross-sectional study was conducted among 387 women aged 18 years or older who in Sri Ganganagar city, Rajasthan. Structured, pre-validated, and interviewer-guided questionnaires were used to assess women's autonomy, knowledge, attitude, oral hygiene practices, and dental care service utilization. Descriptive and inferential statistics were carried out.

Results: Out of total, 58.4 % of the women reported high level of autonomy, with more of urban than rural women. Out of these, 57.2% had high decision-making power at the household level and 51.4% had a high financial control and regular access to money. Women with a high level of autonomy had more cognizance, a more positive attitude, and better dental hygiene habits. Findings of logistic regression analysis revealed that women with high autonomy were 1.89 times more likely to utilize oral health services, whereas women with high knowledge were 1.17 times more likely and women with a positive attitude were 1.76 times more likely than those with a negative attitude to use oral health services.

Conclusions: Women's autonomy was found to influence along with knowledge, attitude, and oral hygiene practices the oral health-care service utilization.

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### Hysterectomy and thyroid cancer risk: a systematic review and meta-analysis

Irene Giacchetta<sup>1</sup>, Roberto Fabiani<sup>2</sup>, Patrizia Rosignoli<sup>2</sup>, Manuela Chiavarini<sup>3</sup>

<sup>1</sup>School of Specialization in Hygiene and Preventive Medicine, University of Perugia, Perugia, Italy, <sup>2</sup>Department of Chemistry, Biology and Biotechnology, University of Perugia, Perugia, Italy, <sup>3</sup>Department of Medicine and Surgery, University of Perugia, Perugia, Italy

Background: Incidence rates of thyroid cancer have increased considerably during the last two decades. Recent studies findings suggest that women who underwent a hysterectomy have an elevated relative risk of thyroid cancer. The aim of our review and meta-analysis is to summarize the evidence about the association between hysterectomy with or without oophorectomy and thyroid cancer risk.

Methods: PubMed, Web of Science, and Scopus database were searched for studies published up to May 2022. The PRISMA statement and MOOSE guidelines were followed. Data derived from selected studies were pooled using a random effects model. Heterogeneity was explored with chi-square-based Cochran's Q statistic and the I<sup>2</sup> statistic. Publication bias was assessed with Begg's and Egger's tests.

Results: Sixteen studies met the eligibility criteria. The pooled analysis showed a significantly 64% increment of thyroid cancer risk in association with any hysterectomy (OR 1.64, 95% CI 1.48–1.81; I<sup>2</sup> = 28.68%, p = 0.156). Hysterectomy without oophorectomy was a stronger predictor of risk than hysterectomy with oophorectomy. The pooled analysis of data regarding hysterectomy without oophorectomy showed a statistically significant increment of thyroid cancer risk by 59% (OR 1.59, 95% CI 1.43–1.77; I<sup>2</sup> = 31.32%, p = 0.178). Hysterectomy with oophorectomy was associated with an increase of thyroid cancer risk of 39% (OR 1.39, 95% CI 1.16–1.67; I<sup>2</sup> = 42.10%, p = 0.049). Significant publication bias was not detected.

Conclusions: Our findings might help with decision making around these surgeries. Additional research is needed to elucidate the biological mechanisms underlying this association.

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### Effectiveness and safety of self-management interventions among adults with type 2 diabetes mellitus in sub-Saharan Africa: a systematic review and meta-analysis

Naomi Carter<sup>1</sup>, Gamze Nalbant<sup>1</sup>, Prit Chahal<sup>2</sup>, Kaushik Chattopadhyay<sup>1</sup>

<sup>1</sup>Lifespan and Population Health, School of Medicine, University of Nottingham, United Kingdom, <sup>2</sup>Health Education East Midlands, United Kingdom

Background and Objective: There has been a rapid increase in the prevalence of type 2 diabetes (T2DM) in sub-Saharan Africa (SSA). Association with lifestyle factors make self-management strategies an integral part of managing T2DM, and these must be tailored to context. Several randomised controlled trials (RCTs) evaluating T2DM self-management interventions in SSA have been conducted. This systematic review therefore aimed to assess and synthesize evidence on the effectiveness and safety of self-management interventions among adults with T2DM in SSA.

Methods: The JBI systematic review methodology was followed. Several databases were searched for published and unpublished RCTs until 31st May 2021. The screening of titles and abstracts and full texts, data extraction and critical appraisal were conducted by two independent reviewers. Disagreements were resolved through Discussion or with a third reviewer. Data synthesis was conducted using narrative synthesis, followed by meta-analysis where feasible.

Results: Out of 1452 records identified, 16 and 12 studies were included in the systematic review and meta-analysis, respectively. Only 4 studies were assigned a 'yes' for more than half of the criteria in the standardised JBI critical appraisal tool for RCTs. Compared to usual care, self-management interventions did not reduce glycated haemoglobin (HbA1c) at 3 months. HbA1c was reduced at 6 months (490 participants, mean difference -6.45mmol/mol, 95% confidence intervals -9.98, -2.92), but not at 12 months. Three studies assessed health-related quality of life and one demonstrated an improvement (2762 participants). Three studies specifically reported no adverse events in relation to the trial interventions (1230 participants), whilst in the remainder this was not reported.

Conclusions: Self-management interventions for adults with T2DM in SSA appear to produce a clinically significant improvement in glycaemic control in the medium-term. Given the limitations of the available evidence and to strengthen the evidence base, high-quality RCTs should be conducted and reported.

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### Dental care during the COVID-19 pandemic at the São Gonçalo Unit of the Social Service of Commerce, Rio de Janeiro (Sesc-RJ)

Patrícia Neves<sup>1</sup>, Leila Franca<sup>1</sup>, Lígia Braganca<sup>1</sup>, Cláudia Coscarelli<sup>1</sup>

<sup>1</sup>Social Service of Commerce, Rio de Janeiro, Brazil

Background and Objective: The pandemic caused by the new coronavirus was decreed by the World Health Organization (WHO) on March 11, 2020. The Ministry of Health recommended maintaining only emergency dental care. In October 2020, a new ordinance guided the resumption of elective care. Dentistry at Sesc - RJ resumed services at the São Gonçalo Unit in July 2021. To report the experience of adapting the environment and training the oral health team at Sesc São Gonçalo - RJ, to carry out care safely for patients and professionals.

Methods: Biosafety training courses were held for the team and specific protocols were established for assistance during the pandemic.

Results: The care protocols were modified and, consequently, the number of patients was reduced. We have incorporated into our routine the measurement of the temperature of the team and patients, hand disinfection and the placement of a sanitizing mat at the entrance to the clinic. In addition to the PPE (personal protective equipment) already in use, such as a disposable cap, safety goggles, fabric lab coat and special shoes, we now use face shields, PFF2 or N95 masks, disposable lab coats and shoe covers, in the offices, the air conditioning remained off and the windows half-open. After the consultations, the surfaces were cleaned with quaternary ammonia.

Conclusions: Biosafety training and protocols established during the COVID-19 pandemic contributed to the safe resumption of care. Some changes proved to be positive and were maintained, such as extending the duration of consultations (which before the pandemic were 30 minutes, now to 1 hour) and the use of the N95 mask and face shield.

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### Consumption of energy drinks among Italian university students: a

**cross-sectional multicenter study**Francesca Gallè<sup>1</sup><sup>1</sup>University of Naples Parthenope, Italy

**Background and Objective.** Energy drinks (EDs) use is very popular, especially among youths. They usually contain caffeine, sugar, various additives and legal stimulants which can cause adverse effects. The aim of the study was to evaluate the prevalence of caffeinated EDs' consumption in a large sample of Italian undergraduates and its association with some of lifestyle-related risk factors. **Methods:** Students attending twelve public Italian universities were involved. Information on socio-demographic characteristics, EDs use and on health-related behaviors of participants were collected by the use of a web-based questionnaire. **Results:** A total of 2,165 students (median age 22, 69.6% F) participated to the study and 15.2% of them reported the use of caffeinated EDs in the last six months. ED users showed a higher proportion of males (47.4 vs 27.4,  $p<0.001$ ) and a higher father's educational level (36.2 vs 27.0 graduated,  $p=0.003$ ), came mainly from Northern universities (56.2 vs 46.3,  $p=0.004$ ) and from degree courses in the life sciences area (76.9 vs 74.7,  $p<0.001$ ), and lived in the university area. Besides, ED users reported higher median Body Mass Index values (22.1 vs 21.5,  $p=0.003$ ), less particular dietary regimens (58.7% vs 59.6%), higher levels of weekly moderate-vigorous physical activity (180 vs 120 min/week,  $p<0.001$ ) and participation in sport (52.6 vs 50.4,  $p<0.001$ ) and in team sports (25.7 vs 16.7,  $p=0.003$ ), and higher proportion of smokers (43.5 vs 30.1,  $p<0.001$ ) and alcohol drinkers (90.2 vs 84.0,  $p=0.005$ ). In the regression analysis male gender, diet, geographical area, tobacco smoke and type of sport were found to be associated with ED consumption. **Conclusions:** These findings highlight the need for increasing the awareness about the negative consequences of an excessive use of EDs among university students', especially in the most interested subgroups.

**Popul. Med. 2023;5(Supplement):A1534****DOI: 10.18332/popmed/165259****Combined association between physical inactivity and non-white skin color exacerbates the chance of diabetes during the COVID-19 pandemic: a population-based study in Brazil**Adriana Meireles<sup>1</sup>, Samara Moura<sup>2</sup>, Luiz Menezes-Júnior<sup>3</sup>, Júlia Carraro<sup>1</sup>, George Machado-Coelho<sup>2</sup>, Aline Batista<sup>2</sup>, Ana Sampaio<sup>2</sup><sup>1</sup>Department of Clinical and Social Nutrition, Federal University of Ouro Preto, Brazil, <sup>2</sup>Federal University of Ouro Preto, Brazil, <sup>3</sup>Graduate Program in Health and Nutrition, Federal University of Ouro Preto, Brazil

**Introduction:** The covid-19 pandemic has drastically impacted the daily lives of the population and changes in lifestyle patterns, such as reduced physical activity (PA). These new patterns may lead to changes in glycated hemoglobin (HbA1c) levels. Further, a racial-ethnic disparity of the pandemic's impacts is perceived, both with overall health care along with limited opportunities to be physically active. We assessed the association between HbA1c and physical inactivity (PI), stratified by skin color during social restriction. **Methods:** A population-based household seroepidemiological survey was conducted in two Brazilian cities. A face-to-face interview was conducted using a structured questionnaire in electronic format; sociodemographic questions, lifestyle habits, and health conditions were assessed. Blood draws were conducted to evaluate HbA1c levels. The practice of PA during leisure time was assessed categorically (active and inactive), according to the recommendations of the WHO. HbA1c was categorized into normal ( $\leq 6.4\%$ ) and diabetes mellitus ( $\geq 6.5\%$ ). The skin color was self-reported (white; non-white). The association between PI and HbA1c was performed by multivariate logistic regression stratified by skin color, and adjusted for age, sex, income and presence of comorbidities. The  $p$  values  $<0.05$  were considered significant. **Results:** 1685 individuals were analyzed, being the majority female (52.4%) and aged between 35-59 years (45.8%). About 73.9% of the study population was non-white, 69.1% had education less than 9 years and 41.2% of individuals had monthly income  $\leq 2$  minimum wages. In addition, during leisure time, 69.7% were physically inactive, 9.3% had diabetes mellitus. When performing the combined analysis between these two factors, we found that inactive and non-white individuals were 4.03 times more likely to be diabetic (OR=4.03; 95% CI: 1.57-10.2). **Conclusions:** In a combined analysis, non-white individuals and PI during social restriction were associated with altered HbA1c levels when compared to physically active white individuals.

**Popul. Med. 2023;5(Supplement):A1535****DOI: 10.18332/popmed/165319****Body Mass Index and physical activity habits: an observational study on modifiable risk factors for Noncommunicable diseases on students and employees of the University of L'Aquila**Annalucia Moretti<sup>1</sup>, Mario Muselli<sup>2</sup>, Giada Mastrangeli<sup>2</sup>, Giulia Battista<sup>2</sup>,Francesca Galassi<sup>2</sup>, Leila Fabiani<sup>2</sup><sup>1</sup>Department of Life, Health and Environmental Sciences, University of L'Aquila, Italy, <sup>2</sup>Department of Life, Health and Environmental Sciences, University of L'Aquila, L'Aquila, Italy

**Background and Objective:** Noncommunicable diseases (NCDs) are responsible for 74% of all deaths globally. These statistics will worsen in the next years for many reasons, including an increase in physical inactivity and a rise in overweight and obesity. Promotion of healthy lifestyles and prevention are powerful valuable tools to face chronic diseases. They can significantly reduce the risk of developing NCDs by adopting healthy habits, such as a healthy diet and regular physical activity. **Methods:** We selected a sample of 290 employees and 374 students at the University of L'Aquila who were examined for professional risks at the occupational medicine clinic. Data collected included age, sex, regular physical activity (Yes/No), and Body Mass Index (BMI). BMI was categorized into 4 groups: underweight ( $<18.5$ ), normal weight (18.5-24.9), overweight (25-29.9), and obesity ( $>29.9$ ).

**Results:** The average age was 25.0 years for students (male: female ratio 1:1) and 54.6 years for employees (male: female 2:1). In both categories the percentage of those who claimed to perform regular physical activity was similar (students: 63.5%, employees: 60.2%); males did more physical activity than females (68.3% vs 56.9%,  $p=0.003$ ). 15.0% of students and 42.6% of employees were overweight/obese, and there was a significant difference in the categories of BMI regarding age ( $p<0.0001$ ). In the whole sample, obesity prevalence was 4.4% in those claiming to perform regular physical activity, and 7.9% in those claiming not to perform regular physical activity ( $p<0.0001$ ). Moreover, males were more often overweight/obese (40.4%) than females (17.7%) ( $p<0.0001$ ). According to multinomial logistic regression, being male and older exposes to a greater risk of higher BMI. **Conclusions:** Promoting healthy lifestyles needs to cover all the modifiable behavioural risk factors to act effectively on intermediate risk factors, such as being overweight, for NCDs. Physicians should use all medical examinations to give education on healthy lifestyles.

**Popul. Med. 2023;5(Supplement):A1536****DOI: 10.18332/popmed/165373****Availability of B-type natriuretic peptide testing in Brazilian public health system**Ione Oliveira<sup>1</sup>, Andressa Braga<sup>2</sup>, Marisa Santos<sup>3</sup>, Bernardo Tura<sup>3</sup><sup>1</sup>Novartis Biociencias, Brazil, <sup>2</sup>Núcleo de Avaliação de Tecnologias em Saúde do Instituto Nacional de Cardiologia, Brazil, <sup>3</sup>Núcleo de Avaliação de Tecnologias em Saúde do Instituto Nacional de Cardiologia, Rio de Janeiro, Brazil

**Background and Objective:** Early detection of heart failure allows an evaluation of risk factors and adequate pharmacotherapy in order to postpone or reversing cardiac remodeling. The diagnosis of heart failure can be supported by B-type Natriuretic Peptide measures (BNP or NTproBNP). These test should be performed before the patient can have free access to sacubitril valsartan. Despite the important role in diagnosis of heart failure and access to specific treatment, a small number of tests were recorded in Brazil between 2020 and 2021. This study aims to assess the availability of B-type Natriuretic Peptide testing in primary health care in Brazil.

**Methods:** A cross-sectional study utilizing a telephone survey with 255 health departments among the 2849 counties available with primary health care units of medium complexity. Three telephone contact attempts were conducted with each municipality on alternating days, throughout the months of June and July 2022. After the unsuccessful attempts, the next county selected in the same region was contacted, and so on, until the necessary number of municipalities was attained. **Results:** The availability to perform these exams were recorded at 20.78% (53/255) of the municipalities and only 16.86% (43/255) the testing was carried out inside the county. These exams were unavailable in 78.03% (199/255).

**Conclusions:** there are more municipalities without access to the test than those who have perform it (16,86% (43/255) x 4,63% (132/2849)). It suggests that this exam is not solicited by physicians despite being offered in some counties. which could indicate that these professionals are unaware of its availability or about the Heart Failure diagnostic flow in Primary Care. The inability to perform these exams limits and delays Heart Failure's diagnosis and proper care. Furthermore, it increases inequities of the Brazilian Health System, posing questions concerning the plan for conditional drug reimbursement based on test results.

**Popul. Med. 2023;5(Supplement):A1537****DOI: 10.18332/popmed/165492****Sinonasal intestinal type adenocarcinoma: increased incidence in Portuguese woodworkers**

Lara Guedes<sup>1</sup>, Francisco Marques<sup>2</sup>, Clara Mota<sup>2</sup>, Roberto Estêvão<sup>2</sup>, Nuno Lousan<sup>2</sup>

<sup>1</sup>Public Health Resident at Baixo Tâmega Public Health Unit, Portugal,

<sup>2</sup>Tâmega e Sousa Hospital Center, Portugal

**Background and Objective:** Sinonasal carcinomas are rare, having an estimated world incidence of 0.5-1/100.000 individuals per year. Intestinal type adenocarcinoma (ITAC) account for 6-13% of these, but its incidence is around 1000 times higher among woodworkers, being recognized as an occupational disease. Our hospital serves a population of approximately 550.000 individuals, many of which are woodworkers. We aim to estimate the incidence of sinonasal ITAC in our area and to characterize the affected population.

**Methods:** We did a retrospective cohort study of all the patients diagnosed with sinonasal ITAC, in the otorhinolaryngology department of a Portuguese tertiary level hospital, between January 2018 and December 2022, and performed a descriptive analysis.

**Results:** In 5 years, 27 cases were diagnosed, 25 (93%) of which were or had been woodworkers. The median of ages was 64 years and 26 (96%) were men. In one of the two patients not exposed in the workplace, we could not find any link to wood dust, the other one had an husband that had a woodshop in their home. Nasal obstruction was the main cause of admission. The mean time between the first symptom and the diagnosis was 6 months, with 11 (41%) patients in stage T4.

**Conclusions:** Based on the global incidence of sinonasal ITAC, our hospital should have less than 1 case per year. However, in 5 years we diagnosed 27 patients, most of which in advanced stage (T3 or T4). With that in mind, we are planning a collaborative public health intervention in the most affected cities and wood companies to build community resilience through health promotion, empowerment and literacy.

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### Factors associated with muscle pain in university students during the online class period

Alberto Barrios<sup>1</sup>, Melissa Fernandez<sup>2</sup>, Irving Jarvio<sup>1</sup>, Josue Villegas-Dominguez<sup>1</sup>

<sup>1</sup>Universidad Veracruzana, Mexico, <sup>2</sup>Mexico

**Background:** During the COVID-19 pandemic, the world found it necessary to adapt its activities to reduce the risk of contagion, so many schools took their classes online, having the freedom to choose their position and place to take the classes. **Objective:** To determine the factors associated with musculoskeletal pain in university students during the online class stage.

**Methods:** a cross-sectional, prospective, observational, analytical study was carried out. University students from Veracruz, Mexico, between the ages of 18 and 35, who were in online classes, were included. Those who did not agree to participate were excluded. The main variables were the place where you take the class, the hours you spend sitting per day, the physical activity you practice, the presence of muscle pain and its characteristics.

**Results:** 1284 students from the main universities of the place participated, 60% indicated having some muscle pain, mainly in the lower back (47%) and neck (46.8%); 37% of the students with pain tried to correct their posture, 15.3% went to the doctor and 47.7% tried to solve the pain in an alternative way. The factors associated (OR/CI95%) with the prevention of muscle pain were being male (0.5/0.4-0.6), not working in addition to school (0.7/0.6-0.9), taking classes in a chair with a backrest in front of a table (0.7/0.5-0.9), spending a maximum of 5 to 6 hours sitting (0.7/0.5-0.9), while the risk factors for pain are taking classes sitting in bed (1.5/1.05-2.1), sitting 7 hours or more (1.4/1.1-1.8) and not doing physical activity (1.5/1.2-1.9).

**Conclusions:** Posture, physical activity and sitting hours are determining factors for presenting muscle pain, so education towards university students on postural hygiene and protective factors for pain should be taken into account, in order to reduce the prevalence of this pathology in similar academic situations.

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### Polychlorinated biphenyls in meat products and its effects on human health

Gholamreza Khaniki<sup>1,2</sup>, Nabi Shariatifar<sup>1</sup>, Parisa Sadighara<sup>3</sup>, Maral Neyestani<sup>1</sup>, Mahla Bayat<sup>1</sup>, Masoomeh Chooapan<sup>4</sup>

<sup>1</sup>Division of Food Safety and Hygiene, Department of Environmental Health Engineering, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran, <sup>2</sup>Iran National Science Foundation (INSF), Tehran, Iran,

<sup>3</sup>Division of Food Safety and Hygiene, Department of Environmental Health Engineering, School of Public Health, Tehran University of Medical Sciences,

Tehran, Iran, <sup>4</sup>Tehran H, Tehran, Iran

**Background and Objectives:** Polychlorinated biphenyls (PCBs) are a group of environmental chemical contaminants which is classified as a probable human carcinogen by the International Agency for research on cancer and the environmental protection agency. Studies of PCBs in humans have found increased rates of melanomas and cancer in liver, gall bladder, biliary tract, gastrointestinal tract, and brain, and may be linked to breast cancer. PCBs tend to be absorbed into the fat tissue and remain it for over years. The food products with high fat content such as meat products are one of the most important foods in the transfer of PCBs from environment to the human body which can cause a variety of diseases such as cancer, kidney disorders, neurobehavioral disorders, etc. The aim of this study is to measure the level of polychlorinated biphenyls (PCBs) in sausage meat products and its health effects. **Methods:** Thirty-two sausage meat products samples were collected from food stores and were sent to the laboratory for PCBs analysis by GC-MS Apparatus. Then, the statistical analysis was done on the data using excel and SPSS Software.

**Results:** The results showed that the average concentration of PCB28, PCB101, PCB52, PCB138, and PCB153 is 0.206, 0.708, 0.629, 0.562 and 0.600 Ppb, respectively. According to international standards, the maximum allowable level of PCBs in meat products is 40 Ppb, and the level of PCBs in all samples was lower than the allowable limit. **Conclusions:** It can be stated that the consumption of examined sausage is safe, but the continuous consumption of these meat products can introduce some of these compounds into the body over time. Therefore, it is recommended to carry out a risk assessment for children, adults and vulnerable people. Also, the monitoring program of PCBs in meat and meat products is periodically suggested.

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### Determinants of cardiovascular diseases among Indian expatriates residing in Ajman, UAE-A Pilot study

Akshay Ahuja<sup>1</sup>

<sup>1</sup>College of Medicine, Gulf Medical University, Ajman, United Arab Emirates

**Background and Objective:** UAE observes overweight/obesity, physical inactivity, high stress levels, smokers and unhealthy dietary practices are major determinants that influence the prevalence of heart diseases and comorbidities. Hence, this research assessed the determinants of cardiovascular diseases (CVDs) among Indian expatriates residing in Ajman, UAE.

**Materials and Methods:** This cross-sectional study was conducted among 279 Indian expatriates using self-administered questionnaire. The participants were recruited after obtaining consent from them. The SPSS version 27 was used for analysis. Chi square test was used to assess the association between dependent and independent variables.

**Results:** Among the respondents 54 (19.4%) had CVDs. Males reported having CVDs at a rate of 30 (24.6%) over the age of 40, compared to females at a rate of 24 (15.3%) over the same age. This correlation demonstrates that men are more prone to CVDs than women. This includes South Indians, 44 (33.1%): Other States, 10(6.8%); married people, 45 (35.2%): single people 9 (6%); family history of CVD (first-degree relatives); insufficient sleep: frequency of sleep: those who do not adhere to a regular sleep pattern; and those who don't exercise showed a statistically significant correlation.

**Conclusions:** The determinants such as age, gender, topography, family history of CVDs, regular sleep pattern, stress, energy drinks, red meat, alcoholism and physical exercise dispose adult Indians residing in Ajman, UAE to various CVDs. Age above 40 years, male gender, hailing from South Indian states, married, family history (first degree relatives), inadequate sleep, frequency of sleep, who don't follow a regular sleep pattern, and those who don't exercise showed a statistically significant association.

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### Assessment of pain/discomfort and their associated factors among cancer patients with chemotherapy in Bangladesh

Marufur Roshid<sup>1</sup>, Moshir Rahman<sup>1</sup>, Mohammad Sarker<sup>2</sup>, Jiaur Rahman<sup>1</sup>, Junaidi Prihanto<sup>3</sup>, Kaniz Eity<sup>4</sup>, Mehedee Masud<sup>4</sup>, Hitoshi Okamura<sup>1</sup>

<sup>1</sup>Graduate School of Biomedical and Health Sciences, Hiroshima University, Hiroshima, Japan, <sup>2</sup>International Centre for Diarrhoeal Disease Research, Bangladesh, Dhaka, Bangladesh, <sup>3</sup>Health Education, Health and Recreation, Sport Science Faculty, Universitas Negeri Surabaya, Indonesia, <sup>4</sup>Oncology department, Khwaja Yunus Ali Medical College and Hospital, Sirajgonj, Bangladesh

**Background and Objective:** Cancer-related pain/discomfort might be a potential

cause of persistent symptoms that have negative impacts or alter patients' quality of life (QOL). The aim of this study was to assess the pain/discomfort among cancer patients undergoing chemotherapy in Bangladesh. Methods: A hospital-based cross-sectional study was conducted on 415 cancer patients using a convenient sampling technique. Adult cancer patients' socioeconomic and self-reported EuroQol 5-Dimension 5-Level (EQ-5D-5L) data were collected between January 2022 and April 2022. Frequency and percentages were used to represent descriptive analysis, and Chi-Square test was performed to assess possible influencing factors with pain/discomfort.

Results: Among our respondent participants, 258 (68%) patients were in the age groups of 30-59 years, and most of them 272 (66%) were males. The majority 113 (27%) of the subjects was lung cancer, 169 (41%) had stage IV cancer, and 175 (42%) completed 3-4 chemotherapy cycles. In total, 131 (32%), 141 (34%), 85 (20%), and 47 (11%) patients reported slight, moderate, severe, and extreme pain/discomfort, respectively. The results showed significant associations of pain/discomfort with cancer stage ( $p < 0.001$ ), smokeless tobacco use ( $p < 0.001$ ), chemo cycle number ( $p = 0.001$ ), and work status ( $p = 0.001$ ). Conclusions: The majority of patients experienced pain or discomfort, which was associated with cancer stages, smokeless tobacco use, chemotherapy cycle number, and work status, resulting in a poor quality of life. We need to take the initiative in pain/discomfort management or health education interventions to reduce cancer survivors' pain or discomfort, which might enhance cancer survivors' QoL in the future.

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### Metal exposure and obesity in Chile: a cross-sectional analysis of the National Health Survey 2017

Alejandro Sepúlveda-Peñaloza<sup>1</sup>, Patricia Matus<sup>2</sup>, Cinthya Urquidí<sup>2</sup>

<sup>1</sup>Departamento de epidemiología y estudios en salud, Universidad de los Andes, Santiago, Chile, <sup>2</sup>Departamento de Epidemiología y Estudios en Salud, Universidad de los Andes, Santiago, Chile

Background and Objective: Chile is a low-middle-income mining country with an epidemiological transition. The prevalence of overweight/obesity reached 78%, and a small area analysis revealed a heterogeneous geographic distribution. These findings lead us to consider the population exposed to metals and their role in developing the disease.

Methods: From National Health Survey 2017 (NHS-2017), we characterized metal concentrations as measured in spot urine (arsenic, cadmium, and mercury) and blood (lead) samples in 15 administrative regions of Chile. The criterion for the detection of metals used by the NSH-17 was a minimum quantification of 5 µg/L for arsenic, 1 µg/dL lead, 1 µg/L cadmium, and 2 µg/L for mercury. We defined metal exposure according to its 50th percentile distributions over the minimum value recordable. Obesity was a body mass index  $>30$  kg/m<sup>2</sup>. Analyses accounted for the complex sampling design; obesity association was estimated through quasi-binomial models. We report prevalences (%), Odds ratios (OR) with 95% Confidence Intervals.

Results: Of 6233 subjects, 3847 (61.7%) had blood/urine samples. Four regions had the highest prevalences of exposure to any of the metals analyzed: Arica (63%, 52-74%) and Atacama (53%, 45-61%) from the north zones; Bio Bio (60%, 49-70%) from the central, and Magallanes (57%, 49-65%) from the south zone. Only a northern region of Chile had the highest prevalence of multiexposure to metals (Tarapacá 25%, 14-35%). OR for lead and obesity was 3.6 (1.18-11.12) in the Valparaíso region and 1.99 (1.04-3.83) in the Tarapacá region. Arsenic was associated with obesity in the Bio Bio (2.41, 1.11-5.94) and the Maule regions (2.51, 1.03-6.11).

Conclusions: This study reveals high-risk areas exposed to metal toxicity in Chile, with different patterns along the territory. This study also explores the external exposome theory in obesity origin, specifically in metal toxicity exposure, proposing the trade-off from curing to preventing obesity.

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### Serum selenium concentrations and adherence to the MIND diet in a Northern Italian population: a cross-sectional study

Tommaso Filippini<sup>1</sup>, Teresa Urbano<sup>1</sup>, Marcella Malavolti<sup>1</sup>, Sara Grioni<sup>2</sup>, Claudia Agnoli<sup>2</sup>, Sabina Sieri<sup>2</sup>, Bernhard Michalke<sup>3</sup>, Marco Vinceti<sup>1</sup>

<sup>1</sup>University of Modena and Reggio Emilia, Italy, <sup>2</sup>Epidemiology and Prevention Unit, Fondazione IRCCS Istituto Nazionale dei Tumori, Italy, <sup>3</sup>Research Unit Analytical BioGeoChemistry, Helmholtz Center Munich, German Research Center for Environmental Health, Germany

Background and Objective: The Mediterranean-dietary approach to stop

hypertension (DASH) Intervention for Neurodegenerative Delay (MIND) is a healthy dietary plan which showed protective effects on cognitive decline, cognitive performance, and dementia risk. Selenium is an element with nutritional and toxicological properties, whose role in neurological diseases is greatly debated. We aimed to perform individual-level selenium speciation analyses to understand the association of different selenium compounds (organic and inorganic) with MIND diet adherence.

Methods: We recruited healthy and non-smoking blood donors from Northern Italy referred to the Transfusion Medicine Unit of Reggio Emilia Hospital in 2017-2019 period. We assessed adherence to MIND diet using the semi-quantitative EPIC-food frequency questionnaire, and total selenium and its species in serum. We used cubic spline regression analysis to investigate the association between selenium compounds and adherence to the MIND diet.

Results: Out of 148 subjects, we performed serum speciation analyses 104 (males/females: 50/54), with median age 48.5 years. Median score of adherence to the MIND diet was 7.5 (interquartile range (IQR) 6.5-8.5), while median levels of total selenium were 116.5 µg/L (IQR 106.0-128.0 µg/L). Overall, we found that total selenium was negatively and linearly correlated with adherence to MIND diet, as in the case of organic selenium and the organic form selenoprotein P. Glutathione peroxidase-bound selenium and selenocysteine were U-shaped associated with MIND, with positive associations above 8-score. For inorganic selenium and specifically the selenate compound, an inverted U-shaped relation emerged with MIND diet, with negative relation above median level of adherence. Conclusions: Our results support the hypothesis that higher adherence to MIND corresponds to lower levels of selenium in serum, specifically selenoprotein P and selenate. Hence, these two compounds may have adverse effects on cognitive decline and dementia risk as suggested in recent studies.

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### Alcohol intake and risk of hypertension: a systematic review and dose-response meta-analysis of cohort studies

Marta Cecchini<sup>1</sup>, Silvia Federico<sup>1</sup>, Inga Iamandii<sup>1</sup>, Tommaso Filippini<sup>1</sup>, Marco Vinceti<sup>1</sup>

<sup>1</sup>University of Modena and Reggio Emilia, Italy

Background and Objective: Alcohol consumption is responsible of the global burden of disease and contributes to a number of diseases and deaths each year globally. Among the established adverse health effects of alcohol consumption there is hypertension. Our purpose is to assess the association between chronic alcohol exposure and incidence and mortality from hypertension in cohort studies, by carrying out a dose-response meta-analysis.

Methods: After performing a comprehensive literature search in PubMed and Embase through December 2, 2022, we retrieved 17 eligible cohort studies. We assessed the risk of bias of the studies and we used a restricted cubic spline model with three knots to model the prospective association between alcohol consumption and incidence of hypertension.

Results: We observed a linear positive association between alcohol exposure and hypertension risk, which in sex-specific analysis was confirmed only in males. Conversely, in females an increased risk emerged only above 12 g of daily alcohol intake.

Conclusions: Our results support a causal association between alcohol intake and the risk of hypertension, thus adding to the evidence recommending to decrease any amount of alcohol consumption in order to improve cardiovascular health. While any amount of alcohol use appeared to be detrimental in males, this may not be the case for females in case of low amounts of consumption.

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### Tea and coffee consumption and risk of dementia: a systematic review and dose-response meta-analysis

Elena Mazzoleni<sup>1</sup>, Andrea Rossetti<sup>2,3</sup>, Tommaso Filippini<sup>2,3</sup>, Marco Vinceti<sup>2,3</sup>

<sup>1</sup>Environmental, Genetic and Nutritional Epidemiology Research Center (CREAGEN), Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>CREAGEN - Environmental, Genetic and Nutritional Epidemiology Research Center, Italy, <sup>3</sup>Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy

Background and Objective: Dementia is a chronic progressive disease characterized by multifactorial aetiology. Among the factors of greatest interest for prevention is lifestyle, including dietary habits. In particular, tea and coffee are still a matter of debate, being associated both with protective and detrimental effects. The aim of our study is to assess the relation between tea and coffee

intake and risk of developing dementia through a dose-response meta-analysis based on cohort studies.

Methods: We performed a literature search in PubMed and EMBASE databases up to 28 November 2022. Inclusion criteria were: population without chronic diseases or previous dementia diagnosis, cohort study design, assessment of tea or coffee intake by increasing categories of exposure, assessment of incident dementia risk. Exclusion criteria were: type of study (non-cohort), type of publication (letters, commentaries and systematic reviews), missing information about exposure level for tea and coffee in each category. For statistical analysis, we used cubic splines through a non-linear random-effects regression model (drmeta routine in Stata/SE 17.0).

Results: We identified 9 articles published between 2009-2021, 1 assessing tea consumption, 6 coffee and 2 both. As the amount of tea consumed increases, risk of dementia decreases progressively. Conversely, we found a U-shaped association between coffee intake and dementia risk: as the number of cups of coffee consumed increases, the risk of dementia decreases progressively up to two cups of coffee (approx. 300 mL) per day, whereas as the daily amount increases, there is a reversal up to five cups (approx. 750 mL) per day.

Conclusions: Moderate coffee intake appears to have a protective effect, while intake in higher amounts seems to increase the risk of dementia. Concerning tea, the relation is almost linear in a protective way.

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### The role of health literacy as a factor associated with tooth loss

Marília Batista<sup>1,2</sup>, Carla Tenani<sup>3</sup>, Manoelito Silva-Junior<sup>4</sup>, Carolina Lino<sup>5</sup>, Maria Sousa<sup>5</sup>

<sup>1</sup>Department of Community Health, Jundiai Medical School, São Paulo, Brazil, <sup>2</sup>Department of Health Sciences and Child Dentistry, Piracicaba Dental School, University of Campinas (UNICAMP), São Paulo, Brazil,

<sup>3</sup>Faculdade de Odontologia de Piracicaba, Universidade Estadual de Campinas, Brazil, <sup>4</sup>Department of Healthy, State University of Southwest Bahia (UESB), Brazil, <sup>5</sup>Department of Health Sciences and Pediatric Dentistry of the Piracicaba Dental School, State University of Campinas, Brazil

Objective: The objective was to analyze the role of Health Literacy (HL) as a factor associated with tooth loss among users of the Brazilian Health System with chronic non-communicable diseases. Methods: The cross-sectional study was conducted with adult and elderly users at ten Family Health Clinics in the town of Piracicaba, São Paulo State, Brazil. A questionnaire was applied with sociodemographic (sex, age, skin color and education), behavioral (brushing and flossing), health determinants (dental health services) and clinical data (pain). Mouth conditions were collected by intraoral examination of visible dental biofilm and community Periodontal Index. The systemic clinical conditions (blood glucose, glycated hemoglobin and blood pressure) were extracted from the medical records. The explanatory variable was HL (low, medium and high), measured with the Health Literacy Scale (HLS-14).

Results: The outcome was tooth loss measured by the index of decayed, missing and filled teeth. Logistic regression was performed using a conceptual model for HL ( $p < 0.05$ ). For the 238 subjects, the mean age was 62.7 years ( $\pm 10.55$ ). Tooth loss was associated with HL in regression models adjusted by type of dental service, dental frequency, and dental floss. In the final model, the factors associated with tooth loss are older age (OR=1,12; 95%CI=1,07–1,17), a lower education (OR=3,43; 95%CI=1,17–10,10), irregular use of dental floss (OR=4,58; 95%CI=1,75–7,31), irregular use of dental services (OR=2,60; 95%CI=1,32–5,12), periodontal pocket (OR = 0,31; 95% CI 0,01–0,08), having visible dental biofilm (OR=7,23; 95%CI=3,19–16,41) and a higher level of blood sugar (OR=1,98; 95%CI=1,00–3,92). Conclusions: Tooth loss was associated with HL when adjusted by health behaviors; when sociodemographic variables and clinical conditions were included, it was less significant. In the final model, behaviors, determinants in health and clinical conditions were risk indicators of tooth loss, showing the multifactorial nature of this phenomenon.

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### Body shape trajectories are associated with birth weight, current body mass index and sociodemographic conditions in participants of the Brazilian Longitudinal Study of Adult Health (ELSA-Brasil): a multiple correspondence analysis

Isiyara Pimenta<sup>1</sup>, Maria Fonseca<sup>1</sup>, Maria Fonseca<sup>1</sup>, Rosane Griep<sup>2</sup>, Sheila Matos<sup>3</sup>, Maria Diniz<sup>4</sup>, Arlinda Moreno<sup>1</sup>

<sup>1</sup>National School of Public Health, Oswaldo Cruz Foundation, Brazil,

<sup>2</sup>Laboratory of Health and Environmental Education, Oswaldo Cruz Institute,

Oswaldo Cruz Foundation, Brazil, <sup>3</sup>Institute of Collective Health, Federal University of Bahia, Brazil, <sup>4</sup>Federal University of Minas Gerais, Brazil

Depending on body shape trajectory, individuals may be more prone to develop chronic diseases in adulthood or older age, so the identification of factors associated with this is essential for encouraging the development of preventive public health strategies. This study was conducted among 14,014 participants in the first follow-up wave (2012-2014) of the Longitudinal Study of Adult Health (ELSA-Brasil). Participants were asked to identify their body shapes at 5, 10, 20, 30 and 40 years of age by choosing one of the nine silhouettes developed by Stunkard (1983) and we applied a clustering method to longitudinal data (kmlShape) to identify body shape trajectories from 5 to 40 years of age and assessed the associations between these and sociodemographic (self-reported race/skin colour, education, maternal education and monthly per capita family income) and health-related factors (body mass index and birth weight) using multiple correspondence analysis. Low birth weight was associated with a slight to moderate increase in shape between 5 and 40 years of age. High birth weight was associated with maintaining large body size in both sexes and markedly increased body shape from age 5 to 40 years in women. Higher sociodemographic status and white self-reported race/skin colour were associated with marked increases in body shape in men and maintenance of medium body shape in women. As far we know, this is the first study to verify the relationship between sociodemographic and health-related variables and body shape trajectories evaluated by silhouette scales. The study shows that variables related to worse lifetime weight status (evaluated by anthropometry), such as presence of obesity, are also associated with worse body shape trajectories, as assessed with silhouette scales. The results thus indicate that body shape trajectories are a good indicator of body weight trajectories and may be used when cohort studies are not possible.

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### Cycling in Czechia: associations with cardiometabolic and mental health

Elena Vitteková<sup>1</sup>, Geraldo Neto<sup>2</sup>, Juan Rivas<sup>1</sup>

<sup>1</sup>Faculty of Medicine, Masaryk University, Brno, Czech Republic Kamenice 5, 625 00 Bohunice Czech Republic, <sup>2</sup>International Clinical Research Center (ICRC) of St Anne's University Hospital (FNUSA) Pekařská 53, 602 00 Brno Czech Republic

Background and Objective: Insufficient physical activity is one of the leading risk factors for mortality in Czechia. Cycling is one of the most popular physical activities worldwide. Despite its repeated health-related benefits, there is a lack of evidence about the prevalence, cardiometabolic, and mental components associated with this activity in the Central European region. This study aims to determine the prevalence of cycling regularly (150 min/week) in a population-based survey of Czech adults and its association with cardiometabolic and mental health factors.

Methods: Data are from the KardioVize project, a population-based cross-sectional study with a random sample of 1% of the adult population (25-64 years) from Brno, Czech Republic. The multiple linear regression was applied to assess the association of cycling with different health outcomes. The fully adjusted model included age, sex, educational level, income, body fat percentage, relationship status, alcohol consumption, smoking, specific medication use, the season of assessment and non-cycling physical activity.

Results: In total 2,109 subjects were included. The prevalence of cycling 150 min/week was 8.2% (n=174) and was higher in men. Regular cycling was significantly

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### Mortality trends in cardiovascular diseases in belgrade and perspective

Gordana Tamburkovski<sup>1</sup>, Svetlana Mladenovic Jankovic<sup>2</sup>, Svetlana Miltenovic<sup>3</sup>, Aleksandra Andric<sup>3</sup>

<sup>1</sup>Institute for public health of Belgrade Public Health Association of Serbia "Vladimira Čopića 51 Belgrade" Serbia, <sup>2</sup>Institute for public health of Belgrade, <sup>3</sup>Institute for public health of Belgrade, Bulevar despota Stefana 54a, Serbia

Background & Objectives: Cardiovascular diseases (CVDs) are one of the global leading causes of concern due to rising prevalence and mortality. The objective was to assess structure and trends in CVDs mortality in Belgrade over last 10 years. Examining these trends is part of broader analysis, important for planning local interventions for prevention of noncommunicable diseases.

Methods: CVDs mortality rates were calculated based on data from Population Register for diseases of major public health importance, maintained by Informatics

Unit in Institute for Public Health of Belgrade. Trends were analyzed by age, sex and type of CVD, for the period 2012-2021. Retrospective analysis was performed. Results: CVDs were the most common causes of death in Belgrade, with 37,6% in total mortality in 2021. The highest share of mortality is in population aged 65 and over (89,5%). Death rates per 100.000 population were higher in women, increased in both sexes during 10-year period, more pronounced in male. Cerebrovascular diseases and ischemic heart diseases (IHD) make almost one third in total CVD mortality (29,1%), predominantly in age group of 65 and over (88,4%, 86,8% respectively). Mortality rates from cerebrovascular diseases decreased by 44,0% among females and by 37,1% among males. Acute coronary syndrome (ACS) accounts for 68,6% of all IHD deaths, downward trend of mortality was more pronounced in man, by 22,9%, compared to 2,8% in women. Remaining 70,9% of CVDs deaths, includes high blood pressure diseases, cardiomyopathies, heart rhythm disorders, insufficiency and cardiac arrest, recorded an increase in mortality rates in both sexes.

Conclusion: Increase in overall mortality in Belgrade from CVDs was noted. Mortality rates from IHD and cerebrovascular diseases declined, but are still high in age group 65 years and older. Special attention should be paid to risk factors for CVDs, such as overweight and obesity, smoking, sedentary habits and unhealthy diet.

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### Factors influencing shisha smoking among youths 15-35 years in juba city council, South Sudan

Rhoda Elia<sup>1</sup>, Nancy Poni<sup>2</sup>

<sup>1</sup>UNICEF, Nutritionist, Nyarkuron West Residential area, Sudan, <sup>2</sup>WFP, Public Health Practitioner, "Munuki Block C, Mia Saba Road - Juba South Sudan, N/A", Sudan

Background: Shisha smoking is one of the major preventable causes of premature death in the world and recent trends indicate raising smoking prevalence rates among children and adolescents and earlier ages of initiation, if these patterns continue, tobacco use will result in deaths of 250 million children and adolescents alive today, many of them in developing countries (WHO 2013).

The Objective Of The Study

The main objective of the study was to determine the factors influencing shisha smoking among youths 15-35 years in the period of October to November 2022. The specific objectives were to determine the prevalence of shisha smoking, to identify the socio-demographic, socio-economic, and environmental factors influencing shisha smoking among youths in Juba City Council.

Methodology: A cross-sectional study used convenience sampling to obtain 110 respondents in the 3 payams of Juba City Council from July to August 2016. Both Quantitative and Qualitative data collection were used with a key informant guide. Pearson Chi-square and Multiple logistic regression models were used to strengthen the association respectively at a 95' confidence interval between shisha smoking and the independent variables.

Results: The prevalence of shisha smoking among youths 15-35 years was 30.9%. The socio-demographic factors; gender ( $X^2=3.553$ ,  $P\text{-Value}=0.031$ ) residence ( $X^2=5.069$ ,  $P\text{-value}=0.036$ ), socioeconomic factors; level of education ( $X^2=33.835$ ,  $p\text{-value}<0.001$ ) and employment status ( $X^2=20.965$ ,  $P\text{-value}<0.001$ ), environmental factors; shisha advertisement ( $X^2=9.339$ ,  $P\text{-value}0.002$ ), relatives who smoke ( $X^2=14.611$ ,  $P\text{-value}=0.000$ ), family support for shisha smoking ( $X^2=20.790$ ,  $P\text{-value}=0.000$ ) and friends who smoke shisha ( $X^2=9.384$ ,  $P\text{-value}0.001$ ). Influenced shisha smoking among youths in Juba.

Conclusion: The prevalence of shisha smoking among youths in Juba City Council is high. Socio-demographic, socio-economic and environmental factors, gender and residence, level of education, employment status, shisha advertisement, relatives and friends who smoke shisha, and family support for shisha smoking were the factors that influenced shisha smoking.

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### Prevalence and determinants of musculoskeletal problems among university students in Ajman UAE

Jayakumary Muttappallymyalil<sup>1</sup>, Smirit Tribhuvan<sup>1</sup>, Savitran Eshwar<sup>1</sup>

<sup>1</sup>HDPCS Program, Faculty College of Medicine, Gulf Medical University, Ajman, UAE

Background: Musculoskeletal disorders is a major public health issue. Musculoskeletal pain is one of the major reasons for decrease in the attendance in the class.

Objective: To determine the prevalence and factors of musculoskeletal pain among university students in Ajman UAE.

Materials and Methods: This research was conducted among medical university students from year one to five. A total of 1008 students participated. An online self-administered questionnaire was used. In addition to socio-demographic details and factors, the Nordic questionnaire was used to obtain information to achieve the objectives. SPSS version 27 was used for analysis. Association between dependent and independent variables were assessed using Chi-square test. Statistical significance was set at  $p<0.05$ .

Results: The sample size of this research was a total of 1009 students. Out of which 978 students had responded with issues with one of the listed common sites.

All the participants were of age group 18-30. Most students had a issue in their neck-978 (97%), Upper back- 396 (39.3%), Lower back- 976 (96.8%), Hips/thighs-518(51.4%), Knee-431(42.8%), ankle/feet-342(33.9%) .

The socio-demographics table shows that 97.5% of male and 99.45 female are effected with musculoskeletal disorders in the last 12 months. With a 99% of the students from EMRO region. Most of the students from other courses have a 100% response as YES, with a exception to college of medicine 97% students effected. It is determined that the ergonomics of students is mostly neglected which leads to musculoskeletal problems among students.

Conclusion : The objective to determine the prevalence of musculoskeletal pain among University students is proved and the data obtained is indicating the same.

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### The effect of visual-based health education on the Perception and Willingness To Pay (WTP) on Human Papillomavirus (HPV) Vaccination among Male Chinese University Students in Hong Kong SAR: a pre-post interventional survey

Eliza Wong<sup>1</sup>, Clement Ng<sup>1</sup>, Annie Cheung<sup>1</sup>, Paul Chan<sup>2</sup>

<sup>1</sup>The Chinese University of Hong Kong, Jockey Club School of Public Health and Primary Care, Hong Kong, <sup>2</sup>The Chinese University of Hong Kong, Department of Microbiology, Hong Kong

Background: Despite Human Papillomavirus (HPV) vaccine being recommended to both genders, vaccine resources and financial subsidies in Hong Kong had been mainly utilized on females and little was invested in promoting vaccine uptake in men. Studies had reported a low HPV vaccination uptake rate in Hong Kong male students, who often demonstrated misconceptions about HPV and perceived low benefits in receiving HPV vaccinations. This study explored the perception and willingness-to-pay (WTP) of the HPV vaccine among male university students in Hong Kong, and further assessed if visual-based education would impact their HPV vaccine uptake intentions.

Methods: An interventional online survey was conducted in April 2021. Perception and WTP were measured with Likert scales and bidding games respectively pre and post the visual-based knowledge dissemination section. Visual-based HPV fact sheet was prepared to highlight male HPV-related diseases such as genital warts, papilloma, and oropharyngeal cancer. Symptoms of the captioned diseases were illustrated with clinical pictures and the section ended by stating HPV vaccine was regarded as an effective measure to prevent the HPV-related diseases mentioned.

Results: Of the 105 cases recruited, the mean age of the sample and their first sexual activity were 21 and 18 respectively. Forty-four participants (41.9%) did not know the male HPV vaccine was available. After visual-based education, the participants recorded a change of +0.35 in the need for HPV vaccine ( $p\text{-value}<0.01$ ) and +0.54 in HPV vaccine uptake intention in the future 6 months ( $p\text{-value}<0.01$ ) on a 5-point Likert scale, while an increase of HKD\$1240 (~USD160) was observed in WTP for each dose but the difference was yet to reach appropriate statistical significance ( $p\text{-value}:0.19$ ).

Conclusion: The findings hinted that many male Chinese university students still held an unclear understanding of HPV and HPV vaccines. Visual-based education materials could be an effective aid to boost their vaccine uptake intentions.

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### Consumption of processed meat increases the incidence of hypertension: ELSA-Brazil cohort

Maria del Carmen Bisi Molina<sup>1</sup>, Raquel de Deus Mendonça<sup>1</sup>, Maria del Carmen Bisi Molina<sup>1</sup>

<sup>1</sup>Federal University of Ouro Preto, Brazil

Background and Objective: Hypertension is a public health problem that increases morbidity and mortality and reduces quality of life. There is evidence of an association between hypertension and consumption of red and processed meat. The objective of this study was to investigate the association between

the consumption of red and processed meat and the occurrence of new cases of hypertension in participants of the Longitudinal Study of Adult Health (ELSA-Brazil).

Methods: Cohort study with 15 105 civil servants (age: 35 to 74 years). Biochemical, anthropometric, socioeconomic, and lifestyle data were collected at baseline (2008–2010) and second wave (2012–2014). Meat consumption (g/day) was estimated using a food frequency questionnaire. To categorize low, medium and high consumption, the independent variables (red meat and processed meat) were divided into tertiles. Hypertension was defined as systolic BP  $\geq 140$  mmHg and/or diastolic BP  $\geq 90$  mmHg. Stata software was used and a  $P < 0.05$  was adopted. Cox proportional hazards models were used to estimate adjusted HRs and 95% CIs for the incidence of hypertension.

Results: Participants with medium and high consumption of red and processed meat had a lower mean age, lower education level and lower per capita income. We identified 1189 new cases of hypertension, corresponding to an overall incidence rate of 38.2 per 1000 person-years. Medium and high consumption of processed meat increases the risk of developing high blood pressure by 1.3 times (95% CI: 1.11–1.53).

Conclusion: The consumption of red meat did not have a negative impact on the health of the participants, however the consumption of processed meat at a moderate and high level increases the risk of hypertension and should be discouraged.

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### Malaria endemicity in sub-Saharan Africa: Past and present issues in public health

Kolawole Eniola<sup>1</sup>, Bartholomew Okolo<sup>2</sup>, Eunice Ayeni<sup>2</sup>, Sodiq Abolade<sup>2</sup>, Stephen Ugwu<sup>2</sup>, Temitope Awoyinka<sup>2</sup>, Augustine Ofeh<sup>2</sup>, Bartholomew Okolo<sup>2</sup>

<sup>1</sup>Department of Microbiology, Ahmadu Bello University, Zaria, Nigeria,

<sup>2</sup>Infectious Disease Research Group, Nigeria

The World Health Organization (WHO) reported an estimated 241 million malaria cases with nearly half of the world's population at risk in 2020. Since time immemorial, malaria has been one of the most endemic parasitic diseases, which has caused a great menace to public health. This infectious disease has spread worldwide, with a cumulative mortality rate. Despite the significant developments in the healthcare sector, parasitic infectious diseases still exist, causing life-threatening diseases and leading to high mortality and morbidity rates worldwide. This review article discussed malaria as a public health endemic infection in general while exposing the associated past and present issues. This is done using articles published in peer-reviewed journals. The endemic nature of malaria was investigated through the past and present issues in its prevalence, multiple causative agents and epidemiological survey. Its morbidity and mortality rate, especially in Africa, where poverty and many other favorable conditions have proven it life-threatening and a serious public health concern. Investigation on the report of various drug resistance to malaria treatment, wide association with other infectious diseases which could aggravate malaria pathogenicity and pose a threat on diagnosis; culminate into a more threat. However, the investigation into various management, prevention and control practices in many African countries has given a glimpse of hope in mitigating endemic malaria.

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### Chronic kidney disease in Slovakia - the key role of general practitioners in prevention and screening

Mária Bartušová<sup>1</sup>, Katarína Gazdíková<sup>2</sup>, Katarína Dostálová<sup>1</sup>, Mário Dvoržák<sup>3</sup>, Martina Slováčiková<sup>2</sup>, Štefánia Moricová<sup>1</sup>

<sup>1</sup>Faculty of Public Health, Slovak Medical University in Bratislava, Bratislava, Slovakia Faculty of Public Health, Slovak Medical University in Bratislava, Bratislava, Slovakia Slovakia (Slovak Rep), <sup>2</sup>Faculty of Medicine, Slovak Medical University, Bratislava, Slovakia, <sup>3</sup>General Practitioner's Office, Trnava, Slovakia General Practitioner's Office, Trnava, Slovakia Slovakia (Slovak Rep)

Chronic kidney disease (CKD) is defined as kidney damage or glomerular filtration rate (GFR)  $< 60$  mL/min/1.73 m<sup>2</sup> for 3 months or more, irrespective of cause. CKD is classified based on GF and albuminuria and affects approximately one in ten people.

The three most common causes of CKD in the world are diabetes mellitus (DM), hypertension (AH) and glomerulonephritis (GNF). About one of five adults with AH and one of three adults with DM suffers from CKD.

In the Slovakia (5 441 991 inhabitants) at the end of the year 2021 were followed 159,882 patients suffering from CKD. Adult patients, aged 19 and over, were

most often diagnosed with glomerular disease in diabetes mellitus (DM) – diabetic nephropathy (DN), followed by arterial hypertension (AH) with vascular nephrosclerosis (VN) and tubulointerstitial nephritis (TIN). 730 patients with kidneys diseases were included in the regular dialysis treatment (RDT). More than 1/3 of patients had dialysis therapy indicated on the basis of chronic kidney damage caused by DM, followed TIN and AH with VN. 343 persons were placed on the transplant waiting list by the end of 2021 and kidney transplants were performed on 105 patients. In the year 2021 dialysis centers registered 855 deaths of people undergoing RDT.

The ideal place for recognizing the risk persons is preventive examinations, which are covered by health insurance for every adult citizen in Slovakia once every 2 years. They are focused on the most important risk factors of CKD – DM, cardiovascular diseases as well as the recognition of early stages of CKD (assessment of creatinine, GFR, exam of urine).

Prevention of CKD should be aimed at finding people at risk (DM, AH, taking drugs, infections, etc.), quitting smoking, achieving and maintaining an ideal weight, treating comorbidities. Any visit to the doctor should serve this purpose.

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### Designing a Communication Strategy Toward the Promotion of Children's Oral Health Among Parents/Caretakers in Calamba City, Laguna, Philippines: An Action Research

Jelaine Bagos<sup>1</sup>, Aldo Lim<sup>2</sup>

<sup>1</sup>University of the Philippines Open University UP Open University, Brgy.

Maahas, Los Banos, Laguna Philippines, <sup>2</sup>University of the Philippines Los Banos

The core objective of the study was to determine the antecedent conditions to be considered in devising communication strategies to promote good oral health among preschool children in Calamba City, Laguna, Philippines. Survey research design was primarily used to gather data on communication factors and knowledge, attitudes, and practices (KAP) from 177 parents/caretakers from 22 barangays in the city. Meanwhile, interviews with key informants were done to find out the city's existing policies and programs. Data were analyzed using descriptive and inferential statistics. Overall gaps in KAP were: 1) lack of knowledge on the ways to prevent or treat oral diseases; 2) negative attitude toward children's oral health; and 3) unfavorable practices regarding children's oral hygiene, dental visits, and diet. Thus, the communication objectives and core content of a prospective communication strategy must focus on the importance of taking care of children's oral health and positive oral healthcare behaviors. The following communication approaches are proposed: awareness raising; information and knowledge sharing; community communication; and networking/linkaging and alliance building. Both interpersonal and media-based methods of communication are apt to be used. Oral health lectures/seminars will serve as the locomotive medium. Meanwhile, brochures, e-modules, posters/banners/stickers, and a Facebook page will serve as supporting materials. Dentists will also be tapped as resource persons seeing as they are not only subject matter experts; they are also parents/caretakers' most preferred information source. These channels of information were found to have moderate to strong association with parents/caretakers KAP. Moreover, parents/caretakers who acquire information from the said channels were found to get higher mean scores in the knowledge test. Lastly, results suggest prioritizing less educated parents/caretakers, those who reside in rural barangays, and those who do not have enough financial capability. Based on statistical analysis, these parents/caretakers had significantly lower KAP levels.

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### Smokeless tobacco cessation support in dental hospitals in Pakistan: Dentists and dental patients' perspectives on current practices, support needed and opportunities available

Shaista Rasool<sup>1</sup>, Fiona Dobbie<sup>2</sup>, Linda Bauld<sup>2</sup>

<sup>1</sup>University Of Edinburgh House 156, street 5 sector k 1 phase 3 hayatabad peshawar Pakistan, <sup>2</sup>University Of Edinburgh United Kingdom

Background: Despite evidence on the effectiveness of tobacco cessation interventions in dental settings, the implementation remains low in most regions. This lack of implementation and scale up of tobacco cessation interventions, which have been found effective in dental settings, requires an understanding of the influences that drive effective implementation. The purpose of this study, was to explore the influences governing ST cessation support in dental hospitals. Methods: A multi-centre exploratory qualitative study was conducted at two tertiary-care dental hospitals, in Pakistan. Semi-structured interview guides; containing open ended questions guided by the Capability-Opportunity-Motivation-

Behaviour (COM-B) model were used, to capture the views of dental patients (n=12) and dentists (n=12) regarding behavioural interventions for ST cessation in dental hospitals. Framework approach was used to thematically analyse the data. Results: Screening of ST users in routine dental practice was seldom practiced and the cessation support offered was brief advice. Common barriers identified by dentists included: fear of offending patients; stereotyping patients; lack of knowledge and skills; lack of privacy; lack of belief in the effectiveness of behavioural support; lack of time and workload pressure; ST use amongst dentists; lack of referral systems and the absence of a mandatory requirement of offering ST cessation support. Facilitators included: delivering support through junior dentists and the length of interaction between the dentist and the patient. Naswar was the most common ST product used by dental patients. Previous cessation attempts were unassisted, with patients reporting receiving negligible cessation support from any healthcare providers. Patients overwhelmingly expressed the need for cessation support.

Conclusions: A range of influences that hinder and facilitate the implementation of behavioural support for ST cessation in dental hospitals were identified. These findings can inform the implementation of behavioural interventions for ST cessation in dental and other clinical settings in low and middle income countries.

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### Inequalities in the use of dental care among the elderly in 14 European countries

Nóra Kovács<sup>1</sup>, Orsolya Varga<sup>2</sup>

<sup>1</sup>Department of Public Health and Epidemiology, Faculty of Medicine, University of Debrecen Hungary, <sup>2</sup>Department of Public Health and Epidemiology, Faculty of Medicine, University of Debrecen

Background And Objective: Regular use of dental care among older people is low, even though healthy ageing can be achieved through better access to health services, including dental care. There is little evidence on the extent to which socioeconomic status and welfare systems influence access to dental care among older people. This study was to describe trends in the uptake of dental care and to compare the uptake of dental care with other types of health services among the elderly, taking into account different socioeconomic factors and welfare systems in European countries.

Methods: A multilevel logistic regression analysis was performed using longitudinal data from four waves of the European Health, Ageing and Retirement Survey database (between waves 5 and 8). Absolute and relative inequalities in the use of dental care and healthcare services were measured. The study sample consists of 20,803 respondents aged 50 years and older from 14 European countries.

Results: The dental care attendance was the highest in Scandinavian countries, although, improving trends of dental attendance was recognized in Southern and Bismarckian countries (p<0.001). The absolute and relative income inequalities in the use of dental care increased over the study period (p<0.001). The educational and income inequalities were higher for dental care attendance compared to other forms of healthcare. Income level and unemployed status had significant effect on forgoing dental care due to cost and unavailability.

Conclusion: The observed differences between socioeconomic groups regarding dental care utilization highlight the health consequences of the different organization and financing of dental care. Adopting policies to reduce financial barriers to dental care may benefit the elderly population. Furthermore, quality of life gains and reduction in overall cost of care is also expected by ensuring access to dental health care due to the correlation between chronic disease and oral health.

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### Assessment of non-communicable diseases risk factors among pre-school children's: a cross-sectional study in Sousse, Tunisia

Siheem Fredj<sup>1</sup>, Nawel Zammit<sup>2</sup>, Rim Ghammam<sup>1</sup>, Sonia Chouchen<sup>3</sup>, Chamseddine Zarrad<sup>4</sup>, Donia Hassine<sup>3</sup>, Nahla Guesmi<sup>3</sup>, waad Belgacem<sup>3</sup>, Jihen Maatoug<sup>1</sup>, Hassen Ghannem<sup>1</sup>, Imed Harrabi<sup>1</sup>

<sup>1</sup>Faculty of Medicine of Sousse, Tunisia 1) University Hospital Farhat Hached, Department of Epidemiology, «LR19SP03», 4000, Sousse, Tunisia 2) University of Sousse, Faculty of Medicine of Sousse, 4000, Tunisia Avenue Ibn Eljazzar Tunisia, <sup>2</sup>Faculty of Medicine of Sousse, Tunisia, <sup>3</sup>University Hospital Farhat Hached, Sousse, Tunisia 1) University Hospital Farhat Hached, Department of Epidemiology, «LR19SP03», 4000, Sousse, Tunisia Avenue Ibn Eljazzar Tunisia, <sup>4</sup>University Hospital Farhat Hached, Sousse, Tunisia

Introduction: Children are susceptible to unhealthy lifestyle and have been shown to have various risk factors that may predispose them to development of non-communicable diseases (NCDs). The objective of our study was to assess NCDs risk factors among pre-school children in Sousse, Tunisia.

Methods: We carried out a cross-sectional study in 2016-2017 among pre-school children enrolled in the level 3 to 5 of kindergardens in the region of Sousse. Weight and height were measured for the children. Parents filled in a questionnaire about their characteristics and those of their children. Overweight and obesity were defined according to the age and sex specific body mass index cutoff points of the International Obesity Task Force. Data were analyzed using the Software SPSS 20.0.

Results: A total of 364 participants were included in the analysis. The mean age of participants was 4.5±0.97 years, the sex ratio was 1.05. Of these, 31.3% were classified as overweight/obese. Only 20.4% of children practice regular physical activity (five days per week or more), whereas the quarter of children (22.7%) did not practice any physical activity per week. Moreover, the mean daily sedentary time was 1,83±1,21 hours, whereas it reached 2.88±1.9 hours daily during the weekend. Thirty nine percent (39,5%) of overweight/obese children and 36% of normal weight children eat their food in front of TV or computer. More than Half (56.2%) of children consume unhealthy snack in the morning. This rate was significantly higher among Overweight/Obese children than normal weight children (p=0.024).

Conclusion: The findings suggest that the healthy lifestyle behaviors were not yet incorporated in our culture. The NCDs risk factors set in at a very early age. Hence, identifying them early and trying to modify them would help in combating NCDs."

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### Epidemiological survey of oral health in an adult population in São Tomé and Príncipe

Marta de Oliveira Pinto<sup>1</sup>, Marta Pinto<sup>2</sup>, Inês Fronteira<sup>3</sup>, Leonor Marinho<sup>4</sup>

<sup>1</sup>Mundo a Sorrir (MAS) Instituto de Higiene e Medicina Tropical (IHMT) R. da Junqueira 100, 1349-008 Lisboa, Portugal, <sup>2</sup>Mundo a Sorrir (MAS) Instituto de Higiene e Medicina Tropical (IHMT) Portugal, <sup>3</sup>IHMT, <sup>4</sup>MAS- Mundo a sorrir FMDUL - Faculdade de Medicina Dentária da Universidade de Lisboa Portugal

Background and objective: Pathologies of the oral cavity are great burden globally and one of the most expensive health treatments. In low and middle-income countries, such as São Tomé and Príncipe (STP), they have an even greater impact. Objective: To describe the prevalence of dental caries of caries, dental trauma, erosion and oral lesions and behaviors related to oral health in adults (≥18 years) in STP.

Methods: Cross-sectional study. Convenience sample of 241 adults (≥18 years). Data collected through the clinical oral health assessment form based on the WHO Oral Health Surveys and extra and intraoral observations by a Dentist. The DMFT index was computed to determine the prevalence of dental caries. Descriptive statistical analysis of data.

Results: Participants were frequently females (67.2%), 5.4% had no education and the mean age was 36.6 years. The prevalence of decayed, missing and filled teeth was respectively 84.6%, 78.0% and 9.1%. 0.4% of erosion lesions with pulp involvement and 0.8% of teeth lost by trauma. More than half of the individuals had no lesions of the oral mucosa (LOM) abnormal condition. The most frequent location of LOM was the gingiva and/or alveolar ridge (17.4%). Only 0.4% did not brush their teeth. 75.5% used fluoride toothpaste and more than half washed their teeth twice a day (90.0%). 66.0% had felt pain or discomfort in a tooth in the last year. However, 30.7% never received dental treatment.

Conclusions: The prevalence of dental caries in the studied sample is high, with a low DMFT index, despite being higher compared to young age groups. The prevalence of dental trauma is below average for African countries. The prevalence of dental erosion was low. This study contributed to the description of oral health in adult age groups in STP, which had never been done before."

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### Pediatric dental healthcare in serbia before and during COVID-19 pandemic

Milena Vasic<sup>1</sup>, Biljana Kilibarda<sup>2</sup>, Jelena Branski<sup>1</sup>, Verica Jovanovic<sup>1</sup>, Vesna Korac<sup>3</sup>

<sup>1</sup>Institute of Public Health of Serbia Dr Subotica 5 Serbia, <sup>2</sup>Institute of Public Health of Serbia, <sup>3</sup>Ministry of Health of Serbia

Background and Aim: Despite high prevalence of oral diseases, oral health is still neglected public health domain.

Regular check-ups and other preventive measures can significantly reduce the burden of oral diseases and children are important population group for implementation of these measures.

COVID -19 pandemic had influence on oral health care utilization globally, depending on the organization of health service. The aim of this study is to explore the changes in indicators of oral health care for children.

Methods: For this analysis we used data from routine statistics collected regularly from all 158 primary health care centers in Serbia. We compared trends in pediatric dental health care indicators for the period 2001-2020.

Results: The average number of visits to dentist per one preschool child was the lowest in COVID-19 pandemic 2020 (0.7). This number is for 40% lower than in 2019 (1.1) and almost double lower than in period from 2011 to 2013 (1.3). The results are similar for school aged children. One child of this age visited dentist 1.4 time in average in 2020 which is significantly lower than 2.4 visits registered in 2019. Coverage of children with dental check-ups decreased from 85% in 2014 to 59.6% in 2020 for children 7 years old, and from 79.9% in 2014 to 47.3% in 2020 for 12 years old. Conclusion:

COVID-19 pandemic led to changes in pediatric dental healthcare utilization and impact on the children oral health can be expected. The intervention to minimize this effect should be developed and recommendation should be made for the event of further pandemic situation.

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### Screening for risk factors of big four diseases-social accountability research from Ajman UAE

Anusha Sreejith<sup>1</sup>, Jayakumary Muttappallymyalil<sup>2</sup>

<sup>1</sup>Gulf Medical University, Ajman Department of Community Medicine, College of Medicine "Al Jurf Ajman United Arab Emirates P.O Box: 4184" United Arab Emirates, <sup>2</sup>Gulf Medical University Department of Community Medicine, College of Medicine "Al Jurf Ajman United Arab Emirates P.O Box 4184" United Arab Emirates

Background & Objectives: Non-communicable diseases accounts for more than 70% of all causes of mortality in the UAE. Leading five risk factors of NCDs are elevated cholesterol, elevated blood pressure, increased blood sugar level, increased body mass index level, and nutritional factors. This research was conducted from the data bank of community engagement as part of social accountability to assess the risk factors of non-communicable diseases among the marginalised population in Ajman.

Material and Methods: Data collected during community engagement was analysed. It had the following variables: Demographic, lifestyle, screening of diabetes, obesity and hypertension. Approval from IRB was obtained. Risk factors screening for marginalised population was part of the social accountability of university. Chi-square test was used to find the association between variables.

Results: Majority of the participants (68.8%) were below the age of 40 years. Male comprises of 93.3% of the total sample. Indians were more with 63.4% when compared to the rest of the nationalities. Prevalence of over-weight and obesity among the expatriates was 57%, while 7.4% were found be diabetic and 26.5% were found to have either grade1 and grade 2 hypertension. Obesity, random blood sugar and hypertension was significantly higher among participants of older ages (14.1%, 27.9% and 39% respectively).

Conclusion: A significantly higher percentage of diabetic, hypertensive and obese respondents were found above the age of 40 years among the expatriate population in Ajman. Educating people to follow health lifestyles can reduce the risk of many life style diseases.

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### Personalized cancer cellular therapies: a socio-economical impact of a therapeutic modality on the rise for mass-adoption

Inês Subtil<sup>1</sup>, Manuela Garcia<sup>1</sup>, Edgar Simões<sup>2</sup>, Bragança Pereira<sup>1</sup>

<sup>1</sup>Public Health Unit of Loures-Odivelas Portugal, <sup>2</sup>Public Health Unit of Loures-Odivelas Manuel

Background and Objective: In 2019 neoplasms rose to be the second global cause of DALYs. The social and economic burden of cancer impacts patients, healthcare systems and countries' health expenditures. While prevention and early detection should be at the forefront of public health action, effective treatment could reduce both the social and economic burden of cancer. Cellular therapies for cancer have recently advanced to a new stage of success with chimeric antigen receptor (CAR) T cell therapy for the treatment of acute lymphoblastic leukemia. The unrivaled response rates this therapy achieved opened the floodgates for research investment and strides into the translation of these results to other malignancies.

It also becomes clear that most health care systems are not prepared for the high costs associated with the presently near to prohibitive high cost of personalized cellular therapies.

Methods: We systematically reviewed all current clinical trials in the field and broke these results down in patient individual therapy versus off-the-shelf approaches, as well as targeted tumors and patient populations that can benefit from these therapies. We will also go over technological breakthroughs that can lead to mass production and the ethical implications of failing to implement such cost-lowering technologies.

Results: Currently there are 6 clinically approved CART products for hematological malignancies and more than 1000 clinical trials ongoing, more than 500 of these currently recruiting. CAR T cell therapy products currently in the market have an approximate cost of \$370.000 for the payer - a cost significantly higher than that of targeted therapies. Furthermore, we highlight efforts in the field of gene and cell engineering to optimize production and scalability.

Conclusion: Personalized cancer therapy heralds both the potential to enable the treatment of malignancies that are currently palliative and to be the straw that breaks traditional public health care systems.

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### Countermeasure policy for chronic noncommunicable diseases in Ukraine

Tetiana Yurochko<sup>1</sup>, Viktoriia Kondratiuk<sup>2</sup>

<sup>1</sup>School of Public Health of National University "Kyiv-Mohyla Academy" National University "Kyiv-Mohyla Academy" Ukraine, <sup>2</sup>School of Public Health of National University "Kyiv-Mohyla Academy"

Background: Noncommunicable diseases (NCD) are main reason for disability and precocious mortality rate in Ukraine. They are determining main socio-economic consequences for country's development and need urgent intervention in political decisions and coordinated actions on all levels.

Objective: Comprehensively assess situation of countermeasures, consolidate data from pre-war period about NCD preventive conditions in strategy development of post-war health care system restoration in Ukraine.

Methods: The assessment was done accordingly to WHO methodology "effective treatment of non-communicable diseases: challenges and solutions for the healthcare systems" within the Ukrainian-Switzerland project "Act for Health".

Results: The major NCDs are not only part of irreversible losses because of mortality but factors in reducing life expectancy. Contribution of NCDs is significant, mainly cardiovascular disease, as Ukraine's overall disease burden (DALYs) which were 8/9 of total years of life lost for women and - for men. There are gaps in primary care in prevention and control of NCDs, despite its importance and work done by the system to overcome the epidemic of cardiovascular disease (CVD), diabetes, and oncology diseases in Ukraine. Nevertheless, mortality rate from these pathologies remains high, showing a systemic fracture in patient group management system and lack of attention to prevention and financial support. As a result, unhealthy lifestyle practices lead to a high level of CVD spread. The number of neglected cases of diabetes and their complications caused by uncontrolled disease courses remains high. Oncology treatment spending from the government and patient budget remains an acute problem.

Conclusions: Results of research show gaps in the pre-war periods activities, which significantly increased due to the destructive impact of war that system passes. Health care system post-war restoration plan development should be based on challenges and barriers depending on populations health condition analysis and pre-war system work.

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### Compliance with the cervical cancer screening program among women living in low-income settings in Cali, Colombia

Paula Jaramillo<sup>1</sup>, Kirvis Torres<sup>2</sup>, Diana Libreros<sup>3</sup>, Lorena Castillo<sup>4</sup>, Daniela Neira<sup>5</sup>, Daniel Arroyabe<sup>6</sup>

<sup>1</sup>Pontificia Universidad Javeriana Cali Departamento de Salud Pública y Epidemiología Pontificia Universidad Javeriana Cali Pontificia Universidad Javeriana Cali Calle 18 No. 118-250. Código Postal: 760031 Edificio Raúl Posada 3° piso Cali, Colombia. Colombia, <sup>2</sup>Instituto Nacional de Salud Pública, <sup>3</sup>Hospital de Siloé Siglo XXI. Red de Salud Ladera Empresa Social del Estado. Colombia, <sup>4</sup>Instituto de la Mujer Cuernavaca Mexico, <sup>5</sup>Hospital de Siloé Siglo XXI. Red de Salud Ladera Empresa Social del Estado., <sup>6</sup>Escuela de Salud Pública, Universidad del Valle, Cali, Colombia.

Background: The global strategy towards the elimination of cervical cancer (WHO), proposes to achieve screening coverage in two rounds higher than

70%, therefore it is important to establish the compliance of women to cervical cytology. **OBJECTIVE:** To determine the relationship between patient compliance with cervical cytology screening and the factors associated with primary health care services.

**Method:** Through a cross-sectional, observational, and analytical study, we analyzed 32001 records of women affiliated to the subsidized health insurance from 2014 to 2018. We classified women according to compliance with cytology rounds into three groups: i. women not attending the program (NAP), ii. women who did not return to the next round (WNR) iii. women up to date in screening (WUD). A multinomial logistic regression model was used to identify the behavior of associated factors in each group: distance in kilometers from the patient's home to the health care center (DIST) and the average number of annual medical consultations made by women in primary health care services (MCPHC).

**Results:** No significant relations were identified in the groups when there was a change in DIST. While MCPHC showed statistically significant relationships in the NAP and WNR groups. In the WNR group the probability of being up to date with the screening increased as the frequency of MCPHC increased as follows: 1-3 times OR=720.2688; IC95%=380.11-1364.82; 4-10 times OR=1329.3304; IC95%=707.10-2499.08; 11-20 times OR 1892.36 IC95%=1008.68-3550.22; In the WUD group, the same tendency was observed: 1-3 times OR=8.93 IC95%=7.89-10.11; 4-10 times OR=21.34 IC 95%=19.27-23.64; 11-20 times OR=41.13 IC95%=37.39-45.26.

**Conclusions:** Inducing attendance to primary health care services for any reason is useful to prevent cervical cancer. There was no relation between distance from patient's home to health care center and adherence to cytology; other approaches should be integrated for a better understanding of the proximity phenomena.

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### Physical activity of patients with colorectal cancer, according to sociodemographic factors, in mato grosso, Brazil, 2019-2021: A Descriptive Study

Gustavo da Silva<sup>1</sup>, Rita de Souza<sup>1</sup>, Noemi Galvão<sup>1</sup>

<sup>1</sup>Federal University of Mato Grosso Brazil

**Background objective:** Colorectal cancer (CRC), which occupies the second position in percentage terms among the types of cancer in Brazil, has been considered one of the clearest markers of epidemiological and nutritional transitions, and associated with an unhealthy lifestyle, among them physical inactivity. The aim of this study was to describe the physical activity of patients with CRC, according to sociodemographic factors, in Mato Grosso, Brazil, from 2019 to 2021.

**Methods:** This is a descriptive study. The study population comprised patients assisted at the Hospital de Câncer and Hospital Universitário Júlio Muller, in the state of Mato Grosso, aged 18 years or older and with a cytopathological or histopathological diagnosis of CRC. Sociodemographic and physical activity information was collected through a questionnaire, in a face-to-face interview, from November 2019 to April 2021.

**Results:** 105 patients diagnosed with CRC were identified, with a mean age of 55.4 years and 50.5% female. Most reported not having practiced physical activity or sport in the last 3 months (71.6%) and not doing physical activity that involves walking or cycling in their usual activities (52.6%). Among the patients who reported not having practiced physical activity or sports in the last 3 months, most were brown (47.0%), married or in a stable relationship (69.1%), with incomplete elementary schooling (48.5%) and economic class C (50.0%). Among the patients who reported having practiced physical activity or sports in the last 3 months (N=27), all practiced at least once a week, with a minimum duration of 50 minutes (N=17).

**Conclusion:** High physical inactivity was identified among patients diagnosed with CRC, especially among brown, married or in a stable union, low level of education and lower purchasing power.

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### Socio-demographic determinants of obesity in adults: findings from the IAN-AF survey in Portugal

Sara Travassos<sup>1</sup>, Júlia Martinho<sup>2</sup>, Inês Subtil<sup>2</sup>, Maria Santos<sup>2</sup>

<sup>1</sup>Escola Nacional de Saúde Pública Av. Padre Cruz, 1600-560 Lisboa Portugal, <sup>2</sup>Escola Nacional de Saúde Pública Portugal

**Materials and methods:** Public available data on socioeconomic determinants and anthropometric measurements was retrieved from the Portuguese National Food, Nutrition, and Physical Activity Survey (IAN-AF 2015-2016), a cross-sectional study. A total of 4339 observations were included, through multistep sampling. Body mass index (BMI) has been used to assess obesity (BMI>30kg/m<sup>2</sup>). Sampling weights were used for a complex samples statistical analysis, to

obtain population estimates. Bivariate analysis was performed, and associations with p<0,2 were included in the logistic regression model.

**Results:** Sex, educational level, marital status, income, employment status, household dimension and age were associated with obesity (p<0,05). Marital status and household dimension were excluded from the multivariate analysis model (p<0,05). Female sex (OR=1.38, CI 95% 1.07-1.77), having completed less than middle school (OR=2.23, CI 95% 1.55-3.19) and each additional year of age (OR=1.03, CI 95% 1.02-1.04) were associated with higher odds of obesity.

**Conclusion:** This study identifies socio-demographic characteristics that are determinants of obesity. Policies to promote healthier behaviors targeted to towards these populations groups are needed to better control the increasing prevalence of obesity-related morbidities and healthcare costs.

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### Health of mothers: integration of oral health and tobacco control into antenatal care

Hyewon Lee<sup>1</sup>, John Gannon<sup>2,3</sup>, Sarah Forberger<sup>4</sup>, Sophia Thomas<sup>5,6</sup>, Neetu Sinha<sup>7,8</sup>

<sup>1</sup>School of Dentistry and Dental Research Institute, Seoul National University, Republic of Korea, <sup>2</sup>Department of Paediatrics, Galway University Hospital, Ireland, <sup>3</sup>World Federation of Public Health, Ireland, <sup>4</sup>Department Prevention and Evaluation, Leibniz Institute for Prevention Research and Evaluation, Germany, <sup>5</sup>Ramalingaswami Centre on Equity and Social Determinants of Health, Public Health Foundation of India, India, <sup>6</sup>World Federation of Public Health, <sup>7</sup>National Health Mission, Karkinos Healthcare, India, <sup>8</sup>World Federation of Public Health, India

This workshop aims to showcase how two WFPHA workgroups (oral health and tobacco control) collaborate to improve the health of mothers by integrating oral health and tobacco prevention/cessation into primary and antenatal care systems. Oral health is a neglected public health topic globally. The who recently reported that global case numbers of oral diseases have increased by 1 billion over the last 30 years, which is higher than cases of all five main non-communicable diseases combined. Women are the key change agents to secure and promote the oral health of communities and families. Mothers' oral health, knowledge, and behaviors can influence children's oral health. Therefore, pregnancy is a window of opportunity to intervene in tobacco prevention and cessation. There is no safe level of fetal tobacco exposure. Research showed that maternal tobacco use during pregnancy approximately doubled the risk of stillbirth and congenital defects and increased the incidence of prematurity and low-birth-weight infants. There is expert consensus that pregnant women who use tobacco should be counseled about cessation from the first trimester. Concern for the fetus combined with regular clinician interaction results in a greater efficacy of tobacco cessation interventions during pregnancy compared to other times. In this workshop, an analysis of the integrative approach for maternal oral health and tobacco cessation will be demonstrated in the India context. About two-thirds of pregnant women have active dental caries, and almost 90% of adults have periodontitis. Tobacco use among women, especially pregnant women, is a significant public health problem in India, with 7.5% of pregnant women being tobacco users. The Indian national oral health strategy will be published next year with a heavy emphasis on tobacco cessation, and the Indian government has rolled out the Ayushman Bharat (health and wellness centres) initiative, with oral health highlighted throughout the plan. However, there is room for improvement in emphasizing how oral health and tobacco control can be integrated into existing ANC systems, focusing on implementation and evaluation. WFPHA collaborated with the public health foundation of India to support the effective integration of oral health and tobacco control programs into ANC, and the workshop will demonstrate the analysis process. WFPHA aims to perform a scoping review to identify existing national and international maternal tobacco prevention and cessation frameworks and/or recommendations to analyze them concerning the following points: (a) common core elements in those frameworks (scientific evidence, addressed workforce, best practices, etc.), (b) differences based on contextual variation, (c) jurisdiction and legal quality. Not all maternal health and oral health strategies and clinical guidelines include straightforward tobacco prevention and cessation strategies specific for women of childbearing age for primary care and dental providers to adapt in clinical practice. Furthermore, national maternal tobacco control strategies are highly diverse between countries in terms of context, practice, and targeted healthcare workforce. This scoping review and analysis aim to understand the core elements of maternal tobacco control frameworks, which can be used for the future development of maternal tobacco control frameworks and mutual learning between countries.

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### The evolving chronic disease landscape: lessons for the post-pandemic world

Tatjana Makovski<sup>1</sup>, Shehzad Ali<sup>2</sup>, Kathryn Nicholson<sup>2</sup>, Saverio Stranges<sup>2</sup><sup>1</sup>French National Public Health Agency, France, <sup>2</sup>Western University, Canada

Background: The COVID-19 pandemic has had a major impact on people living with multiple chronic disease (multimorbidity), has reduced the ability to prevent disease via screening, has disrupted disease management, and has exacerbated health inequities. We propose a workshop to discuss the evolving chronic disease landscape, by providing three case-studies from diverse geographic locations, with a focus on multimorbidity, avoidable hospitalizations from chronic disease, and the role of social determinants of health. Objectives and key questions: Our objective is to discuss major public health challenges in chronic disease and lessons for the post-pandemic transition. Specifically, the workshop will address the following key questions: 1) what is the potential long-term impact of the pandemic among people living with multimorbidity? 2) what is the role of social determinants of health in avoidable hospitalizations from chronic disease? 3) how can we improve surveillance of multimorbidity using multiple data sources? Case study 1: multimorbidity and the risk of sars-cov-2 infection and post-covid-19 condition in France. Population data on SARS-COV-2 infection and its prolonged symptoms is limited among multimorbid patients. Here, we present the risks of SARS-COV-2 infection and post-COVID-19 condition, among individuals living with multimorbidity, using data from a large, randomly selected, representative sample of the adult French population. The interaction between multimorbidity and COVID-19 will be discussed. Case study 2: millions of hospital admissions are avoidable: the role of chronic conditions and social determinants of health in the United States. The rate of avoidable hospitalizations, for conditions that can be treated in primary care, is an important indicator of health system performance. We use the US National Inpatient Sample (2015-2020), to investigate the association between avoidable hospitalizations and chronic conditions, income, race and hospital region. Findings of this study can help develop targeted policies to improve primary care supply and quality to reduce avoidable hospitalizations from chronic conditions. Case study 3: surveillance of multimorbidity using multiple data sources: a Canadian perspective. Multimorbidity has been acknowledged as a burden for health care systems for many years, but the COVID-19 pandemic highlighted the fact that multimorbidity can result in a vulnerable general population. This study will present the epidemiology and surveillance of multimorbidity through the use of common operational definitions, a national health survey dataset (Canadian Longitudinal Study on Aging) and a national electronic medical record dataset (Canadian Primary Care Sentinel Surveillance Network). These findings will be compared to international literature and approaches to supporting individuals living with multimorbidity will be highlighted.

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### The role of law and human rights in promoting healthy diets to prevent NCDs: the experience of East Africa

J. Mwangi<sup>1</sup>, Brigit Toebes<sup>2</sup>, Maria Campisi<sup>3</sup>, Florence Tushemerirwe<sup>4</sup>, David Patterson<sup>5</sup>, Brigit Toebes<sup>2</sup><sup>1</sup>Jomo Kenyatta University of Agriculture & Technology - Karen Campus, School of Law Kenya, <sup>2</sup>Aletta Jacobs School of Public Health, The Netherlands, <sup>3</sup>International Development Law Organization (IDLO), Italy, <sup>4</sup>Makerere University Uganda, <sup>5</sup>Groningen Centre for Health Law Netherlands

Outline: Despite its adoption by the World Health Assembly in 2010, no country has comprehensively implemented the WHO set of Recommendations on the Marketing of Foods and Non-Alcoholic Beverages to Children. Furthermore, although some 50 countries apply fiscal policies to reduce consumption of sugar-sweetened beverages (SSBs), the measures are sometimes formulated in ways that some products with high sugar content are not covered by the regulations. Nutrition labelling is implemented by many countries in all regions, however not all have mandatory nutrient declarations in line with Codex guidelines, and national food labelling standards. Moreover, few countries have embarked on front-of-pack labelling. Reformulation of food products to contain less salt, salt and oil is becoming increasingly common, but most often it is voluntary rather than mandatory. Many countries lack the technical capacity and political will to introduce appropriate regulatory and fiscal measures to address NCD risk factors. Objectives: This workshop will examine the role of the law in promoting healthy diets from three perspectives. First, state obligations under international law will be examined. Second, the experience of a legal and public health capacity-building project in three countries in East Africa (Kenya, Tanzania, Uganda) will be presented. Third, the recent experience of one country (Uganda) will be discussed.

### Key Questionsa

What is the role of international law in addressing the risk factors for noncommunicable diseases, notably unhealthy diets? How is law relevant to advancing the right to health in low and middle-income countries? How can civil society organizations participate in developing policies to address NCDs? How can human rights-based approaches be applied in practice to NCD prevention?

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### The integration of occupational medicine and public health to improve cardiovascular health in the workplace and community

Saverio Stranges<sup>1</sup>, Nicola Magnavita<sup>2</sup>, Giuseppina Affinito<sup>3</sup>, Veruscka Leso<sup>4</sup>, Franca Barbic<sup>5</sup><sup>1</sup>Department of Epidemiology and Biostatistics, Schulich School of Medicine & Dentistry, Western University, Canada, <sup>2</sup>Department of Science of Woman/Child & Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>3</sup>Department of Public Health, University "Federico II" of Naples, Italy, <sup>4</sup>Department of Public Health, University Federico II, Naples, Italy., <sup>5</sup>Humanitas University, Pieve Emanuele, Milan Italy, Humanitas University, Department of Biomedical Sciences, Via Rita Levi Montalcini 4, Pieve Emanuele, Milan, Italy

Background: Occupational Medicine is an integral component of Public Health aimed at preventing mortality, morbidity, and disability burden attributable to occupational risk factors. Minimizing exposure to cardiovascular risk factors in the workplace, in line with the recent model of "Total Worker Health", may improve health and safety of workers, their families and community. The workplace represents an extraordinary powerful "milieu" for creating and developing health promotion programs in keeping with Public Health policies.

### Objectives and Key Questions

To evaluate how the control of cardiovascular risk factors in workplaces may reduce morbidity and mortality in the community. To evaluate how the integration of Occupational Medicine and Public Health may improve cardiovascular prevention in the population at large.

INTRODUCTION (Stranges and Barbic) (5 minutes).

Assessment of Cardiovascular Risk in Workplace and Community: Role of New Risk Algorithms and Artificial Intelligence (Giuseppina Affinito).

Cardiovascular disease (CVD) is one of the most prevalent causes of long-term sickness and absenteeism in the workplace. The working environment can expose workers to elevated physical and psychological work stress, which is related to an elevated risk of CVD and consequent working disability. Therefore, to quantify the interplay between the workplace and health, a new algorithm was developed to estimate the risk of a diagnosis of unsuitability for work due to CVD.

Sleep, Violence, Stress, and Cardiovascular Risk Prevention in the Workplace. (Nicola Magnavita)

Workers' health surveillance offers the opportunity to conduct health promotion interventions in the workplace which, with low-level resources, can achieve significant improvements in health. This study presents some experiences conducted in the last 10 years by our occupational health unit which demonstrate the effectiveness of workplace health interventions. Sleep health promotion, prevention of workplace violence, and reduction of work-related stress are associated with low levels of cardiovascular risk factors and metabolic syndrome. Public Health Approaches to Prevent Cardiovascular Disease in the Workplace (Saverio Stranges)

Evidence suggests that health interventions in the workplace may generate wide-ranging benefits by improving cardiovascular risk factor profiles and preventing cardiovascular disease among workers. This presentation will discuss current evidence from randomised controlled trials, cluster randomised trials, quasi-experimental and observational studies of workplace interventions to assess their effectiveness and feasibility to improve cardiovascular risk factors among workers and prevent cardiovascular disease in the population at large.

Occupational Medicine and the Total Worker Health®: From Workplace Risk Assessment and Management to Workers' Well-Being Promotion (Veruscka Leso) The National Institute of Occupational Safety and Health developed the Total Worker Health® (TWH), defined "as policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness-prevention efforts to advance worker well-being". The TWH model will be presented and the role of occupational physicians in preventing cardiovascular diseases that have a significant impact on Public Health will be discussed. Indeed, addressing modifiable CVD risk factors by structured health promotion interventions in workplaces represent a powerful opportunity to obtain benefits in terms of both occupational and public health.

INTERACTIVE DISCUSSION (15 minutes)

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### **Holding us back? tackling inequalities in the detection and treatment of structural heart disease in Europe**

Arunima Himawan<sup>1</sup>, Lily Parsey<sup>2</sup>

<sup>1</sup>International Longevity Centre UK Fulltime staff member "International Longevity Centre UK Vintage House 36-37 Albert Embankment London SE1 7TL" United Kingdom, <sup>2</sup>International Longevity Centre UK, United Kingdom  
 Workshop Outline

Across many European countries, inequalities in the detection and treatment of Structural Heart Disease (SHD), such as geographic and gender inequalities exist. And there is also evidence of widespread ageism. Such inequalities are hampering progress and holding us back. Indeed, across 11 European countries, a study found that SHD occurs more frequently in women than in men, yet women are less likely to regularly receive a heart check with a stethoscope by their GP, (24.1% vs 31.3% respectively). Despite this, there is very little policy focus on tackling inequalities in the detection and treatment of SHD. With the Healthier Together EU Initiative on Non-communicable diseases, and the forthcoming EU Joint Action on Cardiovascular disease and Diabetes as part of the EU4Health programme, there is an important opportunity to raise the profile of SHD and reduce its growing burden in an ageing society. In this workshop, we will present the findings and policy recommendations of our publication: Holding us back? Tackling inequalities in the detection and treatment of structural heart disease in Europe, supported by Edwards Lifesciences. Following the presentation, we will then open the floor to the audience (which will be moderated by the Chair) to engage in a meaningful dialogue on the barriers and opportunities to reducing the SHD burden.

**Specific Aims/Objectives:** While most types of SHD can be successfully treated, it receives very little policy attention. The key aim of the workshop is to engage with key stakeholders at the forefront of academia, global health policy, and science and medicine, to identify what still needs to happen to reduce inequities in the detection and treatment of SHD across Europe. Our objectives include: 1. Raising the profile and shining a light on the growing burden that SHD places on our society and especially, the heavy toll it places on certain marginalised and underserved populations. 2. Engaging with a diverse group of stakeholders on the barriers and opportunities to reducing inequities in the detection and treatment of SHD and identifying how we can engage world leaders and leading public health policy makers on the importance of tackling SHD in an ageing society. 3. Take the key lessons learned from the workshop to enhance our engagement activities and develop a targeted dissemination plan to ensure we are influencing the right people and engaging in the right conversations.

#### **Key Questions**

1. What are the barriers and opportunities to reducing inequities in the detection and treatment of SHD? 2. What needs to happen to engage world leaders and leading public health policy makers on the importance of tackling SHD in an ageing society? 3. What examples of good practice can you share that you think would help shrink inequalities in the detection and treatment of SHD that should be adopted in other countries? As part of the SHD Coalition, ILC-UK will leverage its expertise to ask the audience the right questions to ensure we are identifying the gaps in our knowledge and understanding and looking for robust solutions.

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### **Workshop on the sustainability of chronic care programmes with a focus on providers' acceptance during programme development and implementation**

Larisa Pilic<sup>1</sup>, Dr. Redaélli<sup>2</sup>, Lisa Giesen<sup>3</sup>, Larisa Pilic<sup>4</sup>

<sup>1</sup>Institut of General Medicine, University Hospital of Cologne "Kerpener Str. 6250937 Cologne Germany, <sup>2</sup>Institute of Health Economics and Clinical Epidemiology, University Hospital of Cologne, Cologne, Germany, <sup>3</sup>Institute of Health Economics and Clinical Epidemiology, University Hospital of Cologne, <sup>4</sup>Institut of General Medicine, University Hospital of Cologne Kerpener Str. 6250937 Cologne Germany

Brief outline of the overall workshop: This workshop will provide a status-quo of German chronic care programmes (CCP) and interactively address their challenges, focussing on providers acceptance, as well as on options to ensure the sustainability of CCP. In Germany, the first CCP (referred to as "disease management programmes (DMP)") were implemented more than 20 years ago, culminating in currently six ongoing DMP for diabetes type 1 and type 2 (T2D), coronary heart disease (CHD), chronic obstructive pulmonary disease, bronchial asthma and breast cancer. Among these, the DMP T2D has the highest number

of enrolled patients, followed by the DMP CHD. The enrollment and treatment of patients in the DMP in Germany are mainly carried out by family doctors, which are supported by health assistants. Currently, it is planned to extend the existing DMP for T2D and CHD by self-management interventions, based on internationally deployed chronic care models. Furthermore, additional DMP for other chronic conditions are planned to be implemented. Within a regional innovation project we are conducting an exploratory mixed-method-study, which identifies positive and negative aspects, impacting the sustainability of the current DMP for T2D and CHD from a family doctor's perspective. The findings of the initial qualitative study show differing perceptions regarding individual DMP. While family doctors evaluate the DMP T2D positively, the DMP CHD is considered less effective. As a result, some of the respondents tend to enroll less patients into the CHD programme, or consider to stop its provision. These results will be presented in the workshop and discussed in an international context. The target group of the workshop are international experts with experience in the implementation and/or provision of CCP.

#### **Specific aims/objectives and component parts**

This workshop will start with a keynote speech on the actual status of CCP for T2D and CHD in Germany, setting them into the international context of CCP and the latest research on their challenges. Furthermore, it will share knowledge on various factors affecting provider's acceptance of DMP, such as family doctors and paramedical health workers, which is relevant for the overall sustainability of such programs. After the keynote speech, participants will discuss key questions in small groups and present their discussion outcome in plenary. Further Information of the workshop schedule and component parts are found in table 1. Table 1: Workshop Schedule

#### **Workshop content additional information duration**

Keynote speech Status-quo of CCP 10 min Introduction to group discussions and formation of groups Provision of handout with key questions 5 min Group discussions Maximal 5 participants per group 20 min Group presentations Presentation of discussion outcomes for 3-5 minutes per group 20 min Closing of the workshop Feedback 5 min

#### **Key questions that the workshop will address**

1) What are international experiences of factors increasing or decreasing the sustainability of individual CCP, with a special focus on providers acceptance? 2) How are the reported findings from Germany comparable with international experiences? 3) How can CCP be improved in order to ensure providers' acceptance and sustainability of such programmes?

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### **Workshop on estimating burden of disease metrics - experiences from the German Burden of Disease Study**

Annelene Wengler<sup>1</sup>, Elena von der Lippe<sup>1</sup>, Alexander Rommel<sup>1</sup>, Michael Porst<sup>1</sup>, Aline Anton<sup>1</sup>, Annelene Wengler<sup>1</sup>

<sup>1</sup>Robert Koch Institute Germany

Summary measures of population health have become key metrics for quantifying the burden of disease (BoD). These include the BoD metrics YLL (years of life lost due to mortality), YLD (years lived with disability) and their total the DALY (disability-adjusted life years). They can be used to identify the importance of specific diseases and injuries with regard to population health. DALY combine information on mortality (YLL) and morbidity (YLD) by quantifying the deviance between the actual health of the population compared to an ideal health state, allowing population health to be assessed in a consistent and comparable manner. As BoD estimates become more popular in Europe and Germany in particular, methodological questions arise and first results become available. BoD metrics can be used to identify the sex and age specific leading causes of disease or injury and the contribution of mortality and morbidity to the disease specific burden. Moreover, the relative importance of specific risk factors can be quantified, as each metric can be linked to metabolic, behavioral, and environmental risk factors. This demonstrates the great importance of BoD estimates for national and local policy decision making, especially when it comes to the planning and monitoring of prevention programs. Nevertheless, the BoD methodology is complex and highly data intensive, particularly regarding the requirements for data on deaths (mortality) as well as prevalence, severity, and duration (morbidity) by disease. Each estimation process requires several small-scale decisions regarding data handling, operationalization, and statistical analysis. Hence, this workshop will focus on the different methodological challenges when calculating both the fatal (YLL), the non-fatal (YLD) as well as the attributable burden due to risk factors. On the one hand, the workshop will foster exchange on methodological questions and challenges related to calculating the BoD. On the other hand, we will discuss results on YLL, YLD, and DALY that have been obtained so far. As an

example, we want to discuss results that have already become available through the German BoD study BURDEN 2020 and through the work of other researchers in the field. The workshop shall be a platform for BoD researchers, including those just starting off and those who are already experienced.

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### The compliance status of tobacco control law (TCL) in Bangladesh: approach in a private university setting

Nasrin Akter<sup>1</sup>, Bilkis Banu<sup>1</sup>, Sujana Chowdhury<sup>2</sup>, Tahsin Tabassum<sup>3</sup>, Sarder Hossain<sup>2</sup>

<sup>1</sup>Northern University Bangladesh, Dhaka, Bangladesh, <sup>2</sup>Northern University Bangladesh, Bangladesh, <sup>3</sup>East-West Medical College, Bangladesh

Implementation of national tobacco control law (NTCL) in the university settings was found very poor in Bangladesh. This study aimed to depict the compliance status of the tobacco control law (TCL) of Bangladesh following the university setting approach. This cross-sectional study was carried out based on descriptive including a mixed method approach, among the 385 students (quantitative method), 10 teachers, and 10 administrative staff (qualitative method) of Northern University Bangladesh. Quantitative and qualitative data were collected through face-to-face and In-Depth Interviews (IDI) Methods. The ethical issue of the study was conformed according to the Declaration of Helsinki. Data analysis was done through both descriptive and inferential statistics. Logistic regression analysis was performed followed by a modeling procedure to find out the determinants for the non-satisfactory compliance on TCL. The study revealed non-satisfactory compliance with TCL among 56.4% of subjects who were strongly supported by the outcomes from the qualitative approach. Predominant non-satisfactory compliance was found to explore the conditions of buying and selling tobacco (78.4%), pasting no-smoking signage (3.2%), anti-tobacco advertisement within the university (34.8%), and specific university policy to implement NTCL. Poor compliance was found significant among the younger aged ( $\leq 21$  years: COR/p=2.74/0.01; 95% CI: 1.27-5.92) 1st-year group (AOR/P=2.28/0.02; 95% CI: 1.15-4.49) who had moderate nicotine dependency (AOR/P=4.04/0.01; 95% CI: 1.28-12.74) and poor knowledge on TCL (AOR/P=3.57/0.02; 95% CI: 1.28-9.95). As a predictor, a significant influential group suggested family guidance (AOR/P=1.77/0.06; 95% CI: 0.97-3.22) as a sustainable way to minimize tobacco consumption and improve compliance status among university students. This study revealed a depressive scenario on the compliance status of TCL in all tiers of the selected university setting. As it is a unique exploration of individual institutional compliance it might provide guidance to plan for sustainable intervention programs in order to improve compliance with TCL in university settings.

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### Access, affordability and barriers to cancer care in India: stories of patient journeys

Soumita Ghose<sup>1</sup>, Soumitra Datta<sup>2,3</sup>

<sup>1</sup>MPH Global Health, Tata Medical Center, India, <sup>2</sup>MRC Clinical Trials Unit, Institute of Clinical Trials and Methodology, University College London, United Kingdom, <sup>3</sup>Tata Medical Center, India

**Background and objective:** Cancer burden versus resources are inequitably distributed in low and middle income countries. Access and affordability to oncology services are limited for the majority of rural and semi urban India. This contributes to late presentation and poor outcome. The present qualitative study aimed at gaining a deeper understanding of patient experiences, social barriers and facilitators of care seeking in Indian cancer patients. The study attempted to identify treatment-seeking pathways of patients and explore reasons for delays and roadblocks. **Methods:** In this is a cross sectional qualitative study, using in-depth interviews, purposive sampling was used with proportionate representation of all common cancer types. The interviewers had access to an interview guide that acted as an aide-memoire to help the interview process but we progressively enquired newer areas brought up in earlier interviews till data saturation was reached. Data was analyzed using the qualitative content analysis frame work. **Results:** Cancer patients (n = 100) and caregivers (n = 48) were interviewed. In depth interviews generated data covering patient's perspectives about healthcare facilities, views on quality of care received, perception related to direct and indirect costs of care and overall impact of cancer on the broader lives. Major themes emerging were related to a) journey of patients to access care, b) psychological trajectory of patients, c) stigma d) decision making and adherence to treatment, e) economic costs and its impact and f) modifiers to accessing cancer care. Barriers and enablers of access to cancer care were identified.

**Conclusions:** Planning and policymaking in the future of cancer care delivery need to consider the views expressed by the cancer patients and their caregivers as regards to access, adherence and disruptions to cancer care in India. Future policies will hopefully address some of the difficulties faced by patients.

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### Assessment of surgical, anaesthesia and obstetric workforce providers in Somalia

Mohamed Omar<sup>1</sup>

<sup>1</sup>University of Somalia, Somalia

**Aims:** To determine the number and distribution of surgical anaesthesia and obstetric (SAO) care providers (both qualified and practitioners); and to establish the patient SAO care provider ratio in Somalia. **Methods:** Cross-sectional study design using quantitative data. The study was conducted in health facilities of 2 Administrative zones of Somalia (Northeast known as Puntland and South/central). The Surgical Assessment Tool (SAT).

**Results:** 55 health facilities participated. The results indicate that most of the SAO providers were in the Benadir state (57%) (Puntland (13%), Southwest (10%), Galmudug (8%), Jubaland (7%), and Hirshabelle(5%)). Most SAO providers were midwives (309) (MBBS providing surgery 127, nurse anaesthesia 89, foreign provider 82, consultant surgeon 67, O&G consultant 54, MBBS providing anaesthesia 49, biomedical 34, orthopaedic consultant 26). Other SAO providers were consultants from the following specialities: radiology, ENT, anaesthesia, and ophthalmology, urology, pathology, neurosurgery, cardiothoracic, cardiology and paediatric surgery. Finally, there was no consultant SAO providers from the following specialities: oncology, gastroenterology, or paediatric anaesthesia. The highest number of SAO providers worked in urban areas (874), whilst rural SAO providers numbered 75. All the states in Somalia had a lower SAO provider: population than the goal of 20 SAO providers for every 100,000 persons set by the Lancet Commission on Global Surgery. Benadir had the highest SAO provider: population (16:100000) followed by Puntland (7:100000), Jubaland (5:100000), Hirshabelle, and Galmudug (3:100000) and South West (2:100000). It is worth noting that the Benadir region is a capital, Mogadishu. The national average was 6:100000. The actual number of health employees (of all types) in Somalia is unknown. **Conclusions:** This study demonstrates that there is a deficiency in Somalias SAO workforce and that it is still a neglected topic. Currently, the workforce required to meet the needs of the population is not present.

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### A systematic review on frugal tele-otoscopy for low resource settings

Christoph Buhr<sup>1,2</sup>, Andrew Blaikie<sup>3</sup>, Katharina Bahr-Hamm<sup>1</sup>

<sup>1</sup>Department of Otorhinolaryngology, Johannes Gutenberg University, Mainz, Germany, <sup>2</sup>School of Interdisciplinary Studies, University of St Andrews, St Andrews, Scotland, <sup>3</sup>School of Medicine, University of St Andrews, St Andrews, Scotland, United Kingdom

The implementation of telemedicine disrupts medical care and provides great opportunities for low resource settings. However, expensive diagnostic equipment is hampering the adoption of telemedicine on a larger scale. Frugal innovations achieving cost reduction while maintaining functionality with a high-performance level might solve this issue. This study provides a review on frugal tele-otoscopy suitable for low- and middle-income countries. A systematic review was conducted on basis of the PRISMA 2020 flow diagram for new systematic reviews. The National Library of Medicine (NLM), the Web of Science Core Collection (WoS), Scopus (Scopus) and the Cochrane Library (CochraneLibrary) were scanned for different terms including "tele-otoscopy" and "telemedicine". After removing duplicates, the articles were scanned for Keywords like "cut-rate", "low price", "low resource", "low- and middle-income countries" or "reverse innovation" using Rayyan. The remaining abstracts were screened, case reports as well as studies evaluating tele-otoscopy as study purpose and published after the year 2012 were included. None of the reviewed studies assessed a device meeting the criteria of a frugal innovation. Moreover, the term "frugal" does not seem to be established in the field of tele-otoscopy yet. However, versatile publications stated the potential of low cost tele-otoscopes for "at-home", rural and low resource settings. Despite the great potential for "at-home", rural and low resource settings, studies evaluating frugal otoscopy devices are lacking. This study provides the first systematic review on frugal tele-otoscopy. This study is part of Dr Buhr's Masterthesis (MSc Digital Health St Andrews).

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### Strengthening the public health partnership and telehealth infrastructure to reduce health care disparities

Jie Chen<sup>1</sup>, Merianne Spencer<sup>2</sup>, Portia Buchongo<sup>2</sup>

<sup>1</sup>School of Public Health, University of Maryland, United States, <sup>2</sup>University of Maryland, United States

**Background and Objective:** The COVID-19 pandemic has underscored the urgency to focus on the essential value of public health systems (PHS) in fostering health equity across the U.S. healthcare delivery system. PHS integration and care coordination can be successfully achieved through Health information technologies (HIT) systems, while the impact of HIT on racial and ethnic health disparities is unclear. The objective of the study was to examine the association between PHS partnerships, telehealth-post discharge services, and racial and ethnic disparities in health care. **Methods:** The analysis used 2017 Centers for Medicare and Medicaid Services Medicare 100% inpatient claims data, the Medicare Beneficiary Summary File, the American Hospital Annual survey, and the American Community Survey. Our final sample size was 2,142,486, including 1,990,781 White, 151,705 Black, and 74,998 Hispanic community-dwelling Medicare fee-for-service beneficiaries aged 65 years and up who had at least one hospital visit in 2017. Outcomes of interest were total Medicare payments, the 30-day all-cause readmission rate, and the number of inpatient visits.

**Results:** Compared to those treated in hospitals with neither PHS partnerships nor telehealth-post discharge services, beneficiaries treated in hospitals with PHS partnerships encountered significantly lower Medicare payments and inpatient and readmission rates. Blacks encountered significantly lower cost, inpatient visits, and readmission rates when treated hospitals with PHS partnership and telehealth-post discharge services (coef=-0.051, p<0.001; IRR=0.982, p=0.007; IRR=0.891, p=0.003). **Conclusions:** Results demonstrated the importance of combining PHS partnership and telehealth-post discharge services to improve the efficiency of the healthcare delivery system and health equity. It is urgent to ensure that PHS has adequate funding and telehealth support, given the encouraging findings of our study.

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### Attitude and practice of medical students in Khartoum state toward advocacy as a core component of medical professionalism 2022

Fatima Mohammed<sup>1</sup>, Abdelgadir Bashir<sup>1</sup>, Tagreed Mohammed<sup>2</sup>

<sup>1</sup>Faculty of Medicine, Khartoum University, Sudan, <sup>2</sup>Faculty of Medicine, Ibn Sinna University, Sudan

**Background and Objectives:** Advocacy is a strategic, evidence-based process to promote human health by addressing social, economic, environmental and political determinants of health. Many medical organizations have declared advocacy as a core component of medical professionalism. The study aimed to determine the attitude and the practice of medical students in Khartoum state toward advocacy.

**Methods:** This study was a descriptive cross-sectional study at Khartoum State. Clustered sampling was used to select six universities, and stratified sampling was used to select an equal number of participants per batch. A simple random technique was used to determine study participants per university. We collected the data through a self-administered online questionnaire with six sections. The Statistical Package of Social Science (SPSS) 29 was used to analyze the data. We measured frequencies, percentages and univariate associations between demographics, attitude and practice scores, Kruskal Wallis H, Mann-Whitney U and Chi square tests to measure the associations between the different variables.

**Results:** We received a total of 473 responses. The median attitude score of health advocacy was 48.00, determinants of health advocacy were 35.00, advocacy inclusion in medical education was 22.00, and of practice was 2.00. Moreover, 42.9% of the participants agreed and 40.8% strongly agreed on including health policy in medical curriculum. Approximately 51% agreed and 52.4% strongly agreed that they should be engaged meaningfully in health policy development. Only 28.3% agreed and 12.7% strongly agreed on considering health advocacy as a future line. The most common advocacy barrier among medical students was lack of Knowledge, with 267 (56.4%) responses.

**Conclusions:** Medical students need to be well-empowered to excel as an advocate from the early stages of their medical studies. Medical schools and health policymakers should promote more for the importance of advocacy among medical students more and engage them meaningfully in their advocacy actions.

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### Exploring interventions to address unhealthy commodity industry

### influence on policy

Adam Bertscher<sup>1</sup>, Britta Matthes<sup>1</sup>, Anna Gilmore<sup>1</sup>, Krista Bondy<sup>1</sup>, Michael Bloomfield<sup>1</sup>, James Nobles<sup>2</sup>, Amber Akker<sup>1</sup>, Sarah Dance<sup>1</sup>, Mateusz Zatoński<sup>1</sup>  
<sup>1</sup>University of Bath, United Kingdom, <sup>2</sup>Leeds Beckett University, United Kingdom

**Background and Objective:** Interventions are needed to prevent and mitigate unhealthy commodity industry (UCI) influence on policy, which poses a significant barrier to advancing effective policy. Whilst literature on interventions to address such influence is beginning to emerge, current conceptualisations may be incomplete as they fail to consider the wider systemic complexities surrounding UCI influence, such as industry adaptivity or its enabling factors. This study aims to apply a systems thinking lens to explore possible interventions that could help address UCIs influence on policy. **Methods:** A series of workshops were conducted between November 2021 and February 2022 with stakeholders from academia, industry monitoring groups, civil society, government, and intergovernmental organisations with expertise in UCIs. Stakeholders identified and discussed possible interventions to effectively address UCI influence on policy. Workshop data were coded and analysed using NVivo.

**Results:** A total of fifty-two stakeholders participated in twenty-three online workshops. Preliminary results collated 43 groups of interventions that aim to decrease: direct access to public sector decisionmakers; confusion and doubt about policy decisions; industry's ability to prioritise their growth and profits; industry's ability to leverage legal and dispute settlement processes; and industry's ability to leverage policymaking, norms, rules, and laws in their favour. In addition, stakeholders suggested leadership, and coordination and cooperation between stakeholders as key actions to achieve interventions. **Conclusions:** Workshops identified a disparate and heterogenous range of interventions. The complexities surrounding UCIs influence suggest that interventions need to: work in concurrently in different parts of the system; apply to broad policymaking processes, not just particular industries; strengthen intermediary actions to achieve change; and target system structures, such as sources of corporate power beyond policymaking processes, which may be overlooked without a systems lens. Government, public health, and civil society actors could consider investing time and resources to support or advance these interventions.

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### Improving adolescents' cooking skills and food literacy in Portugal: a youth-led policy idea as a lifelong health-promoting strategy. The CO-CREATE European Project

Sofia Mendes<sup>1</sup>, Ana Rito<sup>2</sup>, Inês Figueira<sup>1</sup>

<sup>1</sup>Centre for Studies and Research in Social Dynamics and Health (CEIDSS), Portugal, <sup>2</sup>National Institute of Health Dr Ricardo Jorge, Portugal

**Background/Objective:** Although young people are an important target group for health policies, there are few examples of adolescents themselves being included as active agents in formulating such policies. The engagement of adolescents in the EU CO-CREATE (CC) project was based on Youth-led Participatory Action Research with strong focus on the development of their own Policy ideas. We present one of the policy ideas developed by the adolescents and its relevance within the Portuguese context. **Methods:** Three Portuguese CC Youth Alliances (YA) were established with a total of 41 adolescents (15-18 yo) and activities included system mapping, data collection methods, advocacy training and photo-voice for the development of policy-ideas which were then discussed with relevant stakeholders in online or face-to-face Dialog forums.

**Results:** From the YA activities, the youth identified several challenges: 1) lack knowledge about food and nutrition as well as cooking skills 2) dislike for unattractive school meals 3) preference for unhealthy cheap food outside the school premises 4) need of nutrition training and education provided since early ages, at school setting. "To include nutrition and cooking contents in the curriculum of the Citizenship/ Civic Education subject in schools". From this main policy-idea an implementation and evaluation plan was built as a theoretical exercise that potentially could be used in a real-life context and applied in Portugal.

**Conclusions:** As the next generation of adults and decision makers, youth must be involved in shaping the current and future policies. As in Portugal Food and Nutrition Education in schools relies on voluntary guidelines and occasional school-based programs, the importance of integrating nutrition and food related contents in the school curriculum to promote healthier and sustained eating habits, as recognized and proposed by CC Youth, should be acknowledged and an opportunity to turn the youth-led policy-ideas into feasible and applicable action to effectively prevent obesity.

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## Let's Control Flu: the use of gamification in health decision-making for flu vaccination. Application to new countries

Henrique Lopes<sup>1</sup>

<sup>1</sup>Catholic University of Portugal, Portugal

**Background and Objective:** The "Let's Control Flu" (LCF) is an interactive digital tool designed to simulate the impact of public health policies (PHP) on influenza vaccination coverage rates (VCR). It adopts a gamification approach to support decision-making processes on influenza vaccination by testing the relative effects of PHP in specific population segments and providing clues for the optimization of policy decision-making. It, therefore, helps to support the World Health Organization's milestone of having 75% of European target populations vaccinated against influenza by 2030. The application to the pilot country and the project's methodology were presented at the European Health Forum Gastein and World Health Summit conferences in 2022.

**Methods:** The LCF tool is the first quantitative research to apply Kassianos' model, utilizing 13 of the originally proposed 42 PHP while maintaining the 5-pillar structure. The tool creates scenarios within a 10-year time horizon demonstrating what could be averted in seven pre-determined outputs (influenza infections, hospitalizations, flu-related GP visits, workdays/productivity loss, flu-related deaths, hospitalizations due to cardiovascular diseases, and deaths due to cardiovascular diseases) in five key-target groups: children, elderly, pregnant women, healthcare workers, and high-risk populations.

**Results:** The tool was successfully applied to Sweden (<https://letscontrolflu.com> [1]). It is currently in expansion to regions in Italy and Germany, as well as to the Czech Republic, with the results of this phase being presented for the first time, if approved, at the 17th World Congress on Public Health.

**Conclusions:** Gamification is a useful approach to bridging the gap between science, policy-makers, and patient advocacy organizations, merging epidemiology and health policies in a single and democratic solution. Through digitalization, the LCF tool enables quicker and more secure decision-making in health policies and helps promote health education among populations, paving the way for a safer and healthier future for all (<https://vimeo.com/user129422763/review/751589991/dff2ecd410> [2]). Links:-----[1] <https://letscontrolflu.com/>[2] <https://vimeo.com/user129422763/review/751589991/dff2ecd410>

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## Food classification guidelines across Australia - concordance and implications of differences

Miranda Blake<sup>1</sup>, Bettina Backman<sup>1</sup>, Meg Adam<sup>2</sup>, Jasmine Chan<sup>3</sup>, Josephine Marshall<sup>3</sup>, Emalie Rosewarne<sup>4</sup>, Gary Sacks<sup>5</sup>, Adrian Cameron<sup>5</sup>

<sup>1</sup>Global Centre for Preventive Health and Nutrition (GLOBE), Institute for Health Transformation, Deakin University, Burwood, Australia, <sup>2</sup>Institute for Physical Activity and Nutrition, Deakin University, Burwood, Australia, <sup>3</sup>Institute for Health Transformation, Global Centre for Preventive Health and Nutrition (GLOBE), Deakin University, Australia, <sup>4</sup>The George Institute for Global Health, The University of New South Wales, Australia, <sup>5</sup>Global Centre for Preventive Health and Nutrition (GLOBE), Institute for Health Transformation, Deakin University, Australia

**Background:** Each Australian jurisdiction produces separate food and drink classification guidelines for different institutional settings (e.g., schools) to guide food service providers on what constitutes a nutritious offering. Australian food manufacturers, suppliers and retailers frequently report that it is challenging to align their product range with a multitude of different classification systems. This study aimed to investigate the concordance between guidelines from all Australian jurisdictions across various settings, based on their application to a range of packaged food and drink products.

**Methods:** Products from top selling brands in Australian food service settings across 10 product categories (e.g., sweet snacks) were classified according to each of the 20 state and territory food classification guidelines applying to schools, workplaces, and healthcare settings (primarily 'traffic light' classification systems). Product nutrition information was retrieved from manufacturer, supplier, or retailer websites. The level of concordance between each combination of two guidelines using a traffic light' based classification system was determined by the proportion of products rated as 'amber' across both guidelines.

**Results:** 747 food and drink products were assessed. 88% products were classified at the same level of healthiness across all 'traffic light'-based systems. Concordance in 'amber' food classifications ranged between 63% and 96% across guidelines for different jurisdictions. For school guidelines, 'ice creams and frozen desserts' had the highest concordance across guidelines (97%); 'meat and seafood products' had the lowest concordance (80%). Discrepancies mainly arose from differences in food categories included in guidelines, e.g., the 'ready-to-eat

meals' category was absent from some guidelines.

**Conclusions:** There is a need for national coordination and greater evidence-based consistency in food classification guidelines across Australian jurisdictions. This will help ensure clarity for businesses on how to better support community health, including food manufacturer product development and reformulation, and food outlets offerings.

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## Generating political priority for domestic alcohol policy reform: a framework to guide advocacy and research

Louise Signal<sup>1</sup>, Ryan Gage<sup>1</sup>

<sup>1</sup>University of Otago, New Zealand

**Background and Objective:** Effective policies to reduce harm from alcohol include restricting its marketing and availability and increasing its price. However, political will to enact these policies is low in many jurisdictions. Advocacy and research at global, national and local levels are crucial to progress alcohol policy change. Yet, the challenges and levers for influencing political will remain poorly understood. We aimed to identify the key barriers and strategies to enhance political priority for domestic alcohol policy reform using a mixed method approach.

**Methods:** Data came from a scoping review and 37 key informant interviews. Thematic analysis was used to identify the key barriers and strategies to generate political priority for alcohol policy.

**Results:** 52 articles met the inclusion criteria. Study authors and interviewees described the drivers of political will as complex, interrelated and context-dependent. Nonetheless, several strategies were viewed as important for influencing alcohol policy. Key challenges included the lack of an internationally binding treaty to support domestic policymaking, industry actions (e.g. lobbying), limited capacity of alcohol policy advocates and limited civil society involvement. Key strategies included working towards an internationally binding treaty, similar to the Framework Convention on Tobacco Control, framing around the public health harms of alcohol consumption, network building and exposing industry tactics. Several promising strategies were unspecific to alcohol, e.g. combined action to tackle the involvement of unhealthy commodity industries in policymaking. **Discussion:** The findings reveal a set of strategies that could assist advocates and researchers in influencing political will for alcohol policy reform. Two different types of strategies were identified: i) those targeting upstream policy changes to level the playing field between industry and alcohol policy advocates, and b) those seeking to enhance the effectiveness of advocates themselves.

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## Immunisation: Time to consider new preventative solutions beyond vaccines

Catherine Weil-Olivier<sup>1</sup>, Catherine Weil-Olivier<sup>1</sup>, David Salisbury<sup>2</sup>, José Navarro-Alonso<sup>3</sup>, Chryssoula Tzialla<sup>4</sup>, Yan Zhang<sup>5</sup>, Tobias Tenenbaum<sup>6</sup>, Susanna Esposito<sup>7</sup>, Fabio Midulla<sup>8</sup>

<sup>1</sup>Paris VII University, France, <sup>2</sup>Programme for Global Health, Royal Institute International Affairs, Chatham House, United Kingdom, <sup>3</sup>Ministry of Health, Spain, <sup>4</sup>Paediatrics and Nursery Department, Voghera Civil Hospital, Italy, <sup>5</sup>National Institute for Viral Disease Control and Prevention, Chinese Centers for Diseases Control and Prevention, China, <sup>6</sup>Clinic for Child and Adolescent Medicine, Sana Hospital Lichtenberg, Germany, <sup>7</sup>Department of Medicine and Surgery, Pediatric Clinic, Pietro Barilla Children's Hospital, Italy, <sup>8</sup>Department of Pediatrics and Pediatric Neuropsychiatry, Sapienza University of Rome, Italy

**Background and Objective:** The pace of innovation is accelerating and new preventative technologies for infectious diseases are emerging to address unmet medical needs. Most imminent is the use of long-acting monoclonal antibodies (mAb) to prevent Respiratory Syncytial Virus (RSV) lower respiratory tract infection in infants during their first RSV season. Innovative products, such as prophylactic mAbs may challenge existing legislative and regulatory immunisation categorization schemes. Indeed, due to the lack of precedent mAbs for prevention of broad populations, uncertainty remains in the assessment of upcoming prophylactic RSV mAbs, which, in some countries, are categorized neither as a treatment nor as a vaccine, with associated consequences in terms of registration, recommendation, funding, and implementation.

**Methods:** These findings are based on views and insights gathered from 9 global experts (EU, Japan, China, UK) during an advisory board held in July 2022 to discuss RSV prevention strategies, completed by a desk research.

**Results:** Beneath the umbrella of immunization, active and passive immunization exist, which differ in mechanism of action but serve the same public health

purpose. As such, the legislative and regulatory categorization of preventative solutions should not be dictated by what the product is, in terms of technology or mechanism of action, but rather by what the product does, in terms of impact on healthcare systems and population. By terminology, prophylactic mAbs work as passive immunisation and should fall under the remit of National Immunisation Technical Advisory Groups or other relevant recommendation bodies for inclusion into National Immunisation Programs, to facilitate equitable access and maximize the public health impact through high uptake.

Conclusions: Current regulations, policy and legislative frameworks need to evolve to embrace innovative preventative technologies to allow their inclusion into routine immunization programs and recognize them as immunisation tools in our regulatory and access pathways.

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### How is the EU implementing the tobacco products directive ban on characterising flavours in cigarettes and roll-your-own tobacco?

Constantine Vardavas<sup>1</sup>, Zinovia Plyta<sup>1</sup>, Alexander Vardavas<sup>1</sup>, Ioanna Lagou<sup>1</sup>, Anastasia Manta<sup>1</sup>

<sup>1</sup>School of Medicine, University of Crete, Heraklion, Greece

Objectives: The European Union (EU) Tobacco Product Directive (TPD) prohibits the sale of boxed cigarettes and roll-your-own (RYO) tobacco products with characterising flavors (Directive 2014/40/EU, Article 7). The EUREST-FLAVOURS projects goal is to provide the European Commission (EC) with scientific and technical expertise to assist in the methodology specifications on whether tobacco products impart a clearly noticeable flavor other than tobacco.

Methods: Regulatory implementation strategies for fully implementing Article 7 of the TPD include the entry into force of two Commission Implementing Acts, the formation of an Independent Advisory Panel, the formation of a Technical Group of Sensory and Chemical Assessors, and, finally, the establishment of uniform rules and Methodology to support whether or not a tobacco product has a characterising flavor-the latter two processes facilitated by the EUREST-F.

Results: The methodology for determining whether a tobacco product has a distinguishing flavor other than tobacco that is "clearly noticeable" is based on a comparison of sensory profiles of test products through descriptive profiling and rank rating and that of reference products, and is supplemented, as needed, by a chemical assessment of the product composition properties. In 2023 a similar methodological approach will be applied by EUREST-FLAVOURS to support the regulatory decisions for Heated Tobacco Products.

Conclusions: The EU TPD Article 7 is among very few policies regulating tobacco product flavours globally to have banned characterising flavours. An understanding of the policy implementation strategies and methodology for determining whether a product possesses a characterising flavour has significant public health policy implications in the EU and beyond.

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### Impact of advocacy towards integrating nursing into National Surgical Obstetric Anesthesia Policy in LMICs: Nigeria perception

Olubunmi Lawal-Aiyedun<sup>1</sup>, Hayat Goma<sup>2</sup>, Ifeoma Okoro<sup>3</sup>, Njoku Prisca<sup>4</sup>

<sup>1</sup>Lifebox Foundation, Nigeria, <sup>2</sup>Nursing Sciences Department, Faculty of Allied Health Sciences, College of Medical Sciences, Ahmedu Bello University, Nigeria, <sup>3</sup>March Health Care Initiative, Bwari General Hospital, Abuja, Nigeria, <sup>4</sup>National Hospital Abuja, Nigeria

The Lancet Commission (2015) revealed that 5 billion people and 1.7 billion children below the age of 15 years worldwide do not have access to safe, affordable surgical obstetric, trauma, and anesthesia services when needed, a major public challenge. Most of these people and children live in Low and Middle-Income Countries (LMICs) as such there was the launch of the National Surgical Obstetric Anesthesia Plan aimed at promoting and supporting quality, safe and timely surgical healthcare strengthening in LMICs. However, all the countries that have the plan either at the planning or implementation stage do not have nursing integrated into the nomenclature except for Nigeria.

Methods: The Nigerian National Surgical Obstetric Anesthesia and Nursing (NSOANP) plan (2019 - 2023) included nursing from the inception at all levels of the policy in the spirit of leaving no one behind.

Results: Nigerias surgical plan included nursing and children's surgery: the two key elements that have been neglected in the LMICs national surgical plan, making Nigeria the first and the only country that integrated nursing into their surgical plan driven by the power of consistent and well-structured advocacy. The pilot implementation started in 2020, supported by a Non-Governmental Organization driving the essence of galvanizing synergy for public health interest. Now, Nurses

have been trained in safe operative care, and research and are also involved in the electronic registry for orofacial cleft.

Conclusions: Advocacy is the actual process of supporting a cause. It is the nub of healthcare system transformation, which seems to be neglected in the clinical space but serves as a critical and effective tool to create change. To achieve the goal of prioritization of nursing and children's surgical care, Advocacy is a core driver and key element to bring to bear a change in the surgical ecosystem.

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### Evaluation of the Philippine National Unified Health Research Agenda 2017-2022

Reneeppearl Sales<sup>1</sup>, Krizelle Fowler<sup>1</sup>, Joseph Oraño<sup>1</sup>, Juan Camacho<sup>1</sup>, Kathryn Burgonio<sup>1</sup>, Allen Gonzales<sup>1</sup>, Lynn Ong<sup>1</sup>, Krizell Ngipol<sup>1</sup>, Kevin Cavan<sup>1</sup>, Kristine Alvina<sup>1</sup>, Miguel Dorotan<sup>1</sup>

<sup>1</sup>Alliance for Improving Health Outcomes, Quezon City, Philippines

Background: The 58th world health assembly in 2004 and the 2008 Bamako call to action emphasized the use of evidence as an essential priority to achieve health equity. The attainment of high-quality research begins with a strong national health research system that generates, disseminates, and uses evidence. Research agendas have been shown to maximize the efficiency and effectiveness of research investments, strengthen health research systems, and harmonize research priorities across stakeholders. Despite recognition of research agendas as an important tool for health improvement and resource optimization, most of these do not include an evaluation plan. First published in 2006, the Philippine national unified health research agenda (NUHRA) is intended to guide national health research activity, generate research support, and promote the translation of research into practice. The NUHRA 2017-2022 was informed by international, national, and regional research priorities. This evaluation aimed to provide data for its implementers for decision-making, implementation improvement, and subsequent research agenda formulation.

Methods: The evaluation applied a mixed method approach with a triangulation convergence model. An evaluation plan was developed based on a literature review of global research agenda evaluation literature and policy review of NUHRA implementation. Secondary quantitative data collection focused on research output metrics from all regions of the Philippines. Primary data was collected through 40 key informant interviews of national and regional health research council members, NUHRA implementers, and researchers. Data will be analyzed through descriptive and thematic analysis using an abductive approach. Results and Discussion: This project evaluated the NUHRA 2017-2022 using secondary data from regions and interviews with research stakeholders across regions and members/nonmembers of research consortiums. The findings emphasize the importance of mobilizing resources for research, a robust monitoring system to maintain relevance of research priorities, and improving the relationship between researchers and policymakers to facilitate evidence-based decision making.

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### Rewriting/Re-Righting first nations, métis, and inuit public health research in Canada: a commentary of the public health agency of Canada's maternity experiences survey

Isabelle Choon-Kon-Yune<sup>1</sup>, Arielle Perrotta<sup>2</sup>, Jennifer Leason<sup>2</sup>, Erin Davis<sup>2</sup>

<sup>1</sup>Western University Canada, <sup>2</sup>University of Calgary, Canada

The Public Health Agency of Canada (PHAC) population health research frameworks rely on aggregated statistics, which perpetuates generalized stigma and fails to address differences and disparities within racial/ethnic groups. In particular, Indigenous peoples in Canada disproportionately experience poorer health outcomes in comparison to the general population, with health disparities such as cardiovascular disease, substance abuse, mental health, and reduced life expectancy being attributed to the lasting effects of colonialism. In addition to young and growing Indigenous demographics, there is a need to address Indigenous maternal-child health disparities. In 2009, the PHAC released the Canadian Maternity Experiences Survey to provide evidence-based recommendations for improvements in maternity care, and maternal and infant health. In alignment with Truth and Reconciliation Commission's Calls to Action, proposed efforts to focus on indicators such as infant mortality, maternal health, mental health, and availability of appropriate health services are essential. Moving forward, perinatal health research should thus consider engaging directly with Indigenous communities and other stakeholders such as birth partners, Elders, and health care workers to develop a more robust understanding of the current state of Indigenous health. The presentation analyzes PHAC's models for public health engagement to identify gaps in both understanding and creating effective

strategies to improve the overall health outcomes in Indigenous communities. The incorporation of Indigenous epistemologies and ontologies recognizes that Indigenous peoples have the knowledge best suited to address the concerns of their communities and is therefore integral in producing research that is culturally relevant and representative of their needs. Although the credibility of Indigenous methodologies are continuously scrutinized against Western methodological standards, the presentation challenges frameworks rooted within quantitative, epidemiological, and economic research methods that fail to address health disparities between Indigenous and non-Indigenous communities in Canada.

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### **Birth and death registration: qualitative exploration of barriers and gender differences in selected locations in Bangladesh**

Mrittika Barua<sup>1</sup>, Avijit Saha<sup>2</sup>, Muhammad Mannan<sup>3</sup>, Jahedul Islam<sup>3</sup>, Shahrear Alam<sup>2</sup>, Protyasha Ghosh<sup>3</sup>, Saima Mehjabeen<sup>4</sup>, Syeda Ahmed<sup>4</sup>, Sayema Akter<sup>5</sup>, Moyeen Uddin<sup>6</sup>, Nazrul Islam<sup>7</sup>, Anushka Mangharam<sup>8</sup>

<sup>1</sup>BRAC James P. Grant School of Public Health, BRAC University Assistant Professor Bangladesh, <sup>2</sup>BRAC James P. Grant School of Public Health, BRAC University, <sup>3</sup>BRAC James P. Grant School of Public Health, BRAC University Research Assistant Bangladesh, <sup>4</sup>BRAC James P. Grant School of Public Health, BRAC University Senior Research Associate Bangladesh, <sup>5</sup>BRAC James P. Grant School of Public Health, BRAC University Lecturer Bangladesh, <sup>6</sup>Data for Health Initiative, Cabinet Division CRVS Country Coordinator Bangladesh, <sup>7</sup>Vital Strategies Bangladesh, <sup>8</sup>Vital Strategies Technical Advisor Singapore

**Background and Objective:** For effective resource allocation and planning and implementation of public health strategies, registration of births and deaths is important. Despite Bangladesh having laws mandating birth and death registration, in practice, women and girls are often excluded from their births and deaths being registered. The current research explores the barriers to birth and death registration in Bangladesh and the contributing factors that lead to lower registration among women.

**Methods:** This qualitative study was conducted in selected urban and rural locations covering both low and high sex disparities in births and deaths (Dhaka, Dhaka North City Corporation, Thakurgaon, Gaibandha, Satkhira, Kutubdia and Sunamganj) between October and November of 2022. Total 33 Key informant interviews with implementers and 13 FGDs with male and female adult populations were held. The data was analysed using the content analysis method, and patterns and themes were identified.

**Results:** Poor awareness, perceived unnecessary, complex, tedious administrative approval process, accumulated financial burden, social and religious norms and practices, and poor technological and human resources' support delay and discourage both birth and death registrations. Child marriage causes lower birth registrations among women. Men being socially and legally expected inheritor demotivates and leads to lower death registrations among women.

**Conclusion:** Barriers contributed by both implementers and beneficiaries must be addressed to improve birth and death registration in Bangladesh, particularly among women. More awareness about death registrations needs to be made. Interventions and policies need to be gender sensitive and strengthened to increase the number of registrations, especially death.

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### **Evaluating a peer-led intervention to support clients to vacate warrants following release from prison: a case study from British Columbia, Canada**

Mo Korchinski<sup>1</sup>, Pamela Young<sup>1</sup>, Cheri McBride<sup>1</sup>, Nelson Luk<sup>2</sup>, Heather Palis<sup>2</sup>, Amanda Slaunwhite<sup>2</sup>

<sup>1</sup>Unlocking the Gates Services Society, Canada, <sup>2</sup>University of British Columbia, Canada

**Background and Objective:** The process of vacating warrants can be difficult to navigate. Having a warrant affects well-being by limiting access to housing, eligibility for income assistance, and engagement in treatment and recovery programs, overall producing adverse health outcomes; therefore, support for navigating the warrant resolution process is needed. This study outlines a peer-led warrant program that supports clients to vacate their warrants. The program also supports clients to connect with social services such as legal aid, income assistance, safe supply, treatment, food and housing in order to meet their survival needs and improve health outcomes.

**Methods:** Surveys were conducted at two time points (intake and follow-up) to monitor progress and determine warrant impact and health outcomes of people

seeking to vacate warrants. Two Peer Mentor staff were trained in the specifics of vacating active warrants. Unlocking the Gates Services Society (UTGSS) also established a relationship with a municipal organization providing social services, to promote their services in the community.

**Results:** The UTGSS warrant program has successfully provided warrant resolution for 77 people, exceeding their target of 50 clients. Of the 77 clients with the assistance of UTGSS, 41 connected with a lawyer, 22 accessed treatment, and 17 found safe temporary housing upon warrant resolution, thus meeting their basic needs and improving health outcomes.

**Conclusions:** Peer-led interventions can play a critical role in supporting clients to navigate the criminal legal system, including the process of vacating warrants. The positive reception of this peer-led warrant program has led to increasing demands to provide this warrant program to the surrounding communities.

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### **Guiding principles of a peer-led intervention to support the transition to community among people released from prison in British Columbia, Canada**

Pamela Young<sup>1</sup>, Nelson Luk<sup>2</sup>, Mo Korchinski<sup>1</sup>, Heather Palis<sup>2</sup>, Simrat Mahil<sup>2</sup>, Jessica Xavier<sup>2</sup>, Amanda Slaunwhite<sup>2</sup>

<sup>1</sup>Unlocking the Gates Services Society, Canada, <sup>2</sup>University of British Columbia

**Background:** People who are released from prison face significant challenges in their transition back into community. Unlocking the Gates Services Society (UTGSS) is a peer-led organization comprised of people with shared lived experience that supports this population by connecting them with health and social services in British Columbia, Canada. The objective of this study was to identify the guiding principles of UTGSS program in their peer-to-peer work with people released from prisons.

**Methods:** Focus groups (N=2 groups; 11 participants) and one-on-one interviews (N=3) were conducted with UTGSS staff. Focus groups and interviews were audio recorded and transcribed. Thematic analysis was conducted with an iterative approach, moving between data collection, analysis, and discussion with participants to identify patterns across the transcripts.

**Results:** Four themes were identified in relation to the guiding principles of UTGSS staff in their peer-to-peer work: 1) Offering hope; 2) Meeting clients where they are; 3) Building respectful relationships; 4) Providing consistent support.

**Conclusions:** The identified UTGSS peer-to-peer program themes enable staff with shared lived experiences to develop rapport with clients via robust and proven guidelines, thereby creating opportunities for connections to health and social services and overall improving the transition of recently released people back into community. The guiding principles reported in this study may serve as a model for engagement with people released from prison in other peer-led programs seeking to support this population in their transition to community post-release.

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### **The health halo effect of 'better for you' alcohol products on women**

Simone McCarthy<sup>1</sup>, Hannah Pitt<sup>1</sup>, Samantha Thomas<sup>1</sup>, Grace Arnot<sup>1</sup>, Sarah Marko<sup>1</sup>, Florentine Martino<sup>1</sup>, Julia Stafford, Danica Keric

<sup>1</sup>Deakin University Australia

**Background and Objective:** Alcohol is a significant public health problem, with the alcohol industry increasingly targeting women with a range of sophisticated marketing strategies. This has included a range of 'better for you' products, including low calorie/sugar and zero alcohol products. While research suggests that these products may have particular appeal for women, there has been limited systematic investigation into women's attitudes towards, and reasons for, consuming these products, and whether women perceive that these products are appealing for women.

**Methods:** An online panel survey was conducted with 497 Australian women aged 18 and over who had consumed alcohol in the past year. Participants were asked about their own consumption of low calorie/low sugar or zero alcohol products and were asked questions to whether they thought these products would particularly appeal to women and the reasons for this. Reflexive thematic analysis was used to analyse the qualitative data.

**Results:** Women perceived low calorie/sugar and zero alcohol products as an appealing option for women who were health conscious or worried about their weight. These products were identified as having health benefits and described as tools to assist with weight loss or to "stay skinny". Some participants recognised that zero alcohol products gave the illusion that they were healthier since they

did not contain alcohol. Participants thought these would increase the number of drinks that a woman might consume in the one session because women could drink without worrying about calories or weight gain.

Conclusion: 'Better for you' alcohol products were perceived as being for women who were health and weight conscious. Marketing for these products promotes an illusion of healthiness which does not consider the health impact of the alcohol itself. Controls on alcohol marketing should be expanded to limit the use of health and nutrient claims.

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### Strategies to engage young people in climate decision-making: Perspectives from young Australians

Grace Arnot<sup>1</sup>, Samantha Thomas<sup>2</sup>, Hannah Pitt<sup>1</sup>, Elyse Warner<sup>1</sup>

<sup>1</sup>Deakin University, Institute for Health Transformation, Deakin University, Australia, <sup>2</sup>Deakin University

**Background and Objective:** Public health and health promotion communities globally are calling for young people to participate in decision-making that impacts their futures, particularly in relation to the climate crisis. Young people understand how political and commercial determinants influence climate action, and can provide recommendations for systemic and policy-based changes to enforce stronger climate responses. There is a need for strategies to strengthen young people's engagement in climate discussions and decision-making, however there is little research to guide the development of this engagement.

**Methods:** Photo-Elicitation Interviewing was conducted with n=28 young Australians (aged 12-16 years) to explore young peoples perspectives of current influences on climate action, their ability to influence climate action, and suggestions for increasing their influence. Interview data were analysed using a reflexive approach to thematic analysis. Participant images were analysed for content and ascribed meanings.

**Results:** Participants expressed the need for young people to have increased influence over responses to the climate crisis, particularly those by decision-makers. Participants highlighted the importance of developing interesting and practical advocacy engagement initiatives that balance information about the realities of the climate crisis with hope, and follow up with strategies to create action. They also described strategies and mechanisms to increase young peoples influence. This included being involved in research, collaborating with youth organisations, providing feedback to decision-makers, and higher level involvement such as engaging in parliamentary sittings. Finally, participants noted that due to their age, young people were reliant on "adults" and those with power to facilitate this engagement.

**Conclusion:** Young people are intelligent and compassionate, and recognise the importance of urging decision-makers to enact climate responses that prioritise health and wellbeing. Public health and health promotion must collaborate with young people to champion their voices, and develop strategies and mechanisms to embed their perspectives into climate discussions and decision-making.

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### Perceptions and experiences of women about their help seeking behavior for domestic violence in Chitral, Pakistan

Nigar Ali<sup>1</sup>

<sup>1</sup>AKSP, Project Manager, 29 united plaza block 7 Ayesha manzil, Pakistan

Domestic violence against women (DV) is a widely prevalent public health issue that affects all social classes but most significantly low socioeconomic strata in the world. WHO 2013 reports, the prevalence of DV is 30% in the world, 37.7% in South East Asia, and 30-35% in Pakistan. Electronic media reported a 67% prevalence of DV against women in the remote district of Chitral, Pakistan [24]. Help-seeking in DV has important relations with effective handling; preventing and eradicating the issue because it enhances womens autonomy, increases access to support services and visibility of the issue.

The qualitative exploratory case study design was used taking DV survivors as a case and formal and informal help-seeking as the unit of analysis. Through purposive sampling, women were selected from the data registry of the legal and humanitarian institutions. The non-help seekers were identified through social networks by snowball sampling. Data were analyzed through thematic and content analysis by manual coding and through Nvivo software.

This was the first study of its kind in the context of Chitral that has explored that contextual dynamics are the influence of joint family, normalcy of DV after marriage, transmission of social norms, gender inequalities, drug addiction, and lack of awareness about womans right. reason of not help-seeking Stigmatization, female powerlessness, dependency on others, fear of worsening the situation,

fear of losing children custody and safeguarding family honor and hassles of formal procedures. The parental family found to be most trusted, accessible and frequently sought informal support system followed by community-based organizations like Jirga and arbitration board.

Based on the findings of the study we recommend the relevant organizations integrate DV screening, management, and referral facilities in the existing structure of their service provision. The study has implications for the local administrators and policy personnel to strengthen services.

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### Taxation on sugar-sweetened beverages: a systematic review and time series analysis

Leonardo Villani<sup>1</sup>, Michele Sassano<sup>2</sup>, Carolina Castagna<sup>3</sup>, Gianluigi

Quaranta<sup>1</sup>, Roberta Pastorino<sup>1</sup>, Walter Ricciardi<sup>3</sup>, Stefania Boccia<sup>1</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore Section of Hygiene, Department of Health Science and Public Health Largo Francesco vito 1 Italy, <sup>2</sup>Università di Bologna Department of Medical and Surgical Sciences Italy, <sup>3</sup>Università Cattolica del Sacro Cuore

**Background and Objectives:** Consumption of sugar sweetened beverages (SSBs) has been linked to a number of adverse health outcomes. Many countries introduced taxation to face this Public Health issue. Thus, we aimed to summarize national taxation laws on SSBs and to assess their impact on population's health. **Methods:** We conducted a systematic review up to May 2021. Time series analysis included Hungary, France, Fiji, Samoa, Nauru, Guatemala, Latvia, Norway, Palau, Panama, Tonga, and Finland. We used ordinary least square regression to evaluate modifications in the rate of change of standardized prevalence rates of obesity, overweight, and diabetes. A random-effects meta-regression was used to assess whether year of entry into force of the law, Human Development Index (HDI), and tax design affected the effectiveness of the intervention.

**Results:** We included 60 tax laws issued between 1979 and 2020 by 43 countries. Results show a deceleration of the increasing prevalence rates of overweight among children in Hungary ( $\beta = -0.101$ , 95% CI: -0.217, 0.015), Samoa ( $\beta = -0.148$ , 95% CI: -0.243, -0.052), Palau ( $\beta = -0.161$ ; 95% CI: -0.310, -0.012), Panama ( $\beta = -0.068$ , 95% CI: -0.091, -0.045), Tonga ( $\beta = -0.492$ , 95% CI: -0.630, -0.354), Guatemala ( $\beta = -0.043$ , 95% CI: -0.104, 0.018). The same holds for obesity in Hungary ( $\beta = -0.096$ , 95% CI: -0.236, 0.044), Samoa ( $\beta = -0.117$ , 95% CI: -0.254, 0.021), Nauru ( $\beta = -0.116$ , 95% CI: -0.170, -0.061), Guatemala ( $\beta = -0.038$ , 95% CI: -0.098, 0.021), Palau ( $\beta = -0.145$ ; 95% CI: -0.269, -0.021), Tonga ( $\beta = -0.283$ , 95% CI: -0.341, -0.224), Fiji ( $\beta = 0.021$ , 95% CI: -0.145, 0.188). Eventually, the year of entry into force of the law, the HDI, and the tax design have a significant effect on post-intervention coefficients for obesity.

**Conclusions:** Taxation is highly heterogeneous across countries in term of products and design. In some countries taxation led to a deceleration of the increasing prevalence rates of overweight and obesity among children.

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### A joint action task to assess and strengthening of IHR core capacities among ten countries in Europe

Sara Bengtsson<sup>1</sup>, Anders Wallensten<sup>2</sup>, Andreas Bråve<sup>3</sup>, Nuška Čakš Jager<sup>4</sup>,

Indra Linina<sup>5</sup>, Janusz Janiec<sup>6</sup>

<sup>1</sup>Public Health Agency of Sweden Presenter to be confirmed later. Sweden, <sup>2</sup>Public Health Agency of Sweden Sweden, <sup>3</sup>Public Health Agency of Sweden Departement of Microbiology Sweden, <sup>4</sup>National Institute of Public Health Slovenia, <sup>5</sup>State Emergency Medical service of Latvia Latvia, <sup>6</sup>National Institute of Public Health NIH Poland

**Background and Objective:** The objective of the Joint Action task was to Strengthening IHR Core Capacities in 10 focus countries over a 3-year project period.

**Methods:** The task commenced with a strengths and gaps baseline analysis among 10 countries. Data from were derived from IHR core capacities as reported in the WHO-IHR-State Party Annual Reports (SPAR), Joint External Evaluations and a summary of reporting among EU Member States. These were complemented with structured interviews with representatives from each country. Two follow-up interviews and an analysis of subsequent country SPAR reports occurred. The findings from the baseline analysis of preparedness gaps determined four core capacities which merited additional IHR strengthening activities: Biosafety and Biosecurity, Chemicals, Antimicrobial Resistance and Risk Communication. This analysis was presented to the members to finalise the focus of the IHR areas for further work in order to improve public health preparedness. The first of three workshops with the themes took place in January 2020. A second workshop with

a focus on only Risk Communication took place after a second interviews. A third and final interview took place to decide the focus for the final workshop which analysed the core capacities strengthened over the joint action.

Results: The core capacities that improved over the joint action included surveillance, biosafety and biosecurity including lab capacity and risk communication. The underlying factors to strengthen these core capacity included additional financing, national political commitment, training and acquirement of additional qualified human resources. By bringing together representatives from different countries to share examples of best practice knowledge was transferred and communication channels opened for further collaboration.

Conclusion: The rigorous selection process ensured that the project focused on relevant gaps and through workshops strengthened important core preparedness capacities core capacities forward coincided with responding to the covid-19 pandemic in the 10 countries.

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### Implementation research in public health programs: experience from Anemia Mukht Bharat in India

Abhishek Jaiswal<sup>1</sup>, Kapil Yadav<sup>2</sup>, Abhishek Jaiswal<sup>3</sup>, Kashish Vohra<sup>4</sup>, Thejas Achary<sup>5</sup>, Areeba Khanam<sup>6</sup>, Mohan Bairwa<sup>4</sup>, Ravneet Kaur<sup>4</sup>, Sanjay Rai<sup>4</sup>

<sup>1</sup>ESIC Medical College and Hospital, Faridabad, Haryana, India Assistant Professor, Department of Community Medicine, ESIC Medical College and Hospital, Faridabad, Haryana, India Room no. 14, PG ROOM, CCM, OLD OT-Block, AIIMS, Ansari Nagar, New Delhi (Pin Code-110029), India India, <sup>2</sup>All India Institute of Medical Sciences, New Delhi, India Professor, Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi, India Centre for Community Medicine, Old OT-Block, AIIMS, Ansari Nagar, New Delhi (Pin Code-110029), India India, <sup>3</sup>ESIC Medical College and Hospital, Faridabad, Haryana, India, <sup>4</sup>All India Institute of Medical Sciences, New Delhi, India India, <sup>5</sup>All India Institute of Medical Sciences, New Delhi, India India, <sup>6</sup>All India Institute of Medical Sciences, New Delhi, India

Background and objectives: Anemia control program in India have seen mixed experiences from initial progress to later stagnation of effect on anemia control. Poor program implementation, and lack of research to identify solutions for these implementation bottlenecks being key reasons for stagnation. Anemia Mukht Bharat (AMB) was launched in 2018 to intensify, strengthen, and accelerate efforts to reduce anemia burden in India. Present abstract outline various implementation research agenda identified in first-four years of launch of AMB.

Methods: AMB strategy embarks service delivery through 6x6x6 strategy. Progress of AMB had led to identification of bottlenecks at various levels through stakeholder meetings/high-level-expert-meetings/real-time problem faced during implementation of the program. Low coverage/consumption of IFA among beneficiaries, difficulties in procurement of point-of-care devices for haemoglobin estimation, and lack of effective strategies for control of non-nutritional causes of anemia were few known implementation challenges. Various issues identified at different levels from AMB program were utilized as implementation research exercises to further improve its effectiveness.

Results: The various implementation researches agendas identified were proof of concept for 6x6x6 strategy, effectiveness of food fortification (rice, salt, and wheat flour), and feasibility of food fortification through multiple food vehicles. Multi-micronutrient deficiency as adjunct cause of anemia also necessitates research on effectiveness multi-micronutrient supplements in tackling anemia. Ferrous carboxy maltose as one-shot therapy for anemia in pregnancy was also explored. We also have to focus on anemia literacy, and studies on non-responders for anemia treatment. Other areas to further explore under implementation research are supervised supplementary feeding programme-ready-to-use-therapeutic food, non-invasive haemoglobin measuring devices and many more.

Conclusions: AMB program in India has successfully incorporated implementation research as key strategy for strengthening program implementation. The learning's achieved from these implementation research will prove valuable for success of AMB program and control of anemia in India.

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### Global Rise of India: Evidence from Millennium Development Goals to Sustainable Development Goals

Ramesh Sethi<sup>1</sup>

<sup>1</sup>Kalinga Institute of Industrial Technology (KIIT), Deemed to be University, Bhubaneswar, India Kalinga Institute of Industrial Technology (KIIT) Dr. Ramesh Chandra Sethi Assistant Professor Department of Social Sciences and Humanities School of Law Kalinga Institute of Industrial Technology

(KIIT) Deemed to be University Bhubaneswar-751024, Odisha, India India

Background: India is recognized as the world's largest democracy and second most populous country in the globe. In recent times, India has become the centre of attention for its development in the field of science, technology and in medicines specifically in developing indigenous coronavirus disease (COVID-19) vaccines. The World Health Organization has appreciated India's strategy for COVID-19 management. At the same time, diplomatic engagements with other global leaders and government's commitment: to eradicate extreme poverty and hunger, to promote gender equality and empowerment of women, to reduce inequality through social welfare policies, to provide good health and well-being, global partnership for development and attempt to restore global peace, justice and setting up strong institutions for the welfare of citizens indicate remarkable achievements and global rise of incredible India in the 21st century.

Objectives: The present study attempts to evaluate the significant development in the field of public health that has accelerated India's position globally through the implementation of global agenda policies like MDGs and SDGs since 2000.

Methods: This study is based on critical analysis of secondary sources data available and accessible in the form of official documents and reports published by the Government of India as well as by national and international institutions/ organizations. It uses both qualitative and quantitative research methods.

Results: The findings of the study reveal that various interventions made by India paved the way towards achieving the targets of global goals. It also focuses on strengthening institutional capacities to deliver public policies that ultimately promote welfare of the people.

Conclusion: This study reflects the policy implications of MDGs and SDGs and also helps the policy makers to understand various nuances of legislating, various innovative policies for welfare of people in a democratic country which enhances India's position as a global leader in the contemporary world order.

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### The agenda of civil society organizations in global health: weaving networks of social engagement and participation

Marcigley Morais<sup>1</sup>, Laurence Pires<sup>2</sup>, Renan Oliveira<sup>1</sup>, Patrícia Carpio<sup>3</sup>, Diana Zeballos Rivas<sup>4</sup>, Luis de Souza<sup>3</sup>

<sup>1</sup>Federal University of Bahia (UFBA) Brazilian Association of Public Health/ Scholarship by Coordination for the Improvement of Higher Education Personnel (CAPES) Brazil, <sup>2</sup>Public Health School/Fiocruz, <sup>3</sup>Federal University of Bahia (UFBA) Brazilian Association of Public Health Brazil, <sup>4</sup>Federal University of Bahia (UFBA)

Background: The study highlights the performance of Civil Society Organizations (CSOs) in the context of global health by monitoring their public manifestations in the Observatory of Global Health and Health Diplomacy of the Center for International Relations and Health at Fiocruz - Brazil (CRIS/Fiocruz), in 2022.

Methods: With a qualitative, analytical, and reflexive approach, it discusses the data obtained in the monitoring of 50 CSOs, through visits to their official websites and social networks, systematized in bi-weekly publications in 2022 that constituted 23 documents for the study. The data were submitted to the content analysis technique, organized by grouping the CSOs into two analytical groups and categories: the public interest CSOs and the private interest CSOs.

Results: CSOs work for human rights, peace, equity, economic and environmental sustainability, and global responses based on cooperation and solidarity. Public interest CSOs focus on exposing health inequities and global inaction and call for the achievement of the Sustainable Development Goals, including strengthening health systems and intersectoral collaboration. On the other hand, the Private interest CSOs highlight their initiatives to financially support research and public health programs in low-income countries, prioritizing actions related to artificial intelligence, digital technologies and to stand up to the neglected tropical diseases.

Conclusions: Repeatedly the manifestations emphasize the relevance of the ethical principle of equity, attention to vulnerable groups, and the need to implement policies, agreements, cooperation, and treaties that preserve the people and the planet's health. The persistence of this agenda makes it evident that the search for equity has not gone beyond the rhetorical sphere, remaining distant from concrete actions. Behind this persistence, there is a clear insinuation of the global power asymmetries and the dispute between conceptions of health as a human right or as a commodity.

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### Effects of rate of use of aphrodisiac drinks on some health parameters of commercial bus drivers in Ife-Central local

### government and inadequacy of information on the packs of many sampled aphrodisiac drinks

Samuel Olaniran<sup>1</sup>

<sup>1</sup>Department of Pharmacology, Faculty of Pharmacy, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria

**Background and objectives:** The influx of herbal drinks acclaimed to have aphrodisiac activities into the Nigerian society is rising daily but there is dearth of scientific information on the beneficial and adverse effects of these drinks in their consumers. This study examined the usage and effects of aphrodisiac drinks on some human health parameters among commercial bus drivers in Ife-Central Local Government, Osun State, Nigeria.

**Methods:** Two hundred commercial bus drivers were used for the study, selected through random sampling method. The drivers' Body-Mass Indices (BMI), Blood Pressure (BP) and Random Blood Sugar (RBS) were measured through direct observation. Fifty samples of aphrodisiac drinks were purchased from a source in the open market.

**Results:** From the data collected, 87.5% have used aphrodisiac drinks before (treatment group) while 12.5% have not used it before (control group). 44% use these drinks every day; 26.9% use every other day, 21.1% use occasionally, 4.0% use once a week, 1.7% use on weekend while 2.3% use the drinks rarely. The rate of consumption of the aphrodisiac drinks in simple mean scores (14.14) was above the average (high). Rate of use had no significant effect on the drivers' BMI ( $t = -1.97, p > 0.05$ ) but had significant effects on BP ( $t = 3.562, p < 0.05$ ) and on RBS ( $t = 7.631, p < 0.05$ ) respectively. The constituents of 30% of the sampled drinks were not written on the pack, while 80% do not have expiry dates. Drinks with percentage alcohol between 30% v/v and 42% v/v of alcohol amounts to 54%. **Conclusions:** Consumption rate of aphrodisiac drinks by the commercial bus drivers in Ile-Ife, Nigeria is high and the rate has significant effects on the drivers' BP and RBS. The information on the packages of most of the sampled drinks are inadequate.

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### Advancing rare disease policy in Latin America: a call to action

Daniel Wainstock<sup>1</sup>, Amiel Katz<sup>2</sup>

<sup>1</sup>Pontificia Universidade Católica do Rio de Janeiro - PUC-Rio, Brazil,

<sup>2</sup>Harvard University, United States

People living with a rare disease are amongst the most vulnerable groups in society. They have been historically marginalized and systematically stigmatized. It is estimated that 300 million people worldwide live with a rare disease. Despite that, many countries today, especially in Latin America, still lack consideration of rare diseases in public policies and national laws. Based on interviews with patient advocacy groups in Latin America, we aim to provide recommendations for lawmakers and policymakers in Brazil, Peru, and Colombia on how to improve public policies and national legislation for persons living with rare diseases in these three countries.

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### Benchmarking local government policies for creating healthy, equitable and environmentally sustainable food systems

Miranda Blake<sup>1</sup>, Oriana Ruffini<sup>1</sup>

<sup>1</sup>Global Centre for Preventive Health and Nutrition, School of Health and Social Development, Institute for Health Transformation, Faculty of Health, Deakin University, Burwood, Australia

**Background and Objective:** A transformation to healthy, equitable and environmentally sustainable food systems is required as part of efforts to improve human and planetary health. Local governments in Australia vary widely in the extent to which they are addressing this issue, with a lack of comprehensive and cohesive action. This study aimed to develop and apply a tool for local governments to benchmark their policies for creating healthy, environmentally sustainable and equitable food systems against global and local best practice.

**Methods:** The Local Food Environment Policy Index (Local Food-EPI) tool and application processes were developed in collaboration with local government policy makers. We used existing accountability tools, refined through an extensive literature review and detailed input from an international and local expert advisory panel. In 2022, the tool was piloted in one Victorian local government to test its feasibility, usability, reliability, and the perceived value of the tool from a local government perspective. In 2023, the tool will be applied in 10 Victorian local governments, informing refinement of the tool for broader uptake. The tool consists of 61 indicator statements across 25 policy areas spread across 10 food policy domains. Pilot implementation of the tool identified the assessment

process as reliable, feasible and helpful in guiding policy development at the local government level. Local government stakeholders perceived the tool and processes as beneficial in: building knowledge and staff capacity in this area; developing networks; assessing local strengths and weaknesses; and advocating for change.

**Conclusions:** The Local Food-EPI tool is a comprehensive method to assist local governments in benchmarking their actions to improve food systems, and prioritising areas for action. Further assessment of local governments using the tool will identify and share knowledge of best practice, monitor policy progress, build capacity and collaborations, and strengthen efforts to increase accountability for change.

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### Unhelmeted riding, drunk riding, and unlicensed riding among motorcyclists: a population study in Taiwan during 2011-2016

Cheng-Wei Chan<sup>1</sup>, Chih-Wei Pai<sup>2</sup>

<sup>1</sup>Department of Emergency Medicine, New Taipei City Hospital, New Taipei City, Taiwan, <sup>2</sup>Graduate Institute of Injury Prevention and Control, College of Public Health, Taipei Medical University, Taipei, Taiwan

Prior studies have explored the individual effect of drunk riding on a variety of risky riding behaviours, whereas the effects of unhelmeted riding or unlicensed riding and their association with running-off-road (ROR) crashes have been rarely examined. This study investigated the relationship among drunk riding, unhelmeted riding, unlicensed riding, and ROR crashes. By analysing data from the National Taiwan Traffic Crash Dataset from 2011 to 2016, this study focused on motorcycle crashes involving drunk riding, unhelmeted riding, unlicensed riding, and ROR crashes. The multiple logistic regression models were estimated to calculate the adjusted odds ratio (AOR). The model Results revealed that unhelmeted riding increased the risk of drunk riding and unlicensed riding by 138% (AOR = 2.38; CI [confidence interval] = 2.34–2.42) and 47% (AOR = 1.47; CI = 1.45–1.49), respectively. The risk of unhelmeted riding increased with increasing BACs, and riders with the minimum BAC (0.031%–0.05%) had nearly 5 times (AOR = 4.99; CI = 4.74–5.26) higher odds of unlicensed riding compared with those of riders with a negative BAC. Unhelmeted riding, drunk riding, and unlicensed riding were associated with 1.21 times (AOR = 1.21; CI = 1.13–1.30), 2.38 times (AOR = 2.38; CI = 2.20–2.57), and 1.13 times (AOR = 1.13; CI = 1.06–1.21) higher odds of ROR crashes, respectively. Riding without a helmet may induce drunk riding and unlicensed riding. The three risky riding behaviours (i.e., unhelmeted riding, drunk riding, and unlicensed riding) significantly contributed to ROR crashes. The risk of unhelmeted riding and ROR crashes linearly increased with BACs.

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### Blood donation practices during COVID-19 pandemic among students of the College of Applied Medical Sciences, King Faisal University

Edric Estrella<sup>1</sup>

<sup>1</sup>University of the Philippines - Open University, King Faisal University, Saudi Arabia

**Background and Objectives:** A steady supply of blood should be made available at any time to meet the emergency need for transfusion which is a life-saving intervention. It is essential to determine if the fear of COVID-19 has negatively affected the willingness of individuals to donate blood. This analytical cross-sectional study compared the proportions of students donating blood before and during the COVID-19 pandemic and determined the factors that affected their willingness to donate.

**Methods:** A total of 187 students were invited to respond to a 14-item research-developed online questionnaire. Estimation of proportions, z-test and logistic regression were performed using Stata MP version 14.

**Results:** The estimated proportion of students who donated blood before the pandemic was 9.62% (95% CI: 6.12, 14.81) while the proportion of students who donated blood during pandemic was 3.74% (95% CI: 1.78, 7.69). The said proportions were statistically significantly different (z statistic = 2.2774, p value = 0.0114). The estimated proportion of students who had the willingness to donate blood in the next three months was 39.04% (95% CI: 32.25, 46.28). Those who had the fear of getting infected with COVID-19, those who thought that there would be no personal benefit to be gained, and those who were unaware of the locations of the blood donation facilities were 64%, 82%, and 36% less likely to donate blood in the next three months.

**Conclusions:** The proportion of blood donation among students significantly declined during the pandemic. Various factors identified to prevent one from

donating must be addressed.

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### Research project: Easier choices for public health -behavioral insights in policy making

Martina Elings-Pers<sup>1</sup>

<sup>1</sup>Hjärt-Lungfonden, Sweden

**Background and Objective:** Public health in Sweden is facing major challenges. Like in many countries the population is less physically active, eating habit have deteriorated, and the obesity trend shows an increase across the entire population, and in fact accelerates over time. Many countries are exploring policy options with basis in behavioral science to counteract the negative trend. Under the flag of "Public Health for all" The Swedish Heart and Lung Foundation and Swedish Cancer Society in collaboration with the Behavioral Insights Team at PBM in 2021 initiated a new research project. The objective was to investigate the application of behavioral insights in grocery stores to influence healthier consumer choices. This with the overall aim to provide new research and contribute to evidence-based policy making in the sphere of public health.

**Methods:** The research project includes theoretical explanation and dissemination of behavioral insights through a first report launched in September 2022. This report [1] covers examples on successful interventions other countries, and was launched at a seminar with representatives from civil society, industry, and government authorities to further spur joint policy discussions. In the second phase of the project, concepts (3) were designed, applied, and evaluated in grocery stores. This targeting e.g. price, position, information and social norms. Implementation was done in close cooperation with a local food chain and targeting healthier bread consumption. The project rests on a solid methodological framework COM-B model for behavior change [2] (and Behavior Change Wheel and Behavior Change Technique). The project has received attention through press and outreach. Results The practical application of project clearly shows how behavioral insights can influence healthier choices and inform policy discussions. Conclusions: While policy making to great extents is about influencing behavior, behavioral insight should be applied to greater extent in policy making. Links: -----[1] [https://uploads-ssl.webflow.com/5fa2cbdd7a042c4c0b5711b1/632ad330e4ce4385bb043013\\_La%CC%88ttare%20val%20fo%CC%88r%20folkha%CC%88lsan%202022.pdf](https://uploads-ssl.webflow.com/5fa2cbdd7a042c4c0b5711b1/632ad330e4ce4385bb043013_La%CC%88ttare%20val%20fo%CC%88r%20folkha%CC%88lsan%202022.pdf) [2] <https://togetheragency.co.uk/news/the-com-b-model-of-behaviour-change-explained>

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### Public acceptance of default nudges to promote healthy and sustainable food choices

Simone Wahnschafft<sup>1</sup>

<sup>1</sup>University of Goettingen, Goettingen, Germany

**Background:** Default nudges constitute an increasingly relevant policy arena for promoting healthy and sustainable food choices while preserving individual freedom of choice. However, default nudge effectiveness and acceptance have been identified as trade-offs. This study examines public acceptance, and its drivers, of five nudges aimed at shifting food choices, as well as a design variation of each nudge anticipated to increase acceptance. Selected nudges were adapted from studies and/or policies with demonstrated precedent of effectiveness.

**Methods:** Participants of an online survey rated acceptance of ten nudge scenarios (five original, five variations) - (1) eat less butter; (2) eat less meat; (3) climate-friendly groceries; (4) low-energy side dishes; and (5) donation for regional dairy products. Participants then reported on three drivers for each nudge and variation: (1) perceived intrusiveness on individual freedom of choice; (2) perceived effectiveness; and (3) own engagement in the targeted behavior. Variables were measured using 7-point Likert scales. The effects of design changes on acceptance were examined via significant differences in median acceptance of original and variation scenarios. The effects of examined drivers on acceptance were estimated using proportional odds ordered logit models.

**Results:** Design variations increased the acceptance of three of the five nudges: (2) eat less meat (+24.5% full acceptance), (3) climate-friendly groceries (+9.0%), (4) low-energy side dishes (+10.5%). Perceived intrusiveness emerged as the most influential driver of acceptance, followed by perceived effectiveness. Own behavior and socio-demographics held relatively little effect on acceptance.

**Conclusions:** The results highlight opportunities for choice architects to achieve 'sweet spots' in designing default nudges that balance effectiveness and acceptance, principally by mitigating the costliness of opting out and improving nudge transparency. The protection of individual freedom of choice and, in most cases, effectiveness, emerge as key aspects for choice architects to emphasize

in default nudge communication to increase acceptance.

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### Embedding sustainability in medical education and practice: the student Medaid London approach

Vafie Sheriff<sup>1</sup>, Soushma Seeburuth<sup>2</sup>, Naureen Asim<sup>3,1</sup>, Nadhira Samsudeen<sup>3,4</sup>, Adele Mazzoleni<sup>3,5</sup>

<sup>1</sup>St Georges University of London, London, United Kingdom, <sup>2</sup>School of Psychology, University of East London, London, United Kingdom, <sup>3</sup>MedAid London, United Kingdom, <sup>4</sup>Medical School, University College of London, London, United Kingdom, <sup>5</sup>Barts and The London School of Medicine and Dentistry, London, United Kingdom

**Background and Objectives:** Current research shows there is a lack of education in sustainable healthcare teaching in the medical curriculum. A study in 2022, identified 1.8% of 850+ surveyed medical students showed no formal education on Sustainable health. To address the gap in healthcare education, Student MedAid London was created to raise awareness and provide opportunities for students to become involved in sustainable and global health work in providing access to excess medical supplies, and redistributing to locations in need.

**Methods:** For advocacy and education work, a teaching series was designed through Instagram and Twitter, such as Learn-with-Med-Aid, alongside seminars delivered by professionals. The latter focused on diving into sustainable and public health topics not addressed in medical school. Examples include "exploring health inequalities amongst migrants and south-asian youth" and "how women rights are integral to sustainable healthcare". For sustainable medical equipment redistribution work, a team of volunteers contacted local healthcare providers for excess equipment. The WHO sustainability criteria were used to screen receiving organisations to reduce incidence of inappropriate medical donations. Furthermore, utilising the "Flipped Model Operation" prevented stockpiling of resources.

**Results:** Social Media and seminar engagement increased by 62% and 176% respectively from last year, with now over 1000+ followers across all social media. Our demographic has also expanded from London medical students, to young healthcare professionals from across the UK, Ukraine and USA. The organisation has received a wide number of medical donations, and is currently liaising with an Emergency Obstetric and Newborn facility in Sierra Leone as a potential receiving organisation. Positive reception has been obtained from prospective donors.

**Conclusions:** The positive response from our educational events, advocacy work and resources demonstrate an evident gap in awareness and learning. This opens discussions on the importance of sustainability in curriculums and opportunities provided for tomorrow's doctors.

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### Association of climate variables with malaria morbidity in a local municipality, Ghana

Isaac Boadu<sup>1</sup>

<sup>1</sup>University of Ghana, Accra, Ghana

**Background:** Available evidence indicate the profound impact of climate variables on malaria transmission dynamics. Climate variables especially temperature, rainfall and relative humidity affect the survival, reproduction and longevity of mosquito vector which undermines current global, regional and national efforts to control malaria.

**Methods:** A retrospective data (2011-2020) on malaria morbidity and climate variables (temperature, relative humidity, and rainfall) were sourced for this study. Climate data were obtained from the Ghana Meteorological Agency while malaria data were obtained from the Municipal Health Directorate. Evaluation of variables pattern was done using trend analysis and correlation was performed to determine the independent association of temperature, rainfall, and relative with malaria morbidity.

**Results:** Malaria morbidity for the 10-year period has more than doubled in the municipality. Average monthly rainfall ( $r = 0.53$ ,  $p = 0.07$ ) and relative humidity ( $r = 0.49$ ,  $p = 0.11$ ) were positively associated with malaria morbidity while average monthly minimum ( $r = -0.29$ ,  $p = 0.36$ ) and maximum ( $r = -0.56$ ,  $p = 0.06$ ) temperature were negatively associated with malaria in the municipality.

**Conclusions:** Efforts to control malaria should include climate factors especially rainfall patterns. This is important to achieve national, regional and global efforts of malaria reduction and possible elimination.

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## Dokha use-prevalence, predictors and the perception of youth residing in the UAE

Jayadevan Sreedharran<sup>1</sup>

<sup>1</sup>College of Medicine, Gulf Medical University, Ajman, United Arab Emirates

**Background and Objectives:** The study determined the prevalence, predictors, and perception of youth residing in the UAE towards Dokha use. **Materials and Methods:** Cross-sectional study was conducted among nurses working in a tertiary care centre in Ajman, UAE. A self-administered online questionnaire was used.

**Results:** The present study included 552 youth. Among the total, 310 were below the age of 20 years and 169 were  $\geq 20$  years, 300 were non-Arabs and 179 were Arabs. Among the total, 25 (4.5%) were dokha smokers, 454 (82.2%) with no habits and 73 (13.2%) with other types of tobacco habits. This study observed an association between Dokha use and, gender, age and nationality ( $P < 0.05$ ). Among the males, the prevalence was 12 (13%) and 12 (3.2%) were Dokha users among females. Concerning to age group, 3.5% and 8.3 respectively, for ages  $< 20$  years and  $\geq 20$  years. Prevalence among non-Arab nationals was 6 (2%) and 19 (10.6%) among Arabs nationals. To determine the degree of association, simple and multiple logistic regression were used. The crude OR observed was statistically significant; hence all the variables were included in the multiple logistic regression. The adjusted OR was 2.5 for age, 5.3 for nationality and 1.8 for gender. All the AOR observed was statistically significant ( $P < 0.05$ ). The reasons why they started the habits were asked among the users. 13 (52%) each said recreation, peer pressure and feeling good. 17 (68%) each said relief from university problems, for fun, to control mood, experimentation, emotional distress and social gathering. 13 (52%) each said they had no fear of addiction and parental smoking. 7 (28%) each said low self-esteem and to overcome low confidence; 22 (88%) because of anxiety and stress; 15 (60%) said availability. **Conclusions:** The prevalence of dokha use was 4.5%. The predicates were gender, nationality, and age.

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## Global challenges in implementing the international health regulations: a scoping review

Rafael Vasconcelos<sup>1</sup>, Francisca Pulido Valente<sup>2</sup>, Hélder Pinto<sup>3</sup>, Maria Santos<sup>4</sup>, Sara Barroso Travassos<sup>5</sup>

<sup>1</sup>ACES Oeste Norte, Portugal, <sup>2</sup>ACES Amadora, <sup>3</sup>ACES Alentejo Central, Portugal, <sup>4</sup>ACES Lisboa Norte, Portugal, <sup>5</sup>ACES Entre Douro e Vouga I - Feira/Arouca

**Background and Objective:** The International Health Regulations (IHR) govern how 196 countries and the World Health Organization (WHO) collectively address the global spread of disease while avoiding unnecessary tampering with international travel and commercial trade. A total of four public health emergencies of international concern have been declared since its last amendment, with the COVID-19 pandemic demanding a special degree of health diplomacy. The purpose of this scoping review was to identify and compile literature reporting the main challenges associated with implementing the regulations, outlining key areas for revision.

**Methods:** A scoping review was conducted following the methodological framework developed by Arksey and O'Malley. PubMed was the only database used, plus backwards citation chaining. Data selection and analysis were performed by all five researchers using pretest forms. To complement the descriptive analysis of each publication, the researchers performed a qualitative thematic analysis of the identified challenges.

**Results:** From 128 articles screened, 52 met the inclusion criteria, and 135 challenges were identified. The thematic analysis revealed ten categories of challenges, listed in decreasing order of frequency: (i) requirement of financial and technical resources, (ii) lack of enforcement and accountability mechanisms, (iii) need for rules clarification, (iv) deterrents to reporting, (v) inadequate governance, (vi) insufficient cooperation between countries, (vii) sovereignty issues, (viii) scarcity of guidance and technical support from WHO, (ix) lack of inclusion of roles for relevant non-state actors, and (x) conflicts and emergencies.

**Conclusion:** The debate over updating the IHR is already ongoing, and it is expected to continue as countries continue to submit their proposals to the Working Group on Amendments to the International Health Regulations (2005). Studies like this scoping review provide the necessary evidence and framework for this discussion, confirming that a revision of the IHR is highly necessary to safeguard global health.

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## Therapeutic pluralism policies in latin america: advances, gaps, and opportunities towards inclusive, people-centered health care

## systems

Daniel Gallego-Perez<sup>1</sup>, Jon Wardle<sup>2</sup>, Eugene Declercq<sup>3</sup>, Veronika Wirtz<sup>3</sup>, Robert Saper<sup>4</sup>, Linda Barnes<sup>3</sup>

<sup>1</sup>University of North Carolina at Chapel Hill 60 Otis St, Needham, MA. 02492 United States, <sup>2</sup>Southern Cross University, <sup>3</sup>Boston University School of Public Health United States, <sup>4</sup>Cleveland Clinic

**Purpose:** The World Health Organization (WHO) encourages member states to develop national policies that advance the integration of Traditional and Complementary Medicine (T&CM) in national healthcare systems to harness their potential contribution to health, wellness, and people-centered health care. Yet, little is known about the characteristics and implementation of existing T&CM policies. No global guidelines exist for assisting countries in structuring and developing such policies.

**Methods:** A qualitative research design was used to conduct a landscape analysis characterizing existing therapeutic pluralism policies in Latin American countries through a comprehensive literature review, a policy-focused qualitative content analysis, key informant interviews, and a case study analyzing the formulation process of a landmark policy (Brazil's National Policy for Integrative and Complementary Health Practices -PNPICS). A technical cooperation tool to guide T&CM policy development and update for Latin American countries was proposed based on the study's findings, and refined through face validation and an expert consensus method (Delphi process). Data categorization and analysis were performed in MS Excel and NVivo, using deductive and inductive coding.

**Results:** A total of 74 T&CM policy documents from 16 Latin American countries were identified. Policies were enacted through various legal/administrative mechanisms including: constitutional provisions, national laws, national policies, national healthcare models, national guidelines, specific and supportive regulation. A typology of Latin American policy approaches identified policies as: health services-centered, model of care-based, participatory, and indigenous people-focused. The selection of T&CM practices for policy inclusion varies across countries. The proposed technical cooperation tool for T&CM policy development incorporated 17 key policy elements and was structured based on the policy cycle. **Conclusion:** With a few exceptions, policy implementation in Latin America seems to be a real political challenge, often reducing policies to cultural and political symbols. Continued research is needed on assessing the various stages of the T&CM policy process.

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## PHIRI Rapid Exchange Forum (REF): a key tool for cross-country exchange in times of crisis and beyond

Hanna Tolonen<sup>1</sup>, Luis Velez Lapão<sup>2</sup>, Petronille Bogaert<sup>3</sup> Claudia Habl, Neville Calleja

<sup>1</sup>Finnish Institute for Health and Welfare - THL, Helsinki, Finland,

<sup>2</sup>Universidade Nova de Lisboa, Lisboa, Portugal

<sup>3</sup>Advanced Wellbeing Research Centre, Sciensano, Brussels, Belgium,

Since its start, the COVID-19 pandemic demanded a quick exchange between European experts and institutions supporting national governments in the crisis response to provide evidence-based information. However, there was no such regular cross-country forum established in the field of population health causing fragmented responses to the covid-19 crisis. Thus, European population health experts from public health institutes, ministries of health, universities or governmental agencies started in April 2020 to meet regularly online to foster cross-country exchange. In these meetings, partners could approach each other for questions and share views in a trusted environment regarding the management of the pandemic in their own country and learn from other participants' experiences. The European Commission recognized this achievement and supported this exchange as part of PHIRI - The Population Health Information Research Infrastructure (WWW.PHIRI.EU), allowing a quick exchange of data, indicators, good practices and experiences in the COVID-19 crisis response in an efficient manner. By 5/12/2022, 45 so-called Rapid Exchange Fora (REF) have taken place, involving project partners, national advisors to ministers/heads of agency, representatives of expert networks (e.g. Healthy Cloud), EU services (ECDC, JRC) and different health stakeholders (e.g. ELIXIR, OECD). The bi-weekly one-hour online meetings cover in a moderated, structured format pre-agreed topics in the field of population health that are proposed by the participating countries. Such topics include, but are not limited to, discussion on suitable Non-Pharmaceutical Interventions (NPI) and their application, child vaccination strategies, testing regimes, digitalization of death certificates or treatment options for Long COVID patient. In average, 25 delegates from different European countries attend each exchange. Responses by the countries (backed up by national reports, and guidelines that are briefly presented in the meetings)

are compiled and shared immediately after the meeting via the Corona-Corner of the Health Information Portal ([www.healthinformationportal.eu/rapid-exchange-forum](http://www.healthinformationportal.eu/rapid-exchange-forum) [1]). In addition, the Portal features a concise overview of NPIs established by European countries. This is of special interest as a sister project under the auspices of ECDC ended in Sept. 2022, whereby the PHIRI partners still update their country information. The main objectives of this workshop are: 1. To increase the awareness of the scientific community for the Rapid Exchange Forum and the Health Information Portal, 2. To stimulate their use and exploit all benefits and 3. To learn which topics and features are available for research and policy making purposes to stimulate the COVID-19 response – lessons learnt – process. After introducing PHIRI via video and four brief inputs from PHIRI partners there will be ample time for the delegates to: 1. Familiarize themselves with topics that were crucial during the COVID-19 pandemic, 2. Assess the features of the Health Information Portal and especially the REF section, 3. Suggest questions to be covered in upcoming bi-monthly meetings and 4. Identify need for further training in the field.

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### Developing comprehensive public health responses to gambling research, policy and practice

Samantha Thomas<sup>1</sup>, May Van Schalkwyk<sup>2</sup>, Darragh McGee<sup>3</sup>, Hannah Pitt<sup>1</sup>, Simone McCarthy<sup>1</sup>, Samantha Thomas<sup>1</sup>

<sup>1</sup>Deakin University, Australia, <sup>2</sup>London School of Hygiene and Tropical Medicine, United Kingdom, <sup>3</sup>University of Bath, United Kingdom

**Background:** Gambling has quickly emerged as a new global public health threat. While comprehensive public health approaches have been developed in relation to other harmful industries - such as tobacco and alcohol - gambling is still a relatively new area of research, policy and practice in public health. Most research to date has focused on individual and socio-cultural determinants of gambling harm, with little focus on commercial and political determinants. This is problematic, given that new technologies have meant that the gambling industry is able to rapidly develop and promote a range of highly addictive novel products across the globe, including in countries with inadequate regulatory structures to protect populations from harm. This also includes the lack of robust public health mechanisms to protect research, policy and practice from vested interests.

**Aim:** In this interactive, multimedia workshop, participants will learn from leading public health gambling researchers from the United Kingdom and Australia, with global expertise, about the development and implementation of comprehensive public health approaches to gambling harm prevention. The workshop will assume no prior knowledge in gambling. The aim of the workshop is to provide participants with key information (and handouts) about a comprehensive public health approach to gambling harm prevention that can be adapted or applied within their own countries.

**Component Parts**

The workshop will cover five key areas:

The key pillars of a public health approach to gambling harm prevention; The impact of industry influence on public discourses about gambling, and public health strategies that can be used to reframe these discussions; Research strategies and methods that can be used to map and monitor industry and policy responses; Mechanisms for engaging communities, including young people and those with lived experience, in public health advocacy strategies to respond to gambling industry tactics and convince decision makers about the need for regulatory reform; Lessons and cautionary tales from over a decade of research and advocacy in gambling harm prevention.

**The Key Questions that the Workshop Will Address**

What is a comprehensive public health approach to gambling harm prevention? Why is understanding the commercial and political determinants of gambling harm important in public health prevention strategies? How do the gambling industry (and governments) seek to influence the framing of gambling, and gambling research, policy and practice? What are the range of public health strategies that can be used to respond to the predatory tactics of the gambling industry? How can researchers build global networks to share and support independent public health approaches to gambling harm prevention?

This workshop is relevant for public health and health promotion researchers, policy makers, practitioners, and advocates.

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### “There was a lot of that [coercion and manipulation] happening and well, that’s not very trustworthy”: a qualitative study on COVID-19 vaccine hesitancy in Canada

Melissa MacKay<sup>1</sup>

<sup>1</sup>University of Guelph, Canada

**Introduction:** Although a large proportion of the Canadian population is fully vaccinated against COVID-19, millions of eligible individuals remain unvaccinated. Trust in public health and government impacts the effectiveness of crisis communication and the public’s willingness to follow health recommendations.

**Methods:** The research utilized a qualitative approach with semistructured interviews to understand the views and perspectives of vaccine-hesitant adults during COVID-19 in Canada. The interview questions were focused on questions about the key principles of the CDCs Crisis and Emergency Risk Communication Framework. Thematic analysis of the interviews was completed. **Results and analysis:** 12 participants were interviewed, contributing to four interrelated themes as important to COVID-19 vaccine hesitancy: (1) perceived low use of crisis communication guiding principles by public health and government is contributing to distrust of the spokesperson and message; (2) risk perception and decision-making around vaccine uptake are influenced by many sources and concerns surrounding vaccine research and development; (3) the pharmaceutical industry and perceived politicization of vaccine efforts are causing distrust; and (4) stigmatization related to COVID-19 vaccine status further entrenches views and erodes trust. **Conclusions and implications for policy, practice, and research:** This study highlights the importance of trust and how vaccine hesitancy is fueled by perceived ineffective crisis communication by officials. Crisis information that is targeted and tailored and evidence-based must reflect vaccine-hesitant individuals’ information needs and values, rather than a one-size fits all approach.

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### Non-smoking outdoor environments in the health care sector in region Östergötland, Sweden

Linda Karlsson<sup>1</sup>

<sup>1</sup>Region Östergötland, Linköping, Sweden

**Background and objectives:** In January 2016, Region Östergötland introduced a completely non-smoking healthcare area. Tobacco smoking is today the single largest cause of disease and premature death in the Western world. It is important to prevent illness and especially to protect children from passive smoking. The aim is that non-smoking outdoor healthcare facilities become role model and provides a total smoke free environment for all: employees, entrepreneurs, patients, visitors and the population. In 2022, the region made an investment for a campaign to change lifestyle habits and reach better wellbeing. The campaign “Your guide to health” and reinforced earlier work to minimize the exposure for smoke and use of tobacco. **Methods:** The message focuses on the positive potential of non-smoking healthcare facilities outdoors. The organization takes responsibility for promoting health and disease avoidance. Employees in health care take responsibility and show that non-smoking healthcare environments are important. The patient is motivated to change and is offered a tobacco-subsidy aid. Inpatient patients are offered nicotine medicines.

**Results:** It has been a solid job, with many professions involved. Important conclusions have been identified; walking around the hospital environment to detect secret smoking places and extra cleaning if necessary to sweep away cigarette butts. Various campaigns like tobacco-free day and tobacco-free week, news and articles on the hospitals intranet and written information in different languages. **Conclusions:** Since 2018, there is a law in Sweden against smoking in certain places. As society becomes more smoke-free, compliance with healthcare decision in non-smoking outdoor environments is likely to increase and be respected to a largely extent. Regarding behavioral changes, it is a matter of patience, continuously reminding and work from various arenas to reach a smoke-free outdoor environments in region Östergötland.

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### Mis/disinformation in a public health crisis: supporting the wellbeing of individuals with lupus through evidence-informed advocacy

Francesca Cardwell<sup>1</sup>, Susan Elliott<sup>1</sup>, Ricky Chin<sup>2</sup>, Yvan Pierre<sup>3</sup>, Ann Clarke<sup>2</sup>

<sup>1</sup>University of Waterloo, Canada, <sup>2</sup>University of Calgary, Canada, <sup>3</sup>McGill University Health Centre, Canada

**Background and Objective:** The spread of false information, unintentionally (misinformation) or deliberately (disinformation), can have serious consequences for trust in public health communication. Exposure to mis/disinformation also presents challenges for individuals with pre-existing conditions like systemic lupus erythematosus (SLE), as mis/disinformation can complicate patient decision-making and exacerbate stress, a potential trigger for SLE flares. The

spread of mis/disinformation has been amplified during the COVID-19 pandemic, as emphasized by The Lancet in their report on the 'infodemic'.

**Methods:** To increase understanding of how individuals with pre-existing conditions access and trust health information, we surveyed an international sample of SLE patients (n=2111) recruited from 18 research cohorts and five advocacy organizations. Respondents completed an online survey regarding the sources of health information accessed in the 12 months preceding (pre-03/11/2020) and during the pandemic (post-03/11/2020). The percentage accessing various sources of information and their level of trust in each source were compared pre- and post-03/11/2020 using McNemar tests.

**Results:** The mean age of respondents was 49 years and 93% were female, which is consistent with the characteristics of those affected by SLE. Adverse impacts to health due to accessing health information through news/social media were reported by 17%. Although lupus specialists and family physicians were the most trusted sources, they were accessed less frequently post-03/11/2020 (specialists: 79% pre vs 70% post; physicians: 57% pre vs 50% post), and news and social media, less trusted sources, were accessed more frequently (news: 53% pre vs 62% post; social: 38% pre vs 41%). Advocacy organizations were less accessed pre (36%) and post (37%) than other less/similarly trusted sources (e.g., news media). Trust in advocacy organizations decreased post-03/11/2020 (59% pre vs 54% post). **Conclusions:** Exploring how advocacy organizations can better support patients, particularly during times of crisis, is critical to mitigating the adverse impacts of mis/disinformation.

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### Rural-urban variation in willingness to donate blood in Ibadan region, Nigeria

Brigid Unim<sup>1</sup>, Faithwin Gbadamosi<sup>2</sup>, Yusuf Popoola<sup>3</sup>, Femi Olaniyan<sup>2</sup>, Ridwan Adesola<sup>4</sup>, Brigid Unim<sup>5</sup>

<sup>1</sup>Department of Cardiovascular, Endocrine-Metabolic Diseases and Aging, Istituto Superiore di Sanità, Rome, Italy, <sup>2</sup>Department of Geography, University of Ibadan, Nigeria, <sup>3</sup>Department of Computer Science, Adeleke University, Nigeria, <sup>4</sup>University of Ibadan, Nigeria, <sup>5</sup>Department of Cardiovascular, Endocrine-Metabolic Diseases and Aging, Istituto Superiore di Sanità, Italy

**Background and Objective:** Although there are ongoing blood donation campaigns in Nigeria, the prevalence of voluntary blood donation is about 10% and there is limited information about the determinants of blood donation behavior, especially across rural-urban geographic areas. The aim of the study is to assess the rural-urban differences in willingness, knowledge, attitude and practice of blood donation. **Methods:** A cross-sectional study addressing adults from three rural and three urban communities in Ibadan region was performed in 2021 using a structured interviewer-administered questionnaire. The study subjects were selected through a multi-stage sampling method.

**Results:** A total of 287 individuals were surveyed, of which 72% have never donated blood. The majority knew about blood donation (83.6%), considered it a safe practice (88.8%), and knew where to donate blood, especially rural dwellers (78.2% vs. 57.5%; p=0.001). However, urban dwellers were more willing to donate blood (67% vs. 58.6%; p=0.03). The main reasons for not donating blood for rural dwellers were 'never thought of it' (39% vs. 34.7%) and 'no one asked' (34.4% vs. 17%); most urban dwellers were afraid of needles (21.8% vs. 12.5%) (p=0.02). Of 76 blood donors, 68.4% had donated once and 47.4% donated for relatives or friends. Most rural dwellers declared that blood donors should be compensated (82.8% vs. 48.5%; p<0.001). **Conclusions:** Willingness to donate blood varies across rural and urban communities and is influenced by several factors, including cultural context, the need for motivations and incentives. Consequently, willingness to donate blood does not translate to active practice of blood donation, with consequences for the establishment of blood transfusion services. Public health interventions are required to enhance awareness and knowledge about blood donation and should be targeted to the cultural context and geographical area. The provision of incentives could be taking into consideration in areas with high blood shortage.

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### Communicating about COVID-19 vaccines with young adults: preferences, attitudes, and influences on decisions to get vaccinated

Caitlin Ford<sup>1</sup>

<sup>1</sup>University of Guelph, Canada

**Background:** Young adults have remained one of the least-vaccinated age groups against COVID-19, especially for third and fourth vaccine doses. As

such, understanding key motivators and barriers for vaccine uptake is essential for developing effective health communication that encourages them to get vaccinated. In our study we sought to understand the factors that motivated young adults to get vaccinated against COVID-19, the type of health information that young adults have received during the pandemic, and the communication needs and preferences of young adults.

**Methods:** Fifteen Canadian post-secondary students (aged 18-29) participated in semi-structured interviews where they were asked about the influence of various public health information on their decision to get vaccinated against COVID-19. Interview transcripts were then coded for common topics, and a thematic analysis was conducted to uncover major themes from the interviews.

**Results:** Four major themes regarding decisions to vaccinate emerged from our study population. 1) Participants had high science and health literacy which shielded them from being influenced by misinformation; 2) Participants expressed high trust in official sources which positively impacted their confidence in the vaccines; 3) Participants exhibited a low perceived risk from COVID-19 infection and their decision to vaccinate was influenced by factors beyond personal protection; 4) Participants responded best to communication that they perceived to be targeted and tailored towards them and messages that met their communication needs had a positive influence on their decision to vaccinate.

**Conclusions:** Together these themes form a foundation for effective vaccine communication campaigns targeted and tailored towards young adults. Our findings provide strategies for the creation of public health messages that meet the needs of this population, which is essential for gaining their trust during future public health crises.

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### Multilevel and multidimensional communications for health equity: experiences of the health equity network of the Americas

Luis Calvo<sup>1</sup>, Rocío Sáenz<sup>2,3</sup>

<sup>1</sup>Centre for Research in Nursing and Health Care of the University of Costa Rica, San José, Costa Rica, <sup>2</sup>Centre for Research in Nursing and Health Care, University of Costa Rica, San José, Costa Rica, <sup>3</sup>Health Equity Network of the Americas, San José, Costa Rica

The Health Equity Network of the Americas (HENA) is a multidisciplinary platform for research, teaching, and social action, with a diversity of strategic visions and policies at a multilevel scale for the management, exchange, and dissemination of knowledge. In 2021-2022, it was proposed to consolidate an efficient and effective communication strategy from the dimensions of coordination, and internal, external, and corporate communication. A literature review and a participatory workshop with representatives of HENAs political and strategic direction were conducted from Discussion-generating questions about the identity, contributions, audiences, key messages, channels, and feedback on which HENA will be based, in addition to documentary analysis and diagnosis of content in social networks from its launch in 2020 until the transfer and consolidation of the Technical Secretariat to the Centre for Research in Nursing and Health Care of the University of Costa Rica (CICES-UCR) in 2021. The Communications Management Strategy has allowed the continuous flow of information, dissemination of activities of interest, and scientific production. In the corporate dimension, a graphic line was generated for the design and distribution of content, firstly creating an identifier and updating advertising and digital materials. In the internal dimension, the articulated work between the political and strategic teams internally was promoted. For the external dimension, communications, and annual media plans were generated to reactivate brand positioning strategies on digital platforms, with the launch of official chats, and social networks. Sharing knowledge for action in equity requires multilevel dissemination strategies with principles such as accessibility, feasibility, credibility, relevance, comprehensibility, and timeliness of information, targeted and adapted to audiences. HENA has managed to bring together actors for an articulated work and to position equity as an action that transcends intention, with powerful messages contextualized to priorities and experiences of the region that invite to act intersectionally, systemically, and people-centered.

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### Challenges for menstrual hygiene practice among adolescent school girls in West Midnapur district, West Bengal, India

Anumita Mallick<sup>1</sup>

<sup>1</sup>Vidyasagar University, Kolkata, India

**Background:** One of the most common issues that adolescent girls in India face is about their periods. Menstrual Hygiene for adolescent school girls is a neglected

issue coupled with social challenges in countries specially like India. Social norms, practices and limited availability of commodities influence adolescent girls' capacity to cope up the stress as well as take part in family and social life, and many girls even don't know how to maintain the menstrual hygiene. Objectives: This study Aims to explore the restrictions and menstrual problems among adolescent school girls. methods We conducted this cross-sectional study during January 2018 – December 2019 and interviewed Bengali school going adolescent girls in Paschim Medinipur district of West Bengal, India, using semi-structured validated questionnaire. Collected data were entered, cleaned and analysed using recommended statistical software and methods.

Results: Among 232 enrolled study respondents (age range from 9 to 16 years), average age at menarche was found 12.7 years (12.3, 12.9) In response to the question about challenges during menstruation, 97% of the respondents were keeping away from religious function and followed by didn't eat certain food (6%), didn't prepare food (27%), didn't play (39%). 82% felt abdominal pain, 14% in excessive bleeding and 4% felt breast pain) as primary challenges they face.

Conclusions: Menstruation continues to be a health challenge augmented by social norms and practice for adolescent girls, despite significant improvements to facilities and educational programs in the country. This biological phenomenon causes many of the adolescent girls to miss school days, regardless of the types of school. Adolescent girls safe health and recommended menstrual hygiene practices are also greatly influenced by the facilities provided at schools.

Keywords: Menstrual problem, adolescence girls, school toilet, sanitary pad

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### Prevalence of Plasmodium falciparum infection in children under 15 years in two oil palm plantations in Aboisso, Côte d'Ivoire

Agnimou Sadia-kacou<sup>1,2</sup>, Assi Serge-brice<sup>1,2</sup>, Adja Maurice<sup>3</sup>, Anne Poinsignon<sup>4</sup>, Franck Remoué<sup>4</sup>, Guigbéhi Koudou<sup>5</sup>

<sup>1</sup>Institut National de Santé Publique, Abidjan, Côte d'Ivoire, <sup>2</sup>Institut Pierre Richet Bouaké, Abidjan, Côte d'Ivoire, <sup>3</sup>Université Félix Houphouët Boigny, Ivory Coast, <sup>4</sup>MIVEGEC, University of Montpellier, IRD, CNRS, France, <sup>5</sup>Université Nangui Abrogoua, Côte d'Ivoire

Background and Objective: Malaria is a major public health problem in Sub-Saharan Africa including Côte d'Ivoire. It is a deadly disease for children under five year's old and pregnant women. The prevalence of malaria is not well studied in oil palm plantations in Aboisso district. Therefore, the aim of this study is to quantify the burden of Plasmodium malaria infection in two oil palm plantations in South Eastern region of Côte d'Ivoire.

Methods: Two cross-sectional surveys bearing on 388 children aged 1 to 14 years old from two oil palm agro systems namely Ehania-V1 and Ehania-V5. During the dry and the peak of the long-wet seasons, finger pricked blood was used to prepare thick and thin blood smears.

Results: 66.2% of children were identified as afebrile, with axillary temperature below 37.5°C. According to villages, this was 63.7% in Ehania-V1 and 61.4% in Ehania-V5. Microscopy identified an overall Plasmodium falciparum infection prevalence of 35.3%. 19.1% of children in Ehania-V1 and 53.3% in Ehania-V5 harbour Plasmodium falciparum the dominant parasites. Plasmodium falciparum was not associated with gender, age-group, fever and mosquito net use (P>0.05). The prevalence of Plasmodium in febrile (43.7%) and afebrile (59.3%) was not similar in children of Ehania-V5 (p=0.04). Children from Ehania-V5 were significantly more infected in the wet (62.7%) season than the dry (41.5%) (p=0.004). Significant difference were observed in Plasmodium falciparum between the two villages during both the dry (p=0.005) and wet season.

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### Safety education and child safety behavior on the Road in The Gambia

Paul Bass<sup>1</sup>, Bakary Ndow<sup>1</sup>, Manjally Ndow<sup>1</sup>, Alhaji Jabbi<sup>1</sup>

<sup>1</sup>Department of Public and Environmental Health, School of Medicine and Allied Health Sciences, The University of The Gambia, The Gambia

In The Gambia, up to 30% of road traffic crashes involve students with a mean age of 14 years and more than half (51%) were injured as pedestrians. To our knowledge, no study in West Africa investigated child safety behaviours with a support system from parents. This study investigates the influences of safety education and parent support to improve child safety behavior on the road in The Gambia.

Methods: Using a controlled field experimental design, two public lower basic schools located along a public road (highway) in West Coast Region were randomly assigned as the intervention or control schools. Eligible participants were all

students aged 11 to 14 years. Parents of children in the intervention school were provided road safety education and their parent support was assessed, including the child's mode of transport to school, sources of distraction, and safety concerns. However, in the control school, both parents and students were given information about how to ensure dental hygiene. Real-time video recordings were used to observe child safety behaviour while on the road environment.

Results: The results showed that individuals or groups of students were more likely in the intervention school than in the control school to demonstrate ideal road crossing behaviours, such as looking left-right-left before road crossing, less likely to cross the road while there is an incoming vehicle, crossed the road without distractions from others, crossed the road at designated crossing areas and walking fast and not running while crossing the road. The mean crossing time was lower for children in the intervention school than in the control school.

Conclusions: The study demonstrated, to an extent adoption of ideal behaviour among students. These findings may fill in a knowledge gap and should initiate discussions on introducing road safety lessons in the basic school system in The Gambia.

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### Do the same message effect differently vaccinated and unvaccinated?

Smiljana Cvjetkovic<sup>1</sup>, Vida Stojkovic<sup>1</sup>, Sanja Matovic-Miljanovic<sup>1</sup>, Stefan Mandic-Rajcevic<sup>1</sup>, Janko Jankovic<sup>2</sup>

<sup>1</sup>Euro Health Group, Serbia, <sup>2</sup>Faculty of Medicine, University of Belgrade, Serbia

Background and Objectives: Even something distinctly personal, as an attitude towards vaccination, is actually a social phenomenon that can be influenced by what others do or say. Rich history of persuasion research shows that different types of messages can influence attitude change in diverse directions. The aim of this study was to evaluate the effects of message features on attitudes towards COVID-19 vaccine and vaccination. Methods: Experimental study was conducted in two phases. In the first phase the preexisting attitudes towards COVID-19 vaccination were assessed. In the second phase respondents were randomly assigned to four message interventions, developed combining two prototypical pro-vaccination decision narratives (determined vs. hesitant) with two communication sources (physician vs. lay peer). After the message exposure, participants were asked to fill in the questionnaire regarding attitudes towards COVID-19 vaccination again. Total of 172 adults aged 18 and above from Western Balkans, both vaccinated and unvaccinated, participated in the study. Wilcoxon signed-rank test was applied.

Results: The message condition where the lay peer is expressing hesitant decision narrative elicited change in attitudes towards the COVID-19 vaccine safety in both the unvaccinated (p<0.05) and the vaccinated (p<0.05) producing positive change among the former and negative in the latter. Additionally, in the vaccinated the same message condition yielded a significant positive change in perception of the danger of disease (p<0.05) and social responsibility (p<0.05). After the message intervention they perceived danger of COVID-19 as higher and reported greater sense of social responsibility. Conclusions: The same message features elicited different directions of attitude change, depending on vaccination status. In the unvaccinated the exposure to the message enhanced the adoption of message-consistent vaccination attitudes, while in the vaccinated it triggered general sense of vulnerability, characteristic for their pre-vaccination emotional state.

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### Health agencies Facebook performance before and during the COVID-19 pandemic: insights for infodemic control

Leonor Bacelar-Nicolau<sup>1,2</sup>, Susanah Diniz<sup>3</sup>, Leonor Bacelar-Nicolau<sup>4,5</sup>

<sup>1</sup>Instituto de Medicina Preventiva e Saúde Pública (IMPSP) and Instituto de Saúde Ambiental (ISAMB), Faculty of Medicine, University of Lisbon, Lisbon, Portugal, <sup>2</sup>NOVA Information Management School (IMS), Lisbon, Portugal,

<sup>3</sup>NOVA IMS Information Management School, Lisboa, Portugal, <sup>4</sup>IMPSP and ISAMB, Faculty Medicine of Universidade de Lisboa, Lisboa, Portugal, <sup>5</sup>NOVA IMS, Lisboa, Portugal

An infodemic is an enormous flow of inaccurate information that may spread through social media, potentially causing confusion and damaging peoples' behavior and health, during an epidemic. It may intensify outbreaks and hinder the discovery of trustworthy sources and reliable guidance for populations. Our aim was to characterize the individual engagement performance of social media posts published before and during the COVID-19 pandemic (before and after vaccination) on Facebook's pages of selected national health organizations to

identify typologies of agencies. Publicly available data on 39525 posts from 17 health agencies Facebook pages between 01/01/2019 and 31/05/2022 was studied with univariate, bivariate, and multivariate exploratory data analysis (such as principal components and hierarchical cluster analysis) and text mining methodologies. Results showed that globally COVID-19 led to a relevant increase in the number of posts published on the health agencies' Facebook pages under study, and to a significant increase in their audiences' interactions. However, engagement during the pandemic period after starting the vaccination decreased, when compared with the previous pandemic period. Furthermore, 3 typologies of agencies were identified: agencies with high performance in total interactions; agencies with either higher or lower relative engagement; agencies with opposing performance before and after vaccination started during the pandemic period. Hence, audiences sought more information on Facebook with the COVID-19 pandemic. Different performances from health agencies' pages may be linked to different infodemic strategies. Our study provides valuable insights to health agencies, as infodemic management should not be confined to times of crisis but should be an ongoing investment and may contribute to more effective health promotion strategies.

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### Heating versus Eating - The framing of food and fuel poverty in UK media

Sarah Champagne<sup>1</sup>, Omotayo Adefolalu<sup>1</sup>, Jennie Macdiarmid<sup>1</sup>, Euan Phimister<sup>1</sup>, Aravinda Guntupalli<sup>1</sup>

<sup>1</sup>University of Aberdeen, United Kingdom

**Background:** In a time of economic turmoil, the UK is facing a stark cost-of-living crisis where people may be forced to choose between heating their homes and eating regular meals. Little research has explored this intersection of food and fuel poverty (FFP), though the "heat or eat" trade-off has been widely portrayed in the UK media. Hence, this media analysis seeks to assess how FFP are framed relationally in the UK news and how surrounding public health messaging has been portrayed.

**Methods:** Using Nexis Lexis, we searched for UK news articles about overlapping FFP, published between January 2010 and April 2022. Relevant data were extracted and analysed relying on framing theory.

**Results:** We identified 193 articles that met the inclusion criteria. Despite a spike in FFP news in 2013/2014, the issue largely gained momentum late 2021 into 2022, following the cost-of-living crisis and, later, Russian invasion of Ukraine. Journalists predominantly identified food poverty as a reliance on food banks, and fuel poverty as an inability to afford to heat and, to a lesser extent, power household (e.g., cooking) appliances. Many (68%) articles presented FFP as a trade-off ("heating versus eating"), while others framed FFP as "compounding," or "not distinct." Thirty per cent of articles framed the issue in relation to public health, with 10% drawing connections to mental health, 7% to death/mortality, and 18% to physical health. Children (n=78), older adults (n=48), and people with disabilities (n=28) were outlined as having a distinct relationship with FFP – either as particularly "hard hit," "vulnerable to consequences," or "unacceptably experiencing" FFP.

**Conclusions:** The intersection of FFP has been a reoccurring and growing topic in mainstream UK news since 2010. Public health research needs to do more to explore the "heat or eat" phenomenon and contribute to public awareness of FFP health implications.

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### The newspaper coverage of public health policies and scientific research: lessons learned by the Italian National Institute of Health during the COVID-19 pandemic

Carlotta Fiammenghi<sup>1</sup>, Elisabetta Ceretti<sup>1</sup>, Loredana Covolo<sup>1</sup>, Umberto Gelatti<sup>1</sup>, Luana Penna<sup>2</sup>, Anna Taranto<sup>2</sup>, Silvio Brusaferro<sup>2</sup>

<sup>1</sup>University of Brescia, Department of Medical and Surgical Specialities, Radiological Sciences and Public Health, Italy, <sup>2</sup>Istituto Superiore di Sanità, Italy

**Background:** Most articles in the corpus appeared in Corriere della Sera (31,8%) in March 2022 (17,6%). Preliminary results show that across all publications special attention is paid to the semantic and discursive aspects related to the use of a specialized lexicon or register in journalistic texts. Terms such as "serological" (sierologico, 252.97 fpmw), "swab" (tampono, 1637.68 fpmw) and "R-value" (indice R, 83.56 fpmw) are often singled out and explained using lexicographic strategies (definitions, paraphrases, and synonyms); however, concordances show significant semantic shifts from scientific-institutional to journalistic use

of such words in context.

**Conclusions:** The linguistic analysis has shown the friction between medico-scientific, institutional, and journalistic narratives of the pandemic. The project aims to further this analysis by building a multidisciplinary research team comprising medical practitioners, public health researchers, linguists, and journalists, to reflect on these clashes and to develop best practices to face possible future public health crises.

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### TV medical drama: how to talk about public health in Italian primetime

Daniela Zago<sup>1</sup>, Enrico Scarpis<sup>2</sup>, Erika Pompili<sup>3</sup>, Gianluca Voglino<sup>3</sup>, Laura Brunelli<sup>4</sup>

<sup>1</sup>University of Udine, Department of Medicine, University of Udine, Udine, Italy, <sup>2</sup>University of Udine, <sup>3</sup>University of Turin, Department of Public Health Sciences, University of Turin, Turin, Italy, <sup>4</sup>University of Udine; Friuli Centrale Healthcare University Trust

**Background and Objective:** Television is one of the most effective media for conveying important public health messages and promoting prosocial behaviors. In addition, television medical dramas often depict the practice of medicine and thus can influence the knowledge and behavior of a large audience. Our aim was to analyze how public health issues are addressed in the most popular medical dramas.

**Methods:** We selected the two most popular television medical dramas in Italy that aired in prime time between 2012 and 2019 and are also available on DVD or paid platforms. A total of 94 episodes of Greys Anatomy and House, M.D. (49 and 45, respectively) were analyzed in double blind. Each episode was assessed using a checklist that described the health promotion topics covered and the compliance with infection risk prevention for each procedure performed.

**Results:** At least one public health topic was addressed in 57 (61%) episodes (86 total cases), including: blood and organ donation (33%), drug and alcohol abuse (27% and 17%, respectively), healthy eating (9%), physical activity (9%), sexually transmitted diseases (6%), immunizations (3%), screening programs (3%) and smoking (1%). No reference was made to sleep education and promotion of sleep hygiene. Proper hand hygiene was depicted in 10% of the potential 239 procedures. The use of disposable gloves and gowns (PPE=personal protective equipment) was appropriate in 92% and 74%, respectively, of the 191 procedures in which their use was required by the guidelines.

**Conclusion:** In the episodes analyzed, healthy lifestyles (i.e., smoking abstinence) or vaccination were addressed only superficially, and the use of PPE was also partially presented before the pandemic. Given their large audience size, medical dramas should better be used to communicate important public health issues to the general public.

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### A health policy dialogue on emergency use authorization during COVID-19: a case of a YouTube influencer with millions of subscribers

Jenny Frasco<sup>1</sup>, Lana Ivanitskaya<sup>1</sup>, Elina Erzikova<sup>1</sup>, Eva Reed<sup>1</sup>

<sup>1</sup>Central Michigan University, School of Health Sciences, 1200 S. Franklin St., Mount Pleasant, Michigan 48859, United States

**Background and Objective:** An essential element of managing a public health emergency is communication. The rise in popularity of YouTube videos about Emergency Use Authorization (EUA) matched the announcement of the first COVID-19 vaccine receiving an EUA. EUA communication by public health authorities coincided with social media messaging by individuals, some of whom amassed vast global audiences. We aim to analyze the EUA policy from the perspective of the 1) influencer, Dr. John Campbell, a U.K.-based nurse educator and popular YouTuber and 2) his global audience of social media users who watched Campbell's EUA-related videos 4.5M times, posting 38,000 comments.

**Methods:** We used descriptive statistics, content analysis, computational linguistics, and natural language processing in VOSviewer to analyze Campbell's video messages and YouTube statistics; 38,000 comments to his 5 videos about EUA; and audience engagement – likes and comments per video view. Video transcripts and audience comments were transformed into term networks that explain the main discussion topics by visualizing co-occurring terms.

**Results:** By November 2022, Campbell's 2.56M subscribers represented 0.03% of the global population. The YouTube videos about EUAs he uploaded in Nov 2020-September 2022 demonstrate high audience engagement. Campbell's YouTube follower comments provide evidence of social media users' concerns

with how EUAs are used, especially late in the pandemic. There is disagreement about the meaning and application of EUA. Some commenters question if the emergency continues to exist, challenge the process of granting EUAs, and question motivations by pharmaceutical companies and public health authorities. EUA comments are linked to other COVID-19 discussions, which we explain in depth.

Conclusion: While not without controversy, Campbell's messages invite participatory dialogue and broad audience engagement. This case study offers insight about how the influencer engages the audience and how the audience responds, each with implications for health communication, health administration, and health policy.

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### Managing the financial risks and harms from gambling: a lived experience perspective

Sarah Marko<sup>1</sup>, Samantha Thomas<sup>1</sup>, Hannah Pitt<sup>1</sup>, Mike Daube<sup>1</sup>

<sup>1</sup>Institute for Health Transformation, Faculty of Health, Deakin University, Australia

Background and Objective: Government messages about gambling typically frame gambling as a financial risk, and harm as being the result of an individual's choices. This study aimed to understand how people with lived experience of gambling harm conceptualise the financial risks and harms gambling can have, and how these were recognised and managed in their own lives.

Methods: Semi-structured interviews were conducted in Australia. The participants were fifteen gamblers who had experienced harm from their own gambling and six affected who had been harmed by a family member's gambling. The data were analysed using reflexive thematic analysis.

Results: Four themes were constructed from the data. First, participants did not generally think about the risks associated with gambling prior to experiencing harm. Those who did considered whether each bet was affordable. Second, they recognised gambling was harming them when their broader finances were negatively impacted by gambling losses. Third, the financial impact of gambling was managed by prioritising their expenses, limiting other spending, and borrowing money. Finally, the financial impact of gambling contributed to other long-term problems.

Conclusion: This study showed that messages about being financially responsible when gambling may not be effective as participants attempted to manage the financial impacts of gambling. Public messaging around gambling should move away from personal responsibility and instead highlight the realistic risks and harms gambling can have in the lives of gamblers and affected others.

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### Infectious diseases risk framing in Bulgarian media during early COVID-19 pandemic and the Ebola crisis

Zhivka Getsova<sup>1</sup>

<sup>1</sup>National Centre of Infectious and Parasitic Diseases, Bulgaria

Background and Objective: Newly emerging infections are a major challenge to public health. Motivation for compliance with recommendations may be life-saving and depends on effective communication. The study's aim is to review risk framings in the media in the early stages of the COVID-19 pandemic (January 2020) in Bulgaria and to compare results with the communication carried out in October and November 2014 when Ebola was exported from Africa.

Methods: Bulgarian public television central news emissions were screened for information on infections for 1 month in 2020 and 2 months in 2014. A content analysis was carried out. Period lengths reflect observed intensity of spread (EVD 2014 R0 range (1.51-2.53), COVID-19 (1.5-3.5 from early 2020)). Binary, continuous and categorical variables were introduced to match the needs of the analysis. Attention was paid to whether news mention epidemic, symptoms, masks, restrictions, mutation, vaccines, evacuation, testing, preparedness and others. Duration of reportages and choice of interviewees were compared.

Results: Cumulative duration of reporting on infections was 58 min in October-November 2014 and 55 min in January 2020. In both cases information on the epidemic situation in Europe prevailed. Duration of reportages that involve medical doctors as interviewees was higher in 2014 while the presence of foreign technical experts prevailed in 2020. Reporting on other infection was 57% more common in 2020 than in 2014. Evacuation, restrictions and masks were 5 to 10 times more frequently discussed in comparison with 2014, while testing, vaccines and preparedness were 1.14 to 1.6 times more common topics in 2014.

Conclusion: Diagnostic preparedness was framed as more urgent in 2014 while in 2020 early crisis response focused on prevention. To preserve public trust and

encourage compliance with measures communication should explain priorities and their consistency with the threat's nature while setting realistic targets specific to each epidemic.

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### Evaluation of the exposure to COVID-19 vaccination-promoting communication campaign in Armenia

Zaruhi Grigoryan<sup>1</sup>, Zaruhi Grigoryan<sup>1</sup>, Varduhi Hayrumyan<sup>1</sup>, Tsovinar Harutyunyan<sup>1</sup>

<sup>1</sup>Turpanjian College of Health Sciences, American University of Armenia, Marshal Baghramyan 40, Yerevan, 0019, Armenia

Background and Objective: To raise awareness of the safety and effectiveness of COVID-19 vaccines and to boost the vaccination rates in Armenia, the Turpanjian College of Health Sciences of the American University of Armenia (AUA/CHS) launched an awareness-raising campaign in 2021, employing various communication channels. To understand whether the campaign reached its audience, we assessed the level of exposure to the campaign materials in June-July 2022.

Methods: We conducted a cross-sectional telephone survey among 312 adult participants from the capital Yerevan and other regions of Armenia. The exposure to communication materials in the past 12 months was assessed at the levels of aided and confirmed recall. The overall level of exposure and the distribution of exposure across socio-demographic categories were explored in descriptive and bivariate analysis.

Results: The mean age of participants was 47.73. Females constituted 57% of the sample. About 37% of the study sample was exposed to at least one of the COVID-19 vaccination-related communication materials produced by the AUA/CHS. The vast proportion (75.2%) of those who were exposed to any messages about COVID-19 vaccination in Armenia (n=149) were exposed to at least one of the AUA/CHS-produced materials. About 26% of participants reported exposure to any of the five TV spots and 18.21% to any of the three billboards/posters. The TV spots and billboards/posters were the most commonly recalled conduits of communication. A significantly higher proportion of 18-64-years old participants was exposed to communication materials compared with the older respondents (42.11% vs. 21.62, p=0.002).

Conclusion: The study findings showed that AUA/CHS campaign was well-represented in the awareness-raising efforts in the Armenian media, reaching mostly the younger and middle-aged audience. Given the higher rates of exposure to TV spots and billboards/posters, these communication means should be further utilized for awareness-raising efforts in the country.

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### Rational use of antimicrobials: use of technological resources for teaching-learning and health promotion

Claudia Liba<sup>1</sup>, Tatiana de Araújo Alecrim<sup>2</sup>, Isis Katayama<sup>3</sup>, Marcelo Corral<sup>1</sup>, Diego Diniz<sup>4</sup>, Tatiana de Araújo Alecrim<sup>3</sup>

<sup>1</sup>Facens Centro Universitário "Rodovia Senador José Ermírio de Moraes, 1425 - Jardim Constantino Matucci, CEP 18085-784 Sorocaba - SP, Brasil"  
<sup>2</sup>Brazil, <sup>3</sup>Facens Centro Universitário, Sorocaba, Brazil, <sup>4</sup>Facens Centro Universitário, "Rodovia Senador José Ermírio de Moraes, 1425 - Jardim Constantino Matucci, CEP 18085-784 Sorocaba - SP, Brasil

Background: The antimicrobial resistance of microorganisms is a global issue. According to the WHO, in 2019 this phenomenon was one of the leading causes of mortality, with 5 million deaths associated. In this way, the FACENS University Center of Sorocaba/SP promoted an extension activity with academics from health courses, using digital technologies.

Aim: Elaborate an Educational Campaign in Public Health on the rational use of antimicrobials and sustainable consumption, using innovative pedagogic tools. METHODS: The students carried out a survey, in their homes, on personal hygiene and sanitizing products with antimicrobials. Next, they carried out a conversation circle, a directed study with the support of scientific texts and a Task-Based Learning (TBL) about "Mechanisms of Action of Antimicrobials and Resistance". The subject "Control by Physical and Chemical Agents" was taught with the method Learning Stations and the subject "Bacterial Genetics" with the method Phillips 66. Finally, the students elaborated texts based on the studied content, which were adapted for communication in digital platforms.

Results: Biomedicine and Dentistry students produced a successful educational campaign on the rational use of antimicrobials and the consumption of antimicrobial-free products. Ten videos were produced and released for the TikTok

network and an interview for the YouTube channel, complementing the classroom knowledge, with the perspective of Public Health in Sorocaba/SP.

Conclusion: The activities were important for the awareness and sensitization of academics about possibilities of social intervention. The students perceived themselves as powerful agents of social transformation, for having been able to inform to the public, in an accessible and assertive way through digital technologies, knowledge built and learned at the university.

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### Sources of information on formaldehyde-will it modify behavior among students?

Liju Mathew<sup>1</sup>, Liju Mathew<sup>1</sup>, Zeeshan Ali<sup>2</sup>, Neema Halfa<sup>1</sup>, Jayakumary Muttappallymalil<sup>1</sup>

<sup>1</sup>Gulf Medical University United Arab Emirates, <sup>2</sup>Gulf Medical University

Introduction: The essential standard usage of human cadavers in educational practice follows extensive preservation and maintenance to prevent tissue putrefaction which is achieved by embalming and formaldehyde fixation. Medical students spend a lot of time in the gross anatomy laboratory and show variable signs of acute exposure. Obtaining reliable information on the preservative fluid mixture is a major challenge among the students and the staff, due to the regional variation seen with the preservative techniques. In this study, an effort has been made to understand the impact of sources of information on the practical behavior of students to combat the effects of formaldehyde.

Methods: A cross-sectional self-administered questionnaire study was conducted among the student population. A total of 513 participated in the study. Descriptive and inferential statistical analyses were performed. The significance level was set at  $p \leq 0.05$ .

Results: A good level of literacy of 36.1%, an attitude of 70.4%, and practice of 54.0% were observed among the study population. There is a positive association between seminar, school teachers, and senior students and 57% of participants were reported to have better behavior change from other source input. Regarding the source of information on the fixation mixture and its ill effects, 47.2% of students agreed to have been taught by their respective medical school faculty; 16.6% were informed best by the seminar, and 24.8%, 41.9%, and 32.7%; identified senior students, schoolteachers, and friends respectively as source agents in this study.

Conclusion: Addressing the most influential source, the participants agreed source for formaline and other preservative fluids was introduced by the medical school faculty. And recommended improvising the information source-seeking habit, awareness, and information sources on the safety protocols related to handling fixed cadaveric specimens, especially for entry-level students in the university must be highlighted for safe practice and learning.

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### Public health observatories: information and communication networks for knowledge production and dissemination of reliable information in the COVID-19 pandemic

Marcele Paim<sup>1</sup>

<sup>1</sup>Federal University of Bahia/Brazil Rua Basílio da Gama, 72/901, Canela zip code 40110-040 Brazil

Faced with the observation of the growing use of observatories, as an institutional device for Public Health, as information and communication technologies inserted in cyberspace, an attempt was made to investigate their performance in the production of knowledge and dissemination of health information in the COVID-19 pandemic, in Brazil and in other countries. From research that mapped 70 health observatories, focusing on the analysis of health policies of observatories whose countries have universal health systems, a comparative study of multiple cases was carried out. The information content and technical-communicational aspects of 10 health observatory websites were analyzed. The observatories had the function of providing reliable information for monitoring health policies, strategic planning and evidence-based decision-making. The results pointed to the tendency to create new specific sections with information about the pandemic, curatorial work with news publications, epidemiological bulletins, links, articles, studies, research, insertion of new tools, the use of social networks and diversity of languages, revealing the relevance of monitoring health status; gather knowledge production and provide evidence-based quality information, enabling access to reliable information about the pandemic. A dynamic conceptual model is proposed that integrates a virtual repository of information, communication and intelligence in health. This model adds characteristics present in institutional and news sites, suggesting attention to aspects of interculturality and the role

of curatorship of information on health observatory sites. It concludes with reflections on the importance of universal health systems; the intercultural and communicative potential of these health observatories as information and communication networks for the production of knowledge and dissemination of information in the COVID-19 pandemic. In addition, one can defend the thesis of considering health observatories as sociotechnical networks based on the Actor-Network Theory (ANT).

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### The use of instagram for health promotion and prevention: a scoping review

Valerio Corona<sup>1</sup>, Angelica Gris<sup>1</sup>, Leonardo Villani<sup>1</sup>, Michele Bonacquisti<sup>2</sup>, Gabriella Pietro<sup>1</sup>, Enrica Campo<sup>1</sup>, Maria Morra<sup>2</sup>, Maria Gualano<sup>1</sup>, Walter Ricciardi<sup>1</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore Section of Hygiene, Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>2</sup>Università Cattolica del Sacro Cuore

Background & Objective: Over the past 50 years, our knowledge about the impact of behaviors and lifestyles on health has evolved significantly. Strategies that encourage individuals to engage in healthy behaviors for their own health and the health of others are needed today, also considering that the abilities to access, understand and use health information has significantly changed. The aim of this scoping review is to describe how one of the most frequently used social network such as Instagram is used in communicating health promotion and prevention information. It also aims to identify what are the main factors that determine the dissemination of health information among users and its effects on health literacy and awareness.

Methods: The present scoping review was performed following the PRISMA-ScR Checklist. Thereby searching on 3 databases: PubMed, ISI Web of Science, Scopus. Articles published up to November 2022 that investigated the use of Instagram social media, for public health promotion and prevention, were included.

Results: A total of 2,452 articles were screened, finally 52 were included. We conducted a preliminary investigation dividing the included articles into 3 categories and from this first analysis, we can report that the articles were divided into the following percentages: Public Health Prevention and Health Promotion Interventions 25%, Specific Clinical Conditions 23% and Health Risk Factors 52%. Further investigations will be carried out, concerning the type of communication (stories, reels, posts, etc.) and how the communication influenced: dissemination of information, interest of users, awareness of users, health literacy and empowerment users.

Conclusions: Instagram and social networks are becoming increasingly relevant in public health communications, so it is necessary to consider this tool as a communication system in health promotion and prevention programmes, due to its ability to provide the correct information to the population, removing the physical barriers of traditional programmes.

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### Social networks and pandemic: netnography of a group about maternity and concerns with covid-19

Kamilla Vulcão<sup>1</sup>, Mariana Gervásio<sup>2</sup>

<sup>1</sup>USP Student Av. Dr. Arnaldo, 715 - Cerqueira César, São Paulo - SP, 01246-904 Brazil, <sup>2</sup>USP Angela Cuenca USP College of Public Health Av. Dr. Arnaldo, 715 - Cerqueira César, São Paulo - SP, 01246-904 Brazil

Background and objective: As a consequence of COVID-19 social isolation has imposed a reality more immersed in social networks. An environment widely used by pregnant women and mothers, the internet has enabled them to have virtual contact and connect with support networks and easy the debate on maternity and parenthood. They use groups and forums to exchanges information and calls on their support network to help in making parental decisions. From this perspective, a netnographic study is proposed to analyze interactions of Brazilian users on the social network "Babycenter", within the group "Concerns about coronavirus (COVID-19)" about the pandemic

We objective to analyze the interactions of these users promoted in virtual support networks and understand the type of information about motherhood and parenting were exchanged in the face of a pandemic.

Method: Qualitative research using netnography applied to the group "Concerns..." on the BabyCenter social network from March 2020 to January 2022. All data shared in the tool are publicly accessible. For the analysis 17 topics related to COVID-19 were selected, themed as: General doubts, Narrative, Symptoms in babies and Symptoms in adults. Word cloud and interpretation in speech analysis

techniques were applied.

Results: The interactions are built around an emotional grammar that strengthens the maternal identity "selfless in the care of the child". It is on the mother that responsibility for the family health falls in practical dimensions, but also symbolical and emotionally. In this regard, it was observed that mothers reported seeking the diagnosis of COVID-19 less when it came to themselves. The father appears merely as a provider than as active parent.

Conclusion: In the first two years of the pandemic the concerns narrated by participants are fear regarding their children's health, the impact on their routine, illness and sequels of the disease.

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### Knowledge and sources of covid-19 information in Nigeria during the covid-19 pandemic: a case study for evaluating outbreak health communication practices in Nigeria

Damilola Adesuyi<sup>1</sup>, Nigeria Oluwarore<sup>1</sup>, Nigeria Adewole<sup>2</sup>, Ifeoluwa Oladapo<sup>2</sup>, Nigeria Egwuenu<sup>2</sup>

<sup>1</sup>Adekola Pathobiology and Population Science, Royal Veterinary College, University of London, UK United Kingdom, <sup>2</sup>Nigeria Center for Disease Control Nigeria

Background and Objectives: COVID-19 was recognised as a global health crisis in January 2020 and declared a pandemic in March 2020 by the World Health Organization (WHO). In the advent of an outbreak like COVID-19, dissemination of accurate health information alongside measures to promote acceptance and adoption of public health guidelines is essential to prompt good health-seeking behaviours. The spread of facts and misinformation on COVID-19 in Nigeria highlights the need to examine people's sources of information and their impact on beliefs, perceptions, and health-seeking behaviours. Our study evaluates the knowledge and sources of COVID-19 information amongst Nigerians during the initial wave of the pandemic as a case study for health communication practices and spread of false information during pandemics.

Methods: A cross-sectional survey was conducted via an online questionnaire between 19th May, 2020 and 18th June, 2020 for adults ( $\geq 16$  years old) living in Nigeria with access to internet. Descriptive statistics and chi-square ( $\chi^2$ ) were reported, while multivariable logistic regression was conducted to estimate the association between selected predictor variables and good COVID-19 knowledge. Results: International health organisations (73.9%) and health/public health workers (70.7%) ranked as the most reliable sources of COVID-19 information, and a lesser level of trust in government statements (40.6%) and social media sources (22.4%) was observed. Multivariable regression revealed some variables such as residential area, geopolitical zones, educational/professional background, and previous COVID-19 diagnosis as predictors of good COVID-19 knowledge.

Conclusions: Quality health information promotes proper health seeking behaviours. Misinformation promotes ignorance while preventing persons from taking proactive therapeutic and safety measures. It can also contribute to non-adherence to safety guidelines shared by governmental health organisations and other credible sources. Hence, it is pertinent that health communication during an outbreak is clear, factual, and specific to the context.

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### Effect of female education on contraceptive use in a selected coastal area of Bangladesh

Aung Loo<sup>1</sup>

<sup>1</sup>Directorate General of Family Planning (DGFP), Bandarban, Bangladesh

The present study was conducted on female education in a selected coastal area of Bangladesh that affected positively to contraceptive use. A descriptive type of cross sectional study was carried out among the total of 361 samples for selective purposive according to inclusion and exclusion criteria. In study area, majority of the females (77.3%) were in the age group of 18-30, followed by 13.3% in the age group 31-40 years, around 1.9% were less than 18 years and 7.5% above 40 years. Among them, the education level were 45.2% (primary), 42.9% (can sign only), 5.8% (secondary), 1.1% (higher secondary) and 5% (illiterate). Educational qualification their husbands were maximum (47.6%) can sign only followed by 39.3% primary level, 5.3% secondary level, 2.2% Bachelor, 0.6% higher secondary level, 0.3% master level and 4.7% illiterate. The occupation of the studied women revealed that maximum respondents were housewives (85.9%) and rest of them 6.9%, 1.9%, 1.1%, 3.3% were involved at fishing, business, service holders, household workers and other job/work, respectively. Family member (1-4) noticed in 49.3% family and more than 8 family members recorded 5% family. The 93.10% respondents could make decision on family planning method.

The respondents (83.4%) got information about contraceptives from neighbors. Among the respondent contraceptive use was the highest (96.3%) at the age group 'Above 40 years' and the lowest among the age group 'Below 18 years'. Chi-square test revealed that there was significant relationship between age of the respondent and contraceptive use ( $c^2=14.852$ ,  $p0.05$ ).

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### An assessment of COVID-19 vaccine communication from Canadian federal actors' Instagram accounts and the implications for vaccine-hesitant young adults

Caitlin Ford<sup>1</sup>

<sup>1</sup>University of Guelph, Canada

Background: In Canada, young adults remain one of the least vaccinated adult age groups against COVID-19. As such, targeting vaccine messages towards this demographic is important for encouraging them to get vaccinated. Because young adults are a prominent user group on social media, we sought to understand if the vaccine messages from Canadian federal actors on Instagram were effective in promoting vaccine uptake based on best practices. Best practice messaging strategies include implementing guiding principles for crisis communication (i.e., transparency, compassion and empathy, conversational tone, clarity, correction of misinformation, call to action) and addressing the 5C model for vaccine hesitancy (i.e., complacency, confidence, risk calculation, constraints, collective responsibility).

Methods: We performed a content analysis on 159 Instagram posts that mentioned COVID-19 vaccines from eight key federal accounts. In addition, we performed a sentiment analysis on the comment sections of these posts to understand public reaction to the messages being shared.

Results: Across the 8 federal accounts and 159 Instagram posts that mentioned COVID-19 vaccines, federal actors did not widely incorporate best practices for vaccine communication. Further, the accounts did not adopt a unified approach to vaccine communication, and overall public sentiment was neutral.

Conclusions: Our assessment has highlighted gaps in the social media communication strategy for COVID-19 vaccines. As such, these Results can encourage future vaccine communication campaigns that reach young adults to be informed by best practices and strategies to encourage vaccination.

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### Health-related social media advertising is affected by Message Appeals

Ekaterina Volevach<sup>1,2</sup>, Hana Maršálková<sup>3</sup>, Hana Cukrová<sup>3</sup>, Robert Mikulík<sup>3</sup>

<sup>1</sup>International Clinical Research Center, St. Anne's University Hospital Brno, Brno, Czech Republic, <sup>2</sup>Faculty of Medicine, Masaryk University, Brno, Czech Republic, <sup>3</sup>International Clinical Research Center (ICRC), St Anne's University Hospital (FNUSA) Brno, Czech Republic

Background: Emotional appeals in health-related advertising can increase public interest. However, only limited research exists concerning emotional appeals in advertising on social media and with regards to stroke. This study explored which type of advertising appeal achieves a greater audience engagement with the Stroke Riskometer mobile app.

Methods: Facebook users with Android OS aged 20+ living in the Czech Republic were exposed to Facebook advertising campaigns between 29/Jul/22-18/Aug/22. Using a Facebook split test experiment tool, users were randomly assigned to one of the three message appeals - humour, fear and identification. Message appeals were pretested in discussions with Facebook users. Data were analysed using a Facebook ads manager with the Click-through-rate as a standard main outcome. Results: 56100 users viewed advertisements (75% aged 55+; 60% women) and 2008 clicked (65% by women, 86% were >55 years.). Fear vs humour vs identification had a 3.9% (95%CI 3.6-4.2) vs 3.0% (95%CI 2.7-3.2) vs 2.8% (95%CI 2.5-3.0) click-through-rate.

Conclusions: This study on emotional appeals in health-related advertising on social media demonstrated that fear-based advertising led to the largest number of clicks to download the Stroke Riskometer app. Our results add to the limited evidence on the effectiveness of the fear appeal in health-related Facebook campaigns (e.g., about hypertension, smoking, drink driving). Our fear-based ads also provided better results when compared to previous ads that didn't use emotional appeals (e.g. 2.6% Click-through-rate for lung cancer prevention). Our results provide an insight into the use of emotional appeals in order to maximise user engagement in health-related social media advertising.

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## One health Melioidosis public knowledge measurement for driving public awareness

Chadaporn Phiancharoen<sup>1</sup>, Chadaporn Phiancharoen<sup>2</sup>, Chadaporn Phiancharoen<sup>1</sup>

<sup>1</sup>Division of Communicable Diseases, Ministry of Public Health Thailand,

<sup>2</sup>Division of Communicable Diseases, Ministry of Public Health 1/74 Alist B Condominium, Soi. Tiwanon 14/2, Talad khwan sub district, Mueang District, 11000 Thailand

Background: Melioidosis, also locally known as soil fever that is a public health concern for many countries in Southeast Asia including Thailand. Farmers and people who have careers that contact with soil and water might increase the chance of infection. Risk factors for melioidosis include the presence of diabetes mellitus chronic renal failure and thalassemia. Most melioidosis patients will eventually develop sepsis and life-threatening within 1-2 days of hospitalization. Thus, the Ministry of Public Health's goal in Thailand would like to focus on reducing the number of infections and deaths, raising awareness. All of the objectives lead to developing the public knowledge measurement to assess people's comprehension that will be developed the prevention program in the next step.

Objective: \* To evaluate people's knowledge and risk behavior of melioidosis infection

\* To increase melioidosis awareness in people by strengthening the health literacy of melioidosis prevention and control.

Method: The questionnaire was launched via an online platform. The result will demonstrate the level of understanding of risk groups and risk behavior which can lead to the implementation of the prevention and control program via increasing the health literacy of the healthy volunteer and people.

Result: From 2,644 Thai people who complete the melioidosis questionnaires, The result shows that 58% never heard of melioidosis and 41% had heard of this disease but some of them had misunderstood this disease. There are 23% of people believe that melioidosis patients cannot be cured. There are 94% of people who recognize that farmers are a high-risk category, but any job that involves water or soil might be infected.

Conclusion: As a result, Thai people still require additional information about melioidosis, along with enhanced prevention awareness. As a result, the melioidosis prevention and control plan might also promote prevention and awareness of Health volunteers and target risk groups.

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## General ombudsman in Brazil: Communication to support the management of the unified health system

Rafael Caliani<sup>1</sup>, Dherik Santos<sup>2</sup>, Jeanine Barbosa<sup>3</sup>, Marcos Cordeiro<sup>1</sup>, Margareth Conceição<sup>4</sup>, Stephania Demarchi<sup>1</sup>, Fabiane Simões<sup>1</sup>, Bárbara Lacerda<sup>3</sup>, Rita Lima<sup>1</sup>, Maria Andrade<sup>1</sup>

<sup>1</sup>Universidade Federal do Espírito Santo Programa de Pós-graduação em Saúde Coletiva Brazil, <sup>2</sup>Universidade Federal de Catalão, <sup>3</sup>Universidade Federal do Espírito Santo Brazil, <sup>4</sup>Universidade Federal do Espírito Santo

Introduction: Communication through the ombudsman of the Unified Health System (SUS), in Brazil, supports the decision of health managers, based on data received from users, effecting social participation. The ombudsman built on a basis of communication, in providing information on the evaluation of services, the populations health needs, and proposals for improvement in the technical areas of the SUS, in response to citizens manifestations.

Objective: To present the participatory performance of the SUS Ombudsman network, from 2010 to 2022.

Methods: An analysis about communication via the SUS Ombudsman was made, demonstrating quantitative and qualitative data on services provided by the Ombudsman network, extracted from the Ministry of Health data panel, between the period of 2010 to 2022.

Results: According to data from the OuvidorSUS Computerized System, 4,710,356 manifestations were registered, since the beginning of its use in Brazil, in 2010. The registrations per year represented: 2010 (1.97%), 2011 (3.50%), 2012 (4.57%), 2013 (6.02%), 2014 (6.05%), 2015 (7.64%), 2016 (8.26%), 2017 (8.57%), 2018 (9.20%), 2019 (10.92%), 2020 (9.11%), 2021 (12.32%) and 2022 (11.87%) of demonstrations, indicating a growing trend in participation over the historical series. The most used means were telephone (55.34%), face-to-face (21.16%) and online form (10.52%). The classifications were related to: requests (40.04%), complaints (35.97%), compliments (10.61%), compliments (6.87%), information (5.22%) and suggestions (1.29%). The main subjects dealt with: management (36.33%), health care (29.44%), pharmaceutical care (7.98%), health surveillance (6.28%), health surveillance (5.96%) and others (14.02%).

Conclusion: Society's participation in the formulation, evaluation and supervision of public policies in Brazil is a social achievement. SUS ombudsmen are powerful management support instruments, as they encourage individual participation and allow managers to know the opinion of the population, subsidizing their health actions.

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## Experience report of dental care in schoolchildren in the municipality of Japeri-Rio de Janeiro, through the atraumatic restoration technique (ART) in the midst of the covid-19 pandemic

Leandro Costa<sup>1</sup>, Alessandra Lucchese<sup>2</sup>, Márcia Silva<sup>3</sup>, Rafaela Medina<sup>4</sup>, Tais Feris<sup>2</sup>, Marcus Bezerra<sup>5</sup>

<sup>1</sup>Social Service of Commerce in Rio de Janeiro health management

135, Coronel Paulo Malta Resende, Barra da Tijuca, Rio de Janeiro, RJ,

22631-005 Brazil, <sup>2</sup>Social Service of Commerce in Rio de Janeiro, <sup>3</sup>Social

Service of Commerce in Rio de Janeiro health management 715, Sete de

setembro, 201, Rio de Janeiro, 25020190 Brazil, <sup>4</sup>Social Service of Commerce

in Rio de Janeiro health management 55, Av Jornalista Alberto Francisco

Torres, 708-1, Icaraí, Niterói, 24230-000 Brazil, <sup>5</sup>Social Service of Commerce

in Rio de Janeiro health management 60, João Alfredo, 504, Tijuca, Rio de

Janeiro, 20511-390 Brazil

Resume: With the pandemic of the new coronavirus (COVID-19) and the consequent decrease in preventive supply and curative dental care, there was a lack of attention to oral health. The application of the ART, by Mobile Units of Sesc-RJ, was a way to expanding dental care. In addition to the office, with a minimal invasive technique, without using rotary instruments, providing social inclusion, guidance, prevention and maintenance of oral health.

Aim: describe the experience of dental care through ART in students of the Municipal School Ary Schiavo, during the COVID-19 Pandemic. Methodology: Descriptive study with a qualitative approach. The project started in October 2020, covering children aged 5 to 12 enrolled at the Ary Schiavo Municipal School, 01 dental surgeon, 01 oral health assistant and 01 general services assistant were allocated in the project. The activities took place in a classroom provided by the educational institution. Lectures were held for all students, a survey of dental needs, supervised brushing for selected students and general guidelines for their guardians. The assessment of dental needs was carried out through visual clinical examination, using a flashlight, with the aim of identifying cavities. Later, the patient underwent ART.

Results: There was an improvement in oral health and quality of life of this population, during a critical moment for world health, minimizing risks of cross-infection by aerosols in dental offices and knowledge transmission for the maintenance of public health.

Conclusion: We found that teams performance was effective at the proposed time.

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## Communicating data to enhance comprehension and relevance

Matt Jacob<sup>1</sup>, Vasileios Margaritis<sup>2,3,4</sup>

<sup>1</sup>Jacob Strategies LLC, Arlington, United States, <sup>2</sup>Swiss School of

Management, Bellinzona, Switzerland, <sup>3</sup>European Association of Dental

Public Health, <sup>4</sup>KMOP, Athens, Greece

The data gathered by public health officials can be a powerful catalyst for improving health policies and practices. Unfortunately, public health data is often communicated in ways that can confuse both non-scientific audiences and health care professionals. Sometimes, a set of data is presented in the same way to different audiences without consideration of their different needs, interests, or literacy levels. In this workshop, the speakers will offer suggestions for disseminating data that enhance its relevance and impact. These suggestions can improve the clarity of data. Recommendations will also be offered for how the public health programs at universities can raise statistical literacy and educate students in appropriate strategies for communicating data. 1. Key public health data should be comprehensible to non-scientific audiences, 2. Data can help the public understand the rationale for public health recommendations, 3. Data can encourage policy makers to adopt evidence-based policies, 4. Communication approaches should be aligned with the audience, 5. Focus on the most meaningful data for the target audience, 6. Disaggregate data when possible, 7. Don't overwhelm them with technical terms, 8. Simplify or translate data, 9. Present data in whole numbers unless more detail is essential, 10. Consider expressing percentages as ratios, 11. Present preferably measures of association to enable comparison between different groups, 12. Use longitudinal data to tell a story, 13. Importance of statistical literacy among health care

professionals (HCP), 14. HCP are working with biological systems, with inherent variability and complex measures, 15. They need to draw accurate inferences, despite biological uncertainty, 16. HCP imperceptible apply statistical principles (e.g. the Bayes' theorem) during their daily duties, 17. Although most of HCP do not conduct formal research, they need to read and interpret research as effectively as possible, 18. Importance of the Statistical Knowledge for Teaching (SKT) framework for epidemiologists and biostatisticians, 19. SKT helps to make statistics comprehensible to others and it is needed to make high-stakes recommendations related to public health, 20. A combination of mathematical and nonmathematical knowledge is required, 21. Statistical knowledge alone is not adequate to advise the public about the evidential basis for recommended health practices, 22. Pedagogical content knowledge is also necessary to enable experts to communicate data and Results effectively to the lay audience, 23. Schools of public health can prepare epidemiologists, biostatisticians and HCPs, 24. Include in their curriculum SKT in quantitative reasoning and analysis courses, 25. Include in their curriculum courses about communication and dissemination strategies, 26. Enhance students' skills in developing and evaluating public health communication campaigns by applying social marketing principles, 27. Provide education on the application of crisis and risk communication, 28. Continuing education for health care professionals via seminars, webinars, short courses on science communication and data Interpretation. Key questions that the workshop answers: 1. How can public health data be presented or summarized to ensure that policy-makers understand its relevance and implications? 2. How can a storytelling approach enhance the comprehension of longitudinal data? 3. What role can the faculty at schools of public health play in educating epidemiologists, statisticians and health care professionals about better ways to communicate data and make valid recommendations related to public health?

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### Communicating data effectively: making statistics stylish

Gerold Dermid<sup>1</sup>

<sup>1</sup>School of Public Health, University of Nevada, United States

The Larson Institute for Health Impact and Equity within the School of Public Health at the University of Nevada Reno utilizes a wide variety of communication practices to support audiences being able to access, understand, and use data related to public health matters. Public health data is too often collected, analyzed, and put into extensive final reports that have limited impact. This session will present new ways to display data that support understanding and utilization. Using case study examples from Nevada's Public Health Workforce Development Surveys, session will highlight the impact data design can have when communicating. Examples will showcase how presenting data in new formats supported a better understanding across workforce tiers and was used to guide organizational training development plans throughout the state of Nevada. Attendees will be involved in pinpointing key questions that establish what communication tools should be used for distinctive audiences. In addition, attendees will learn communication tips to create useable reports for multiple levels of the public health workforce as well as the general public. Session will highlight simple data visualization techniques that can be made to help readers interpret what matters most and alter the readers experience, including how to share key findings using color, modern graphs, images, or special effects. Recognizing the importance of inclusivity and following the American Disabilities Act (ADA) standards, session will review common practices that are harmful to reader interpretability and provide alternative solutions. Attendees will gain knowledge of ways to use common programs, including excel and PowerPoint, to create reports that will do more than sit on a shelf.

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### Health emergency communication: which key elements?

Chiara Crepaldi<sup>1</sup>, Alessandro Venturi<sup>2</sup>, Guido Legnante<sup>2</sup>, Ferruccio Di Paolo<sup>3</sup>, Giovanni Rezza<sup>4</sup>, Luisa Brgonzoli<sup>1</sup>

<sup>1</sup>Fondazione The Bridge, Italy, <sup>2</sup>University of Pavia, Italy, <sup>3</sup>University Unicusano, Italy, <sup>4</sup>Ministry of Health, Italy

Outline of the workshop: COVID 19 pandemic is an example of health emergency at global level, in which institutional communication plays a fundamental role. WHO developed in 2005 general recommendations to be included in national pandemic plans: due to their vulnerable implementation, at the outbreak of the pandemic some countries have succeeded in promoting effective informative actions; others have not, promoting uncoordinated information actions inadequate to the situation.

The study is structured on 3 phases:

National and international literature review on institutional communication strategies; A retrospective and comparative analysis of countries proved to be of particular interest, identifying their strengths (level of coordination, authority and scientific nature of the communication, adequacy to the context, etc.) and criticalities (inadequacy to a state of crisis, overabundance of contents and sources, lack of centralisation, etc.). On this basis, the key elements to elaborate a communication model suitable for a crisis context will be identified.

Specific Aims: The presentation, starting from an analysis of how the pandemic has been institutionally communicated in some European and non-European countries, focuses on what worked and what failed, to identify key elements for an effective communication strategy.

These key elements, with their strengths and weaknesses, will be analysed according to relevant parameters such as timeliness, effectiveness, ability to manage information flows, inter-institutional coordination, communication channels. The results will be compared with the indications provided by WHO and the CDC.

Key Questions: Ineffective communication feeds collective fears and uncontrolled reactions in the population and in the economic system, while effective communication, made up of coordinated clear messages, based on the collective perception of risk, can influence the way in which citizens respond to adverse events, and support the exit from the emergency. The presentation aims to gather useful elements derived from past experiences to support future emergency situations.

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### The health information portal for better health research and policy decisions

Miriam Saso<sup>1</sup>, Petronille Bogaert<sup>2</sup>, Nienke Schutte<sup>3</sup>, Miriam Saso<sup>4</sup>

<sup>1</sup>Sciensano Belgium Hanna Tolonen Finnish Institute for Health and Welfare (THL), Finland, <sup>2</sup>Sciensano, Belgium, <sup>3</sup>Sciensano Belgium, <sup>4</sup>Sciensano Belgium Metka Zaletel National Institute of Public Health Slovenia (NIJZ) Slovenia

Brief outline of the overall workshop: The COVID-19 pandemic has shown the need for quick exchange of accurate health information between European countries. To respond to this need, the Population Health Information Research Infrastructure (PHIRI) Project developed the Health Information Portal, a one-stop shop that aims to facilitate findability and accessibility to health and healthcare information in Europe. Following the FAIR (Findable, Accessible, Interoperable and Reusable) data principles, metadata catalogue of population health information were developed following DCAT and Schema.org discoverability metadata standards. Through a collaborative effort between 41 organisations across 30 different countries, the information on the Portal is provided by national experts within National Nodes, organizational entities linked to a national institution that bring together relevant health stakeholders in European countries. The Portal promotes discoverability, access and dissemination of health information allowing researchers and policy makers to benefit from the most up to date health information available in Europe. On December 2022, the Portal contained metadata (incl. links) to 240+ national health data sources, 150+ national and European health information projects, 350+ dissemination sources (e.g. publications, web portals) and 95+ training activities in areas of population health. The Portal also has a dedicated COVID-19 corner. Policy discussions between public health institutes, Ministries of Health, research institutions and universities, on national experiences related to the management of the pandemic are posted to promote exchange of best practices and lessons learnt across countries. Such information is accompanied by an overview map where key COVID-19 policy measures implemented in Europe are displayed to further aid countries in learning from each other's experiences and provide the basis for COVID-19 research.

Specific aims/objectives and component parts

The main objectives of this workshop are: \* To increase awareness of the scientific community of the Health Information Portal and the resources the Portal offers, \* To demonstrate the use of the Portal, \* To showcase, in a moderated environment, how to create a DCAT linked metadata record on the Portal. Throughout the session, the exchange of knowledge, experiences and opinions with the audience will be fostered by the moderator. Firstly, the Health Information Portal will be introduced by guiding the participants on the different sections of the Portal. Secondly, the attendees will be guided through practical examples how to find health information sources, training events, or projects relevant for the topic interested by the audience. Finally, the participants will be introduced to the FAIR data principles and their relevance, and they will be guided on how to create a DCAT linked metadata record on the Health Information Portal.

Key questions that the workshop will address

The Health Information Portal, places itself at the cornerstone of the European public health landscape. Timely and effective, public health actions require easy access to the most up-to-date health information available. The Portal supports researchers and policy makers by promoting the Findability, Accessibility, Interoperability and Reusability of health data across Europe.

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### It's (not) rocket science! a quick guide to a successful scientific communication in public health

Lucia Palandri<sup>1</sup>, Tommaso Filippini<sup>2</sup>, Eleonora Ferrari<sup>2</sup>, Camilla Lugli<sup>3</sup>, Anna Odone<sup>4</sup>, Andrea Grignolio<sup>5</sup>, Lucia Palandri<sup>6</sup>, Camilla Lugli<sup>3</sup>, Eleonora Ferrari<sup>3</sup>, Elena Righi<sup>3</sup>, Marco Vinceti<sup>3</sup>, Tommaso Filippini<sup>3</sup>

<sup>1</sup>University of Modena and Reggio Emilia Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy. <sup>2</sup>Clinical and Experimental Medicine PhD Program, University of Modena and Reggio Emilia, Modena, Italy Via Campi, 287, Modena, Italy,

<sup>3</sup>Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>4</sup>University of Modena and Reggio Emilia Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>5</sup>University of Pavia Department of Public Health, Experimental and Forensic Medicine, University of Pavia, Pavia, Italy, <sup>6</sup>Vita-Salute San Raffaele University Faculty of Medicine and Surgery, Vita-Salute San Raffaele University, Milan, Italy. Interdepartmental Center for Research Ethics and Integrity, National Research Council (CNR), Italy. Italy, <sup>6</sup>University of Modena and Reggio Emilia Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy. Clinical and Experimental Medicine PhD Program, University of Modena and Reggio Emilia, Modena, Italy

A Brief Outline Of The Overall Workshop: Our workshop is intended to act as an overview of effective Public Health communication. We will examine various contexts, beneficiaries, and actors in Preventive Medicine and Public Health communication, stressing the importance of effective knowledge transfer in this field.

\* First sub-session "HOW TO: COMMUNICATE DATA TO HEALTH PROFESSIONALS" (20 min):

\* How to: Data Visualization - Lucia Palandri, MD, DrPH, PhDc

\* How to: Digital Communication - Prof. Tommaso Filippini, MD, DrPH, PhD

- [HALF-TIME - 10 min]: DO'S AND DON'TS: INFOGRAPHICS FOR HEALTH PROFESSIONALS VS GENERAL PUBLIC - Eleonora Ferrari, MD; Camilla Lugli, MD

\* Second sub-session "COMMUNICATE HEALTH TO PEOPLE: SUCCESSFUL EXAMPLES" (20 min):

\* Leo and Giulia - Prof. Anna Odone, MD, MSc, MPH, PhD

\* Vaccine Pills on TV - Prof. Andrea Grignolio, MA, PhD

\* Q&A session (10 min)

Moderator: Prof. Elena Righi, PhD

Specific Aims/Objectives And Component Parts

As Public Health professionals and residents, COVID-19 pandemic had a significant impact on our work, shedding light on a major issue: communication. As a matter of fact, in the last few years, scientific communication has undoubtedly been a challenge in two ways. On one hand, communication has been difficult even among professionals due to the significant volume of data constantly gathered and analyzed during the pandemic. On the other hand, we faced some difficulty with the necessity to constantly interface with the population in an infodemic setting.

Both challenges should be considered as important priorities in public health: the lessons learnt from the pandemic (and beyond) should routinely and inextricably guide us in carrying out our roles as PH specialists.

Hence, our necessity to delve into this topic and share what we have learnt with coworkers. To this end, we chose to organize our workshop into two sections. A first skill-building sub-session will be dedicated to the communication of scientific information and data among health professionals and "insiders". In the second sub-session we would like to present a couple of examples of successful general public scientific communication campaigns. We will merge the two sub-session with a practical guide about do's and don'ts in scientific posters and general public infographic creation.

The Key Questions That The Workshop Will Address

- How to present scientific findings and relevant data to scientists and health professionals? How to make data more comprehensible?

- How to deliver a clear message and maintain public trust in science through successful campaigns?"

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### Applying the principles of communication during a public health crisis to safeguard health security and democracy

Background: During the COVID crisis government agencies around the world have embraced an open government approach and mobilized unprecedented resources to get information into the hands of citizens, address false and misleading content, and lead societies out of the crisis. Yet during the pandemic, we have witnessed how false information about medical treatments, vaccines, and the overall COVID-19 response, has spread fear and skepticism about science and perpetuated a sentiment of general distrust of the government and in some cases resistance to science-based policies. This study focused on governments' communication capabilities and functions to be enhanced in preparation for future emergencies.

Methods: We conducted interviews with 27 government officials across 19 countries and 5 continents who served in a position as spokesperson or direct advisor to the spokesperson during COVID-19 and other emergencies. Thematic analysis was used to organize and identify salient themes and patterns that emerged from the qualitative data.

Results: The themes emerged from the analysis include: transparency, accountability, coordination, consistency, timeliness, politicization, responsiveness, ethics, equality and trust. Interviewees highlighted specific examples of how maintaining effective communication across these themes and communication principles may be challenging and brought examples of what tasks public health agencies should oversee and pay attention to enhance communications. Examples include: internal processes to ensure transparency, quality of the information shared with the public, use of AI to monitor mis-disinformation, ethical principles in the code of conduct in social listening, monitoring and communication activities. This presentation will include practical recommendations on how to enhance communication plans.

Conclusions: During the COVID-19 pandemic, government agencies engaged in public health communication efforts have been challenged in applying principles of effective communication. This study has identified specific tasks government agencies can include in emergency plans to address the complexity of the information ecosystem and prepare for future crisis.

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### Ethical and practical implication of COVID-19 vaccine among pregnant women

Eunice Kimunai<sup>1</sup>

<sup>1</sup>Defense Health Agency, United States

Background: According to the CDC Health Alert Network, as of September 27, 2021, more than 125,000 confirmed laboratory cases of COVID-19 were reported among pregnant women that resulted in more than 22,000 hospitalized cases and 161 deaths, with the highest death toll of 22 women in the month of August 2021 alone. There are many adverse pregnancy outcomes that have been reported among pregnant women who have contracted COVID-19 including severe illness, stillbirth, preterm birth, neonates' hospital admissions into Intensive Care Units (ICUs), and death. Just one-third of pregnant women were fully vaccinated before or during pregnancy as of mid-September 2021. Evidence about the safety and effectiveness of COVID-19 vaccination during pregnancy, although limited, has been growing. The COVID-19 vaccine is recommended for pregnant women and those who are breastfeeding. This study examines ethical and practical implications of the COVID-19 vaccine among pregnant women.

Methods: In this paper, we reviewed and presented 16 cases of pregnant women who were either vaccinated or unvaccinated against COVID-19 and share their health outcomes as retrieved from media sources. Findings: The Findings mirror what the literature reports on the state of COVID-19 among pregnant women. Negative outcomes reported in the literature were also reported in our case reviews. Interpretation: This study presents a framework that will guide providers with messaging and provide information to help pregnant women make informed decisions about getting the COVID-19 vaccine.

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### A critical look at science-based policy-making during the covid-19 pandemic: the case of EU covid passes and lessons learned for the future

Danaja Povse<sup>1,2</sup>

<sup>1</sup>Health and Aging Law Lab (HALL), Belgium, <sup>2</sup>Law, Science, Technology and Society Research Group (LSTS), Vrije Universiteit Brussels, Belgium

**Background and Objective:** This paper will critically appraise the Regulation 953/2021 [1] (DCCR) and its digital COVID-19 certificates (DCC) in the light of EU law's strict requirements for scientificity and objectivity, aiming to provide a normative framework and recommendations on drafting evidence-based policies for the current and future pandemic(s).

**Methods:** To answer the following question: "What role has scientific evidence played in the DCCR, and in the light of EU law requirements, was the inclusion of scientific evidence effective considering the policy Objectives?", the author will analyse how relevant provisions of the DCCR interact with scientific evidence. Building on the relevant EU case-law on evidentiary requirements, and on the work of sociological jurisprudence, law turning outwards and studies of evidence-based policy, a normative framework will serve to analyse the effectiveness of the DCCR approach. Preliminary findings: Like other EU pandemic laws, DCCR is vague about the inclusion procedures and the quality of science required to adopt additional restrictions. Nor is it clear what kind of scientific expertise should feed into the system – natural sciences, social sciences, public health ethics etc. The references to consultations and adapting the information on the pass to reflect the relevant scientific evidence are scant, and omicron has rendered several underlying assumptions about immunity and transmission outdated. Finally, while the DCCR was drafted to ensure a safe reopening, its implementation by member states has instead led to more social contacts and more infections.

**Conclusions:** Further research on this topic will lead to reorientation of the evidence-based standards in EU law during pandemics and periods of scientific uncertainty, as well as the eventual consequences of the both member state and EU action, such as nullification suits. This is likely to be difficult due to DCCR's claim to be a technical regulation, focusing on interoperability rather than substance. Links:[1] <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32021R0953>

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### The role of law and human rights in public health: setting the agenda

Brigit Toebes<sup>1</sup>

<sup>1</sup>Faculty of Law, Aletta Jacobs School of Public Health, University of Groningen, Groningen, The Netherlands

**Background and objective:** Law is an important determinant of health. Previous research affirms the role of law in health inequalities. Burris and others have pointed out that law is both a vehicle through which health inequalities are exacerbated and a tool to reduce them and to improve social determinants. Within law, human rights are an important moral and legal tool to advance public health objectives. By giving expression to the vulnerability of the individual, human rights law can serve as an overarching framework protecting the rights and interests of those affected by health inequalities and poor social conditions. Law influences health, and human rights can protect important values when it comes to public health promotion and protection. However, truly interdisciplinary scholarship in the field is limited and it requires on-going maintenance. Legal and public health scholars should connect more to identify common approaches and to find common solutions. **Methods:** A literature review will be conducted to explore current interdisciplinary work addressing law, human rights and public health, with the aim of identifying research gaps and opportunities.

**Results:** While several authors have expressed the importance of law for public health, this approach requires maintenance. It should be placed on the agenda of law and public health researchers and public health policymakers. **Conclusions:** Law plays an important role in improving health and in reducing health inequalities. This paper has identified some pathways in how this understanding and approach can be strengthened. References Burris, I Kawachi, A Sarat, "integrating law and social epidemiology" (2002) *J L Med Ethics*, 30, 510–521; S Burris, "from health care law to the social determinants of health: a public health law research perspective" (2011) *U Penn L Rev* 159(6), 1649–1667. BCA Toebes et al, health and human rights – global and European perspectives, *intersentia*, 2022 (2nd ed.).

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### An examination of sugar-sweetened beverage tax regulations in six jurisdictions: applying a social justice perspective to beverage taxation and exemptions

Natalie Riediger<sup>1</sup>, Tamara Neufeld<sup>1</sup>, Myra Tait<sup>2</sup>, Lorna Turnbull<sup>1</sup>, Kelsey Mann<sup>1</sup>, Andrea Bombak<sup>3</sup>

<sup>1</sup>University of Manitoba, Canada, <sup>2</sup>Athabasca University, Canada, <sup>3</sup>University of New Brunswick, Canada

**Background and Objective:** Taxes, legislation, and politics are social determinants of health, which impact health through multiple pathways. Globally, sugar-sweetened beverages (SSB) are increasingly taxed as a public health measure, despite criticism that excise taxes are regressive. The purpose of this study was to review laws and regulations regarding taxation of SSB, and describe how various jurisdictions determine applicable taxes to meet their respective legislative objectives.

**Methods:** We reviewed SSB taxation schemes from Berkeley, Mexico, Philadelphia, San Francisco, South Africa, and the United Kingdom. A comparative review of supplementary government documents and academic publications helped differentiate rationales for taxation, exemption or zero-rating of beverages. Beverage categories selected reflect availability of similar beverages in Canada and the US.

**Results:** Several beverage types fell clearly into typically taxed or exempt/zero-rated categories across all six jurisdictions (e.g. pop/soda as taxed and water as zero-rated). However, no two sets of regulations were the same, regardless of having similar legislative objectives – to reduce consumption of SSB. Exemptions and ambiguities within the six jurisdictions can generally be grouped lacking clarity regarding the meaning and use of milk; the meaning of 'medical purposes' and 'supplemental'; the point at which a beverage is 'prepared'; the form of concentrate (i.e. liquid/frozen/powder) or medium used (e.g. water, coffee); and the location of preparation (e.g. pre-prepared or point-of-sale) or business size of retailer.

**Conclusions:** SSB tax regimes are complex, unclear, vary across jurisdiction, and unexplainably omit from taxation several added-sugar beverage types, potentially risking legal challenge. In addition, other research suggests tax complexity is associated with tax avoidance, diminished perceptions of equity and fairness, and increased regressive tax administrative and compliance costs, potentially amplifying negative impacts of SSB taxation on social determinants of health. Lastly, tax exemptions generally reflect and perpetuate existing, already inequitable, political dynamics within the food system.

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### A public health ethics exploration of a novel mobile health application for public health surveillance

Thokozani Hanjahanja-Phiri<sup>1</sup>, Pedro Velmovitsky<sup>1</sup>, Plinio Morita<sup>1</sup>

<sup>1</sup>School of Public Health Sciences, University of Waterloo, Canada

**Background and Objective:** Digital health technology is poised to advance medicine across adult and aging populations but there is a social and ethical opportunity cost attached to this unprecedented advancement in technology. Moreover, these outstanding accomplishments of the 21st century often misalign with public health and global health goals such as the SDG (3) which aims to "ensure healthy lives and promote well-being for all, at all ages". The proposed study will first assess the expected health benefits for a target population in Canada of a novel mobile health application (app) against a systematic ethical framework. The app collects health data from mobile products, wearables, and wireless blood pressure cuffs to capture overall physical and mental health and detect the risk of developing a cardiovascular disease. The mobile health app has been created at the Ubiquitous Health Technology Lab (UBILAB).

**Methods:** Using qualitative measures, the proposed study will evaluate the (1) impact on individual autonomy; (2) impact on equity and (3) unintended impacts as a result of using this mobile health app from a Public Health and Ethics (PHE) perspective.

**Results:** The results will be presented in a table based on the systematic ethical framework by Marckmann and colleagues by answering the following questions in an evaluation: Is there health-related empowerment? (2) How equitable is the access to the public health intervention and what is the remedy? (3) What are the potential negative effects of using wearables and sensors? (4) How is respect for individual autonomy expressed?

**Conclusions:** The practice of PHE has complementary tools useful for examining the social and ethical factors affecting the quantifiable aspects of a digital health technology. The proposed study aims to inform practitioners and decision-makers in health policy with proposed guidelines on how to manage the ethical aspects of digital health technology.

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### Simplifying the information letter in health research to fit the needs of low literacy participants: a Delphi consensus study

Marion Delvallée<sup>1</sup>, Ouazna Habchi<sup>2</sup>, Marion Delvallée<sup>3</sup>, Ouazna Habchi<sup>4</sup>,

Estelle Bravant<sup>5,6</sup>, Anne-Marie Schott<sup>7,2</sup>, Adèle Perrin<sup>2</sup>, Julie Haesebaert<sup>7,2</sup>

<sup>1</sup>Research on Healthcare Performance (RESHAPE), INSERM U1290,

University Claude Bernard Lyon 1, Lyon, France, <sup>2</sup>Hospices Civils de Lyon, Pôle de Santé Publique, Service de Recherche et Epidémiologie Clinique, Lyon, France, <sup>3</sup>Research on Healthcare Performance RESHAPE, Université Claude Bernard Lyon 1, Lyon, France, <sup>4</sup>Hospices Civils de Lyon, pôle de Santé Publique, Service de Recherche et Epidémiologie Clinique, Lyon, France, <sup>5</sup>Healthcare Performance RESHAPE, INSERM U1290, University Claude Bernard Lyon 1, France, <sup>6</sup>Hospices Civils de Lyon, Pôle de Santé Publique, Service de Recherche et Epidémiologie Clinique, F-69003 Lyon, France, <sup>7</sup>Research on Healthcare Performance RESHAPE, INSERM U1290, University Claude Bernard Lyon 1, France

**Background and Objectives:** Potential participants in clinical research must receive understandable and readable information in order to exercise their free will. The information letter (standard IL) imposed by French Health research authorities provide information that is difficult to understand and not adapted to participants with low health literacy (HL) level. We aimed to adapt the standard IL to participants with low HL level while respecting the regulatory requirements of clinical research.

**Methods:** A group of experts comprising researchers, members of institutional review boards (IRB), lawyers and patients were invited to participate in a "Delphi" consensus methodology. Three rounds were planned. We proposed to the experts to rate on understandability and conformity to regulatory requirement the standard IL and 2 simplified IL developed based on adapted communication guidelines: (1) Haute Autorité de Santé, (2) Santé Publique France and (3) "Facile à Lire et à Comprendre". The level of readability of each proposed letter has been evaluated by two readability analyzers (Scolarius and Translated Labs). In each rounds the IL were evaluated by the experts in an iterative process via an online questionnaire. **Results:** A total of 22 experts participated in the Delphi study group and a consensus was reached at the 3rd round on a simplified version of the IL. According to Scolarius, the standard IL had a university readability level and the final IL had a secondary readability level. The main adaptations concerned: the length of sentences, the creation of a glossary of research actors, the use of pictograms, the simplification of regulatory parts.

**Conclusions:** This new model of the IL will enable low HL participants to better understand information and could be generalized to every patient in clinical study. The final IL will be validated during a focus group with low HL patients and then presented to regulatory authorities.

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### Public health and humanity losses: A reiterated plead towards Jonathan Mann's principles

Sanja Špoljar Vržina<sup>1</sup>

<sup>1</sup>Institute of Social Sciences Ivo Pilar, Zagreb, Croatia

Jonathan Mann fought all his life for Public Health Rights. In 1998 he resigned from World Health Organization in protest of United Nations not humanely responding towards the rampant AIDS crisis. Mann called for a shift of human consciousness through the Universal Declaration of Human Rights. In a (post) covid-19 World we are urged to question whether today's millions globally consume the first article to which international pillars swear - 'All human beings are born free and equal in dignity and rights' (UDHR Article 1). Are we equal and dignified in consuming Public Health Rights? As in the times of Mann's fights for dignity and health little has changed on the global health scene? (Mann et al., 1999 posthumously). Are there ways of escaping a quantified humanity causing structural loss of Rights? Methodologically, this research is a long-term follow up of Croatian/European medical system downfall embedded in social level mapping (Bear et al. 1986) of decades long global medicine departures from equity for all (Walter et al. 2004, Bourdieu, 1992, etc.). The times of (post) COVID 19 demand a further critical seeking of Rights informed interventions upon the findings which prove the continuous structural violence done through today's neoliberal syntax of numbers not health for all (Špoljar Vržina, 2021). Results testify of people incapable of surviving future challenges without Public Health equity confronting the solidified medicine paradigms that wax and wane according to the continuous structural violence of monetary 'progress'. Without Mann' dignified humanity global transformations are solely ones into an endangered species cycles of pandemics, forced migrations and wars. Concludary, global desensitizing conditions continuously build upon disrespect towards the worsening realities of global medical contexts for which, reintroducing the basics of Mann's principles into Public Health actions of a (post) COVID 19 World are indivisible of future Public Health agendas.

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### Moral suffering experienced by health workers in covid-19

### screening centers in Brazil

Marta Verdi<sup>1</sup>, Jaqueline dos Santos<sup>1</sup>, Verdi Marta<sup>1</sup>

<sup>1</sup>Universidade Federal de Santa Catarina Associação Brasileira de Saúde Coletiva - ABRASCO Rua Laurindo Januário da Silveira 5125 casa 6 - CEP 88.062-201 - Florianópolis - Santa Catarina - Brazil

**Background and objective:** Moral suffering comes from negative emotions experienced by health workers resulting from morally undesirable situations. Faced with an ethical problem, the worker has his moral deliberation interrupted by obstacles that prevent him from implementing the course of the chosen moral judgment. The COVID-19 pandemic revealed new ethical problems that aggravated the moral suffering of health workers. This study aims to understand the experience of moral suffering of health workers at COVID-19 Triage Centers (CT) in the municipality of Blumenau-SC, Brazil.

**Methods:** This is field research with a qualitative approach. The study included 31 health workers who were involved in assisting users of the COVID-19 CT. Data were analyzed through content analysis, using the Atlas-ti software.

**Results:** Ethical problems present in daily work are related to the organization of work processes, working conditions and relationships between managers, workers and users. The relationship between ethical problems and the experience of moral distress was perceived at the moment when moral integrity was threatened and the worker was prevented from carrying out deliberate moral conduct. The most important component was the context of the health crisis, substantially aggravated by the political and economic tensions caused by the necropolitics undertaken by the federal government, which directly harmed the functioning of health services and had repercussions not only on the high mortality from COVID-19, but also on the moral suffering of health workers.

**Conclusions:** The experience of moral suffering exposes the context of microviolence that is made invisible and trivialized by workers, managers, users and society. TC workers experienced numerous threats to their moral integrity, as it is yet another space for the reproduction of moral suffering that already exists in the health work process, with even more strenuous overloads caused by the context of crisis evidenced by the COVID-19 pandemic.

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### Protecting passengers from exposure to tobacco smoke by enforcement tobacco control law & Bangladesh railways act

Mir Hossain<sup>1</sup>, Sazia Saleh<sup>2</sup>

<sup>1</sup>Initiative to Make Bangladesh Railway Tobacco Free - IMBRTF project, Ministry of Railways Ministry of Railways "Room 728 (6th Floor), Rail Bhavan, 16, Abdul Gani Road, Dhaka, Bangladesh" Bangladesh, <sup>2</sup>Ministry of Railways

**Background:** Exposure to tobacco smoke causes to serious health risks including heart attack, stroke, cancer, chronic obstructive pulmonary disease (COPD) etc. Protecting passengers at the train and rail stations is legal and moral responsibility of Ministry of Railways and Bangladesh Railway. More than 90 million passengers used train as mode of transport, most of them are non-smokers Including children and women. The Railways Act 1890 restricted smoking in train compartment and Smoking and Tobacco Products Usages (Control) Act 2005 (amendment in 2013) banned smoking in railway station and train. First class officer of Bangladesh Railway (BR) included in the law as authorized officer to enforce these laws.

**Methodology:** To oversee the current situation of law implementation, a baseline survey conducted at 04 rail stations in Dhaka city [Kamalapur (central rail station in Bangladesh), Tejgaon, Cantonment and Airport] under the Initiative to Make Bangladesh Railway Tobacco Free -IMBRTF project. More than 100,000 daily passengers usage these stations. Based on the findings, a guideline has been developed for concerned officials to enhance law implementation. Audio and Video messages developed and on-aired frequently, posters, stickers and billboards were displayed on law and health hazards of second-hand smoking and frequent monitoring takes places to aware passengers.

**Results/Impact:** This initiatives strengthened the implementation tobacco control laws at the Railway stations in Dhaka, Bangladesh that protected hundreds of thousand passengers from second-hand smoking. Both train and rail stations become environment-friendly, floors are free from cigarette butts and air are free from nicotine.

**Conclusions:** Ministry of Railways and Bangladesh Railway is working to ensure tobacco free environment at the rail stations and train. These examples from 4 stations in Dhaka can be replicate other rail stations in across the country.

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### A critical study of the ethico-legal implications of expanding

### cadaveric organ donation and transplant in Kenya: lessons for Kenya & Africa

J. Muthoni Mwangi<sup>1</sup>

<sup>1</sup>Jomo Kenyatta University of Agriculture & Technology Karen Campus off Bogani Road P.O. Box 68162 -00200 Nairobi, Kenya

Whilst many countries outside Africa have longstanding and well developed cadaveric organ donation and transplantation programs, majority of countries in Africa do not. Kenya legalized cadaver organ donation in 2017 vide Health Act No. 21 of 2017. The rationale for allowing cadaver organ donation and transplant is a belief within government that organ transplant compared to life sustaining treatment like dialysis for kidney failure is a better treatment option for the patient. This is because when the patient's quality of life is improved it means that the patient can go back to work, is less dependent on his/her family and friends for upkeep and costs of medical treatment. Despite these benefits and current law in place, the rate of cadaver organ donation is low and many people who require an organ transplant end up dying due to organ shortage. The objective of this study is twofold. First is to critically analyse the ethical and legal issues that are generic to cadaveric organ donation and transplant and country specific to Kenya. Secondly, to suggest practical and ethical solutions to the identified issues that can be applicable not only in Kenya but across Africa. The objectives will be achieved first, through critical analysis of existing literature on generic ethical and legal issues in cadaveric organ donation and transplant. Second, through empirical study that will involve the conducting of key informant interviews with personnel in hospitals around the country that offer organ transplant services. The importance of this research is to add to the existing body of knowledge by filling existing gaps in not only in the context of Kenya but Africa as a whole. The use of empirical research will contribute to new knowledge by way of research methodology.

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### Citizens' perceptions of ethical issues in covid-19 containment measures: A comparative quantitative study

Kevin Sabbata<sup>1</sup>, Alessio Conti<sup>2</sup>, Maurizio Balistreri<sup>3</sup>, Welcome Wami<sup>3</sup>, Dick Willems<sup>4</sup>, Klaassen Pim<sup>5</sup>, Rachel Brenner<sup>5</sup>, Regitta Agusni<sup>6</sup>, Lucky Andriyanto<sup>7</sup>

<sup>1</sup>Keele University School of Law United Kingdom Marco Clari University of Turin Medical School Italy, <sup>2</sup>University of Turin Medical School Italy, <sup>3</sup>University of Turin School of Philosophy Italy, <sup>4</sup>Universiteit van Amsterdam, <sup>5</sup>Vrije Universiteit Amsterdam Netherlands, <sup>6</sup>Airlangga University Surabaya Fajar Perdhana Airlangga University Surabaya Indonesia, <sup>7</sup>Airlangga University Surabaya Indonesia

Background and objective: COVID-19 has confronted decisionmakers with choices impacting citizens' fundamental rights. Such impactful decisions tended to be taken following a technocratic logic, being seldom publicly discussed. Our study aims to analyse citizen's perceptions in four emblematic countries regarding choices on COVID-19 containment and study how different values and contextual factors lead to different moral views.

Methods: We circulated a survey to the public in The Netherlands, Italy, Indonesia and Kenya, with questions on their agreement with containment measures, plus the Moral Foundation Theory questionnaire, which aims to explain variations in ethical stances by reference to five dynamics (harm, fairness, loyalty, authority, purity). Proportions were compared using Chi-squared tests and regression analysis was performed to examine links between responses and socio-demographic factors and moral foundations. Data was collected between October 2020 and February 2021.

Results: We collected 1401 responses (The Netherlands: n=336; Italy: n=512; Indonesia: n=359; Kenya: n=194). In Italy and The Netherlands agreement with restriction was similarly high, despite the different approach the two countries had adopted. In Indonesia and Kenya agreement was significantly lower. In all countries except Kenya, participants (would have) endorsed a total lockdown in the first COVID wave. Dutch and Italian participants were less favourable to restrictions to protests than the others. We also found a link between old age and approval for curfew and closures of non-essential businesses, and males appeared more in favour of such measures than females. Agreement with mask mandates and hand washing seemed linked to the moral foundation of purity. Approval of mask mandates seemed linked with fairness

Conclusion: Our study shows that citizens' opinions on containment measures differ depending on their country, values and background, and provides indications as to what factors need to be taken into account in order to maximise the ethical acceptability of such measures.

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### Clinical safety of natural compounds, an evidence-based approach

Anna Bajek<sup>1</sup>, Bartosz Tylkowski<sup>2</sup>, Jarosław Bajek<sup>3</sup>, Oliwia Kowalczyk<sup>4</sup>, Małgorzata Maj<sup>1</sup>, Magdalena Olkiewicz<sup>5</sup>

<sup>1</sup>Department of Tissue Engineering, Chair of Urology and Andrology, Nicolaus Copernicus University in Torun, Poland, <sup>2</sup>Chemical Technologies Unit, Eurecat, Spain, <sup>3</sup>Poland, <sup>4</sup>Research and Education Unit for Communication in Healthcare, Department of Cardiac Surgery, Nicolaus Copernicus University in Torun, Poland, <sup>5</sup>Eurecat, Chemical Technologies Unit, Spain

There is an increasing use of natural products and compounds in medicine, also in oncology research. These products including medicinal plants, phytopharmaceuticals, vitamins and even bio-wastes. It is generally believed that these products are safe for patients. However, still there are some concerns associated with them. Different methods are used to evaluate the safety of these compounds, among which the in vitro studies are (evaluating the toxicities on different cells). The aim of our study was to check if the formulations of natural compounds are safe for patients, on the example of normal human cells.

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### How including scientific evidence in legal decision-making can help us answer questions in public health law. Case study: justifiability and proportionality of discrimination in EU Digital COVID Certificates.

Danaja Povse<sup>1,2</sup>

<sup>1</sup>Health and aging law lab (HALL), <sup>2</sup>Law, science, technology and society research group (LSTS)

Background and Objective: EU digital covid certificates (DCCs) scheme, instituted in the summer of 2021 under the Regulation 2021/953 (DCCR) to facilitate reopening European borders, assumes that certificate holders pose less of a risk to public health and their freedom of movement should not be restricted. As the DCCR made sweeping assumption about the underlying mechanisms of immunity, transmission and risk, and access, questions about discrimination were raised. My doctoral project seeks to answer the following research question: In what manner should EU law consider scientific findings in its evaluation of legal questions such as discrimination, and how do scientific findings justify differential treatment?

Methodology: The question will be answered in the context of a case study - establishing discrimination under the EU Digital COVID Certificates scheme, in three parts. The first and second parts of the project is concerned with the normative framework: definition of scientific evidence, its relevance to and inclusion in the EU legal order, and how it can be used to answer legal questions. In the third part, the framework is applied to evaluate the possible discrimination stemming from the DCCs. Preliminary findings and conclusions: Individualised risk assessment of the DCCs is difficult to reconcile with the public health approach and if used as an access condition can lead to discrimination insofar there is no justification for differential treatment, such as quality scientific evidence. The latter is required by EU law to demonstrate permissible restriction on freedom of movement, as well as ECHR case-law in the context of discrimination in public health. Legislators should clarify the role, quality standards and inclusion process for scientific evidence in the decision-making process in order to preclude discriminatory impacts.

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### Research ethics in times of pandemic: the case of proxalutamide to treat COVID-19 in Brazil

Lucas Brojan<sup>1</sup>, Fernando Hellmann<sup>2</sup>, Núria Homedes<sup>3</sup>

<sup>1</sup>Federal University of Santa Catarina, Brazil, <sup>2</sup>Federal University of Santa Catarina/Université de Montreal, Canada, <sup>3</sup>Salud y Farmacos, United States

The Brazilian Federal Senate created a Parliamentary Commission of Inquiry (CPI) to investigate the Bolsonaro governments irregularities in managing the COVID-19 pandemic. One of the cases that drew attention was the Proxa-Rescue AndroCov Trial, which tested proxalutamide, a second-generation, non-steroidal antiandrogen, against COVID-19 in Brazil. This study analyzes the ethical and scientific integrity issues related to its implementation. We analyzed the Senate CPI report, the letters from the National Research Ethics Commission, the article published by the researchers, the clinical trial records in Brazilian and US platforms, and the information disseminated by the media. Our findings show numerous problems. Even with 200 deaths from a total of 645 participants in the study, there was no interruption to the research. Researchers changed the consent form approved by the ethics board, omitting critical information such as the risk of using proxalutamide in pregnant women. There is evidence of conflict

of interest between researchers and sponsors and problems associated with scientific integrity. It is a case of scientific fraud that transgresses national and international ethical guidelines. The proxalutamide study served as government propaganda to promote ineffective drugs against COVID-19

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### The world healthcare I would not want...

Massimiliano Biondi<sup>1</sup>

<sup>1</sup>Pouav2 and univpm asur marche and univpm hospital: fabriano via stelluti scala n. 26 univpm: ancona via tronto 10/a Italy

Context and Objective: Transforming our world” This is what can be seen in the incipit of the 2030 Agenda for Sustainable Development. How can we transform our healthcare? ...a respectful methodology for human beings, paying attention to the various aspects that have serious repercussions on us and on our planet: COVID and other epidemics, wars, economic crisis, hunger, famine, digital divide. Against this, new awareness is emerging, which combines respect for cultures and traditions, with the possibilities offered by innovation (“intelligent” technologies, quantum, metaverse, robotics, energy transition, sharing economy, etc.) which will be able to focus health on the individual.

Method: An attempt has been made to identify the ten aspects that could constitute a decalogue of what we would never like to see. Healthcare in this decalogue meets a vision that starts from the WHO 1948 definition of health, passing through the 1974 Ladonde report, the 1978 Alma-Ata Declaration, the 1986 Ottawa Charter, up to the Charter of Bangkok, 2005.

- Results: 1. unequal health care, in which the little one has “small” rights  
 2. a tortuous healthcare, in which everyone fails to reach their destination  
 3. flat healthcare that flattens creative excellence  
 4. a closed healthcare that traps its networks  
 5. a blind healthcare, which darkens the eyes so as not to see within itself  
 6. a deaf healthcare that does not listen to the silence of pain  
 7. a mute healthcare, which is silent about its own needs  
 8. a lame healthcare, which is unable to run towards a better future  
 9. a dull healthcare, which extinguishes hope  
 10. a cold healthcare, in his rooms and in his heart

Conclusion: The model is prospective and could be monitored by International Organizations through sets of indicators that should be created ad hoc for each of the points of the decalogue.

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### Advancing public health and health equity through human rights law

Giandomenico Barcellona<sup>1</sup>, Emma Rawson<sup>2</sup>, Rocío Sáenz<sup>3,4</sup>

<sup>1</sup>Framework Convention on Global Health (FCGH) Alliance, Italy, <sup>2</sup>ManuKahu Associates, Indigenous Consultancy, New Zealand, <sup>3</sup>Health Equity Network of the Americas, <sup>4</sup>Sustainable Health Equity Movement, Costa Rica

This workshop will highlight the centrality of human rights law to advancing health equity and the important role it should take in public health policy. The workshop will offer proposals on ways that the law can create accountability around and improve implementation of the right to health, including a proposed treaty on the right to health, the Framework Convention on Global Health (FCGH). Advancing health equity requires working towards social justice and tackling inequality, which can be done through meaningful implementation of human rights, including the right to health. The workshop will consist of presentations and interactive portions throughout. Participants in this workshop will learn about human rights law and principles from presenters from different parts of the world with expertise in health and human rights. Presenters will offer specific examples of ways that human rights law can help achieve the goals of public health, with a particular focus on health equity. Presenters will also provide clear proposals for the implementation of human rights, and the right to health specifically. This will include a focus on the FCGH proposal, advocacy strategies, and steps that participants and the constituencies they represent can take to advance those proposals. During this workshop, participants will engage with presenters in an interactive session to gain a deeper understanding of the topics and examples presented and how they may apply in their own countries and contexts. After participating in this workshop, attendees will be able to answer the question of why accountability around human rights is necessary to advance health equity and must be a public health imperative. They will also be equipped with specific examples of how right to health implementation advances public health. Finally, participants will leave the session with an understanding of key demands, the FCGH in particular, targets, and calls for action to shape and inform their advocacy.

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### There is no public health without ethics - Code of ethics and professional conduct for good public health practice

Katarzyna Czabanowska<sup>1</sup>, Jim Thomas<sup>2</sup>, Farhang Tahzib<sup>3</sup>, Steven Bow<sup>4</sup>, Lena Lena Strohmaier<sup>5</sup>

<sup>1</sup>Maastricht University / ASPHER Netherlands, <sup>2</sup>University of North Carolina, United States, <sup>3</sup>Faculty of Public Health, United Kingdom, <sup>4</sup>University College London United Kingdom, <sup>5</sup>University of Maastricht Netherlands International Working group on Codes of Conduct and professional Conduct International Working group on Codes of Conduct and professional Conduct Faculty of public health United Kingdom Faculty of Public Health Faculty of Public Health Faculty of Public Health United Kingdom

The professional discipline of public health is driven by its values. Public health is not merely a technical discipline concerned with statistics or facts. Our norms, values, beliefs and the way we see the world, as individuals, communities and institutions which serve us, do matter and fundamentally affect our decisions, behaviours, policies, and practice. The WHO-ASPHER road map to professionalizing the public health workforce and the WHO global report on building the public health and emergency workforce, have highlighted the development code of ethics and professional conduct (CoC) as one of the key pillars for professionalizing the public health workforce. There is evidence of significant variations in education and training in public health ethics which is considered a key competency for good public health practice. A joint international group of public health practitioners, ethicists and academics have been formed to develop guidelines and principles and support the development of CoC as part of the professionalisation of public health agenda and build competency and capacity of the workforce. The purpose of this workshop is to provide rationale and evidence on the importance of CoC for good public health practice, share learning, experience and resources, and discuss options and opportunities to advance the agenda in promoting ethical public health practice and policy making. The workshop will briefly share and reflect on the literature and work by the America leadership society, FPH, the Scottish and UK public health community and others. The workshop will provide the thinking and materials from the current International group on the principles and guidelines for development of CoC, and insights on the process, experience and learning in development codes of ethics and professional conduct and seek insights from participants on the implications for day to day public health practice. Among the key issues is appreciating fundamental role of norms and values in public health practice and policy making, and the importance of ensuring such work is linked to a strategy and activities to build competency and capacity around public health ethics and law and to ensure resources, systems and robust education and training activities are put in place for a sustainable development and effective implementation. Specific aims / objectives The session will provide: - insights on the importance and relevance of public health ethics and development of Code of ethics and professional conduct for good public health practice - learning and experience from development of Codes of ethical practice and professional conduct - work by International working group on guidelines, principles and process for development and implementation of Codes of ethics and professional conduct and their implications for behaviour and practice. Key questions: \* Why are Codes of ethics and professional conduct key to good public health practice \* What are the norms and values for good public health practice \* What are the principles, values and processes for development for development of a Codes of ethics and professional conduct and their implications for practice \* What are activities and options for building ethical competence and capacity of the public health workforce

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### Impact of the 2022 flood and the incidence of Malaria in Sohbatpur District, Balochistan-Pakistan

Zubair Ahmed<sup>1</sup>, Ehsan Ahmed<sup>2,3</sup>

<sup>1</sup>Field Epidemiology and Laboratory Training Program (FELTP) Pakistan, Balochistan, Pakistan, <sup>2</sup>Provincial Disease Surveillance and Response Unit (PDSRU), Field Epidemiology and Laboratory Training Program (FELTP), Balochistan, Pakistan, <sup>3</sup>Ministry of Health (MoH), Government of Balochistan, Pakistan

Background: Heavy rain hit Pakistan including Sohbatpur district in August 2022 with subsequent flash floods. Study was carried out to assess the impact of flooding on incidence of malaria in Sohbatpur district.

Methods: This observational retrospective study compared malarial data during rainfall seasons in Sohbatpur community in flood 2022 with those of corresponding

rainfall seasons of previous two non-flood years 2020 and 2021.

Results: A marked increase of malaria cases and incidence rate was observed in 10 sentinel malaria notification sites in district (IR>4.01/100,000 person days in 2019 [95 % CI: 6.13-7.04] and 5.41 in 2020 [95 % CI: 6.33-6.51] to 11.24 in 2022 [95 % CI: 9.15-9.44];  $P < 0.0001$ ), with peaking of incidence rate in 5-15 years' age group. An evident increase in slide positivity rate ( $P < 0.0001$ ) was observed in 4-week period of 2022 (SPR = 18.16% [95 % CI: 20.40-21.32%]) compared with same periods in 2020 (SPR = 8.72% [95 % CI: 8.36-9.08%]) and 2021 (SPR = 12.62% [95 % CI: 13.14-14.88%]), with more marked rise of SPR in 5-15 years' age group. Hospital OPD incidence proportion in 2022 was 22.3% (95% CI: 17.11-19.22%) compared to 10.15% (95% CI: 6.48-6.91%) in 2020, and 9.17% (95% CI: 7.82-9.21%) in 2021. The 5-15-year age group was responsible for overall rise in proportion of malaria cases in 2022. Incidence proportion of severe malaria cases increased to 22.5 % (95 % CI: 20.12 to 21.50 %) in study period of 2022 compared to 19.8 % (95 % CI: 18.6 to 21.0 %) in 2020 and 18.4 % (95 % CI: 17.4 to 19.5) in 2021.

Conclusions: Study revealed a significant increase in incidence rate of malaria in Sohbatpur following flash flood of August 2022. The flooding had highest impact on malaria incidence of age 5-15 years' age group.

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### Population health trends analysis and burden of disease profile observed in Sierra Leone from 1990-2017

Jolleen Zembe<sup>1</sup>, Flavia Senkubuge<sup>2</sup>, Tanita Botha<sup>1</sup>, Tom Achoki<sup>3</sup>, Haja Wurie<sup>4</sup>

<sup>1</sup>School of Health Systems and Public Health, University of Pretoria, Pretoria, South Africa, <sup>2</sup>School of Health Systems and Public Health, Faculty of Health Sciences, University of Pretoria, Pretoria, South Africa, <sup>3</sup>Africa Health policy, Kenya School of Health Systems and Public Health, University of Pretoria, Pretoria, South Africa, <sup>4</sup>University of Sierra Leone, Sierra Leone

Background: Sierra Leone, located in West Africa, is described as one of the worlds poorest developing countries. The country has endured numerous obstacles, including a civil war from 1991 to 2002, an Ebola outbreak from 2014 to 2016, and floods and landslides in August 2017. This culminated in health system scarring, which remains a challenge to date. There has been minimal research on the disease burden in Sierra Leone. Objectives The purpose of this study is to quantify and provide a comprehensive assessment of the burden of disease in Sierra Leone for the past 27 years.

Methods: In descriptive, this study analysed secondary data from IHME Global Burden of Disease to quantify the burden of disease patterns, injuries, and risk factors in Sierra Leone. Global Burden of Disease metrics was used to measure mortality rates, years of life lost, disability-adjusted life- years, years lived with disability, and risk factors all ages and both sexes from (1990 -2017).

Results: From 1990-2017, trends of mortality rates for all ages and sexes have declined in Sierra Leone although mortality rates remain some of the highest when compared to other developing countries. The burden of communicable, maternal, neonatal, and nutritional diseases is greater than the burden of non-communicable diseases due to the prevalence of endemic diseases in Sierra Leone.

Conclusions: Sierra Leones health status is gradually improving following the civil war and Ebola outbreak. Sierra Leone has a double burden of disease with CMNNS leading and NCDs progressively increasing. Despite these challenges, Sierra Leone has promising initiatives and programs pursuing the universal health coverage 2030 Sustainable Developmental Goals Agenda. There is need for accountability of available resources, clear rules, and expected roles for non-governmental organisations to ensure a level playing field for all actors to rebuild the health system.

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### Investigation of the performance of public policies in risk management in the face of disruptive events in Brazil

Maria Bellini<sup>1</sup>, Nadianna Marques<sup>2</sup>

<sup>1</sup>School of Public Health and Humanities School, Pontifical Catholic University - State Secretariat of Saude, Brazil, <sup>2</sup>Humanities School, Pontifical Catholic University, Porto Alegre, Brazil

This research investigates risk management in relation to disruptive events in 02 Brazilian regions suffering from the extremes of humidity, droughts and floods that cause the eviction of vulnerable populations. This imposes on science and public policies a commitment to investigate the impacts that violently affect communities, especially the most vulnerable to propose prevention and/or mitigation actions. Methodology: Documentary research with analysis of documents such as: contingency plans, protocols, etc., Bibliographic research. Empirical research - interviews, focus groups, seminars-. The sample is representatives of the public

administrations of the municipalities, researchers from universities and members of civil society from 20 municipalities in the 02 Brazilian states-Amazonas and Rio Grande do Sul.

Results: The bibliographic search was initiated and also the list of documents that will be included in the search was started. The project has consultants from Australia, South Africa and Italy, countries systemically affected by disasters. It does not yet present Results analyzed. Conclusions:s or reflections: The investigation of disasters and/or disruptive events of social dynamics is a necessary inclusion in the commitment to know the impacts that disruptive events have especially on the most vulnerable populations. The inconsistencies in the definitions in relation to what is disaster generates insufficiency in the guidelines and accountability in relation to these events in the different professions, organs and public policies. Scientific research on these phenomena is the responsibility of researchers, but their confrontation is the responsibility of all actors of society in particular of the State through public policies.

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### Improving access to primary health care for refugee women and children using Health Emergency and Disaster Risk Management Framework during pandemic: a mixed method study in three countries

Yasir Shafiq<sup>1</sup>, Francesco Adesi<sup>2</sup>, Matina Valente<sup>3</sup>, Luca Ragazzoni<sup>3</sup>

<sup>1</sup>Center for Research and Training in Disaster Medicine, Humanitarian Aid and Global Health (CRIMEDIM), Università degli Studi del Piemonte Orientale Amedeo Avogadro, Novara, Italy, <sup>2</sup>Department of Translational Medicine (DIMET), Università degli Studi del Piemonte Orientale Amedeo Avogadro, Italy, <sup>3</sup>Center for Research and Training in Disaster Medicine, Humanitarian Aid and Global Health (CRIMEDIM), Università degli Studi del Piemonte Orientale "Amedeo Avogadro", Italy

Background: Over 930 million people are living on the edge of poverty due to suspected out-of-pocket health expenses, leaving universal health coverage (UHC) behind. The agenda is even far from being accomplishment in humanitarian crises due to the lack of access to primary health care (PHC). Additionally, the COVID-19 pandemic put additional strain on health systems due to access to PHC. Globally, PHC faced disruption due to lockdown during pandemic, poor planning, shift to tertiary care, and silos in coordination. In these vulnerable communities facing humanitarian crises, community is facing poor accessibility to maternal, neonatal and child health (MNCH) services, Resulting in high morbidity and mortality. To ensure continuity of PHC, the World Health Organization has devised a framework called Health Emergency Disaster Risk Management (health-EDRM). Countries hosting refugees and displaced populations, the response to emergencies in well planned, coordinated, and integrated. Data is missing for vulnerable communities in crisis, and they are not the priority in the planning, preparedness, and implementation of PHC during emergencies. Study Aims to: (i) assess community barriers to accessing MNCH-related PHC services, (ii) identify barriers to implementing the h-EDRM policy framework, (iii) map partner's activities in targeted countries participating in emergency response.

Methods: A mixed-methods study will be conducted in Pakistan and Italy on refugee population from Afghanistan and middle-east, as well as in Ethiopia, where population is internally displaced due to the crisis in Tigray region. Cross-sectional survey will be conducted to assess MNCH-related PHC accessibility challenges at the community-level by conducting a cross-sectional survey. Humanitarian organizations and other stakeholders will be interviewed to understand the barriers to implementing health-EDRM. Activities of stakeholders will be mapped to understand how health-EDRM is being implemented. Outcomes: Workshops and consultations will be held with stakeholders to develop strategies, tools, and integrating health-EDRM into country-level emergency planning.

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### Changes in drug demand when a pandemic coincides with other outbreaks in a war zone country

Ebtesam Saleh<sup>1,2</sup>, Bassam Saleh<sup>3</sup>, Randa Haddadin<sup>4</sup>, Eman Elayeh<sup>5</sup>

<sup>1</sup>Department of Pharmacology and Toxicology, Aden University, Yemen, <sup>2</sup>Charite University, Berlin, Germany, <sup>3</sup>Health Department, The International Organization for Migration, Yemen, <sup>4</sup>Department of Pharmaceutics and Pharmaceutical Technology, School of Pharmacy, The University of Jordan, Amman, Jordan, <sup>5</sup>Department of Biopharmaceutics and Clinical Pharmacy, School of Pharmacy, The University of Jordan, Amman, Jordan

Background: Yemen's health system has severely deteriorated due to the ongoing civil war accompanied by the COVID-19 pandemic which coincided with other

endemic infections. Many health institutions closed due to insufficient supplies. Consequently, pharmacists became the available healthcare provider on the frontlines. This study aimed to evaluate the pattern of demand for drugs during the pandemic based on the pharmacist's perspective in Yemen, a conflict zone country. Methods: An online survey was developed, validated, and distributed among pharmacists. The questionnaire was composed of two sections: (1) demographic characteristics of the participants and (2) changes in the demand for different drug categories. Chi-square test and Fisher's exact test were used to find statistical associations.

Results: Responses (330) were received from pharmacists working in 12 out of 22 governorates in Yemen. During the pandemic, there was an increase in the demand for prescription drugs such as antibiotics, antimalarials, and sedatives (95%, 90%, and 71%, respectively) and an increase in the demand for nonprescription drugs such as vitamins (93%) and paracetamol (> 90%). In addition, there was an increase in the demand for prescription drugs without a prescription, which was reported by 50% of the participants. No statistical difference was seen between the frontline districts and major cities in terms of requesting these drugs without a prescription. On the other hand, most participants (75.2%) did not attend any training or workshop during the last 6 months of conducting this survey. Conclusions: COVID-19 has increased the demand for many prescription and nonprescription drugs, where the irrational use of these drugs may lead to devastating health effects. In war zone areas hit by a pandemic, policymakers and public health organizations should focus on training and educating pharmacists as important health care and medicine providers for the public.

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### Factors, health system preparedness, and response strategy for the recent cholera outbreak in Syria

MHD Alhaffar<sup>1</sup>, Maria Gomez<sup>2</sup>, Jemar Sigua<sup>2</sup>, Anneli Eriksson<sup>2</sup>

<sup>1</sup>Department of Global Health, Karolinska Institute, Sweden, <sup>2</sup>Department of Global Health, Karolinska Institute, Solna, Sweden

On 2022 September 10, The Ministry of Health in Syria officially announced a cholera outbreak in the country, primarily affecting northeast Syria and spreading fast to other cities and regions. With the decade-long armed conflict situation in Syria, the country's health system struggles to respond to the crisis. This article aims to analyse the reasons and underlying factors that contributed to the current ongoing cholera outbreak in Syria, assess the preparedness of the country's health system in facing the outbreak, and recommend strategies to better prepare for and respond to future outbreaks.

Methods: A literature search of research articles and grey literature related to the ongoing cholera outbreak in Syria was conducted on online databases and search engines. Results were scanned for relevance to two overarching topics: factors that contributed to the outbreak and health system preparedness and response.

Results: Forty three out of 1,209 articles were included in the review. From these articles, underlying factors that contributed to the fast spread of the cholera outbreak in Syria were identified, including displacement due to armed conflict situations; chronic water insecurity and lack of water, sanitation, and hygiene (WASH) infrastructure; droughts due to climate change; weakened health system capacity; and political instability leading to an overall uncoordinated local and international response.

Conclusions: Syria has reported its first cholera outbreak since the country's decade-long armed conflict started. Overall, the current state of the country's health system and political landscape is insufficient in adequately responding to this outbreak. As the outbreak has started to spread beyond the country's borders, external aid is much needed to assist the nation's fragmented response. Focusing efforts in arresting the outbreak in Syria now will not only prevent more casualties and losses in the country but can also save neighboring countries in the region.

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### SHARP Work Package 7: EMERGE Laboratory Network

Daniela Jacob<sup>1</sup>

<sup>1</sup>Robert Koch Institute (RKI), Germany

Embedded in the EU-funded projects and Joint Actions EQADeBa (2008-2011), QUANDHIP (2011-2015), EMERGE (2015-2019), and currently implemented into SHARP (2019-March 2023), the EMERGE Laboratory Network is a success story and essential for the protection of European citizens against exposure to a panel of high threat bacteria and viruses. Indeed, especially, for emerging and re-emerging pathogens, classified as Risk Group (RG) 3 and 4, the need for an efficient, rapid, quality assured and coordinated response is addressed to prevent and manage major public health emergencies. The EMERGE laboratory network

on highly infectious pathogens operates in compliance with the currently revised Decision No 1082/2013/EU and comprises about 40 reference laboratories. The network is deeply engaged in laboratory capacity and capability building by quality assurance exercises, evaluation of new diagnostics, training and improvement of biorisk management in high containment laboratories.

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### Poisoning assessment and patients' behavior seeking healthcare within urban and rural communities of Burundi

Azarias Nkengurutse<sup>1</sup>

<sup>1</sup>Faculty of Medicine, University of Burundi, Burundi

Background: Pesticides exposure (16.70%, 12.91%); food poisoning (30.05%, 35%), traditional medicine intoxication (10.85%, 14%), ingestion of unknown substances (13%, 16.9%), household products (3.5%, 7%), suicide attempts with hydrogen sulfur (6%, 0%). Clinically, patients had trouble breathing, nausea, vomiting, diarrhea and confusion. Among hospitalized patients, 18.65% developed kidney failure and liver problems. 85% delayed in consulting. Of 276 interviewed participants, 46% reported they experienced poisoning in their life. 65% consulted traditional healers. 24% consulted modern health professionals, 11% didn't consult.

Conclusions: There is a high incidence of food poisoning and ingestion of unknown substances in rural communities than in urban areas, in children than adults. The negative behavior of patients in seeking healthcare leads to diseases chronicity causing several preventable complications and an increase of death rate. Raising awareness and establishing poisoning control centers are essential to prevent and control threats associated with poisoning.

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### Differential ethnic approach as a strategy to reduce disaster risk in multicultural communities: the case of Colombia

Maria Moreno<sup>1</sup>, Bahaa Alhaffar<sup>1</sup>

<sup>1</sup>Karolinska Institutet, Sweden

Introduction: Colombia is a country located in the extreme northwest of South America with 20% of the population composed of indigenous, Afro-Colombian, Raizal, Palenquera, Rom, and rural communities. The highest levels of vulnerability to natural disasters are found in these communities, who are the ones with the highest levels of poverty. The objective of this article is to assess the importance of the differential ethnic approach in disaster risk reduction.

Methods: A literature review on the differential approach in disaster risk reduction in Colombia was conducted by searching different databases such as Web of Science, Clinicalkey, PubMed, Science Direct, and Lilacs. Official documents and gray literature are also included.

Results: In Colombia, various plans have been made to incorporate the differential ethnic approach into disaster risk management. It has been observed that these communities participate in the response phase of a disaster, however, there is no participation in the prevention, preparation and recovery phases.

Conclusions: It is necessary to integrate the differential ethnic approach in all the phases of the disaster risk cycle through intercultural dialogue and scientific-ancestral knowledge; and take advantage of the community's knowledge about the natural dynamics of the territory they inhabit, community resources, vulnerability, resilience factors, and cultural practices.

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### Societal disruption as a disaster

Joseph Cuthbertson<sup>1</sup>

<sup>1</sup>Monash University, Australia

Introduction: This research aims to review the impact of drug addiction, domestic violence and suicide in Australia through the lens of disaster risk reduction. This study explores whether drug addiction, domestic violence and suicide can be considered as disasters according to established thresholds and definitions; and whether contemporary health emergency and disaster risk management (HEDRM) practice can be adapted to support action to reduce the impact of these events and inform disaster risk reduction. Methods: We conducted a literature review to explore drug addiction, domestic violence and suicide as societal disruptions causing disaster. Key Australian government reports describing deaths associated with suicide, domestic violence and drug addiction were identified, following which a constrained snowball sampling was applied to the bibliography of each document to gather further key articles and inform the evolution of the impact of these themes in Australia over the period 2000 – 2018. The search strategy

included both peer reviewed and grey literature. We used the search terms 'social disruption', non-traditional, 'drug addiction', 'domestic violence, 'suicide' and societal disruption as key words and included articles if they demonstrated an analysis of the theme related to health impact related to disaster settings.

Results: Utilising the Australian Disaster Resilience Knowledge Hub and the international CRED criteria for a disaster, the impact to human health of drug addiction, domestic violence and suicide upon the Australian population each meet the criteria of a disaster. Conclusions: Public Health practice through the lens of the determinants of social disruption combined with activities that consider hazards, vulnerability and exposure, can institute prevention, preparedness, response, and recovery programs to reduce the impact of drug addiction, domestic violence and suicide.

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### Direct and indirect economic impact model for imported hemorrhagic fevers outbreaks in the EU, UK and US

Tristan Learoyd<sup>1</sup>

<sup>1</sup>Emergent Biosolutions, Bruchsal, Germany

Background: Little information is publicly available to determine the economic impact hemorrhagic fevers with no available or stockpiled medical countermeasure (MCM) have on health care systems. This study examined the direct and indirect health costs of imported cases of the hemorrhagic fevers Crimean Congo (CCHF), Hanta, Lassa, Marburg, Nipah and Rift Valley (RVF) in the European Union, United Kingdom and United States. Methods: An adapted direct cost model using sourced conservative treatment regimens for the respective fevers were costed. Reported reproduction ratios, fatality ratios and case reports were used to determine the spread of infection, front-line mortality, and the cost of and extent of an imported outbreak. The average length of hospitalization and death rate was factored into the care costs including front-line casualties and cost of replacement. Native community replication was represented where transmission allowed. Costs were converted into American, British, and European healthcare costs.

Results: Interhuman infection applied to the replication number of the imported case increased the direct and indirect costs for Lassa and Marburg cases. CCHF, Hanta and RVF cases remained local vector dependent with Nipah costs confined largely to direct case zero cost (R0<0.6). Average hospital stays as published in case reports ranged from 4.4 days (CCHF) to 28 days (Rift Valley Fever). Direct costs ranged from \$77,865 (CCHF) to \$787,266 (Marburg) per first imported case with <1.6-fold increase for Marburg and <1.8 increase for Lassa in direct and indirect costs through reproduction. Conclusions: Significant direct healthcare costs were calculated for six imported hemorrhagic fevers with Lassa and Marburg having potential to increase costs beyond case zero through local transmission. The costs highlight the potential savings that effective local MCM availability could have in reducing the cost impact of hemorrhagic fever importation.

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### Gender roles and intra-household decision-making on child feeding practices: a qualitative study exploring gender power dynamics in Somalia

Adam A. Mohamed<sup>1,2</sup>, Mohamed A. Magan<sup>1</sup>, Samar Abdelrahman<sup>1</sup>, Adan Y.

Mahdi<sup>1</sup>, Said A. Mohamoud<sup>1</sup>, Cashington Siameja<sup>1</sup>, Meftuh Omar<sup>1</sup>

<sup>1</sup>Save the Children International, Somalia

<sup>2</sup>Department of Public Health, Faculty of Health Sciences, Başkent University, Ankara, Turkey

Background: The culture of Somali families is very collectivist, with communal responsibilities rather than individualist, in which culturally prescribed roles, values, traditions, and communication patterns are often significant factors at the household and community levels. This study sought to examine and thematically describe how gender roles and responsibilities influence the child feeding practice in the Somali context. Methods: A total of nine Focus Group Discussions (FGDs) were conducted on fathers "3-FGDs", mothers "3-FGDs", and Grandmothers "3-FGDs" in four villages in Kismayo town, Lower Jubba region between Jan-Feb 2022. The study employed a qualitative method to explore roles and responsibilities at home and in the community, as well as social barriers and gender dynamics related to child feeding and nutrition. Results: The pertinent findings of this study found that fathers and grandfathers have the overall family decisions, provide, and control family resources, and sometimes support and encourage women concerning family tasks, childcare, and feeding, whereas mothers are tasked with the internal household chores, decisions, and issues related to childcaring and feeding, while grandmothers and mothers-in-law act as a family advisory and take care of the children when the mother is absent or ill or busy. Conclusion: Traditional

gender roles and responsibilities regarding child feeding practices still exist in the studied communities of Somalia where fathers were the main financial provider and less involved in the decision of initiation and continuation of breastfeeding and give emotional support to breastfeeding and child feeding practice; At the same time, the mother is the primary caregiver, and elderly mothers have both determinantal and beneficial on infant practices. Key Words: Gender roles, Child feeding, power dynamics, household decisions, Somalia.

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### Reaching the unreached in high-risk population of Nepal - Mobile COVID-19 Vaccination Service

Ghanshyam Bhatta<sup>1</sup>

<sup>1</sup>Institute for Collective Health, Adventist Development Relief Agency, Kathmandu, Nepal

Background: The coronavirus disease 2019 (COVID-19) pandemic has affected billions of lives worldwide. Nepal, like many other countries, was severely affected by the pandemic. The socio-economic and health conditions of key populations, such as pregnant and lactating women, people with disabilities and morbidities were at high risk. In 2021, Adventist Development Relief Agency (ADRA) Nepal in collaboration with the Government of Nepal conducted a vaccine hesitancy survey in seven provinces of Nepal. The results revealed a high vaccine hesitancy in Madhesh province (37.5%), which was mostly attributable to the difficulties in accessing the vaccination service (26%).

Methods: To eliminate the barriers identified during vaccine hesitancy survey, Mobile COVID-19 Vaccination Service (MoCoVs) was started in coordination with the government to provide door-to-door vaccination service to pregnant and lactating women, people with disabilities and morbidities. A dedicated vaccination vehicle with a team of vaccinator and a nurse equipped with Adverse Effect Following Immunization kits, vaccine storage boxes, syringe disposal boxes were deployed to seven districts with low vaccination coverage in the province.

Results: MoCoVs was able to reach high-risk beneficiaries (elderlies-11%, people with disabilities and morbidities-9%), the majority of whom were female (57%), including 10% of pregnant and lactating women. The vaccination coverage increased from 24% to 72%, with the MoCoVs being responsible for the enhanced immunisation reach to high-risk populations.

Conclusions: The MoCoVs approach was highly effective in reaching the marginalized population, who generally lacked access to vaccination services. The door-to-door vaccination service was highly effective and easily replicable during public health emergencies.

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### The impact of violent conflict on pharmacy practice in the Middle East

Christina Steenkamp<sup>1</sup>, Mayyada Wazaify<sup>2</sup>

<sup>1</sup>Department of Public Health and Mortality Studies, School of Social Sciences, Oxford, United Kingdom, <sup>2</sup>Department of Biopharmaceutics and Clinical Pharmacy, School of Pharmacy, The University of Jordan, Amman, Jordan

Background and Objective: The Middle East and North Africa (MENA) region has witnessed several intense and violent conflicts over the last 10 years. While much is known about the impact of war on various aspects of public health (including pressure on health care institutions, disease outbreaks amongst refugee populations and reduced access to medicines), very little is understood about how war impacts on levels of medicine abuse and misuse amongst populations. Pharmacists are ideally placed to witness and record these practices. This paper asks how violent conflict impacts on the work and experiences of pharmacists, who are at the frontline of managing drug misuse/abuse amongst the population. Methods: The paper is part of a larger two-year (2020-2022) study investigating the impact of violent conflict in the MENA region on medicine abuse/misuse and pharmacy practice in managing this challenge. The study used a mixed-method approach to data-gathering, involving a quantitative survey (n=160) and semi-structured interviews (n=20) with pharmacists in Syria, Libya, Yemen and Iraq. This paper, specifically, focuses on the public health role of pharmacists in violent contexts.

Results: The results show that violent conflicts have far-ranging consequences for pharmacy practice, especially in community settings. The results highlight the challenges which pharmacists face during conflict, including the (in)accessibility of medicines, the collapse of institutional frameworks, threats to personal safety, damage to infrastructure and the need to balance ethical considerations and their own wellbeing vis-à-vis that of the patient. The research outlines the safety measures that pharmacists take to protect themselves and how these measures impact on their provision of healthcare.

Conclusions: The research led to greater awareness of the role that pharmacists

play in the public health of conflict-affected populations. Recommendations are made for how pharmacists can be more effectively supported during war.

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### Implications of an intensive care unit urgent transfer in terms of clinical and infectious risk

Edoardo Miotto<sup>1</sup>, Laura Brunelli<sup>1</sup>, Massimo Pin<sup>1</sup>, Daniele Celotto<sup>1</sup>, Adriana Moccia<sup>2,3</sup>, Gianni Borghi<sup>4,2</sup>, Amato Monte<sup>4,5</sup>, Cristiana Macor<sup>4,5</sup>, Roberto Cocconi<sup>6</sup>, Luca Lattuada<sup>2,4</sup>, Silvio Brusaferrò<sup>1</sup>, Luca Arnoldo<sup>1</sup>

<sup>1</sup>Dipartimento di Area Medica, University of Udine, Udine, Italy, <sup>2</sup>Direzione Medica, Presidio Ospedaliero Universitario S. Maria della Misericordia di Udine, Italy, <sup>3</sup>Azienda Sanitaria, Universitaria Friuli Centrale, Udine, Italy, <sup>4</sup>Azienda Sanitaria Universitaria Friuli Centrale, Udine, Italy, <sup>5</sup>Dipartimento di Anestesia e Rianimazione, Presidio Ospedaliero Universitario S. Maria della Misericordia di Udine, Italy, <sup>6</sup>SOC Rischio Clinico, Qualità e Accreditamento, Azienda Sanitaria Universitaria Friuli Centrale, Udine, Italy

**Background and Objectives:** Proper functioning of an intensive care unit (ICU) contributes to efficient hospital management, but what happens when the ICU needs urgent transfer? Considering that healthcare-associated infections (HAIs) are one of the most important factors that can negatively impact patient outcomes in an ICU, we retrospectively reviewed cases that occurred in an ICU in our hospital on January 6, 2017. We assessed the cumulative incidence of HAIs in patients admitted to the ICU before and after transfer, and overall impact on the three hospital's ICUs.

**Methods:** The clinical records of inpatients admitted to the ICU in the 6 months before and after transfer were analyzed to assess the occurrence of HAI. Demographic data were collected to describe the patients. The overall impact on ICU activity was analyzed considering six-month mortality rates for the period 2015-2019. Descriptive statistics and a multivariable model were performed including all parameters that were significantly correlated with HAI occurrence in the univariate analysis.

**Results:** The revision was conducted on 393 clinical records. The number of patients included in the study of the occurrence of at least one HAI was 304, as 89 patients were excluded because their length of stay in the ICU was less than 48 hours. HAIs occurred in 13.1% of patients before and in 6.9% after transfer. Pneumonia accounted for 52.9% of HAIs, bloodstream infections for 29.4%, urinary tract infections for 14.7%. No significant difference in incidence was observed between the two periods. The presence of a central venous catheter was significantly associated with the occurrence of at least one HAI ( $p=0.045$ ). **Conclusions:** Urgent transfer of the ICU did not appear to have an impact on clinical and infectious risk, as no difference in infectious disease incidence and mortality was observed likely due to the dedicated work of the healthcare staff.

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### Implementation of Case Management in emergency departments: the influencing factors

Elodie Schmutz<sup>1</sup>, Madison Graells<sup>1</sup>, Joanna Moullin<sup>2</sup>, Olivier Hugli<sup>3</sup>, Jean-Bernard Daepfen<sup>4</sup>, Julia Ambrosetti<sup>5</sup>, Julien Ombelli<sup>6</sup>, Michel Golay<sup>7</sup>, Vincent Ribordy<sup>8</sup>, Véronique Grazioli<sup>1</sup>, Patrick Bodenmann<sup>1</sup>

<sup>1</sup>Department of Vulnerabilities and Social Medicine, Center for Primary Care and Public Health, Chair of Medicine for Vulnerable Populations, University of Lausanne, Switzerland, <sup>2</sup>Faculty Health Sciences, School of Pharmacy and Biomedical Sciences, Curtin University, Western Australia, Australia, <sup>3</sup>Emergency Department, Lausanne University Hospital, University of Lausanne, Switzerland, <sup>4</sup>Addiction Medicine, Department of Psychiatry, University of Lausanne, Switzerland, <sup>5</sup>Emergency Department, Geneva University Hospital, Switzerland, <sup>6</sup>Emergency Department, North Vaud Hospital Group, Switzerland, <sup>7</sup>Emergency Department, Broye Intercantonal Hospital, Switzerland, <sup>8</sup>Emergency Department, Fribourg Hospital, Switzerland

**Introduction:** Frequent users of Emergency Departments (ED;  $\geq 5$  ED visits in the previous 12 months) often cumulate somatic, psychological and substance use problems. Providing a Case Management (CM) intervention may reduce their number of ED visits and improve their quality of life. However, there is limited knowledge about the implementation process of CM. This study aimed to identify the facilitators, barriers and needs encountered during the CM implementation in the context of a larger study that aimed to implement CM in EDs thorough French-speaking Switzerland. **Methods:** Mixed-method research were conducted with ED staff involved in CM implementation completed a questionnaire ( $N = 31$ ) and took part in semi-structured interviews ( $n = 23$ ) assessing implementing

influencing factors. Quantitative data were analyzed with Kruskal-Wallis one-way tests, whereas qualitative data were subject to an inductive content analysis.

**Results:** Using several dimensions of the RE-AIM framework, ED sites were split into two groups: more and less successful sites. Quantitative Findings showed a significant association between the perception of acceptability ( $x^2 (2, n=30) = 14.39, p=.045$ ), appropriateness ( $x^2 (2, n=30) = 15.36, p=.032$ ) and feasibility ( $x^2 (2, n=30) = 17.25, p=.016$ ) of CM intervention measure and the success of the CM implementation. Qualitative Findings revealed four main facilitators: 1) Direct hierarchy support and flexibility; 2) Exchange with colleagues; 3) Supervision by the research team; and 4) Motivation. Lack of resources was an unanimously mentioned barrier. Participants identified the following needs to enable CM implementation: official and protected time for the project and at least two team members with complementary skills (e.g.: somatic, psychiatric and social). **Conclusions:** The way the CM implementation was perceived by the professionals contributed to the success of the implementation process. That said, beyond their convictions, human and logistical resources were found as crucial. Findings highlight that influencing factors for implementation are at individual and structural levels.

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### Climate change and threats to public health in Pakistan: a gender analysis of vulnerable communities

Farzand Bhanbhro<sup>1</sup>, Sadiq Bhanbhro<sup>2</sup>, Simi Kamal<sup>1</sup>

<sup>1</sup>Integrated Research Solutions Global, Karachi, Pakistan, <sup>2</sup>Sheffield Hallam University, Sheffield, United Kingdom

Climate change is the biggest global challenge and an imminent threat to public health. The threats are particularly severe in low- and middle-income countries like Pakistan, which are often the least able to respond. Pakistan is among the countries that are most vulnerable to the risks associated with climate change. Pakistani women and girls in general, and poor rural women in particular, are the largest and most vulnerable group and unduly victims of climate change-triggered disasters. This study aimed to engage with local communities living at the country's largest natural water reservoir sites to investigate their understanding of climate change and its impacts. We used a gender analysis approach that informed the data collection using qualitative (focus groups, interviews and observations) and quantitative (household survey) methods. In total, 226 community members and 10 government officials participated from 6 locations in four provinces. The study found inadequate knowledge and awareness concerning climate change and its impact among the research participants. On the hand, most of the participants were aware and highly concerned with post-disaster (e.g., flooding, heavy rain and extreme weathers) health impacts, such as the spread of water- and vector-borne diseases, diarrhoea, skin infections, malaria, dengue, and malnutrition. Women participants expressed their views about the disproportionate impact of such disasters during their pregnancy and delivery. Government officials who participated in the study knew that climate change triggers natural disasters, a challenge for the country. Still, most of them believed that these were natural disasters, thus, not in their control to prevent them. This study concludes that women and men in these sites lack resources, knowledge and information about climate change and its risks to population health. Thus, the study recommends that decision-makers engage with these communities to raise their knowledge about climate risks and build their capabilities to mitigate them.

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### The effect of violent conflict on prescription/nonprescription drug misuse and abuse in four Middle Eastern countries

Mayyada Wazaify<sup>1</sup>, Christina Steenkamp<sup>2</sup>

<sup>1</sup>School of Pharmacy, The University of Jordan, Jordan, <sup>2</sup>Oxford Brookes University, United Kingdom

**Background and Objective:** An important, yet poorly understood, impact of violent conflict on public health is the susceptibility of populations in conflicts to drug abuse and misuse as increased stress, the easy availability of drugs, and the relaxation of taboos against drug use exacerbate the problem. This study Aims to describe the types and patterns of prescription and non-prescription medicines suspected of being misused and abused amongst local populations in conflict zones, as reported by pharmacists.

**Methods:** The study is part of a larger two-year (2020-2022) project investigating the impact of violent conflict in the MENA region on medicine abuse and misuse and the experiences of pharmacists in managing this challenge. The study used a mixed-method approach to data-gathering, involving a quantitative survey ( $n=160$ ) and semi-structured interviews ( $n=20$ ) with pharmacists in Syria, Libya, Yemen and

Iraq. This paper focuses on the on prescription/nonprescription medicine misuse and abuse in violent contexts.

Results: So far, a total of 91 questionnaires have been filled (51.0% male, 54.9% between 26-35 years old, 44.0% Iraq, 25.3% Syria, 20.9% Yemen, and 9.9% Libya). More than half (n=52, 57.1%) reported that 20 customers or more were suspected of misusing/abusing medications in the past 3 months with 17.5% suspected more than or equal to 50 customers. The top suspected medicines were pregabalin and sedatives/hypnotics followed by gabapentin opioids like tramadol, in addition to cough and cold preparations. Qualitative data analysis shows the profile of users suspected by pharmacists, the reasons for misuse/ abuse, and the ways in which pharmacists react to deal with the problem, most of which are refusing the sale and claiming that the product is not available.

Conclusions: Based on the results above, policy recommendations about how to effectively respond to medicine misuse and abuse amongst conflict-affected populations are made.

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### Public health consequences of flooding: evaluation of Cholera outbreak in Nigeria

Deborah Komolafe<sup>1</sup>

<sup>1</sup>Obafemi Awolowo University, Ile-Ife, Nigeria

Background and Objective: Floods are the most common disaster worldwide and present a significant public health concern in countries where infectious diseases are endemic. The relentless rain in Nigeria, alongside the release of the Lagdo dam in Cameroon, Resulted in the most severe flooding in the past decade that struck at the same time as a worrying cholera outbreak. This study aimed to evaluate how floods influence the incidence of infectious diseases.

Methods: We conducted a narrative review of evidence to answer the aim of the study. Articles were retrieved from PubMed, Google Scholar, Scopus, and Science Direct from 2017 to 2022. Twenty-one studies were included with the Keywords in the title or abstract. Epidemiological data were obtained from newspapers and national country reports. We analyzed data on the incidence of infectious diseases during flooding compared to other years.

Results: Our findings revealed that multiple health impacts from flooding occur, from injury and death during an evacuation to worsened allergic symptoms, gastrointestinal infections, skin diseases, and mental health problems. As of October 2022 in Nigeria, the floods increased the incidence of infectious diseases such as malaria, cholera, and typhoid. More than 6000 suspected cholera cases and a 4-5% case fatality ratio were recorded. This is believed to be due to the high consumption of contaminated water, worsened sanitary conditions, and limited access to healthcare facilities.

Conclusions: The consequences of flooding pose significant challenges to public health. This study suggests improved health promotion and preventive measures for flooding to reduce current and future vulnerability to disease. There is a need for enhanced surveillance systems with an emphasis on training front-line health workers toward timely detection, reporting and response.

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### 20-year disaster epidemiology in Italy: what have we learned and how prepared are we?

Nunzio Zotti<sup>1</sup>, Francesca Di Serafino<sup>1</sup>, Andrea Conti<sup>2,3</sup>, Virginia Casigliani<sup>1</sup>, Sara Civitelli<sup>1</sup>, Giulia Geminale<sup>1</sup>, Angelo Baggiani<sup>1</sup>, Caterina Rizzo<sup>1</sup>

<sup>1</sup>Department of Translational Research and the New Technologies in Medicine and Surgery, University of Pisa, Pisa, Italy, <sup>2</sup>Center for Research and Training in Disaster Medicine, Humanitarian Aid and Global Health (CRIMEDIM), Università del Piemonte Orientale, Italy, <sup>3</sup>Department of Translational Medicine, Università del Piemonte Orientale, Italy

Disasters have always been part of Italy's history and the constant threat in our territory is represented above all by seismic and hydrogeological hazards, but technological risks can't be underestimated, too. Italian civil defense is articulated in a central organ, directly linked to Prime Minister's Office, which makes use of local institutions, materials and personnel for rapid deployment in case of emergency. In our work, we would first understand disaster epidemiology in Italy and then evaluate regional preparedness resources. Data on disasters in Italy from 2002 to 2022 were retrieved from the EM-DAT Database - Centre for Research on the Epidemiology of Disasters (CRED), from Université Catholique de Louvain (UCL). Italian regional data are taken out of Italian National Statistics Institute (ISTAT) and Italian Ministry of Health, regarding Emergency Departments (EDs) distribution, bed units, ambulances, number of healthcare facilities and health personnel. Descriptive analyses were conducted by disaster type and

years using Microsoft Excel. During the study period, 225 events occurred in Italy, affecting 899/100000 inhabitants on average (Range: 4-4480/100000inhab.), corresponding to 277645 individuals. The most affected Region was Sicily, with 26 events, the majority related to migrants' shipwrecks in Mediterranean Sea. Meanwhile, the majority of affected people were registered in Abruzzo and Molise (4480 and 3003/100000inhab.) because of L'Aquila and San Giuliano di Puglia earthquakes. With only 4/100000inhab., Aosta Valley was the less affected Region. Umbria reached best Results in Emergency Department [CR1] [1] distribution (1,59/100000 inhab.) and healthcare facilities (1,70/100000inhab), Molise scored the best bed units distribution (401,81/100000inhab.), Trento autonomous province has the highest number of ambulances (38,63/100000inhab.) and Liguria counts the higher distribution of healthcare personnel (746,55/100000inhab.). Our findings highlight the existing differences between different Italian regions and the importance of emergency preparedness and management, according to effective policy-making plans, strengthening infrastructure, materials, and health personnel. Links: -----[1] <http://events.decorporate.ca/#msocom1>

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### Preferable model of Public Health Emergency Operation Center in the regional level of Indonesia

Muhammad Hardhantyo<sup>1</sup>, Hanevi Djasri<sup>1</sup>, Happy Pangaribuan<sup>1</sup>, Aldillas Nursetyo<sup>1</sup>, Bernadetta Adipradipta<sup>1</sup>, Bella Donna<sup>1</sup>, Madelina Ariani<sup>1</sup>, Gde Yogadhita<sup>1</sup>, Andriani Yulianti<sup>1</sup>

<sup>1</sup>Center for Health Policy and Management, Indonesia

Background: WHO had provided a framework on the country development of Public Health Emergency Operation Center (PHEOC). This institution was required for the country to manage its public health event, including prevention, rapid detection, and response. As a country comprises of 17000 island and extend to more than 5000 km, the central level of PHEOC was not enough. PHEOC system reform is required to accommodate Indonesia's specific circumstances particularly in regional level. We outlined the potential of developing sub-national level PHEOC based on existing evidences. Policy Option and Recommendation: Indonesia need a fast and capable resources to be deployed during the surge capacity in Public Health Emergency situation. There are three different policy models for PHEOC at the regional level the base on the current evidence on PHEOC models in various countries. These concepts detailed different command structures for ad hoc agency models, independent agency models, and and Public Health Office (PHO)-based models. Each model has its own advantages and consequences.

Conclusions: The Ministry of Health of Indonesia is proposed to adopt the third PHEOC policy model, as the line of command lies under the Province Health Office. The PHO has the ability to mobilize units and access to resources in response to a current public health emergency situation, making this model the most practicable. However, routine training and capacity-building for the local surveillance staff are required to assist PHO in its role as regional PHEOC commander.

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### Long term post-traumatic stress disorders among the earthquake affected people of Sindhupalchok, Nepal

Laxmi Gautam<sup>1</sup>, Prof. Khadka Mishra<sup>2</sup>

<sup>1</sup>Manmohan Memorial Institute of Health Sciences, Institute of Medicine, Tribhuvan University, Soalteemode, Kathmandu, Nepal, <sup>2</sup>Madan Bhandari Academy of Health Sciences

Background: People who are suffering from PTSD have disturbing feelings and thoughts which is related to their experience even after a long time of such traumatic events happened. This study highlight the characteristics and prevalence of PTSD among the survivors after 4 years of earthquake- 2015, Nepal. Methods: Cross sectional study was carried out using standard PCL-5 PTSD questionnaire. Interview was taken among 376 survivors of earthquake after 4 years of earthquake in Sindhupalchok, Nepal. Descriptive statistics, Chi-square test and multiple logistic regression were used to describe data and test association.

Results: The mean age of the respondents was 39.47±16.18 years. Almost 2/5th of the respondents were either buried, injured or physically or mentally disabled during earthquake. Majority of the survivors had loss their loved one while most of them loss their property. Among the respondents who were buried 28.6% had develop PTSD which was 22.2% among physically or mentally disable during earthquake. All 20 indicators of PCL-5 were significantly associated with PTSD. The average score of PTSD was 22.48±13.57 with minimum score 0 to maximum 74 out of 80. The prevalence of PTSD was 71 (21.5%). Female (63.4%) were more prone to PTSD than male (36.6%). Respondents who lost their father (OR: 9.50,

95% CI for OR: 2.125-42.492), mother (OR: 9.027, 95% CI for OR: 2.861-28.487), and family members (OR: 5.068, 95% CI for OR: 2.380-10.790) were 9.501, 9.027, and 5.068 times more likely to develop PTSD respectively as compared to those who didn't loss known person.

Conclusions: PTSD was prevalent among 21.5% of survivors even after 4 years of earthquake which showed an urgent need to address PTSD among the respondents and necessity of immediate intervention to prevent and treat such problems in case of future disasters.

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### Identifying and scoping new options for healthcare system strengthening in North East Syria

Giulia Perego<sup>1</sup>, Bardisan Gawrieh<sup>2</sup>, Syria Maria José<sup>3</sup>, Cristina Renzi<sup>4</sup>, Carlo Signorelli<sup>4</sup>

<sup>1</sup>Vita-Salute San Raffaele University, Global Health Center of the Tuscany Region, Italy, <sup>2</sup>Un Ponte Per, <sup>3</sup>Caldés Pinilla, Global Health Center of the Tuscany Region, Italy, <sup>4</sup>Vita-Salute San Raffaele University

Background and Objectives: Nowadays, North East Syria (NES) remains a complex humanitarian emergency, still bearing the devastating consequences of over a decade of ongoing hostilities that caused more than 400.000 deaths in Syria and led it to be the country with the worlds highest number of internally displaced persons (IDPs) until last year.

NES security situation is still particularly fragile and highly dynamic, prone to escalations with the persistence of active armed clashes, airstrikes and shelling. The health sector has been severely hit by the conflict, which caused widespread destruction of healthcare infrastructure, fragmented health governance, depletion of healthcare providers and scarcity of supplies and equipment.

The primary purpose of our work is to comprehensively assess and map primary healthcare facilities and services currently present at territorial level in NES, as well as critical gaps and implementation capacities for each specific area, to identify new options for strengthening the healthcare systems, define future priorities and strategic actions to guide the decision-making process and help define a minimum health service package (MHSP).

Methods: This study will use secondary data review from data service providers and open-source research, in combination with extensive healthcare facilities assessment at each sub-district level (area-based) and key informant (KI) methodology at different levels of the healthcare sector: KI interviews will be carried out to relevant community leaders with sector-specific knowledge, healthcare professionals, hospital management and health experts. Therefore, the analysis will be based on both qualitative and quantitative data.

Results and Conclusion: Limitations and gaps in available healthcare services are hard to identify due to impediments in data collection: access restrictions, insecurity, rapidly changing governance dynamics and other challenges hinder the capacity to conduct analysis in the area. Thus, this report may not capture some of the most recent events and trends. Results are still ongoing.

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### Global capacities for Implementation of International Health Regulations

Milena Vasic<sup>1</sup>, Vesna Karadzic<sup>2</sup>, Dragana Jovanovic<sup>1</sup>, Biljana Kilibarda<sup>3</sup>, Verica Jovanovic<sup>2</sup>, Miljan Ljubicic<sup>3</sup>

<sup>1</sup>Institute of Public Health of Serbia, Faculty of Dentistry, Pancevo, Serbia, Dr Subotica 5, Serbia, <sup>2</sup>Institute of Public Health of Serbia, <sup>3</sup>Institute of Public Health of Serbia, Dr Subotica 5, Serbia

Background and objective: In 2005, World Health Organization's (WHO) General Assembly adopted the International Health Regulations (IHR) as an international legal instrument aimed at strengthening global health security and empowering the global community to prevent and respond to public health threats. In 2019, European Commission launched new Joint Action Strengthened International Health Regulations and Preparedness in the EU (SHARP JA) with the aim to strengthen EU preparedness for serious cross-border health threats, and support the implementation of the IHR. Within the SHARP JA we have assessed the capacities of participating countries to implement IHR. The aim of this work is to expand that analysis to the global level.

Methods: Desk review and data analysis were done. The source of data was the WHO States Parties Annual Report (SPAR) for the years 2019, 2020, and 2021 for six WHO regions - African Region (AFRO), Americas Region (AMRO), Eastern Mediterranean Region (EMRO), European Region (EURO), South-East Asia Region (SEARO), and Western Pacific Region (WPRO).

Results: The average IHR global capacity remained unchanged from 2019-2021,

(64, 65, and 64%, respectively). The highest capacities for indicated period without any noticeable changes have been recorded in EURO (75, 74, and 74% respectively). In AMRO, the overall IHR capacities were over 70% in 2019 and 2020 (71 and 72%), while in 2021 there was a decrease (67%). The lowest capacities in observed period were in AFRO (44, 49, and 49%, respectively). Although capacities in AMRO are the lowest, increase during the pandemic is noted.

Conclusion: The results show the regional differences in IHR capacities. The SPAR results which represent countries' self-assessment on IHR capacities indicate some improvements during pandemic in countries with the lowest capacities. However, there is still room for IHR capacities improvement in all WHO regions.

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### The new normal: Ensuring Continuity of Family Planning and Reproductive Health Services During Health Emergency Response in Davao City, Philippines

Lady Molleno<sup>1</sup>, Ashley Lopez<sup>2</sup>, Azin Libanan<sup>3</sup>

<sup>1</sup>Research Triangle Institute, "Pryce Tower, J.P. Laurel Avenue, Davao City, Philippines, <sup>2</sup>City Health Office of Davao, Davao City, Philippines, <sup>3</sup>Provincial Health Office of Davao Oriental, Philippines

Background and Objective: Responsive Health Care Provider Networks are borne out of a nuanced approach to organizing and operating the local health systems. In Davao City, health care is characterized by a service delivery system with a lone national government-owned hospital caters to not just the hospital needs of its constituents but also primary and secondary care services. The newfound demand for the novel COVID-19 services had profound consequences on the health care system downscaling both essential public health services in primary care facilities and non-COVID cases in the government hospital.

Methods: For a more responsive health system, the city together with its partners rearranged the structure and dynamics of the local government unit and the health facilities ensuring equal access, quality, efficiency, and sustainability of health care services. A Health Care Provider Network (HCPN), a new service delivery arrangement centered on service provision to identified target population, was established to address the demand for COVID-19 services and at the same time redirect displaced patients seeking essential public health care services to appropriate facilities. The network arrangements include referral, resource pooling and financing arrangements.

Results: The major outputs include improved access to health services especially to indigents making them more informed and properly navigated to appropriate facilities and increased service coverage and coordinated referrals for Maternal and Childcare services. This benefited the constituents especially the indigents who are most vulnerable and affected by the system-wide impact of the pandemic. Non-COVID cases were properly referred and accommodated in assigned hospital facilities. COVID services were decentralized to the established COVID Cluster clinics.

Conclusion: COVID-19 has exposed the weaknesses of the health system. It is critical to implement clear and timely health emergency response without compromising provision of other essential health services. Health services should be accessible to the people despite the pandemic. "

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### Implementing Public Health Policies in practice: how Local Health Authority Roma 1 managed the Ukrainian refugee crisis

Paolo Parente<sup>1</sup>, Valerio Mogini<sup>2</sup>, Andriy Melnyk<sup>3</sup>, Lavinia Barone<sup>4</sup>, Maryana Kohut<sup>1</sup>, Rosaria Messina<sup>3</sup>, Paolo Lombardo<sup>4</sup>, Leonardo Villani<sup>3</sup>, Maria Riccardi<sup>3</sup>, Maria Martelli<sup>1</sup>, Adriano Grossi<sup>1</sup>, Andrea Barbara<sup>1</sup>, Gennaro D'Agostino<sup>1</sup>, Giancarlo Santone<sup>1</sup>, Mauro Goletti<sup>1</sup>

<sup>1</sup>Local Health Authority Roma 1, Italy, <sup>2</sup>Division of Public Health, Italian Red Cross International, <sup>3</sup>Section of Hygiene - University Department of Life Sciences and Public Health, Università Cattolica Del Sacro Cuore, Rome, Italy, <sup>4</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome, Italy

Background and Objective: Russian invasion of Ukraine forced citizens to flee as refugees. Displaced people face many obstacles, including physical, mental, institutional and economic ones. The migrant population represents a Public Health challenge given its different epidemiological and social backgrounds. Local Public Health implementation of the guidelines developed to assist the refugees. Our objective was to provide practical solutions to the emerging problems pertaining Local Public Health implementation of the guidelines developed to assist the refugees, in the context of the Local Health Authority (LHA) Roma 1.

Methods: LHA Roma 1 developed a strategic plan based on local expertise,

national and international guidelines to ensure infectious disease prevention and control, as well as continuity of care for non-communicable diseases and mental health. It was later refined based on national and regional decrees, the available literature, ECDC indications, and the feedback from the health professionals on the field. Community engagement, real time feedback and the formation of a multidisciplinary and multicultural central team allowed a smoother implementation process which covered refugee needs.

**Results:** Many challenges were faced during the implementation phase which required sensible and timely solution. These challenges include the necessity of rapid resource provision, overcoming linguistic and cultural barriers, guaranteeing a standard of care across multiple sites and coordination of interventions. Despite these, during the first three months of operations more than 9300 refugees were assisted and assigned an STP code, which guarantees healthcare services on par with Italian citizens.

**Conclusion:** Refugee assistance and socio-sanitary integration are an essential part of Public Health practice. Bridging the gap between refugee population needs and available healthcare provision requires sound leadership within a responsive and collaborative workforce. Evidence-based practices implemented to increase local health system resilience to the current crisis foster a preparedness-based environment to face the emergencies of the future.

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### Evaluation of individual preparedness for emergencies / disasters among members of health professions' chambers in Ankara - Turkey

Dilek Yildirim Pak<sup>1</sup>, K. Altintas<sup>1</sup>

<sup>1</sup>Hacettepe University - Public Health Department Turkey

**Objective:** This descriptive study aimed to determine the factors associated with the individual emergency / disaster preparedness behaviour of the members of four different Health Professions' Chambers in Ankara - Turkey.

**Methods:** Ethical approval was taken from the Ethical Committee of Hacettepe University. As data collection form, a questionnaire consisting of 32 questions prepared by the researchers and the General Disaster Preparedness Belief Scale Based on Health Belief Model (31- items) were used. As the score increases, individual preparedness for emergencies/disasters is better (min.-max. 31-165). The data were first collected online using "Google forms". Since there was not enough participation, the face-to-face interview method was used afterwards. There were 401 health professionals in the study. The study group involved dentists (n=96, 23.9%), medical doctors (n=150, 37.4%), pharmacists (n=74, 18.5%), and veterinarians (n=81, 20.2%).

**Results:** Participants who received emergency/disaster-related training consisted of 35.2% of all participants (n=141). None of them received training from the chambers. 38.2% (n=153) of the participants experienced a disaster of any type. 33.2% of the participants (n=133) stated that they were not individually prepared for emergencies and disasters. The mean scale score of the participants was 112.39±12.77. Several factors were found associated with health professionals' individual preparedness for emergencies/disasters. These included education and training on disasters, presence of previous or current job about disasters, being assigned and/or being volunteered to disaster response.

**Conclusion:** Turkey is known to be a country which frequently encounters disasters and health professionals provide essential services during emergencies and disasters. They, as individuals, should not be affected from disasters in order to serve. Therefore, training on personal emergency/disaster preparedness is urgently needed for them. One way of achieving this is by organizing courses or web-based training provided by health profession chambers.

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### War and peace in public health education and training - a scoping review

Marta Miller<sup>1</sup>, Yudit Namer<sup>2</sup>, Lisa Wandschneider<sup>2</sup>, Colette Cunningham<sup>2</sup>, Tomasz Bochenek<sup>3</sup>, Łukasz Balwicki<sup>4</sup>, Oliver Razum<sup>2</sup>

<sup>1</sup>Medical University of Gdańsk Poland, <sup>2</sup>School of Public Health, Bielefeld University, Germany, <sup>3</sup>Institute of Public Health, Jagiellonian University Poland, <sup>4</sup>Department of Public Health and Social Medicine, Medical University of Gdansk Poland

**Background and Objectives:** Armed conflict and war are public health disasters. In such scenarios, public health action has a crucial role in emergency and rehabilitation, and the importance of war prevention and peace promotion ("peace through public health") is increasingly recognised. While this role is by now well conceptualised in public health research and interdisciplinary cooperation, the

translation into public health training and competencies is only beginning to emerge, especially in Europe.

**Methods:** With a scoping review, we systematically map the scientific literature on public health education and training relating to war and peace promotion. We searched in PubMed, CINAHL, PsycINFO, Embase, Web of Science Core Collections as well as the reference lists of included material. Eligible literature assessed war and peace in the European public health education context. We excluded any material that did not target the public health workforce.

**Results:** We included 21 sources that ranged from opinion pieces to empirical assessment of curricula and evaluation studies. The educational programs were predominantly short-term and extra-curricular in postgraduate courses addressing public health professionals both in conflict-affected countries as well as those not directly war-affected. Most of the literature focused on public health action in times of war, often without specifying the context and type of war or armed conflict. Emergency response and multidisciplinary collaboration were the most prominent competences, often drawing from closely related fields such as natural disaster and outbreak management.

**Conclusions:** The scientific discourse on competences in times of war and promoting peace in public health in the European region mostly focuses on immediate emergency response. Peace promotion and war prevention are missing foci which need to feature more prominently in public health training. Professional organisations of schools of public health should ensure their competencies include peace promotion and war prevention in addition to war response.

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### Local response to humanitarian crises: the experience of Roma 2 Local Health Authority with the Afghani and Ukrainian crises

Annalisa Rosso<sup>1</sup>, Alessandro Rinaldi<sup>1</sup>, Daniele Coluzzi<sup>1</sup>, Fabrizio Perrelli<sup>1</sup>, Filomena Monaco<sup>1</sup>, Pier Napoli<sup>1</sup>, Giuseppe Angelis<sup>2</sup>

<sup>1</sup>Migrants and Vulnerable Populations' Health Unit- Local Health Authority Roma e Italy, <sup>2</sup>Department of Prevention- Local Health Authority Roma 2 Italy

**Background and objective:** In August 2021 and March 2022, Roma 2 Local Health Authority (ASL) was confronted with the prompt arrival of migrants from Afghanistan and Ukraine, following the humanitarian crises occurring in the two countries. The Migrants and Vulnerable Populations' Health Unit (MVPH) developed and coordinated an intervention model aimed at responding to the health needs of newly arrived migrants.

**Methods:** A multidisciplinary team was established in both emergencies, coordinated by the MVPH Unit, composed of nurses, medical doctors, vaccination staff, administrative staff, cultural mediators, responsible for outreach activities in the hotels where migrants were hosted. A basic assessment of health needs, COVID-19 tests and vaccination, TB screening were offered on-site. People were also granted access to health services through release of an STP (temporarily present foreigner) code. For the Ukrainian population, in addition to outreach activities a dedicated Hub was also set up to guarantee free access to COVID-19 tests and vaccination, medical screening, vaccinations included in the National schedule and STP code release, with the full time presence of cultural mediators. Collaboration with Non-Governmental Organizations (NGOs) working in support to the humanitarian crisis was activated.

**Results:** From August 21 to September 2 2021, 469 people from Afghanistan arrived in three facilities located in ASL Roma 2 area who were all assessed for their needs, were offered COVID-19 vaccine and received STP codes. From 1 April to 30 June 2022, 626 people accessed the dedicated Ukraine Hub. Forty-five site visits were carried out in the six hotels hosting Ukrainian refugees, with 343 people receiving a clinical examination.

**Conclusions:** The presence of a dedicated service has allowed a rapid reorganization of ASL Roma 2 services to deal with humanitarian emergencies and the prompt activation of already established collaborative networks.

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### Impact of Russian war in Ukraine on COVID-19 dynamics in Italy

Dmytro Chumachenko<sup>1</sup>, Plinio Morita<sup>2</sup>

<sup>1</sup>University of Waterloo / National Aerospace University "Kharkiv Aviation Institute" Canada Tetiana Dudkina National Aerospace University "Kharkiv Aviation Institute" Ukraine, <sup>2</sup>University of Waterloo University of Waterloo Canada

On February 24, 2022, Russia invaded Ukraine, what led to a humanitarian catastrophe and mass migration. Italy received many refugees from Ukraine and ranked 4th in the world in terms of the number of refugees received. This study aims to test the hypothesis of the impact of the Russian war in Ukraine on the

dynamics of COVID-19 in Italy. To assess the impact of migration on the COVID-19 dynamics, a XGBoost model was built. We used data from the World Health Organization on morbidity and mortality from COVID-19 in Italy for the pilot study. We verified the model for the period 01/25/22 – 02/23/22. To assess the impact of migration, a forecast was built for the period 02/24/22 – 03/25/22. Model's performance was estimated using mean absolute percentage error. As a result, the accuracy of forecasting the COVID-19 dynamics in Italy for 01/25/22 – 02/23/22 was 98.4% for new cases and 99.7% for fatal cases. The accuracy of forecasting the COVID-19 dynamics in Italy for 02/24/22 – 03/25/22 was 95.8% for new cases and 99.5% for fatal cases. A comparison of the model's accuracy for different periods suggests that migration from Ukraine is an insignificant factor in changing the dynamics of morbidity. At the same time, it does not affect mortality. The reasons for the impact on the dynamics of COVID-19 are the lack of control over the medical histories of refugees, the low percentage of vaccinations (36.96%) and the population, received a booster dose (1.76%) in Ukraine. At the same time, the high level of vaccination in Italy (75.98% of the population with a booster dose) smoothed out the impact of migration on mortality. Therefore, additional COVID-19 control measures in Italy aimed at Ukrainian refugees are necessary, such as facilitating access to testing, medical care and booster vaccinations.

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### Ukrainian refugees and migrants' access to healthcare services in Tuscany

Claudia Cosma<sup>1</sup>, Michela Maielli<sup>2</sup>, Chiara Lorini<sup>1</sup>, Marco Del Riccio<sup>1</sup>, Silvia Gandolfo<sup>2</sup>, Andrea Belardinelli<sup>2</sup>, Federico Gelli<sup>2</sup>, Guglielmo Bonaccorsi<sup>1</sup>

<sup>1</sup>Department of Health Science, University of Florence, Florence, Tuscany, Italy, <sup>2</sup>Health, Welfare and Social Cohesion Directorate, Region of Tuscany, Florence, Tuscany, Italy

**Background and objective:** Russian military invasion of Ukraine on 24 February 2022 has produced the largest humanitarian crisis in Europe since World War II. More than 14 million people have been forced to flee their homes seeking refuge in neighboring countries. Our aim is to assess the impact of migration on Tuscan healthcare system with a comparison of the number of accesses to three different healthcare settings in 2022 with data from the same period in 2021.

**Methods:** Data were collected from the Tuscan health registry "Digital Health and Innovation", period 01/03/2022-30/09/2022 and 01/03/2021-30/09/2021 and include administrative data, hospitalizations, emergency room accesses and outpatient care for citizens born in Ukraine.

**Results:** From 01/03/2022 to 30/09/2022 17399 Ukrainian refugees registered in the health registry using the STP code "Temporarily Present Foreigner" (9232) or CF "Tax Code" (8167) to obtain access to healthcare services. There were 891 hospitalisations, 61% more than in the same period in 2021. Discharges were mainly from obstetrics (7,30%), orthopaedics (6,74%), oncology (5,83%), gastroenterology (4,02%), and cardiology (3,17%) departments. There were 2964 admissions to the Emergency Room (ER, 2013 women and 951 men), 445% more than in 2021. Accesses of the 0-14 age group in 2022 increased fivefold. 66% of the people who accessed to the ER in 2022 were in the 15-64 age group. Outpatient care increased by 50% compared to 2021 for a total of 92908 visits.

**Conclusion:** Healthcare is a fundamental human right for people all over the world. Everyone, including refugees and migrants, has the right to access health services whenever they need them. European countries should be equipped with strong healthcare systems to cope with emergencies. Knowing refugees' experiences in host countries is important to design the best hospital and primary healthcare organisation.

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### What are the psychosocial health realities of women surviving wartime sexual violence in africa? a rapid qualitative systematic review

Aurilie Milord<sup>1</sup>, Marie Hatem<sup>1</sup>

<sup>1</sup>Université de Montréal Canada

**Intro:** Africa has been marked with several armed conflicts in the past years. These armed conflicts often create favorable situations where a particular weapon of war is used against the population: wartime sexual violence. Women surviving wartime sexual violence are living with multiple trauma related consequences.

**Aim:** Using an original framework based on the theory of wartime sexual violence as a weapon of war and the nine categories of genocide rape trauma by Mukamana et al (2018), this review aims to explore the psychosocial wellbeing of women surviving wartime sexual violence in Africa.

**Methods:** This rapid qualitative systematic review followed the JBI Evidence

Synthesis approach to conduct such studies. Two data bases have been consulted as part of the search strategy: 1) Medline (n=136) and 2) APA PsychInfo (n=172). After the selection process, 17 articles have been selected to be included in the study according to our criteria of inclusion.

Data extraction was done using COVidence. The synthesis and interpretation of results was based on Harden and Thomas (2008) method for thematic synthesis of qualitative research in systematic reviews using Nvivo 12. The results have been evaluated using Grade CERQual.

**Results:** 1) Women surviving wartime sexual violence are experiencing overwhelming feelings and unbearable memories the most; 2) psychosocial health is affected by stigmatization, which is guided by cultural norms; 3) our framework does not account for two elements: i) the resilience emerging for the women surviving wartime sexual violence that is based on their faith and support from their communities and ii) the needs for institutional and educational changes and 4) the literature does not have enough information on the perception of women surviving wartime sexual violence regarding the framework used in the study on their psychosocial wellbeing.

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### Malaria transmission in the coastal zone and in the center of the Ivory Coast during the dry season

Gouamene Timan<sup>1</sup>

<sup>1</sup>University Nangui Abrogoua, Ivory Coast

Malaria remains a threat in sub-Africa, particularly in Côte d'Ivoire. In Côte d'Ivoire malaria is endemic. The strong climatic variations that exist between coastal and savannah area of Côte d'Ivoire. Malaria suggest that vector control measures take into account eco-epidemiological diversity before considering large scale action. This study evaluate bioecological parameters of vectors and malaria transmission in two districts of Côte d'Ivoire. It was conducted in the coastal (Jacqueville) and savannah (Beoumi) area of Côte d'Ivoire in the dry season. Humain landing catches conducted monthly to determine Anopheles vector species composition, aggressive density, aggressive cycle and biting location as well as entomological parameters of malaria transmission. Mosquitoes were captured for 12 hours, from 6:00 pm to 6:00 am plasmodium inside infected mosquitoes were tested by Enzyme-linked immuno-sorbent assay for P. falciparum circumsporozoite protein. A random sample of 100 females belonging to the An.gambiae complex together with all CSP positive anopheline, were further classified by PCR at the species and molecular form. In Jacqueville 853 (99,65%) An.gambiae s.l and 3 (0.35%) An.pharoensis. In Beoumi 811 (96,32%) An. pharoensis. An.coluzzi represented the only species of the An.gambiae s.l complex in Jacqueville. In Beoumi, 58% of An.coluzzi was found and the rest was constituted of An.gambiae s.s. The human biting rate in Jacqueville increased from 5.7 (b/p/n) in Novembre to 17.3 (b/p/n) in march. Unlike eoumi, where the rate decreased from 16.4 (b/p/n) in march. In novembre to 0.69 (b/p/n) in march. In Jacqueville, (EIR) varies from 0.21 to 0.56 (ib/p/n). There were no infections in the An.gambiae s.l pare population tested in Beoumi. This study shows us bioecological parameters of the two ares.

**Keywords:** Malaria, mosquitoes, Côte d'Ivoire, coastal area, savannah aera, transmission

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### Knowledge, attitude, and preventive practices regarding dengue fever among sudanese citizens and associated factors in Khartoum state, Sudan

Teeba Hamdoun<sup>1</sup>, Ibrahim Adel<sup>2</sup>, Elaf Aziz<sup>3,4</sup>

<sup>1</sup>Faculty of Molecular Biology and Genetics, Kadir Has University, Istanbul, Türkiye, <sup>2</sup>Faculty of Medicine, Alneelien University, Khartoum, Sudan,

<sup>3</sup>Faculty of Medicine, National Ribat University, Khartoum, Sudan, <sup>4</sup>King

Abdullah University Hospital, Sudan

**Background and Objectives:** Dengue fever is a mosquito-borne viral disease that causes nearly 390 million dengue infections annually, particularly in the tropical and subtropical regions of the world. According to the World Health Organization (WHO), 40 % of the world's population lives in these areas that are classified to be at high risk for Dengue infections. Sudan is one of the countries with a continuous risk of developing dengue fever outbreaks with 1197 reported cases in 2019. Our study aimed to assess the knowledge, attitude, and practice patterns regarding dengue fever among the public living in Khartoum state of Sudan. **Methods:** A descriptive cross-sectional community-based survey was conducted in August 2021, among 532 participants. Data were collected using a pretested, structured online questionnaire designed on Google form and were analyzed using Statistical

Package for Social Science (SPSS).

Results: Among the survey respondents (n=532), (56%) were male, (36.1%) aged 26-35, (75%) were in universities and institutes, (49.2%) were married and (60%) were working. (7%) had a personal history of dengue infection, while (19.7%) had reported knowing someone who get infected. Social media was the main source of information. Knowledge scores were significantly associated with occupation, marital status, source of information regarding dengue fever, history of personal infection, and family or friends' previous infection ( $P<0.05$ ). The overall correct rate of the knowledge questionnaire was (52.12%). (69.7%) agreed that dengue fever is a serious illness in Sudan. (94%) used fans and (93.4%) covered their water containers. Conclusions: This study revealed that participants had an intermediate level of knowledge, while most participants showed a positive attitude and appropriate practices. The study highlighted that people with a personal or family history of infection had relatively higher knowledge compared to other groups. This warrants the development of appropriate public health interventions and educational programs.

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### Climate effects and health emergencies: analysis of response actions to floods in Bahia, Brazil

Marcelo Rocha<sup>1</sup>, Ivône Maia<sup>2</sup>, Karoline Rebouças<sup>1</sup>

<sup>1</sup>Secretaria da Saúde do Estado da Bahia, Brazil, <sup>2</sup>Secretaria da Saúde do Estado da Bahia, Bahia, Brazil

Background and Objective: Climate impacts have repercussions on the global agenda, as changes in temperature and climate patterns prompt the occurrence of storms, floods, and landslides, leaving populations vulnerable and susceptible to disease and food insecurity. In Northeast Brazil, a region traditionally affected by periods of drought, heavy rains intensified amid the pandemic, with floods that affected the lives of thousands of people and required comprehensive responses from the health system. In view of the installed set of crises, this study aimed to analyze the main interventions carried out to face the Public Health Emergency caused by floods.

Methods: Qualitative research with a critical-reflective approach based on the experience report of Health Surveillance professionals from the Southwest Regional Health Center of the Health Department of the state of Bahia, Brazil. The actions developed were described and analyzed between December 2021 and February 2022. Data were analyzed in two analytical categories: risk management and strategic response actions.

Results: The intersectoral work integrated sectors of health, public security and civil defense. Risk management prioritized strengthening the capacity for action at the regional level, with the installation of a Situation Room. Some of the strategic actions were the creation of teams on continuous duty to monitor the homeless and displaced people, distribution of medication, inspection of shelters, visits to the most affected municipalities, and analysis of water samples for human consumption.

Conclusions: The response measures were adequate and successful, being the coordinated and solidary partnership of the state of Bahia with the municipalities of fundamental importance. According to the regional experience, integration between different sectors is an essential strategy for overcoming the dimensions of vulnerability installed in climatic events that cause floods and overload the health systems.

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### Pandemic surveillance system pilot

Myagmar-Ulzii Enkhbaatar<sup>1</sup>

<sup>1</sup>Robot Systems LLC, Mongolia

Pandemic Surveillance System pilot and actual interface design and end-user components of the pilot project. It is extremely critical that making the right decisions during pandemic, such as imposing appropriate restrictions and reopening the economy at an optimal time and pace. Primary role of PSS pilot was designing and testing Pandemic management system architecture, it maintains pandemic related Master data as a single source. During piloting PSS implemented core four component systems including Data collection system, Pandemic information system, Lab management system, Early Warning Analytic system.

Methods: 1. After numerous meetings and interview among stakeholders including Ministry of Health, National Health Data Center, National Centre for Communicable Diseases, National Center for Zoonotic Diseases, we find out effective solution for multisource based Pandemic Surveillance System design. Based on this finding, we proposed integrated PSS system architecture that able to oversee most

important pandemic indicators at centralized storage and keep historical data for further study. 2. PSS is designed for enterprise architecture, functional abilities of PSS are very wide including data governance, data standardization, business glossary, and semantic mapping and data flow management.

Results: This component is aimed for delivering insight reports after receiving aggregated data from other components. End-Users able to set up expected outcomes and factors then system automatically generate analytical insights to user. Core aspects of this components is that it triggers messages when unusual activity or insight appears in data. Also, will integrate with EWS system at NEMA. Summary: Pandemic surveillance system (PSS) provides several benefits to government such as allowing to use MDM for more accurate analyses of the pandemic, and more informed decisions about reopening economies around the country. PSS is implemented for timely surveillance systems that collect information on epidemic prone diseases to trigger prompt public health interventions.

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### Adaptation of the hospital structure in response to covid-19 in Bahia, Brazil, year 2020

Ivône Maia<sup>1</sup>, Marcelo Rocha<sup>2</sup>, Karoline Rebouças<sup>3</sup>

<sup>1</sup>Secretaria da Saúde do Estado da Bahia, Brazil, <sup>2</sup>Em Frente à Escola de Música Cathalá, Secretaria da Saúde do Estado da Bahia, Brazil, <sup>3</sup>Secretaria da Saúde do Estado da Bahia, Bahia, Brazil

Hospitals in the state of Bahia/Brazil as well as in other parts of the world had to quickly adapt to the COVID-19 emergency, which resulted in difficulties to adequately assist infected people. The necessary changes, be them of the physical structure or the care procedures, were based on the goal of protecting the health of patients and hospital workers. In this perspective, the objective of this work was to present the actions developed by the Sanitary Surveillance for guidance and monitoring of hospital units.

Methods: Experience report developed in the region of Brumado, state of Bahia/Brazil, comprising 21 municipalities, composed of technicians from the Regional Health Center/Bahia, from February to April 2020. Data were analyzed in two dimensions: actions for structuring the hospital network and implementation of care protocols.

Results: Sanitary inspections were carried out in all hospitals in the territory with the aim of adapting the physical structure to the flow of distinction in the areas of care for people infected with COVID-19 and people with other pathologies and actions of an educational and guiding nature were adopted. The (online) meetings were based on the following topics: patient safety, risk management, infection control and worker health protection. In the hospital network structuring category, the main focus was on adapting the structure. The main changes were necessary in the areas of attire, hospitalization, isolation, waste shelter, comfort, and place for the health professionals to eat. In turn, regarding the technical protocols, the need to implement standards aimed at the safety of the professionals involved and patients was taken into account, and the application this standards followed the guidelines of the National Health Surveillance Agency.

Conclusions: The applicability of scientific knowledge in the daily practice of health institutions provided the necessary changes to protect the lives of patients and health workers. development in the LEPH field for the public health community – including education in LEPH. Explore all these issues interactively with the audience.

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### Quality of life in patients with type 2 diabetes mellitus in a city in southeastern Brazil

Angelita da Silva Mansur<sup>1</sup>, Maria Helena Monteiro de Barros Miotto<sup>1</sup>

<sup>1</sup>Brazil

Diabetes mellitus is a public health problem due to its incidence and prevalence. As it is a progressive disease, affected people tend to deteriorate their health over time, leading to complications. Although its negative impact on quality of life is recognized, there is a need to analyze it focusing on the context of southeastern Brazil. To fill this gap, this study Aims to evaluate the quality of life in patients with type 2 diabetes mellitus in a city in southeastern Brazil. Through an analytical cross-sectional observational study, we collected data from patients of the university in a city in southeastern Brazil. We applied a survey including questions related to the sociodemographic and clinical information, and from the SF-36 quality of life questionnaire. Descriptive analyzes and the t-test. The final sample consisted of data from 300 patients, mostly female (79.0%), aged over 54 years (73.3%), married or in a stable relationship, and predominantly with lower

income and lower education levels. Most patients were obese (48.3%) and did not practice physical activity (67.7%). Regarding the SF-36 domains, the highest average value found was for the Social Aspects domain (73.4). Between males and females, a significant difference was only observed between the scores of the Functional Capacity and Pain domains. Comparing age groupings, individuals with or without obesity, and with or without other comorbidities, significant differences were found for most domains (including Pain and General Health Status). The education level was also significant, with the highest averages in the SF-36 domains being obtained for individuals who had at least completed high school. Physical activity practice was significant for all domains. Evaluating the factors associated with the quality of life of Brazilians, considering the diabetes effects, can contribute to health promotion and disease prevention actions.

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### Impact of infrastructure disruptions on Puerto Rican household capabilities, health, and well-being

Ralph Rivera-Gutierrez<sup>1</sup>, Susan Clark<sup>2</sup>, Sara Peterson<sup>2</sup>, Andrea Zabraná-Rosario<sup>3</sup>, Michael Shelly<sup>2</sup>

<sup>1</sup>Graduate School of Public Health, University of Puerto Rico, San Juan, Puerto Rico,

<sup>2</sup>State University of New York at Buffalo, United States,

<sup>3</sup>Graduate School of Public Health, University of Puerto Rico, Puerto Rico

Critical infrastructure encompasses energy, water, communications, transportation, food, health, and emergency services. When critical infrastructure is damaged or fails, essential services are interrupted which can have severe health and well-being consequences. This study examines how infrastructure service interruptions place burdens on Puerto Rico households impeding their capabilities, i.e., accessing drinking water, storing and preparing food, and cooling homes. This study assessed impacts of power outages on households to help inform disaster mitigation and preparedness strategies. Respondents were identified significant power outages that occurred in the past three years to answer questions about its impact on household capabilities (e.g., cooling their homes, preparing food, etc.) and the physical, mental, and overall health and well-being of household members. Other questions covered access to food, water, and healthcare, and social capital. Disruptions to cooling and food refrigeration were the most frequently reported impacts, the most highly ranked impacts on the health and well-being of household members, and the most time and financially intensive disruptions. Respondents identified disruptions to communications and information access as negatively affecting their mental health. The outage reduced life satisfaction for most respondents and was a significant factor in determining the severity of impacts. The results suggest that providing cooling resources (i.e., fans and/or air conditioning at community centers with back-up power systems) and refrigeration (i.e., access to ice or community provided refrigeration for food and medicine) are important interventions to safeguard health during outages. For mental health, enhanced community outreach and diversified communication channels may be particularly impactful. Preparedness efforts should focus on identifying households that depend upon electricity to power medical devices or to refrigerate medication. Because households with young children and/or disabilities were found to experience more severe health consequences from outages, interventions focused on providing childcare and dependent care during disruptions are recommended.

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### Clinical-epidemiological description of the Ukrainian refugees in Italy: the experience of the local health authority roma 1

Paolo Lombardo<sup>1</sup>, Andriy Melnyk<sup>2</sup>, Leonardo Villani<sup>2</sup>, Claudia Coppi<sup>3</sup>, Lavinia Barone<sup>1</sup>, Maryana Kohut<sup>3</sup>, Maria Riccardi<sup>2</sup>, Rosaria Messina<sup>2</sup>, Adriano Grossi<sup>3</sup>, Fabiano Grassi<sup>1</sup>, Andrea Barbara<sup>3</sup>, Gennaro D'Agostino<sup>3</sup>, Mauro Goletti<sup>3</sup>, Paolo Parente<sup>3</sup>

<sup>1</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome Italy, <sup>2</sup>Section of Hygiene - University Department of Life Sciences and Public Health, Università Cattolica Del Sacro Cuore, Rome, Italy, <sup>3</sup>Local Health Authority Roma, Italy

Background and objective: Russia launched a full-scale invasion of Ukraine on the 24th of February 2022, causing Ukrainian refugees to flee to other nations. Host nations need epidemiological information on the newly arrived refugee population to program health services appropriate for them.

This study aims to investigate demographic composition, COVID-19 vaccinations performed, specialist care provided, and Non-Communicable Diseases (NCDs) prevalence in COVID-19 vaccinated refugees of the Ukrainian refugee in the Local Health Authority (LHA) Roma 1 area of competence.

Methods: We performed a retrospective analysis of collected data regarding Ukrainian refugees assisted on the LHA's territory from 2nd March 2022 to 2nd June 2022. NCDs were classified according to The International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10).

Results: 9349 Ukrainian refugees were assisted by LHA Roma 1 with the consequent issuing of a STP code for each; 2784 (29.8%) were Males and 6565 (70.2%) were Females; median age was 25 (10-39). 2485 Ukrainian refugees got vaccinated for COVID-19; 569 (22.9%) were male and 1916 were female. 401 (16.1%) among the vaccinated refugees had at least one NCD. The most frequent diseases were diseases of the circulatory system (203; 50.6%), endocrine, nutritional and metabolic diseases (100; 24.9%) and mental and behavioral disorders (26; 6.5%). A total of 206 refugees needed second-level assistance, with endocrinology (25; 12.1%), cardiology (18; 8.7%) and gynecology (15; 7.3%) being the leading requested specialties.

Conclusion: The Ukrainian refugee population needs health services targeted mainly to minors and women. A noteworthy proportion of NCDs was detected, especially chronic diseases such as hypertension, hypothyroidism and diabetes; also, mental illnesses were relevant. LHA Roma 1 managed to produce a broad spectrum of care services for free to the refugees, as proven by COVID-19 vaccinations, STP codes issued and the specialist care provided.

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### Nuclear Anxiety in a context of Russian-Ukrainian War 2022 (RUW-22): Descriptive Cross-sectional Study

Anton Drobov<sup>1</sup>, Abanoub Riad<sup>1</sup>, Aleš Peřina<sup>1</sup>, Michal Koščík<sup>1</sup>, Muhammad Alkasaby<sup>2</sup>

<sup>1</sup>Masaryk University, Czech Republic, <sup>2</sup>London School of Hygiene & Tropical Medicine, United Kingdom

Nuclear anxiety and its consequences, are expected to be heightened amid the Russian-Ukrainian War of 2022 (RUW-22). The main goal of the study is to assess the prevalence of nuclear anxiety and its possible risk factors in the group of Czech university students from March till April 2022 of RUW-22. A digital self-administered questionnaire (SAQ) was used to collect data. The SAQ consisted of multiple-choice items questioning about demographic characteristics, generalized anxiety symptoms using generalized anxiety disorder-7 (GAD-7), depressive symptoms using patient health questionnaire-9 (PHQ-9), attitudes towards civilian uses of nuclear power, and nuclear war-related anxiety. Of 591 participated students, 67.7% were females, 68.2% were Czech nationals, and 61.8% followed the RUW-22 news at least once a day. In terms of the civilian uses of nuclear power, most participants agreed that nuclear power was safe (64.5%), denied being afraid that civilian use of nuclear power might deteriorate their health (79.7%) and thought that public acceptance was important for building new nuclear power plants (56.9%). About 42.1% and 45.5% of the participants reported feeling depressed at the possibility of nuclear war and agreed that the chances of a nuclear war in their lifetime were very high, respectively. 23.9% reported looking for recommendations for protection against nuclear accidents and 19.3% were looking for the nearest bomb shelter. The depression about nuclear war possibility was positively and relatively strongly correlated with the level of "feeling concerned about the RUW-22" ( $r_s = 0.401$ ), and it was moderately correlated with GAD-7 ( $r_s = 0.377$ ) and PHQ-9 ( $r_s = 0.274$ ) scores and weakly correlated with RUW-2-related news following frequency ( $r_s = 0.196$ ). Within the limitations of the present study, nuclear anxiety was common among Czech university students. Its risk factors may include but are not limited to the female gender, common psychological disorders such as generalized anxiety and depression, RUW-22-related news following frequency, and level of "feeling concerned".

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### Knowledge, attitudes, and behaviors towards proper nutrition and lifestyles in ukrainian diabetic patients during the covid-19 pandemic

Paolo Castiglia<sup>1</sup>, Oksana Urchysyn<sup>2</sup>, Elena Castiglia<sup>3</sup>, Antonella Arghittu<sup>3</sup>, Marco Dettori<sup>4</sup>, Giovanna Deiana<sup>5</sup>, Andrea Cossu<sup>4</sup>, Gavina Pazzola<sup>3</sup>, Andrea Pischedda<sup>3</sup>, Paolo Castiglia<sup>4</sup>

<sup>1</sup>University of Sassari Italy, <sup>2</sup>Ternopil National Medical University Ukraine,

<sup>3</sup>Department of Medicine, Surgery and Pharmacy, University of Sassari Italy,

<sup>4</sup>Department of Medicine, Surgery and Pharmacy, University of Sassari -

University Hospital of Sassari Italy, <sup>5</sup>University Hospital of Sassari

Background and Objective: A healthy lifestyle is the basis of diabetes prevention. The COVID-19 pandemic has led to major changes in daily life and social behavior that may affect glycemic control and diabetes self-management. The present work

aims to assess the relationship between diabetic patients' knowledge, attitudes, and behaviors towards proper nutrition and lifestyles in order to plan strategies for educational intervention from a health literacy perspective.

Methods: Diabetic patients registered at the clinic of endocrinologists and family doctors from Western Ukraine were interviewed through a cognitive survey. Because of the Russian-Ukraine conflict, the questionnaire was administered via google-form in the period September-December 2022. The questionnaire, already standardized during a previous survey conducted in an Italian context (<https://doi.org/10.3390/ijerph191811212> [1]), was consisted of 25 questions and 4 research areas (profile of participants, knowledge, attitude and behavior).

Results: Seventy-six questionnaires were filled during the survey period. Fifty-five percent of diabetic patients were female and 45% male with a mean age of  $60.5 \pm 14.2$  years and  $54.5 \pm 15.8$  years, respectively. The overall level of knowledge about the role of food and proper nutrition with respect to the risk of diabetes and its complications appeared to be generally unsatisfactory and inadequate. Despite a slightly better level of knowledge than the Italians a worse nutritional behavior was detected. Nonetheless, females generally showed a higher level of knowledge than males, whereas knowledge was seen to decrease according to the age of the patients. As for the possible impact played by the COVID-19 pandemic on lifestyles, it should be noted that about 46% of the respondents stated that they had difficult to maintain a healthy diet.

Conclusion: Thus, the study underlines the need to improve the knowledge of diabetic subjects about nutrition and, in particular, their self-management, positively influencing behaviors and attitudes. Links:-----[1] <https://doi.org/10.3390/ijerph191811212>

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### The experience of an Italian local public health department in floods preparedness and response

Daniel Fiacchini<sup>1</sup>, Simone Paradisi<sup>2</sup>

<sup>1</sup>Local Public Health Department - Senigallia Asur Marche - AV2 Italy, <sup>2</sup>Local ER Unit

Background: In Italy hydrogeological risk is one of the major environmental risks with significant impacts on human life and activities. The City of Senigallia (40.000 inhabitants) was recently hit by two floods (2014 and 2022). Before the last flood event, which occurred on 15 September 2022, the Local Public Health Department (LPHD), the Local Health District (LHD) and the Municipality of Senigallia worked jointly to improve the capacities for hydrogeological risk preparedness and response.

Methods: During the month of April 2022, a simulation exercise was carried out which allowed the confrontation between LPHD-LHD and the Municipality of Senigallia and made it possible to agree on objectives, procedures and activities aimed at managing a flood.

Results: According with the main outcomes of the simulation exercise LPHD-LHD agreed on an operating procedure to be activated in the event of a regional alert for hydrogeological risk and collaborated to have a list of non-ambulatory patients living on the ground floor, immediately available through appropriate home-care management software improvements.

In response to the 15 September 2022 flood, the Municipality of Senigallia promptly organized reception centres, alerted the population and secured the non-ambulatory patients living in risk areas 2 hours before the flood arrived. None of these actions has been implemented in neighboring cities.

Conclusion: In the flood of 15 September 2022, the territories of 7 municipalities were severely affected. The damage caused to the structures is enormous; 1 missing person and 12 victims were recorded, one of whom was resident in the municipality of Senigallia where no injuries and deaths were recorded among frail and non-ambulatory people. Given the increasingly frequent extreme weather events, preparation for hydrogeological events is pivotal and Local Health Authorities must be able to continuously improve floods preparedness and response involving all the municipalities in a systematic and timely way.

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### Public health governance and outcomes in ukrainian citizens moved in a part of the veneto region, Italy

Gloria Girolametto<sup>1</sup>, Anna Voltolini<sup>2</sup>, Luca Tribbia<sup>2</sup>, Alessandra Corò<sup>3</sup>, Antonio Stano<sup>3</sup>, Emanuele Barbierato<sup>3</sup>, Francesco Calcaterra<sup>3</sup>, Cristina Velludo<sup>3</sup>, Lorenzo Bulegato<sup>3</sup>, Alessandra Zotto<sup>3</sup>, Mario Baruchello<sup>4</sup>, Vincenzo Baldo<sup>2</sup>

<sup>1</sup>University of Padua - Italy Hygiene and Public Health school Italy,

<sup>2</sup>University of Padua - Italy, <sup>3</sup>Aulss7 - Pedemontana, Veneto, <sup>4</sup>Italian Red Cross - Bassano del grappa Italy

Background & Objective: As the Ukraine emergency broke out (24/02/2022), millions of Ukrainian moved worldwide, particularly in Europe leading healthcare authorities to implement different intervention plans. The Veneto Region (Italy), in its 7th Local Healthcare trust, released an identification-code for everyone arrived, offered screening for COVID-19 and Tuberculosis, vaccines prophylaxis and the possibility of medical visits / prescriptions for acute or chronic diseases. Together, the Italian Red Cross ran a refugees and migrant health point in Bassano del Grappa.

Methods: A database was created and analyzed from 01/03/2022 to 01/06/2022 through the Veneto Regional Registry and Q-lik-sense focusing on the registration date, identification-code released, age, gender, arrived-declared domicile, COVID-19 swabs and Tuberculosis tests results; COVID19, Diphtheria, Tetanus, Polio, Measles vaccinations coverage results. From medical visits' reports the diseases were grouped according to the International Classification of Primary Care and pharmaceutical flows were analysed too.

Results: 3964 people were registered and 1495 declared the arrived-domicile in our Municipalities. 68% were women, average aged 29.5 ( $\pm 18.4$  years). 47.4% were minors, 31% 3-13 years old and 5% under-3 years old. 2.10% tested positive for COVID-19, none positive Quantiferon test despite 4 positive Mantoux. Of those eligible for COVID-19 vaccination: 13.92% get vaccinated abroad, 9.79% in Italy and 8.6% completed the primary cycle in Italy. At the Local Public Primary Healthcare Clinic 139 accesses were made and most frequently encountered diseases were respiratory, endocrine and cardiovascular systems. Communication's difficulties were reported in at least 22 visits. Most frequently prescribed medications were antihypertensive and antibiotics. Dates were qualitatively confirmed in Red Cross reality too.

Conclusions: Mainly female and young aged individuals arrived, their healthcare demand was limited but present. Despite the precarious conditions experienced during the migration route, the percentage of positivity to COVID-19 on arrival was limited. Fundamental is to raise awareness on vaccines prophylaxis.

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### War in eastern Europe: a humanitarian disaster

Barry Levy<sup>1</sup>, Linda Gunter<sup>2</sup>, Ira Helfand<sup>3</sup>

<sup>1</sup>School of Medicine, Tufts University, Boston, United States, <sup>2</sup>Organisation of the International Campaign to Abolish Nuclear Weapons, Maryland, United States, <sup>3</sup>Physicians for Social Responsibility, Massachusetts, United States

War in Eastern Europe: A Humanitarian Disaster on February 19, 2022, Nobel Peace Prize winning International Physicians for the Prevention of Nuclear War (IPPNW) hosted a webinar entitled: "War in Eastern Europe – on the Brink of a Humanitarian Disaster." [1] It predicted, all too accurately, that conventional war in Ukraine would be devastating to civilians in addition to combatants, and that it threatens much worse if nuclear power plants are attacked or nuclear weapons are used. Five days later, the Russian Federation invaded Ukraine. The world has seen the crisis in Eastern Europe become a regional humanitarian disaster and that it still threatens to become global humanitarian catastrophe if war involving nuclear-armed nations erupts in Ukraine. In this workshop, IPPNW is updating its emergency briefing with the same distinguished panel of experts to examine the terrible human cost of the War in Ukraine so far, and the potential that exists for it to become much worse. Topics to be covered include: - Conventional war – The direct and indirect impacts of the ongoing conventional war in Ukraine continue to have devastating health, human rights, and environmental effects upon Ukrainian society and its landscape, with spillover effects in the surrounding countries and globally – including threats to global food security. - Damage to nuclear power reactors - The risk continues for large radioactive releases from the six Zaporizhzhia nuclear power reactors occupied by the military of the Russian Federation, or from reactors at the other three operating nuclear power stations in Ukraine that are vulnerable to deliberate or accidental destruction or meltdowns due to loss of power through either physical attacks or cyber-hacks. - Escalation to nuclear weapons use - The regional and global consequences would be catastrophic if nuclear weapons are launched intentionally or by accident or miscalculation. In addition to the immediate large-scale and indiscriminate carnage the use of a nuclear weapon or weapons would bring, the size, number, and conditions under which nuclear weapons might be used will determine whether there are environmental and climatic effects that could extend globally, reducing crop yields and harming or even devastating food security world-wide. IPPNW continues to support the petition it initiated through the group Avaaz with the Dalai Lama and 14 other fellow Nobel Peace Prize Laureates, signed by over a million people worldwide: "We Reject War and Nuclear Weapons" – Join the Global Call" [2]. It calls for an immediate ceasefire and the withdrawal of all Russian

military forces from Ukraine, and for Russia and NATO to explicitly renounce any use of nuclear weapons in this conflict. Links: -----[1] <https://www.ipn.org/norwar> [2] <https://secure.avaaz.org/campaign/en/nonuclearwarloc/>

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### Public health in emergencies, disasters, and wars: what is needed for regulatory preparedness?

Debra Yeskey<sup>1</sup>, Elizabeth Sadove<sup>2</sup>

<sup>1</sup>Coalition for Epidemic Preparedness Innovations (CEPI) United States, <sup>2</sup>US Food and Drug Administration United States

Workshop Abstract

The COVID-19 pandemic illuminated the need for and challenges with making available the medical countermeasures (MCMs), that is the diagnostics, devices, therapies, and vaccines needed to respond to public health emergencies, disasters, and wars, available to the impacted populations in a timely manner. Healthcare and political leaders alike agree on the goals— immediate access to reliable diagnostics, sufficient supplies of personal protective equipment and other medical supplies, and rapid deployment of safe and effective vaccines and therapeutics.

Many public health emergency planners anticipated that for a public health event of the magnitude of COVID-19, that the regulatory agencies would be barriers to accessing the needed MCMs. COVID-19 demonstrated that wasn't necessarily the case. Now, as the COVID-19 pandemic continues its world-wide simmer, intentional and continued collaboration between public health and regulatory agencies is needed to identify the elements of regulatory emergency preparedness and response that are working and change the ones that are not. "For too long, we have allowed a cycle of panic and neglect when it comes to pandemics: we ramp up efforts when there is a serious threat, then quickly forget about them when the threat subsides. It is well past time to act." (Global Preparedness Monitoring Board, 2019). Building on the assessment of regulatory activities that did and did not work, now is the time for countries to assess and potentially change their legal authorities and regulations to ensure that they are working to expedite access to needed MCMs and are fit for all-hazard purposes.

This workshop will consider the importance of regulatory preparedness for making MCMs accessible from the perspectives of the regulators of MCMs, public health, medical, and non-profit communities.

Workshop components:

- \* Scene Setting- defining the issues regarding regulatory preparedness (5 mins)
- \* Lessons learned from COVID-19- a regulator's view- 2 regulators (5 mins each)
- \* Preparing for the next pandemic (20 mins)
- \* 100 Days
- \* Interface with public health and regulatory authorities
- \* Introduction of the GHS Legal Preparedness Action Package (25 mins)
- \* Overview: Legal preparedness
- \* Regulatory Sub Working Group- workplan and deliverables

Key questions:

- \* How can public health preparedness include lessons learned by MCMs regulators?
- \* What actions can help to expedite access to MCMs in the next pandemic
- \* How can countries assess the gaps in their legal/regulatory frameworks for responding to the next pandemic?

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### Prevalence of violence against health care workers in the emergency department of a teaching hospital in Nigeria

Alphonsus Isara<sup>1</sup>

<sup>1</sup>Department of Community Health, University of Benin, Benin City, Nigeria

**Background and Objective:** Globally, violence targeted at health care workers (HCW) have reached an alarming level. The incidence of workplace violence is peculiar to both developing and developed countries with more workers at risk in developing countries especially in sub-Saharan Africa due to poorly developed work environment. According to World Health Organization, 8% to 38% of health workers suffer physical violence at some point in their careers. The Objective of this study was to determine the prevalence and forms of violence against HCWs in Emergency Department (ED) of University of Benin Teaching Hospital (UBTH), Benin City, Nigeria.

**Methods:** This was a cross-sectional study of all the 282 HCWs in the ED of UBTH. A standardized, pretested, interviewer-administered questionnaire was used for data collection. Data was analyzed using IBM SPSS version 25.0 software. Level of significance was set at  $p < 0.05$ .

**Results:** The mean age of the HCWs comprised of doctors 53 (18.8%), nurses 50 (17.7%), paramedics 36 (12.7%), porters 29 (10.3%), and laboratory scientist 19 (6.7%), among others, was  $36.1 \pm 8.4$  years. The prevalence of physical violence was 63 (22.3%) while that of psychological violence was 247 (87.6%). The perpetrators were mainly patient relatives, 93.6% and 96.7% for physical and psychological violence respectively. The predominant forms of violence were verbal abuse (99.5%), kicking (96.8%), slapping (60.3%), bullying (45.3%), threat (40.4%), and sexual harassment (32.4%). Majority experienced post-traumatic stress disorder following the violence. Duration of service ( $> 5$  years) was the only socio-demographic variable that showed statistically significant association with psychological violence ( $p = 0.008$ ).

**Conclusions:** The study showed worrisome high prevalence of violence against HCWs in the ED of UBTH. There is an urgent need for intervention measures directed at patients, patient relatives, HCWs and the community, to be initiated to curb the menace of violence against HCWs.

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### Strengthening public health capacity in Africa - the case of advanced public health education and training in Cabo Verde

Isabel Araújo<sup>1</sup>, Paulo Ferrinho<sup>2</sup>, Elen Castanheira<sup>3</sup>, Inês Fronteira<sup>2</sup>, Deisa Semedo<sup>4</sup>, António Delgado<sup>4</sup>, Mohsin Sidat<sup>5</sup>, Maria Mendonça<sup>6</sup>

<sup>1</sup>Global Health and Tropical Medicine, Universidade Nova de Lisboa, Lisbon, Portugal, <sup>2</sup>Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Portugal, <sup>3</sup>Faculdade de Medicina, Universidade Estadual Paulista Júlio de Mesquita, Botucatu, São Paulo, Brasil, <sup>4</sup>Universidade de Cabo Verde, Cape Verde, <sup>5</sup>Faculdade de Medicina, Universidade Eduardo Mondlane, Maputo, Mozambique, <sup>6</sup>Instituto Nacional de Saúde Pública, Cape Verde

**Background:** As recently as 2021, 32% of the WHO Africa region's 47 countries did not have postgraduate public health training. We describe the development of advanced public health training (APHT) in Cabo Verde (CV), emphasizing the unique aspects of the sustainability of this development. **Methods:** The presentation will be structured as a case study based on documentary analysis. **Results:** In 2022 public health competencies are still lacking and local training capacity is limited and the country remains without a functional national health workforce observatory. This situation is being corrected through the proposal by the Ministry of Health of plans for the development of human resources in health, through the strengthening of APHT and through partnerships, national and international. We review the development of advanced public health medical specialist training in (2011) analyze the failure to sustain it and trace the professional development of its graduates. We review the development of the first edition of the University of Cabo Verde (Uni-CV)-based public health master program (in 2010), analyze the failure to sustain it and review the professional development of its multi-professional graduates. We further describe the attempts to revitalize the master program, which already 2 new editions since 2019. We describe the development of the National Program to train field epidemiologists, coordinated by the National Public Health Institute, responsible for training of frontline epidemiologists, and the collaboration with the Uni-CV for advanced (master level) field epidemiologists. **Conclusions:** Sustainability of APHT in CV is achievable through institutional capacity building (at universities and national public health institute), the development of collaborative national consortia, including service providers and professional councils, establishment of strong international partnerships and adopting new information and communication technologies for distance learning.

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### Organisational policy to support oral health equity in Aotearoa New Zealand

Virginia Signal<sup>1</sup>, Leeann Waaka<sup>2</sup>, Justin Wall<sup>3,4</sup>, Moira Smith<sup>1</sup>, Bridget Robson<sup>1</sup>, Kelly Richards<sup>5</sup>, Hatea Ruru<sup>6,7</sup>

<sup>1</sup>University of Otago, Wellington, New Zealand, <sup>2</sup>Te Ao Mārama Aotearoa Māori Dental Association, Ngāpuhi, New Zealand, <sup>3</sup>Ngāti Toa, New Zealand, <sup>4</sup>Wellington and Chair Māori Oral Health Providers Quality Improvement Group, University of Otago, New Zealand, <sup>5</sup>Māori Oral Health National Coordination Service, New Zealand, <sup>6</sup>Te Ao Mārama Aotearoa Māori Dental Association, New Zealand, <sup>7</sup>Te Aitanga-a-Māhaki, Ngāti Maniapoto, New Zealand

**Background and Objective:** Severe, unacceptable and avoidable oral health inequities persist for MāORI in Aotearoa New Zealand (NZ). Recognising and addressing equity should be core priorities of professional organisations, which in NZ, includes recognising Te Tiriti o Waitangi (Te Tiriti), the foundational treaty

between Māori and the Crown that ensures health equity for Māori. We aimed to understand oral health organisations' knowledge of, and commitment to, Te Tiriti and equity, and shift taken-for-granted practices, policies and systems generating and perpetuating inequities.

**Methods:** The spokespersons of nine organisations-professional networks, associations or organisations that support oral health professionals in fulfilling their role—were interviewed. Questions were sent in advance allowing participants to consider their responses, gather relevant documentation and obtain members' viewpoints. A Te Tiriti-based framework guided analysis. Each organisation was provided with strengths-based feedback on activities they were doing well and opportunities for improvement.

**Results:** Participant organisations represented a range of oral health professions, with members being either predominantly public-sector or predominantly private-sector. Knowledge and commitment to Te Tiriti and equity varied, but was greater among public-focused organisations. One organisation had a Tiriti responsiveness plan, otherwise there were few Māori health or equity plans, policies or position statements, or equity tools, used to guide and monitor activities. While some had Māori in leadership roles, there was little purposive co-governance and few activities supporting normalisation of Māori worldviews. All participants commented that the interview process was insightful and committed to future action.

**Conclusions:** Differences between public and private-facing organisations likely reflects equity being an expectation of public-facing work, and access to relevant training. Organisations that had Te Tiriti or equity policies or roles had progressed, demonstrating that purposeful policy enables action to promote health equity at group and individual levels. These findings have implications for all nations with indigenous populations.

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### Impacts of industrial actions, protests, strikes and lockouts by health and care workers during COVID-19 and other pandemic contexts: living systematic review

Isabel Craveiro<sup>1</sup>, Pradeep Choudhury<sup>2</sup>, Ana Oliveira<sup>3</sup>, Alessandra Pereira<sup>4</sup>, Inês Fronteira<sup>5</sup>, Raphael Chança<sup>4</sup>, Giorgio Cometto<sup>6</sup>, Mathieu Boniol<sup>6</sup>, Mario Poz<sup>7</sup>, Paulo Ferrinho<sup>8</sup>

<sup>1</sup>Global Health and Tropical Medicine, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Lisboa, Portugal, <sup>2</sup>Zakir Husain Centre for Educational Studies, Jawaharlal Nehru University, Delhi, India, <sup>3</sup>Instituto de Medicina Social, Universidade do Estado do Rio de Janeiro (UERJ), Rio de Janeiro, Brazil, <sup>4</sup>Instituto Nacional de Câncer, Ministério da Saúde, Rio de Janeiro, Brazil, <sup>5</sup>Global Health and Tropical Medicine, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa (UNL), Lisboa, Portugal, <sup>6</sup>Health Workforce Department, World Health Organization, Geneva, Switzerland, <sup>7</sup>Instituto de Medicina Social, Universidade do Estado do Rio de Janeiro - UERJ, Rio de Janeiro, Brazil, <sup>8</sup>Global Health and Tropical Medicine, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa - UNL, Lisbon, Portugal

**Background and Objective:** Public health emergencies of international concern (PHEIC) like COVID-19 pandemic and others that have occurred since the early 2000s put enormous pressure on health and care systems and are a fertile ground for protests by health and care workers (HCWs). We aimed to (i) identify the impact of the COVID-19 pandemic and other PHEICs on the industrial actions, protests, strikes and lockouts (IAPSLs); (ii) analyze the demands of HCWs associated with these IAPSLs; (iii) identify and describe the relevant interventions to address these grievances.

**Methods:** Living systematic review of studies published between January 2000 and March 2022 in PubMed, Embase, Scopus, BVS/LILACS, WHO's COVID-19 Research Database, ILO, OECD, HSRM, and Google Scholar. Eligibility criteria were HCWs as participants, IAPSLs as phenomenon of interest occurring in the context of COVID-19 and other PHEICs. GRADE CERQual was used to assess risk of bias. **Results:** The searches retrieved 1656 records, of which 91 were selected for full-text screening. We included 18 publications for data extraction. A system-wide approach, rather than a limited approach to institutions on strike, will allow understanding the full impact of strikes on health and care services. PHEICs tend to aggravate already adverse working conditions (e.g., lack of PPE and financial issues), acting as drivers for HCWs strikes both in the North and Global South, particularly evident in Asia and Africa based on literature.

**Conclusions:** Evidence to assist policy-makers in defining strategies to respond adequately to the healthcare needs of the population during IASPLs is crucial. Adequate responses will minimize additional economic burden for the poorest families who cannot afford private health care when IAPSLs compromise access

to public health care. There is a lack of information on relevant interventions to resolve these IAPSLs, justifying periodic updates to capture emergent literature, helping to fill knowledge gaps.

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### Implementation of advanced practice nursing in primary health care in Brazil

Beatriz Toso<sup>1</sup>, Vanessa Horewicz<sup>2</sup>, Daria Bula<sup>3</sup>, Marcus Heumann<sup>3</sup>, Kerstin Hämel<sup>3</sup>, Rosa Rodrigues<sup>2</sup>, Maria Rizzotto<sup>2</sup>, Lígia Giovanella<sup>4</sup>, Elyne Engstrom<sup>4</sup>  
<sup>1</sup>Western of Paraná State University, Paraná, Brazil, <sup>2</sup>Western of Paraná State University, Brazil, <sup>3</sup>Bielefeld Universität, Germany, <sup>4</sup>Oswaldo Cruz Foundation, Brazil

**Background/Objective:** The demographic and epidemiological transition challenges health care systems worldwide, also in Brazil. Consequently, primary health care (PHC) has to increasingly address complex patient demands. To reach this goal, several countries have encouraged the expansion of the nurses' roles in PHC, through Advanced Practice Nursing (APN). However, in Brazil – although discussions have already begun – the implementation and research initiatives on the subject are still scarce and in early stages. Since little is known about the obstacles and chances of the implementation of APN in PHC, this study investigates them from the perspective of nurses, physicians, and other stakeholders in Brazil.

**Methods:** We conducted 4 focus groups with healthcare professionals, representatives of health and professional entities, e.g. the federal council of nurses, state health secretariat, physician national federation, health national council, and representatives of physicians' and nurses' associations. Data was analyzed by means of thematic coding.

**Results:** The results show how nurses and physicians currently collaborate in primary care. Work overload resulting in nurses' reluctance to take over more advanced tasks, a deficit in training for interprofessional collaboration, lacking management support and possible non-acceptance of the population for the roles of APN are seen as the main barriers. Nevertheless, the implementation of APN in PHC may improve patients' access to care, strengthen the nursing profession and enhance organization as well as longitudinality in the regional healthcare networks. Professional nursing organizations were reported to be essential for the development of APN in PHC. Thus, the discussions should be expanded to the professional councils, to create legislation and guidelines to support nurses' role development.

**Conclusions:** The implementation of APN roles in PHC can be enabled by an ongoing dialogue between politics, professional representatives, and patients. The role of the APN should be clarified to strengthen its perception in the population.

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### Second victim phenomenon in Italian healthcare workers: IT-SVEST survey and latent profile analysis

Enrico Scarpis<sup>1</sup>, Beatrice Favero<sup>1</sup>, Yvonne Beorchia<sup>2,3</sup>, Valentina Moretti<sup>1</sup>, Federico Farneti<sup>4</sup>, Roberto Cocconi<sup>4</sup>, Rosanna Quattrin<sup>4</sup>, Luigi Castriotta<sup>5</sup>

<sup>1</sup>Dipartimento di Area Medica, Università degli Studi di Udine, Italy, <sup>2</sup>Azienda Sanitaria Universitaria Friuli Centrale, Italy, <sup>3</sup>Istituto di Igiene ed Epidemiologia, Italy, <sup>4</sup>Accreditamento, Qualità e Rischio Clinico, Azienda Sanitaria Universitaria Friuli Centrale, Italy, <sup>5</sup>Istituto di Igiene ed Epidemiologia, Azienda Sanitaria Universitaria Friuli Centrale, Italy

**Background and Objective:** The second victim (SV) phenomenon concerns healthcare workers (HCWs) whose involvement in a medical error, as well as non-error patient safety events or near-miss events, has affected their well-being. Its prevalence ranges from 10% to 75%, and can predispose HCWs to burnout and depression, increasing the probability of committing errors. The primary aim of our study was to determine the prevalence of HCWs involved in an adverse patient safety event in Friuli Venezia Giulia Region (Italy). The secondary aims were to use latent profile analysis to identify profiles of SVs and factors influencing profile membership, and to evaluate the relationship between the severity of symptoms and desired support options.

**Methods:** A cross-sectional survey through the IT-SVEST tool was conducted in five Local Health Authorities, and all HCWs involved in direct patient care were invited. Descriptive statistics were conducted for all variables and correlations were evaluated with Kendalls tau-b test. Latent profile analysis was based on the scores of dimensions measuring SVs symptoms. Factors affecting profile membership were assessed through multinomial logistic regression.

**Results:** A total of 733 HCWs participated. Of them, 305 experienced at least one adverse event (41.6%). Among dimensions measuring SVs symptoms,

psychological distress had the highest percentage of agreement (30.2%). Three latent profiles were identified: mild (58.7%), moderate (24.3%), and severe (17.0%) symptoms. Compared to the mild symptom profile, the severe symptoms profile was positively associated with the agreement for extra-occupational support and negatively associated with the agreement for organizational support. The severity of symptoms was directly associated with the desire for support strategies.

Conclusions: The prevalence of HCWs involved in adverse events is consistent with the literature. Three latent profiles have been identified according to SVs symptoms and the higher the severity of symptoms, the greater the reliance on extra-occupational support.

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### Public Health workforce development

Tahani Qadiri<sup>1</sup>, Marília Paulo<sup>2</sup>

<sup>1</sup>Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, Al Ain, United Arab Emirates, <sup>2</sup>Comprehensive Health Research Center (CHRC), NOVA Medical School (NMS), Faculdade de Ciências Médicas (FCM), Universidade NOVA de Lisboa, Lisboa, Portugal

Background: Health workforce and public health specialists are the cornerstones of any developed health system, as evidenced by the countries' management of the COVID-19 pandemic. The COVID-19 pandemic has highlighted the need for public health competences and urgency of health workforce innovation.

Methods: This is a review of healthcare systems, the educational structure of public health specialization, and the availability of public health cadres in six countries: the United States of America (USA), the United Kingdom (UK), Canada, Singapore, Saudi Arabia, and the United Arab Emirates (UAE) (Abu Dhabi). Information published by the World Health Organization (WHO), the World Bank, official data from ministries of health and the National Bureau of Statistics from each country, the European Public Health Association, international bodies concerned with public health, and studies conducted by universities was revised.

Results: There are different experiences in the countries in establishing a special structure for public health, especially in the USA, the UK, and Saudi Arabia, and far less in Singapore and Canada, while it is noted that it is still in its early stages in the UAE. The review highlighted the need to changing concepts of preventable disease, provisions directed toward better mental health, growing emphasis on health education, the biostatistical, epidemiological approach, changes resulting from an aging population, concern regarding the quality of the environment and increasing interest of national governments.

Conclusions: All countries need to integrate the concept of public health into their programs and structure of the Ministry of Health, giving priority to the competence of public health for all workers in the health sector, and work in a long-term health strategy. This will enhance health systems preparedness.

Keywords: COVID-19 pandemic, health systems preparedness, human resources for health, public health workforce, United Arab Emirates

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### Individual and psychosocial study environment characteristics associated with exposure to sexual harassment at a large public university in Sweden

Jack Palmieri<sup>1</sup>, Per-Olof Östergren<sup>1</sup>, Markus Larsson<sup>1</sup>, Anette Agardh<sup>1</sup>

<sup>1</sup>Lund University, Sweden

Background and Objective: Universities can be understood as work-like environments for students. Limited research has examined this study environment from a Demand-Control-Support perspective with regards to sexual harassment. Understanding this environment is key to designing preventative measures.

This study therefore aimed to examine the association between individual and psychosocial study environment characteristics and exposure to sexual harassment among students at Lund University, Sweden. Methods: This cross-sectional study utilised survey data from an online survey conducted among university students (N=8960). Questions on background characteristics, exposure to sexual harassment while at university and psychosocial study environment as measured by a Demand-Control-Support-instrument were used. Descriptive analysis, bivariate, and multivariable logistic regressions were used to examine the association between individual and study environment characteristics and exposure to sexual harassment. Population Attributable Fractions (PAF) were calculated and synergy indexes (SI) used to examine the interaction between demands and control and potential buffering effects of support.

Results: High demands and low control were independently associated with higher odds of being exposed to sexual harassment among both females and males. When controlling for background characteristics, high study strain (combination

of high demands and low control) was associated with exposure to sexual harassment among both female and male respondents and accounted for a PAF of 14% and 15% of study environment sexual harassment for females and males, respectively. Low lecturer support was associated with higher odds for sexual harassment for females but not males. No evidence was found for a buffering effect of support on high strain and sexual harassment. Conclusions: Reducing high psychosocial strain in study environments could be an effective strategy for reducing sexual harassment in university settings. Improving support from lecturers could also modify this relationship, but more research is required to identify causal pathways for this results.

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### Understanding the impacts of COVID-19 on the mental health and intention to leave among the Canadian public health workforce

Emily Belita<sup>1</sup>, Clemence Zogo<sup>2</sup>, Sarah Neil-Sztramko<sup>1</sup>, Sheila Boamah<sup>1</sup>, Jason Cabaj<sup>3</sup>, Susan Jack<sup>1</sup>, Cory Neudorf<sup>4</sup>, Gaynor Watson-Creed<sup>5</sup>, Maureen Dobbins<sup>1</sup>, Vanessa Rubeis<sup>1</sup>

<sup>1</sup>McMaster University, Canada, <sup>2</sup>University of Toronto, Canada, <sup>3</sup>Alberta Health Services, Canada, <sup>4</sup>University of Saskatchewan, Canada, <sup>5</sup>Dalhousie University, Canada

Background and Objective: The public health workforce has been overwhelmed in meeting COVID-19 demands while attempting to deliver core public health programs at a reduced capacity. There is limited understanding of the pandemic's impact on the mental health of the public health workforce. This study will explore the extent of the pandemic's impact on the mental health of Canadian public health workers and their intention-to-leave the workforce.

Methods: In this cross-sectional study, participants are eligible to participate if they are public health professionals with advanced public health or discipline-specific education/training (e.g., nurses, epidemiologists) or other workers (e.g., family home visitors) and are employed in local public health units in Canada prior to March 2020 and for ≥8 months during the COVID-19 pandemic. Online communication channels (e.g., social media, email) of national and provincial public health organizations are being used to recruit participants. Data are being collected via an online survey on socio-demographic and workplace factors, burnout, anxiety, depression, and intention-to-leave. Descriptive statistics will be reported on the state of mental health and intention-to-leave. To determine who is at greatest risk, we will compare outcomes by socio-demographic (e.g., gender, ethnicity) and workplace factors (e.g., supervisor support) using regression analyses.

Results: Recruitment and data collection began mid-November 2022 and will be completed by January 2023. To date, 310 surveys have been completed, with the sample consisting of frontline public health/community providers (57%), program/project management staff (20%), senior management (5%), program assistants (5%), Chief Medical Officers of Health/Medical Officers of Health (1%), and other roles (12%). Final data analysis will be completed by February 2023.

Conclusions: Understanding the extent to which the mental health of the public health workforce has been impacted by the COVID-19 pandemic can inform strategic workforce planning, improve recruitment and retention efforts, and promote positive psychological health of workers.

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### Implementation of policy and management interventions to improve health and care workforce capacity to address the COVID-19 pandemic response: living systematic review

Ana Oliveira<sup>1</sup>, Mariana Galante<sup>2</sup>, Leila Maia<sup>2</sup>, Isabel Craveiro<sup>3</sup>, Alessandra Pereira<sup>4</sup>, Inês Fronteira<sup>5</sup>, Raphael Chança<sup>4</sup>, Giorgio Cometto<sup>6</sup>, Mathieu Boniol<sup>6</sup>, Paulo Ferrinho<sup>5</sup>, Mario Poz<sup>1</sup>

<sup>1</sup>Instituto de Medicina Social, Universidade do Estado do Rio de Janeiro - UERJ, Rio de Janeiro, Brazil, <sup>2</sup>Instituto de Medicina Social, Universidade do Estado do Rio de Janeiro (UERJ), Rio de Janeiro, Brazil, <sup>3</sup>Global Health and Tropical Medicine, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa (UNL), Lisboa, Portugal, <sup>4</sup>Instituto Nacional de Câncer, Ministério da Saúde, Rio de Janeiro, Brazil, <sup>5</sup>Global Health and Tropical Medicine, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa - UNL, Lisboa, Portugal, <sup>6</sup>Health Workforce Department, World Health Organization, Geneva, Switzerland

Background and Objective: The COVID-19 pandemic highlighted pre-existing weaknesses in health and care systems. Policymakers needed to adopt measures to face these challenges improving the surge capacity of the health and care workforce (HCW). This living systematic review (LSR) aimed to identify countries'

range of policies and management interventions implemented to improve HCW capacity to address the COVID-19 pandemic response.

Methods: LSR of studies, technical and political documents published in PubMed, Embase, Scopus, LILACS/BVS, WHO COVID-19 Research Database, ILO, OECD and the Health System Response Monitor from 2020 to March 2022. Data were collected and organized according to interim guidelines from WHO. For risk of bias the JBI Critical Appraisal Tools were used, and GRADE to assess the certainty of the evidence on the outcomes identified.

Results: A total of 69 documents were included, but only 14 publications offered outcomes for policy and management interventions implemented by countries. 66.7% of the documents described at least one intervention to increase the flexibility and capacity of the HCW. Most interventions were to attract and retain HCW in a safe and decent working environment (58% of the documents described at least one intervention). Interventions related to licensing and regulation were implemented to increase the HCW pool, such as making training received abroad more easily recognized and to regulation of practice within the respective countries.

Conclusions: Many of the systemwide health workforce enablers were viewed as intervention facilitators, and little was explored on how they were (re)structured and adapted to allow for the agility of implementation. The SR identified a lack of studies, particularly in the areas of social protection service provision, planning and evaluation, and human resources information systems, and no information was found regarding the role of community health workers and other community-based providers. The impact and effectiveness of strategies require further research.

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### Public health roles and responsibilities 2022-2030: a job task analysis

Allison Foster<sup>1</sup>, Laura King<sup>2</sup>, Allison Foster<sup>1</sup>

<sup>1</sup>National Board of Public Health Examiners, Washington, United States,  
<sup>2</sup>Council on Education for Public Health, Silver Spring, United States

The public health workforce is ever evolving. As the work of the public health workforce changes, so must the skills, abilities and knowledge needed to address current challenges facing our nation's health. How can we measure the changes that have taken place and even more importantly, how can we anticipate what the workforce should look like to meet future challenges? The National Board of public health examiners conducts a Job Task Analysis at least once a decade. A Job Task Analysis is a highly-structured survey process that determines the most common tasks being performed by members of a professional field. Sequential job task analysis allow for a profession to measure changes in workforce responsibilities over time. The NBPHE has conducted two recent job task analysis, one in 2016 and another in 2022. The NBPHE is proposing a session to provide an overview of the roles and responsibilities currently performed by public health professionals. The 2022 results will be compared to the 2016 study, allowing participants to discern changes over the past decade. The 2022 JTA survey yielded responses from over 5,000 public health professionals. To increase the regional scope of responses, the 2022 JTA survey was made available in six languages (English, Mandarin, Hindi, French, Spanish and Arabic). This is the first-of-its-kind study using the JTA Methodology to at the global public health workforce at this level of detail. A special emphasis of the presentation will be made on the impact of COVID-19 and how the pandemic impacted the work of the public health profession. The audience will be invited to provide input into whether these changes to the roles and responsibilities are temporary or if they have permanently changed the nature of public health as a profession.

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### Interprofessional collaborations to improve the implementation of prenatal oral health care in primary health care

Kellen Gasque<sup>1</sup>, Diana Diaz<sup>2</sup>

<sup>1</sup>Regional Board of Brasilia, Oswaldo Cruz Foundation, Brasília, Brazil,  
<sup>2</sup>Oswaldo Cruz Foundation, Regional Board of Brasilia, Gleba, Brazil

The interdisciplinarity of prenatal oral health care represents a strategy for an integral during pregnancy, valuing the interprofessional context and the collective view of health, in accordance to the guidelines of the Brazilian Unified Health System. The objective of this study was, through an integrative review, to map and analyze the scientific literature on the occurrence of interprofessional collaborations for the feasibility of prenatal oral health care in Primary Health Care. As a method, a systematic search of primary articles was carried out in the databases: BVS, BVS Dentistry, Scielo, Pubmed, Scopus, Periódicos Capes, Web

of Science and MEDLINE Complete (EBSCO)<sup>3</sup> using the Decs/Mesh related to "Attention Primary Health", "pregnant women" and "prenatal dental care", without time restriction. The eligibility criteria of the studies were the Brazilian scientific productions referred to dental care in prenatal care, which included primary health care professionals and / or pregnant women who attended prenatal care in the primary health care. As a results, 20 articles were included, systematized into three categories, showing barriers, potentialities, and recommendations for the feasibility of the prenatal oral health care in primary health care. In conclusion, interdisciplinary collaborative dialogues were perceived as deficient /absent among prenatal professionals, managers and pregnant women. This gap makes it difficult to exchange knowledge, strengthen bonds, deconstruct fears, reducing the adherence to the prenatal oral health care by pregnant women. Strategies to implement this interprofessional collaborative work are necessary, such as: well-articulated communication and guiding flows between professionals, shared agendas for the care of pregnant women, spaces for interdisciplinary health education and permanent education in the team.

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### Widespread racism in the UK's health and social care sector is a significant threat to public health

Sadiq Bhanbhro<sup>1</sup>, Anandi Ramamurthy<sup>2</sup>, Faye Bruce<sup>3</sup>, Ken Fero<sup>4</sup>

<sup>1</sup>Sheffield Hallam University, Sheffield, United Kingdom, <sup>2</sup>Sheffield Hallam University, United Kingdom, <sup>3</sup>Manchester Metropolitan University, United Kingdom, <sup>4</sup>Coventry University, United Kingdom

The recent Lancet's Global Review says, "racism is a "profound" and "insidious" driver of health inequalities worldwide and poses a public health threat to millions of people". The review confirms the findings of our study, where hundreds of ethnic minority participants working in frontline health and social care roles shared shocking stories of racism at work. Racism impacts ethnic minorities and migrant staff working in NHS at all levels. We aimed to explore and understand the stories and experiences of healthcare staff from ethnic minority background during the pandemic and previously in their working lives. We conducted a questionnaire survey and qualitative interviews with nurses, midwives and other healthcare staff. Three hundred-eight respondents completed an online survey, and 45 people participated in the narrative interviews. Our findings report that racism is prevalent in the health and social care sector and is usually unreported. In the case of reporting to authorities, 77.3% of respondents who complained about racism said they were not treated fairly. Incidents of racism were not individual and isolated; it was a culture that permeated daily practice. Our survey findings revealed 59% of the survey respondents had experienced racism during their working lives, making it difficult to do their job; thus, 36% had left a job. Most participants reported that racial discrimination had impacted their physical and mental health and their patients' care. Our research underscores that the endemic culture of racism is a pertinent threat to public health in the UK; thus, it must be recognised and called out. There is a need to raise awareness and undertake interventions that recognise and address racial discrimination and stigma, institutional racism and structural racism as distinct driving forces of inequalities and inequity in the social determinants of health.

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### In the eye of the storm: Hospital leaders' resilience during the COVID-19 pandemic

Nina Füreder<sup>1</sup>, Nina Füreder<sup>1</sup>, Charlotte Förster<sup>2</sup>

<sup>1</sup>Sustainable Transformation Management Lab, Johannes Kepler University, Austria, <sup>2</sup>Faculty of Economics and Business Administration, Technical University Chemnitz, Germany

Background and Objective: Hospitals make a significant contribution to public health and are part of the critical infrastructure. Unfortunately, hospitals are facing tremendous challenges such as general pressures of cost reduction, the need for high-quality care, and effective management of human resources. Amplified by the COVID-19 pandemic it is obvious that hospitals and especially their leaders must be more resilient than ever to cope with this stressful work climate. Recognizing the crucial role of the leader in overcoming organizational crises, few studies focus on how leaders cope with work-related stress during crisis. This study provides deeper knowledge of leaders' behavior and strategies for dealing with stress. We point to the importance of leaders' coping mechanisms when it comes to organizational resilience, whereby we consider resilience from the perspective of the conservation of resources theory, since two different types of resilience (acceptance and strategic resilience) arise from this theory. Methods: Qualitative interviews were made with leaders from different university hospitals in Austria

within different professions and leadership levels (n=44) and analyzed in a hybrid process of deductive and inductive coding.

Results: Mainly, we followed the call of Bardoel and Drago (2021) for qualitative studies to provide empirical data in terms of the two different types of resilience and their associated resources. Therefore, we show first our empirical data on acceptance resilience to then move to strategic resilience data and at least showing the interplay and possible triggers for switching between them. Conclusions: Our work shows how hospital leaders cope with the challenges resulting from the COVID-19 pandemic over time and point out how different coping mechanisms and their associated resources were used. At least we discuss the crises driven nature of hospitals and how the important dimension of temporality influence leaders and consequently influence organizational resilience.

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### Physician profiles according to determinants of scope of practice in Brazil

Ana Stralen<sup>1</sup>, Cristiana Carvalho<sup>1</sup>, Sábado Girardi<sup>1</sup>, Ilka Reis<sup>1</sup>, Samuel Silva<sup>1</sup>, Mariangela Cherchiglia<sup>1</sup>

<sup>1</sup>Federal University of Minas Gerais, Brazil

The scope of practice of physicians impacts directly the quality of health services provided, and the cost associated with health. Proposals to enhance physicians' scope of practice have been encouraged, seeking to innovate the use of the health workforce and meet the populations needs in the most efficient and effective way. The study aimed to outline the profile of physicians in Brazil, considering the main determinants of their scope of practice. This is a cross-sectional, exploratory study conducted between December 2017 and June 2018. Data collection was carried out through an online survey with 1.418 physicians. The physicians were classified according to their main specialty. The number of procedures performed (n=32) was considered as a proxy for an expanded scope of practice. Determining variables of scope of practice were grouped into personal factors, training, and practice location practice. We used the method Grade of Membership (GoM) for generating the profiles according to the determinants of scope of practice. The results showed that the scope of practice can be described through four physician profiles. The profiles that were more likely to have a broader scope of practice showed important similarities, such as working in primary health care specialties, in basic health units, and in areas described as rural and unsafe urban areas with physician shortages. Among the three determinants analyzed (location, personal, and training factors), the location of practice was more likely to be associated with a broader scope of practice. The others showed that, in isolation, they do not necessarily impact the physicians' scope of practice. The continuous study of the physicians' scope of practice is important to help understand the main factors that affect them. This can allow health policy planners to develop strategies aimed to optimize physicians practice and improve population access to health.

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### Is 'muddling through' the way forward for NCD program management in Nepal?

Selvanaayagam Shanmuganathan<sup>1</sup>, Uday Yadav<sup>2</sup>, Suresh Mehata<sup>3</sup>, Andrew Wilson<sup>4</sup>

<sup>1</sup>Ministry of Health, Malaysia & Menzies Centre for Health Policy and Economics, The University of Sydney, Malaysia, <sup>2</sup>National Centre for Aboriginal and Torres Strait Islander Wellbeing Research, Australian National University, <sup>3</sup>Ministry of Health and Population, Nepal, <sup>4</sup>Menzies Centre for Health Policy and Economics, The University of Sydney, Australia Chronic disease is well recognized as a significant health challenge in developed and many emerging economies. A key element in health system change is the role of leadership, management and organizational culture. The study aims to examine how leadership characteristics interact with management and influence the implementation of chronic disease management programs in Nepal.

An interview was done with 12 key informants from various district health offices in Province 1 of Nepal. The participants were district health officers and senior managers in charge of chronic disease management programs. The semi-structured interviews were transcribed into Nepali and then translated into English. Leaders at the district level are constantly challenged in addressing the lack of human, material and technical resources in implementing chronic disease programs. This shortage impacts the decision-making and handling of social and professional workplace relationships by the leaders. Leaders from the district described the necessity of building strategic alliances with stakeholders from across the public sector and non-governmental organizations. These alliances were crucial to resource mobilization, garnering material support, expanding

healthcare access and community outreach, and compensating for capacity constraints within the districts to address the issues in the implementation of NCD programs at the district level. Participants framed their leadership as a moral drive to change and some leadership styles used are democratic leadership, servant leadership, and collaborative leadership, which is leveraged flexibly depending on the demands of the moment or the task at hand.

The study provided a critical, preliminary understanding of leadership and challenges in healthcare. We found that there is a demand for healthcare leadership development, which will undoubtedly improve the health systems managerial, administrative and teamwork capacities at a micro-level in strengthening healthcare and improving health outcomes.

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### Leadership styles, which one fits better? A bibliometric analysis

Tommaso Osti<sup>1</sup>, Angelica Valz Gris<sup>2</sup>, Tommaso Osti<sup>3</sup>, Francesco Causio<sup>1</sup>, Maria Gualano<sup>4</sup>, Carlo Favaretti<sup>5</sup>, Walter Ricciardi<sup>1</sup>, Damiani Gianfranco<sup>1</sup>

<sup>1</sup>University Department of Life Sciences and Public Health, Section of Hygiene, Università Cattolica del Sacro Cuore, 00168 Rome, Italy, <sup>2</sup>University Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>3</sup>Università Cattolica del Sacro Cuore, Italy, <sup>4</sup>UniCamillus-Saint Camillus International University of Health Sciences 00131 Rome, Italy, <sup>5</sup>Leadership in Medicine Research Center, Università Cattolica del Sacro Cuore, 00168 Rome, Italy

Background and Objective: Leadership in healthcare is associated with several indicators related to health care performance both at local and supranational levels. A wide debate has been developed about which leadership model best fits the needs of different contexts. The aim of our study is to analyze the scientific output relating to three models of leadership (transactional, transformational and complexity leadership), to understand to what extent they have met the interest of the scientific community.

Methods: We conducted a bibliometric analysis of the 100 most influential articles for each of the three leadership styles. We searched Scopus database using three different research strings including keywords like "Leadership OR leadership style" and, respectively, "transformational", "transactional" and "complexity". Articles were sorted according to the number of citations, median citation values of each string were calculated and Kruskal-Wallis (KW) test was used to verify that the distribution of the number of citations were significantly different. Research was then extent to the total number of results for each string, relative frequency of citations was calculated for each query.

Results: The median number of citations for each 100 articles was respectively 24 for transactional leadership, 80 for transformational leadership, 207.5 for complexity leadership (KW p < 0,001). Relative frequency of citations was 4.8% [95%CI 4.75 – 4.98] for transactional leadership, 16.6% [95%CI 16.48 – 16.86] for transformational leadership, 78.5% [95%CI 78.28 – 78.70] for complexity leadership.

Conclusion: Our research shows that the type of leadership that seems to best interpret the interest of academia is complexity leadership in place of traditional models linked to reward mechanisms or pure motivational incentive. This follows up with the notion that complex systems cannot be reduced to simplistic models of a one-size-fits-all cause-and-effect nature but require more complex analyses therefore more ductile and articulate leadership models.

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### Determinant factors of choosing public health as a medical residency in Portugal

Rafael Vasconcelos<sup>1</sup>, João Dionísio<sup>2</sup>, Daniel Resendes<sup>3</sup>

<sup>1</sup>ACES Oeste Norte, Portugal, <sup>2</sup>ACES Baixo Mondego, <sup>3</sup>ACES Lisboa Central, Portugal

Background and Objective: The Public Health (PH) workforce in Portugal is in a state of decline, with a large number of medical specialists entering the age of retirement before 2025. Despite government efforts to increase the number of vacancies available for medical residents, some are still vacant. Our study attempts to identify the factors that contribute to the choice of PH as a medical residency in Portugal.

Methods: From publicly available data regarding the Portuguese medical residency application and selection process from 2016 to 2022, we analyzed the differences between new residents in PH (n=275) and other medical specialties (n=11.483) regarding gender, number of application attempts, medical school, and percentile rank of grades in medical school and in the national access exam.

Results: A significant association between male gender and choosing PH was

found with an Odds Ratio (OR) of 1,6 (95% CI: 1,3 - 2,1). Among the eight included medical schools, only one was associated with a higher choice of PH by medical residents (OR=2,0; 95% CI: 1,3 - 3,1). Choosing PH was also associated with a higher average number of application attempts (PH: 1,19 vs. other medical specialties: 1,14,  $p<0,01$ ), lower grades in medical school (PH: 33,1% vs. other medical specialties: 54,6%,  $p<0,01$ ) and in the national access exam (PH: 32,3% vs. other medical specialties: 61,2%,  $p<0,01$ ).

Conclusion: To maintain the sustainability of the PH workforce in Portugal, efforts should be made to understand these factors. Decision makers should reflect if the current curricula in Portuguese medical schools are adequate in raising interest in PH and if the application and selection process is suitable in selecting PH medical residents.

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### The Portuguese national health accreditation program - does it fit a public health unit reality?

Gustavo Paiva Monteiro<sup>1</sup>

<sup>1</sup>USP Entre Douro e Vouga I, Portugal

Background and Objective: The Portuguese National Health Accreditation Program (NHAP), based on the Quality Model of the Andalusia Agency, has adequate characteristics, answers to the main needs of the Portuguese health system and it's suitable for most of the healthcare institutions in Portugal.

The main goals are to verify if the NHAP is applied in the context of Public Health Local Units and if it has specific criteria directed to these institutions.

Methods: It was conducted an audit of the Public Health Local Unit Entre Douro e Vouga I, with the format of the ISO 19011 guideline. It was based on the 41 required elements of group I of the accreditation model for healthcare institutions, determined by the NHAP.

Results: It was found that is not fully applicable in the context of a Public Health Local Unit since there are no specific requirements or criteria aimed at the function of these institutions, which have quite different particularities, such as the lack of clinical activity or the fact that they don't have results that are easily measured. 7 of the 41 requirements were evaluated as non-applicable to the context of Public Health, since they were connected to functions and responsibilities out of the Public Health Unit context. Furthermore, the requirements of NHAP model, appears to be addressed to the user of the institution as a singular form, and not to the population as a whole, which makes the process of certifying Public Health Local Units very difficult, since these, with some exceptions, intervene in the community and not in a patient itself.

Conclusion: It's urgent to develop a specific manual for the reality of Portuguese Public Health, with the creation of a consultancy and guidance organization for the certification processes of these institutions.

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### Variability of patient safety culture among nursing home staff: a cross-sectional cohort study

Ilaria Tocco Tussardi<sup>1</sup>, Lucia Cazzoletti<sup>2</sup>, Maria Zanolin<sup>2</sup>, Donatella Visentin<sup>3</sup>, Annarita Comini<sup>1</sup>, Emanuele Torri<sup>4</sup>, Stefano Tardivo<sup>1</sup>, Francesca Moretti<sup>5</sup>

<sup>1</sup>Department of Diagnostics and Public Health, Section of Hygiene, University of Verona, Italy, <sup>2</sup>Department of Diagnostics and Public Health, Section of Epidemiology and Medical Statistics, University of Verona, Italy, <sup>3</sup>Agency for Health Services of the Autonomous Province of Trento, Unit of Hygiene and Public Health, Trento, Italy, <sup>4</sup>Agency for Health Services of the Autonomous Province of Trento, Department of Health and Social Policies, Trento, Italy, <sup>5</sup>Department of Neurosciences, Biomedicine and Movement, University of Verona, Italy

Background and Objective: Residents of nursing homes (NHs) are a highly vulnerable group and at risk of adverse events. Knowledge of patient safety culture (PSC) is essential to ensure patient safety and guide effective improvements. However, research on the variability of PSC in NHs is still scarce. This study explored whether and how PSC differed among NH staff (managers, nurses, direct care, support and administrative staff) in the Autonomous Province of Trento (Northeastern Italy).

Methods: The Nursing Home Survey on Patient Safety Culture (NHSPSC) was administered to the staff of 25 NHs (2368 beds) in June 2019. Linear mixed models were used for the score analyses of the 12 NHSPSC domains, with each domain score as response variable and staff type as the fixed effect of interest.

Results: Overall, 1224 employees participated in the survey (mean facility response rate: 59%, range 31-90%). The majority (61.7%) of respondents were direct care staff. The mean aggregate NHSPSC score for all staff type was 3.54/5.00 ( $\pm$ SD

0.58) (64.5 $\pm$ 14.6% using a 0-100 scale). There was a statistically significant difference in 9/12 domain scores between staff categories. We detected that: managers and administrative staff had higher scores than other staff types in 9/12 domains; support staff had the lowest scores in almost all domains (10/12); the domain with the highest score was 'Handoffs and Transitions' for managers and administrative staff (mean 82.5 $\pm$ 17.1%) and 'Feedback and Communication about Incidents' for nurses, direct care and support staff (mean 76.2 $\pm$ 20.1%); and the domain with the lowest score was 'Staffing' for all staff categories (mean 49.6 $\pm$ 18.3%). In 10/12 domains and overall NHSPSC scores, a statistically significant reduction was evident for the support staff category compared to the others.

Conclusions: There are differences in PSC between different professions in NHs, which need to be addressed to build a positive PSC.

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### Midwives struggle for recognition: a constructivist grounded theory study

Bielka Carvajal<sup>1</sup>, Helen White<sup>1</sup>, Jane Brooks<sup>1</sup>, Ann Thomson<sup>1</sup>, Alison Cooke<sup>1</sup>

<sup>1</sup>The University of Manchester United Kingdom

Background: Midwives are a cornerstone in women's reproductive care and vital to achieving sustainable maternal and neonatal development goals. After the enactment of a bill that allows abortion under three clauses, midwives have managed to expand their scope of practice to include induced abortion care. In this new scenario, this study aims to elucidate how Chilean midwives understand and provide abortion care and how they have (re)defined their professional identity to include abortion care.

Methods: The study followed a constructivist grounded theory methodology using in-depth online semi-structured interviews. Midwives were purposively and theoretically sampled until data saturation was reached. Fifteen Chilean midwives working in various settings and with various years of working experience were interviewed. Interviews were recorded, transcribed verbatim in Spanish and translated into English. Interviews were read and reread by the research team and coded incident-by-incident using NVivo. The team discussed the categories' properties and relations to each other. A model using constructivist grounded analysis and Honneth's recognition theory was generated to explain Chilean midwives' understanding of their professional identity and experience providing abortion care.

Findings: The preliminary analysis of this study shows that 1)Chilean midwives understand abortion care provision as part of midwifery care. However, midwives are also aware of the contradictions of their practice. 2)Chilean midwives agree that midwifery's scope of practice has moved from pregnancy and childbirth only to providing sexual and reproductive health care in broader terms. 3)Midwives' autonomy is restrained by the healthcare systems current structure and laws regulating healthcare. Chilean healthcare provision continues to favour medicals over non-medical professionals, creating tensions that fuel midwives' struggle for recognition and their ability to provide optimum care.

Conclusion: Examining midwives' experiences as a call for recognition could help to reduce midwives' dissatisfaction and secure better future access to sexual and reproductive healthcare in Chile.

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### Definition of the staffing standard of the family or community nurse

Domenico Mantoan<sup>1</sup>, Maddalena Iodice<sup>1</sup>, Marica Scotellaro<sup>1</sup>, Lorena Martini<sup>1</sup>, Alice Borghini<sup>1</sup>

<sup>1</sup>National Agency for Regional Health Services Via Piemonte 60, 00187 Rome Italy

Background and Objective: The Family or Community Nurse (FCN) is the health professional that ensures nursing assistance in primary care and serves as point of reference for the population. The FCN was recently introduced in the Italian National Health Service. The objective of the present study is to define FCN staffing standards for the territorial healthcare facilities, estimating the minimum number of FCNs that will be involved in Community Health Houses (CHH), Community Hospitals (CH) and Territorial Coordination Centers (TCC) in order to assure the quality of healthcare services.

Methods: To define the minimum standard of nursing staff necessary to assure the quality of healthcare services in primary care facilities throughout the Country the following parameters have been considered: services offered, operating hours and catchment area.

Results: The reference standard, according to reform, is 1 FCN every 3,000

inhabitants within the primary care facilities. The FCNs will be distributed as follows: for each CHH (1350 financed by National Recovery and Resilience Plan – NRRP) 7-11 FCNs are planned, ranges 9,450-14,850; for each TCC (600 financed by NRRP) 4-6 FCNs are planned, ranges 2,400-3,600; for each CH (400 financed by NRRP) 7-9 FCNs are planned, ranges 2,800-3,600. The total amount of FCN will range from 14,650 to 22,050.

Conclusion: The number of FCNs, that will be involved in the new territorial facilities, constitutes the standard of nursing staff that each region of the Italian territory will adopt to implement the new primary care reform and assure the quality of care services. Considering the additional number of nurses needed in the near future, our result will help the policymaker to program the training offer.

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### Integration of oral health with primary health care, an interprofessional collaborative approach in udupi district, South India

Ramprasad Vasthare<sup>1</sup>, Dr. Udupa<sup>2</sup>

<sup>1</sup>Manipal College Of Dental Sciences, Manipal, Manipal Academy Of Higher Education Manipal College Of Dental Sciences, Manipal Department Of Public Health Dentistry, Manipal College Of Dental Sciences, Manipal, Manipal Academy Of Higher Education, Manipal, Udupi District, Karnataka, India PIN – 576104 India, <sup>2</sup>District Health Office, Udupi

Background and Objective: Udupi district in Karnataka State, South India is a progressive district with a relatively high literacy rate and socioeconomic status as compared to the other districts in the country. Udupi district has a population of 1.3 million, 60 Primary Health centres, 6 Community Health Centres and 247 Health and Wellness Centres - Sub Centres.

There were no oral health screening and treatment services available at any of the Primary Health Centres run by the Government and personnel recruitment had not happened. With this background, an oral health service support was thought would be very helpful and add value.

Objective: The Objective of this study was to find the means and methods to achieve integration of oral health with Primary Health Care.

Methods: An Interprofessional team comprising of faculty of Community Medicine, Physicians, Nursing staff and Dental Screening and Treatment Teams were constituted in alliance with the District Surveillance and District Health and Family Welfare Office. Focus groups were created covering the entire District of Udupi. Weekly screening and referred treatment of vulnerable populations at identified Community Health Centres Dental treatment for identified Fishing community and Industrial workers groups. Incremental Dental and Comprehensive Dental Treatment for school students. Providing monthly screening and treatment facilities by adopting the Wellness centres. Installation of Dental Chairs at identified Primary Health Centres and making Dental Treatment accessible.

The following core areas were given due importance: Risk assessment, Oral health evaluation, Preventive intervention, Education and communication, Interprofessional Collaborative Practice.

Results: The First year results are very encouraging paving the way for enhanced integration and greater participation by the local residents of Udupi district.

Conclusion: Interprofessional Collaborative practice greatly supports the integration of oral health with primary health care.

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### Distribution and availability of medical doctors in the state of Rio de Janeiro, Brazil: The need for medical workforce regulation

Thauanne de Souza Gonçalves<sup>1</sup>, Paulo Almeida Rodrigues<sup>1</sup>, Rodrigo Alves Torres Oliveira<sup>2</sup>, Rodrigo Dias Lages<sup>3</sup>, Marcela de Souza Caldas<sup>3</sup>, Alice Medeiros Lima<sup>2</sup>, Paulo Xavier de Mendonça<sup>4</sup>, Mônica Testa Morangueira<sup>4</sup>, Ana Matheus Peres<sup>5</sup>, Lucas da Silva Cabral<sup>3</sup>

<sup>1</sup>IMS/UERJ Brazil, <sup>2</sup>COSEMS/RJ, <sup>3</sup>COSEMS/RJ Brazil, <sup>4</sup>UFRJ Brazil, <sup>5</sup>UNIFASE and COSEMS/RJ Brazil

Background and Objective: Medical doctors (md) shortage is one of the most important difficulties for ensuring access to quality health care. In Brazil, the public health system faces major challenges in retaining medical professionals, notably in specialties associated with diseases that cause more hospitalizations and deaths. The competition presented by the private health sector is one of the main factors for this. The objective of this study is to describe the distribution and availability of mds and their specialties in the state of Rio de Janeiro (srj), Brazil. Methods: Open data, from 2020, provided by the Brazilian government was used to calculate the ratio of number of doctors, doctors in public system and in strategic specialties, by inhabitants of municipalities and health regions in the srj. Also,

linear regression charts were created associating these data with the following related variables: population size, gross domestic product per capita, population coverage of private health insurance and availability of hospital beds.

Results: The distribution of mds showed great inequality. The number of professionals in many specialties proved insufficient. There are blanks of mds across the state, notably in specialties related to oncological treatment. The variable that showed highest positive linear correlation with the ratio of mds was coverage of private health insurance. Mds in Brazil use to work both in the public as well as the private sectors, the correlation suggests strong influence of the private market.

Conclusion: Improvement of universal health services depends on overcoming shortage of mds. The lack of specialists generates long queues and displacements of populations in search of services. The presence of the private sector seems to be the greatest factor to explain the availability of physicians. State regulation of medical workforce, formation of specialists, and policy incentives for professional allocation seems to be important to overcome shortcomings.

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### Continuity of care service for the benefit of difficult discharges

Michele Capraro<sup>1</sup>, Veronica Ciorba<sup>2</sup>, Michele Lagioia<sup>1</sup>

<sup>1</sup>IRCCS Istituto Clinico Humanitas Italy, <sup>2</sup>IRCCS Istituto Clinico Humanitas

Background and objective: Difficult discharges are defined as those characterized by situations of permanent or temporary disability, resulting from an acute event, which requires economic, human, and organizational resources, which go beyond the potential of the patient and his social network, requiring the involvement of integrated home care services, long-term hospital stays, nursing homes, and hospices. The need for these services is often unpredictable and the timing of access is lagged. That increases the duration of hospitalizations and reduces the optimization of beds and professionalism of acute hospitals. During the pandemic, one cause of difficult discharge was the lack of territorial availability to welcome fragile COVID+ patients, as well as the difficulty of implementing physical isolation at home in clinically stable patients.

Methods: In 2000, continuity of care service (SECC) was set up in our hospital, managed by 7 social workers, who can be activated directly by CCE by the case manager following a difficult discharge forecast. Following activation, the SECC interfaces with the patient to assess the health and social needs and, if necessary, with the territorial network of the most appropriate services, optimizing the reception times of the request.

Results: In the last two years of activity, 5555 patients have been reported and managed. Of these, integrated home care was activated for 30.7%, 19.3% were sent to rehabilitation, 18.5% were managed at home, 10.7% in RSA, 6% in hospice, 4.3% were sent to the spoke network, 1.3% in subacute cases, 8.2% of requests not handled due to death, 1.1% of covid patients were hosted in our guesthouse.

Conclusion: A better hospital-community integration, also thanks to ad hoc trained personnel to manage their interactions, including communication, can be helpful in reducing the managerial impact of difficult discharges and ensuring the appropriate use of hospital resources for acute care.

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### Exclusive versus expanded, and shared scopes of practice of medical specialties in Brazil

Sabado Girardi<sup>1</sup>, Lucas Der Maas<sup>1</sup>, Joana Cella<sup>2</sup>, Ana de Sousa van Stralen<sup>1</sup>, Jackson Araujo<sup>1</sup>, Cristiana Carvalho<sup>3</sup>, Valeria Penzin Goulart<sup>2</sup>, Leda de Oliveira<sup>2</sup>

<sup>1</sup>Federal University of Minas Gerais Brazil, <sup>2</sup>Oswaldo Cruz Foundation Brazil,

<sup>3</sup>Pontifical Catholic University of Minas Gerais Brazil

The extension of common acts and competencies shared among medical specialties can be considered a strategy to improve access to specialized care in health systems. However, initiatives in this direction run into continuous disputes over exclusive and private practices. The present study investigates the exclusive versus expanded practice around medical specialties among physicians in Brazil. It was a cross-sectional study based on data collected from official Brazilian State and medical entities records (2015 and 2021). Were carried out: (i) identification of the prevalence of physicians with expanded activities in the scope of more than one specialty and, on the contrary, exclusive to a single specialty; (ii) analysis of differences according to individual attributes and relative to the professional practice locations; and (iii) binomial logistic regression for analysis of factors associated with extended versus exclusive practice.

About 36% of Brazilian doctors had an expanded practice around medical specialties in 2021 - a small reduction compared to 37.9% in 2015. The

professionals with the greatest tendency towards expanded scopes are those who work in surgical, cardiology, and oncology specialties, associated with working in a small, remote municipality with a shortage of doctors, where professionals tend to travel to provide care, but also in environments with greater clinical diversity, such as hospitals. Exclusivity occurs more frequently in Ophthalmology, Psychiatry, Otorhinolaryngology, Dermatology, and others, and is associated with having a corresponding specialist title, being female, working in a private establishment, and working in large urban centers.

The results point to a significant extension of physicians' scope of practice between medical specialties in Brazil, despite the resistance of the model characterized by private and exclusive acts. Therefore, possibilities of migrating to a model characterized by shared acts are identified, particularly focused on competency-based training, following the trend that is currently observed in several countries.

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### The reflection of the covid-10 pandemic on physicians' work practices in Brazil

Jackson Araujo<sup>1</sup>, Samuel Gomes da Silva<sup>1</sup>, Lucas Der Maas<sup>1</sup>, Ana de Sousa van Stralen<sup>1</sup>, Joana Cella<sup>1</sup>, Ana Maciel Chagas<sup>1</sup>, Cristiana Carvalho<sup>2</sup>, Valeria Penzin Goulart<sup>3</sup>, Leda de Oliveira<sup>3</sup>, Sabado Girardi<sup>1</sup>

<sup>1</sup>Federal University of Minas Gerais Brazil, <sup>2</sup>Pontifical Catholic University of Minas Gerais Brazil, <sup>3</sup>Oswaldo Cruz Foundation Brazil

**Background and Objective:** COVID-19 was characterized as a pandemic by the world health organization in march 2020 and since then it has directly impacted the work practices of health professionals. The present study aimed to investigate aspects related to the impact of the pandemic on the employment relationship and professional practices of physicians in Brazil.

**Methods:** We carried out a descriptive exploratory cross-sectional study through an online survey with 2.541 physicians in Brazil between october 2020 and january 2021. Respondents were classified according to their primary specialties.

**Results:** For clinical, surgical, and diagnostic/therapeutic specialists, the biggest changes of the pandemic were the suspension of elective procedures and the decrease in office activity. About 20% of primary care and diagnostic/therapeutic physicians stated they had started to perform activities that were usually performed by other specialties. 35% of surgical specialists began to perform fewer types of procedures. For 63% of primary care physicians, there was no impact on their income during the pandemic. As for the surgical specialties, there was a reduction in income for almost 80% of the respondents. More than half of the physicians started to value more stability in work and social security rights. 20% of primary care physicians expanded their employment relationships, while 21% of the surgical specialties had their contracts reduced. Clinical and surgical specialists were the ones that most felt the impact of the pandemic on their services: around 20% of the physicians in both categories reduced their services. **Conclusions:** The impact of covid-19 was felt differently across all specialty groups. The social isolation recommendations, the suspension of elective procedures, and the reduction of movement in the offices were the impacts most felt by the respondents, especially among clinical, surgical, and diagnostic/therapeutic specialists.

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### Patterns of physicians' circularity in health regions in Brazil: a cluster analysis

Danielle Bivanco-Lima<sup>1</sup>, Paulo Seixas<sup>2</sup>, Danielle Bivanco-Lima<sup>3</sup>, Silvia Bertolini<sup>4</sup>, Maria Ferreira<sup>5</sup>, Edgard Fusaro<sup>6</sup>, André Gonçalves<sup>5</sup>, Cristiana Carvalho<sup>7</sup>, Sábado Girardi<sup>7</sup>, Valéria Goulart<sup>8</sup>, Leda de Oliveira<sup>8</sup>

<sup>1</sup>ObservaRH-SP/FCMSCSP/USCS Brazil, <sup>2</sup>FCMSCSP/Instituto de Saúde Brazil, <sup>3</sup>FCMSCSP, <sup>4</sup>ObservaRH-SP Brazil, <sup>5</sup>Fundação SEADE Brazil, <sup>6</sup>ObservaRH-SP, <sup>7</sup>NESCON - UFMG Brazil, <sup>8</sup>FIOCRUZ Brazil

**Background and objective:** The shortage of health professionals generates inequalities in access to healthcare and is also related to misdistribution of medical specialists, multiplicity of jobs and mobility among health regions in Brazil. The aim of this study is to describe patterns of physicians' mobility and the workforce dependence to identify mediator factors. **Methods:** The study design is a survey based on the National Registry of Healthcare Establishment (CNES), in which health services and professionals are registered. It was analyzed 19 specialties of physicians' registrations in CNES in June 2018 in 435 health regions. It was performed a factorial analysis including 38 variables, which indicated two synthesis variables: medical specialists supply and exclusive physicians working in health region (72% of variance). It was performed a cluster analysis that identified different groups among health regions.

**Results:** It was identified 5 clusters of health regions that correlate to mobility and dependence. In cluster 1 there are all metropolitan areas and greater cities, with all medical specialties and a high percentage of exclusive physicians (N=92 health regions). In cluster 2, there are regional hubs, with all medical specialties, with mixed exclusive and non-exclusive physicians (N= 145). In cluster 3, there are smaller and midsized cities with shortage of medical specialties with high rate of non-exclusive doctors, with high dependence from cluster 1 regions (N=119). In cluster 4, there are smaller cities with shortage of medical specialties, with mixed frequencies of exclusive and non-exclusive physicians (N=35), and higher rates of primary care physicians. In cluster 5, there is the lowest rate of specialists with greater predominance of primary care and exclusive physicians (N=44).

**Conclusion:** Different patterns of mobility were identified, related to specific healthcare structure and socioeconomic characteristics. Those findings contribute to guide directed human resources redistributive strategies for each cluster of health regions.

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### Public health workforce capacities and the challenges for preparedness

Ricardo Mexia<sup>1</sup>, Marta Barreto<sup>1</sup>, Liina Voutilainen<sup>2</sup>, Erika Lindh<sup>2</sup>, Laura Kalin-Mänttari<sup>2</sup>, Máire Connolly<sup>3</sup>

<sup>1</sup>Epidemiology Department, National Health Institute Doutor Ricardo Jorge (INSA), Lisboa, Portugal, <sup>2</sup>Department of Health Security, Finnish Institute for Health and Welfare, Helsinki, Finland, <sup>3</sup>School of Medicine, University of Galway, Galway, Ireland

**Background and objective:** The COVID-19 pandemic has exposed the threat posed by communicable disease outbreaks and the importance of the public health workforce in responding to such outbreaks.

Therefore, there is a need to identify key skills, competencies and training of relevant personnel, considering also personal impacts of public health emergencies and developing a path to a more resilient public health system response.

This study, part of PANDEM2 Project, aims at reviewing methodologies and tools already in use to measure workforce capacity and training needs to prevent, detect and respond to infectious disease threats.

**Methods:** A scoping review was developed, including searching several databases: PubMed, Scopus, Web of Science, among others. Documents of grey literature were also included, from several different sources: WHO, CDC, ECDC, among others. Search words included, but not limited to, "pandemic", "preparedness", "response", "workforce" and "tools", for articles published in English, between 2008 and 2022.

**Results:** The review highlights the difficulties in defining the public health workforce and workforce diversity across countries and systems.

The review identified tools measuring workforce capacity, as well as gaps and challenges of the public health system response, which was already facing difficulties before the COVID-19 pandemic.

Many countries do not have a dedicated public health workforce policy or plan.

**Conclusion:** To strengthen public health and emergency preparedness and response, it is fundamental to define and monitor the public health workforce and its capacity.

Several tools were identified, as well as Public Health work force needs and training priorities for response.

The information gathered is key for the future steps in classifying the public health workforce, as designed by the roadmaps and other resources presented by ECDC, WHO and other organizations.

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### Supporting the ukrainian health professionals - war refugees - to study czech language and czech health system in one place

Alena Petrakova<sup>1</sup>, Alena Petrakova<sup>1</sup>, Nora Veselá<sup>2</sup>

<sup>1</sup>Institute for Postgraduate Medical Education Czech Republic, <sup>2</sup>Institute for Postgraduate Medical Education

**Background:** The Institute for Postgraduate Medical Education (IPVZ) is responsible for a postgraduate education of health professionals, in particular of physicians, pharmacists and dentists. The Institute on behalf of the Ministry of Health shall prepare and organize the approbation examination of physicians, dentists and pharmacists who as foreign nationals have obtained medical qualification outside the European Union and wish to practice their profession in the Czech Republic or the European Union. The School of Public Health (SPH) is an integral part of this Institute (IPVZ) and is responsible for public health training for all health professionals. Since March 2022, the School of Public Health works in close

collaboration with the Institute's leadership on preparation and implementation of various support activities for the Ukrainian health professionals - war refugees. Objectives: To respond to the needs of Ukrainian war refugees and to support in particular those health professionals who plan to stay in the Czech Republic, the IPVZ leadership in close collaboration with the School of Public Health, initiated the project to organize the Czech language courses, led by the native Ukrainian speaking tutors, and to develop the cycle of short bilingual videos - webcasts - supplemented by a translation of the Czech spoken word into the Ukrainian language, to introduce Czech health system in summary, available free of charge on IPVZ website at <https://ua.ipvz.cz> [1].

Results: Starting on 2 May 2022, implementation of language courses in both presence and online forms are in progress for Ukrainian health professionals - war refugees. To support their knowledge of the Czech health system, the cycle of bilingual webcasts is under continuing development, all webcasts are available at <https://ua.ipvz.cz> [2].

Conclusions: Czech language classes and cycle of bilingual videos as introduction to the Czech health system will support Ukrainian health professionals to prepare for their approbation exams. Links: [1] <https://ua.ipvz.cz> [2] <https://ua.ipvz.cz>

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### New trends of practice arrangement among specialist doctors in Brazil

Sabado Girardi<sup>1</sup>, Lucas Wan Der Maas<sup>2</sup>, Joana Cella<sup>1</sup>, Ana van Stralen<sup>1</sup>, Cristiana Carvalho<sup>2</sup>

<sup>1</sup>Federal University of Minas Gerais Brazil, <sup>2</sup>Federal University of Minas Gerais

Background and purpose: Physicians practice arrangements are defined by a combination of structural and relational attributes that characterize the ways and conditions in which medical work is performed and remunerated. The objective of this study is to describe changes in practice arrangements of medical specialties in Brazil between 2010 and 2021.

Method: Practice arrangements include: (i) type of practice; ii) practice ownership structure iii) employment relationship, iv) practice size, defined by the number of physicians working in the establishment and how it is remunerated. Data were collected from the Ministry of Health of Brazil referring to the universe of physicians working in health establishments in the country in the period from 2010 to 2021/2022.

Results: There is a trend to increase practice in solo practice and in small single-specialty practice groups as well as in medium and large multi-specialty groups. The precariousness of work also increases and appears in different ways: through the increase in typical outsourcing, the use of employing agencies such as social organizations, by the use of fictitious firms constituted as legal entities to escape the tax and social protection obligations of the typical employment relationship; by the increase in formal temporary employment contracts and by the expansion of the use of work by residents in hospitals as well as self-employed workers in public outpatient clinics. There is a deepening of the trends observed in the last years of the series as a possible impact of the COVID-19 pandemic.

Conclusions: During the last decade, especially in recent years, with the COVID-19 pandemic, there was a trend to expand the precariousness of work and unstable flexible practice arrangements among specialist doctors in Brazil

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### Interprofessional collaboration and the law: the importance of interdisciplinary research approach

Marie-Andree Girard<sup>1</sup>

<sup>1</sup>Universite de Montreal Canada

Background: Interprofessional collaboration (IPC) is central to effective care around the globe. This practice is structured by an array of laws, regulations and policies but the literature on their impact on IPC is scarce. Using the managerialization of law theory as pillar, a novel mixed-method approach was design.

Methods: The study of the legal framework of IPC must be seen in a global way. A design was built using a convergent parallel mixed-method approach. One arm was a legal analysis of all the elements coming from all relevant legal field and the second arm was a survey to clinicians to complete perceptions, knowledge and prioritization of law in the clinicians themselves.

Results: Analyzing each fragment in isolation only gives an incomplete portrait due to the interrelation between several elements. The legal knowledge and perception of the law of health professionals are quite different from those of lawyers. Their perception of the increase in responsibility when working in a team, of the standard of practice which is determined by the usual continuum

of care of their institution, of the team liability and their hierarchical vision are indicators of their "with the law" position. This attitude is the result of several interrelated elements: an intrinsic ignorance of the principles of liability and case law, an implicit bias in the acquisition of this knowledge from the main sources of knowledge and infrequent interaction with the legal system that is limited to conflict and adversarial situations.

Conclusion: This study potentially can impact the outcome of any legal change. A single change in the law will only have limited effects if it is not accompanied by teaching of the principles of law and a thorough examination of the clinical practice legal framework.

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### The institutional support and its impacts on healthworkers' groups in two Brazilian public hospitals

Denise Diniz<sup>1</sup>, Eliane Teixeira<sup>1</sup>

<sup>1</sup>National School of Public Health Sérgio Arouca (ENSP/FIOCRUZ), Brazil

Background and Objective: The institutional support work in the SOS Emergencies Program (Ministry of Health) aimed to qualify the public hospitals' gateway. One of the strategies 'support was to offer a care management's training course to healthworkers in the emergency service (Health System Emergency Management Course - GES-SUS). Thus, the present study intends to present an experience report about dual role: institutional support and learning facilitator, in emergency professionals groups of two public hospitals (Ha and Hb, fictitious names).

Methods: These experiences have happened from 2011 to 2016 and were analysed based on supporters-facilitators workes records in their respective diaries. Some fundamental concepts were used like "Paideia support", "Extended clinic" and "professional training" (Campos, 2000, 2013); "institutional imaginary", "groups bonds" (Enriquez, 1994); "intermediate formations" (Kaës, 2001, 2011), "cooperation" and "practical intelligence" (Dejours, 2004).

Results: SOS Emergencies Program set up collegiate groups that combined to GES-SUS could promote local interventions. However, the Ha team did not receive support from hospital management, had difficulty to see themselves as a group and always questioned the transformative potential of the program. While the Hb team had an intense support from management hospital, took advantage of the course to create better strategies to apply in hospital, strengthened social bonds around a common project as well as used this opportunity to improve hospital care.

Conclusions: Therefore, although not all Results have responded to Ministry of Health expectations, both hospital teams reflected the respective institutional supporters autonomy, the groups dynamics, the type of leadership support and the teams desire to change the reality of the service.

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### Quantitative research on the structural empowerment of nurses and the emotional intelligence of their managers in a Moroccan tertiary hospital

Sofia Yahyaoui<sup>1</sup>, Zeggwagh ali<sup>2</sup>, Ahmed Idrissi<sup>3</sup>

<sup>1</sup>Faculté de Médecine et de Pharmacie, Université Mohammed V de Rabat,

Morocco, <sup>2</sup>Faculté de Médecine et de Pharmacie de Rabat-Université

Mohammed V de Rabat, Morocco, <sup>3</sup>Ecole Nationale De Santé Publique,

Morocco

Background and Objective: The link linking emotional intelligence to the performance of healthcare teams is based on the improvement of elements of structural empowerment or accountability. The aim of the study was to measure the structural empowerment (SE) of nurses and the emotional intelligence (EI) of their managers in a Moroccan tertiary hospital and examine the link between the variables under study. Methods: Descriptive and correlational study, carried out between June and July 2019, with 118 nurses and 39 hospital managers, including 19 heads of clinical departments and 20 head nurses, using the Conditions for work effectiveness questionnaire-II (CWEQ II survey) and the self-scale reported emotional intelligence (SSREI).

Results: The SE of nurses was moderate (11,5 ±3.2). The EI of medical managers was found to be highest (137.1±16.5) compared to that of nursing managers (121±29). A positive correlation was established between these variables among medical managers (r = 0.310; p <0.01). Conclusions: The study opens up research perspectives on the development of SE and EI in hospitals.

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### Relationship between working conditions and incidence of Arterial

### Hypertension in ethylene production workers

Vanya Nedkova-Milanova<sup>1</sup>, Martina Narduli<sup>2</sup>, Mariyana Stoynovska<sup>3</sup>, Radka Kirilova<sup>4</sup>

<sup>1</sup>Department of General Medicine, Medical University, Pleven, Bulgaria,

<sup>2</sup>Faculty of Medicine, Medical University, Pleven, Bulgaria, <sup>3</sup>Department of Hygiene, Medical Ecology, Occupational Diseases and Disaster Medicine, Medical University of Pleven, Pleven, Bulgaria, <sup>4</sup>Department of Physiology and Pathophysiology, Medical University of Sofia, Sofia, Bulgaria

**Background and Objective:** Occupational safety and health management provides a comprehensive framework for public health leadership. Ethylene belongs to the unsaturated hydrocarbons (UH) and is the most important starting substance in chemical industry. Almost a third of all organic products are obtained from it, used to obtain polyethylene (50%), ethylene oxide (20%), vinyl chloride (15%), styrene (5%), also ethanol, acetaldehyde, freons, vinyl acetate, propanoic acid. As substances with a narcotic effect UH, have toxic effect on the cardiovascular system. THE Objective of the study was to monitor the health status of workers in ethylene production.

**Methods:** Periodic prophylactic screening of workers in the chemical industry is a condition for early diagnosis of pathological deviations related to the impact of the working environment. 73 ethylene production workers (51 men, 22 women) were studied, distributed according to the degree of their occupational risk, age, gender. The control group is 51 persons without professional contact with chemical substances.

**Results:** Elevated blood pressure was found in 32.2% of exposed workers and 14.5% of controls. The exposure-effect and exposure-response relationships between the degree of professional exposure and the incidence of arterial hypertension are manifested. The disease is recognized with an increase in age and specialization of work experience. There is a significant difference between female workers with more than 10 years of work experience (44.4%) compared to controls (17.2%). Data from study that has been carried out has shown that there is an increased risk.

**Conclusions:** Unsaturated hydrocarbons contained in the air of the working environment are a risk factor for the development of cardiovascular pathology. There should be widespread use of disease management programs for chemical workers to improve the efficiency, effectiveness and equity of care. The management of health and safety at work provide an overarching framework for the management of public health.

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### Cultural aspects and the work of community health workers: community values and health services

Marciglei Brito Morais<sup>1</sup>, Luis Cosme Silva Santos<sup>1</sup>

<sup>1</sup>Federal University of Bahia (UFBA), Brazilian Association of Public Health/ Scholarship by Coordination for the Improvement of Higher Education Personnel (CAPES), Brazil

**Background and Objective:** The study analyzes how cultural aspects influence the work process of the Community Health workers (CHWs) in the service daily life, considering culture as a factor that conform the profile of care provided the population.

**Methods:** This is a qualitative research with a descriptive approach, carried out in a Family Health Unit in the city of Vitória da Conquista-Bahia, Brazil, with the 10 CHWs participation from teams linked to the Family Health Strategy (FHS). The construction of data took place through the focus group technique. The data were analyzed using the hermeneutic-dialectic technique. We organize into three analytical categories: cultural aspects: contributions to the quality of home visits; cultural boundaries: constituting barriers in the quality of assistance in the daily service; and the interweaving between the work of the CHWs and the health management model.

**Results:** The FHS seeks to promote the life quality of the Brazilian population, intervening in the factors that put health at risk, in the prevention and health promotion perspective, with an axis of reorientation of the care model based on the principles of universality, equity and integrality, structuring the Unified Health System. In the CHWs perception, the cultural aspects present in the work process interfere, enhancing or weakening, the quality of care performed in the daily service. Health workers, users and their families, build webs of relationships based on social interactions, forming symbolic structures, achieved by living in the territory and by establishing bonds.

**Conclusions:** We recommend as essential the appropriation of a cultural system for effective assistance in the territory according to the real health needs of the population. Cultural aspects are reference points for intervention at home and in the community, influencing health care practices and impacting on the

establishment of a link between user-CHWs-health service-community.

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### Strengthening public health functions in azerbaijan through community oriented primary care training

Hande Harmanci<sup>1</sup>, Belgin Unal<sup>2</sup>, Bulent Kilic<sup>3</sup>, Mestan Emek<sup>3</sup>, Oyku Turunc<sup>4</sup>, Kevser Vatanser<sup>5</sup>, Sevgi Turan<sup>1</sup>, Halil Durak<sup>6</sup>

<sup>1</sup>WHO Country Office of Azerbaijan 62 Uzeyir Hajibeyov str. Marine Plaza, 5th floor. Baku AZ-100 Azerbaijan, <sup>2</sup>WHO Country Office of Azerbaijan Dokuz Eylul University Faculty of Medicine Department Of Public Health 62 Uzeyir Hajibeyov str. Marine Plaza, 5th floor. Baku AZ-100 Azerbaijan, <sup>3</sup>Dokuz Eylul University of izmir Dokuz Eylul University Faculty of Medicine Department Of Public Health, Inciralti, Izmir, Turkiye Turkey, <sup>4</sup>Akdeniz University Faculty of Medicine Dept of Public Health Akdeniz University of Antalya Akdeniz University Faculty of Medicine Dept of Public Health, Antalya Turkey, <sup>5</sup>Mardin Health Authority, MoH Turkiye Turkey, <sup>6</sup>WHO Country Office of Azerbaijan 62 Uzeyir Hajibeyov str. Marine Plaza, 5th floor. Baku AZ-100 Turkey

**Background and Aim:** WHO Country Office in Azerbaijan in collaboration with Ministry of Health, developed a general strategy to strengthen the public health policy framework, service delivery and public health capacity in Azerbaijan. Community oriented primary care (COPC) is a strategy that elements of primary health care and public health are systematically developed and brought together in a coordinated practice. The aim of this work is to present the use of COPC training as a starting point for public health capacity development in Azerbaijan.

**Methods and Results:** A public health capacity group was selected from the applicants to an advert, by a panel of representatives from the MoH, TABIB, Mandatory Health Insurance Agency, and WHO-Azerbaijan Office. A 5-day face-to-face COPC training was organized in Baku on 14-18 November 2022. The training included one field visit for observing the community, 7 interactive lectures on principles of COPC, 3 group works on practicing the skills of COPC and 3 group presentations and discussions.

The training was evaluated with a self-evaluation form that the participants scored their competency on community characterization, interpretation of health indicators, prioritization, detailed assessment, intervention planning and evaluation using 1 to 10 Likert score, anonymously at the beginning and end of the training. Wilcoxon test was used for statistical analysis.

**Results:** In total 20 participants took part in the training. For all six items of the self-evaluation form, the scores given at the end of the training was higher than the initial scores ( $p \leq 0.01$  for all six items).

**Conclusion:** COPC training is a useful method in teaching basic skills needed to address the health problems of a defined community and gives participants to use their existing knowledge and experience together with the new knowledge and skills.

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### Strengthening advanced practice nursing and collaboration in PHC in Brazil and Germany

Kerstin Hämel<sup>1</sup>, Marcus Heumann<sup>1</sup>, Beatriz Toso<sup>2</sup>, Daria Bula<sup>1</sup>, Elyne Engstrom<sup>3</sup>, Maria Rizzotto<sup>4</sup>, Ligia Giovannella<sup>3</sup>

<sup>1</sup>School of Public Health, Bielefeld University, Bielefeld, Germany, <sup>2</sup>Center of Biological and Health Sciences, Western Paraná State University, Cascavel, Brazil, <sup>3</sup>National School of Public Health, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil, <sup>4</sup>Center of Biological and Health Sciences, Western Paraná State University, Brazil

Brief outline of the overall workshop: Strong and robust primary health care (PHC) models are able to address the majority of population health needs close to people's homes. Evidence shows that improved collaborative practices among PHC professionals, in particular, effectively contribute to meet complex needs of the increasing number of people with chronic conditions and vulnerable groups while ensuring continuous care. In the last decade, strengthening the nursing profession as part of collaborative interprofessional PHC teams has been a promising approach to further evolve PHC models. Accordingly, PHC nurses' responsibilities and autonomy have been expanded in many countries. However, the development of Advanced Practice Nursing (APN) roles in PHC is pacing differently across different countries. In the focus of this workshop are two countries - Germany and Brazil - which have not yet implemented APN in primary care but are discussing and developing visions for APN roles. Both countries differ concerning resources, the organization of PHC, and the role of the nursing profession. However, similarities can be observed considering the vision of APN in PHC: Promising approaches in both countries build on the idea to

reach beyond the sheer extension of individual care and advanced clinical tasks. They focus on strengthening family- and community-oriented PHC approaches, e.g. by conducting home visits and collective health promotion activities. In this workshop, we present Results of a study analyzing strengths, possibilities, and obstacles of APN implementation, and ultimately, new models of interprofessional collaboration in PHC in Brazil and Germany. Workshop participants are invited to discuss with us about the possibilities, chances, and challenges for both countries. In addition to that the Discussion Aims at identifying new arrangements of APN in PHC in the two countries which can be indicators for further development in other countries. Specific Aims and Objectives: The workshop presents results of an exploratory comparative study comprising of a document and literature search and focus groups with stakeholders in Brazil and Germany. Building up on the study results, workshop participants will learn and discuss different perspectives for APN development and collaboration in PHC and identify future research needs. The key questions that the workshop will address: What are strengths, possibilities, and obstacles of APN implementation, and consequently, new models of interprofessional collaboration in PHC in Brazil and Germany? What conditions enable or hinder APN development in Brazil and Germany? How can APN roles contribute to a more community-oriented PHC? Which research is needed in the context of APN development in PHC?

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### Emerging young health leaders and their roles in tackling global public health challenges

Atiya Mosam<sup>1</sup>, Jaifred Lopez<sup>2</sup>, Biljana Gjonneska<sup>3</sup>, Juan Nuñez-Enriquez<sup>4</sup>, Suraj Bhattarai<sup>5</sup>, Omary Chillo<sup>6</sup>, Dipendra Khatiwada<sup>5</sup>, Duha Shellah<sup>7</sup>  
<sup>1</sup>Young Physicians Leaders, Academy of Science of South Africa, South Africa, <sup>2</sup>Young Physicians Leaders, National Academy of Science and Technology - Philippines, <sup>3</sup>Young Physicians Leaders, Macedonian Academy of Sciences and Arts, MASA, Macedonia (Republic of), <sup>4</sup>Young Physicians Leaders, Mexican Academy of Sciences and National Academy of Medicine, Mexico, <sup>5</sup>Young Physicians Leaders, Nepal Academy of Science and Technology (NAST), Nepal, <sup>6</sup>Young Physicians Leaders, Tanzania Academy of Sciences-TAAS, Tanzania, <sup>7</sup>Young Physicians Leaders, Palestine Academy for Science and Technology, Palestinian Territory, Occupied

Effective leadership emerged as one of the most important aspects of the recent public health crisis during the COVID-19 pandemic. Leadership training programs, such as the Young Physician Leaders (YPL), aim to provide and build important skills for emerging physician leaders in the fields of research, policy and practice. YPL also aims to address the need for global health leadership by fostering engagement with global peers and experienced mentors. Launched through a collaboration of the Interacademy Partnership (IAP) medical panel and the M8 alliance, YPL presents an important way forward in ensuring the relevance of medical and health professional leadership training amid an evolving health landscape. YPL also catalyzes the representation of young scientists in inter/national academies of science. In 2021, the YPL programs marked its 10th year anniversary including more than 200 representatives with diverse backgrounds (in terms of education, specialization and geographic representation). Such diversity is reflected in the YPL alumni steering committee (YPL-ASC) aiming to take forward the YPL mission and disperse its key learnings via increased networking and engagement among alumni cohorts.

Global health issues, including the ongoing pandemic, have set the stage for the YPL program concepts and skills to be put to the test, as YPL alumni worldwide assume leadership in biomedical and public health research and practice. The YPL-ASC was recently awarded a grant to conduct profiling of YPL alumni and their shared traits, styles, ambitions, challenges, with an aim to use these insights to broaden the discussion on emerging leadership.

In understanding the impact of leadership programs such as the YPL as well as how to better utilise these programs for effective leadership, we propose the above-titled session to address the following questions:

What are the common profiles and shared experiences that define emerging health leaders around the world, regardless of their race, gender, region, origin, education and other socio-demographic variables?

Is emerging health leadership a dynamic construct?

What can we do, to effectively tackle this issue and improve leadership capacities of young public health professionals?

This will be addressed through the following activities:

Question 1 will be addressed through - A brief overview of the initial results from our IAP supported project, exploring the personality traits, styles, roles, responsibilities and challenges of YPLS and insights drawn.

Question 2 will be addressed through - An interactive survey of the workshop

participants allowing them to understand their own leadership traits and styles and contrasting this to the findings highlighted in activity a.

Question 3 will be addressed through - A panel discussion with distinguished young experts and leaders, offering insights and drawing conclusions on the results, as well as sharing past experiences and lessons learned and a Q&A session to encourage interactions among session attendees, panelists, and YPL-ASC. The panelists will be drawn from the IAP membership, ensuring representation that is broader than medical and health sciences.

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### The public health leadership coalition: a valuable experience during hard times

Louis De Souza<sup>1</sup>, Alex Jadad<sup>2</sup>, Jean Okwo-Bele<sup>3</sup>, Rocio Saenz<sup>4</sup>, Walter Ricciardi<sup>5</sup>, Bettina Borisch<sup>6</sup>, Marta Lomazzi<sup>6</sup>

<sup>1</sup>WFPHA, Brazil, <sup>2</sup>Public Health, Canada, <sup>3</sup>Public Health Africa, Democratic Republic of Congo, <sup>4</sup>Public Health Costa Rica, Costa Rica, <sup>5</sup>WFPHA, Italy, <sup>6</sup>WFPHA, Switzerland

Brief Outline of the Overall Workshop

Since 2020 our world is living unprecedented challenges to public health: a strong leadership in public health is an urgency. In this scenario, several leaders formed the public health coalition within the World Federation of Public Health Association (WFPHA). The Public Health Leadership Coalition (PHLC) brings together world-class leaders to support decision makers by providing the most updated and robust scientific evidence from the public health field in order to build a common front in response to the pandemic and future global issues and to create a more equitable and sustainable approach to health for all. Now more than ever before it is important to create a bridge between the world of researchers and scientists and the world of decision-makers, at each level.

The speakers and the chairs will discuss about the mission, the activities and the goal achieved by the Coalition during the last 3 years.

Specific AIMS/Objectives and Component Parts

The aim of workshop will be to analyze the experience, the activities and the outcomes achieved by the Coalition. Since the beginning of the COVID-19 pandemic, more than 20 public health leaders from all continents took part to several meetings, supported by the Executive Director and Manager, Administrative and Communication Office of the WFPHA and by a team of researcher of Leadership Research Center of Università Cattolica del Sacro Cuore in Rome. They produced documents and papers that were shared with scientific community and citizens and were spread through social media and the official website of the WFPHA also. As an example, since the PH leaders strongly believe that global challenges can only be overcome through global efforts and the adoption of appropriate global approaches to address health threats at the animal, human, and environmental interfaces, in December 2021 a Call to Action was released, published in English language and then translated in Spanish, French, Italian and Arabic.

The Key Questions that the Workshop Will Address

The specific key questions addressed by the workshop are focused on analyzing the best ways to afford and guide with the fair leadership the decision-making process in the health care sector during pandemics or other challenge for humans and for the planet. Indeed, every initiative undertaken by the members of the Coalition during the last 3 years, was committed to provide scientific advice and region-specific solutions to enable decision makers to implement the best evidence-based policies in public health and to make the right choice for the health and wealth of each country. The PHLC consolidates the WFPHA commitment to advocating for Global Public Health by recollecting and sharing best practices and accountable data, performing effective advocacy, and facilitating a right governance for the health sector.

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### Leading out of the turmoil - perspectives from early career public health professionals as future leaders on the vision of public health for the 22nd century

Fatai Ogunlayi<sup>1</sup>, Farhang Tahzib<sup>2</sup>, Mehreen Hunter<sup>3</sup>, Monica Brinzac<sup>4</sup>, Tara Chen<sup>5</sup>, Steven Bow<sup>6</sup>, Stefan Buttigieg<sup>7</sup>, Fatai Ogunlayi<sup>1</sup>

<sup>1</sup>UK Faculty of Public Health and UK Health Security Agency United Kingdom, <sup>2</sup>UK Faculty of Public Health, United Kingdom, <sup>3</sup>University of Cape Town, South Africa, <sup>4</sup>European Public Health Association Netherlands, <sup>5</sup>Association of School of Public Health in the European Region (ASPHER) Belgium, <sup>6</sup>University College London (UCL) United Kingdom, <sup>7</sup>World Federation of Public Health Association (WFPHA) Switzerland

Brief outline of workshop: I didnt define myself for myself, I would be crunched

into other peoples fantasies for me and eaten alive.” Audre Lorde In alignment with the vision of the main conference, seeking to build a sustainable and equitable future, this workshop will provide a platform for early career public health professionals (ECPs) as future leaders in public health. These future leaders will reflect on globally relevant challenges and discuss the need for responsive and adaptive models to address these current and emerging health threats. The recent pandemic has propelled public health into the limelight and reminded the world of the important role that public health professionals play in population health. However, the unintended consequence of this remains the risk of portraying public health as simply a specialty concerned with infectious diseases or pandemics. Some of the challenges facing public health, presently and into the future, include non-communicable diseases, climate change, air pollution, digital transformation and other social determinants of health. Public health core values centre around health equity and social justice which is rooted in the understanding that optimal health is predicated on the eradication of issues such as racism, conflict and displacement. The future of public health needs to be bold and embrace this fundamental part of its identity. Whilst it is to be welcomed that, as part of ‘building-back-better’ initiatives post COVID-19, public health leaders are engaging in discussions about the future of public health and importance of strengthened public health systems, these conversations are often lacking the voice of ECPs. It is important to engage these future leaders in discussions that will inform future public health structures. If we are serious about building a sustainable and fair future, it will require the energy and determination of ECPs at the helm. This is an opportunity for future leaders to lead the discourse that will inform future direction and set the vision of public health for the 22nd century.

**Specific aims/objectives:** The session will: \* Explore reflections among panellists and audience on the challenges/opportunities of global public health \* Provide panellists and audience opportunity to share visions of how future public health needs to be shaped to meet those challenges \* Generate an output that will form the basis of an editorial article for publication.

**Component parts:** After playing an introductory “vox pop” from a broad range of ECPs, the expert panel of ECPs will share their insights on challenges/opportunities facing public health today and in the future. Audience will also be invited to participate via Mentimeter/Q&A to share their views on the subject. There will be discussion on the case for a multidisciplinary, value-driven public health systems that recognise global nature of the challenges facing public health. The key questions the workshop will address

- \* What are the perspectives of ECPs on the public health challenges of the future?
- \* How should the public health systems be shaped to meet those challenges? \*
- How do we empower ECPs to take ownership in designing solutions to address future public health challenges?

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### Industry responses to the work of those involved in exposing the harmful practices of corporations

Mélissa Mialon<sup>1</sup>, Phil Chamberlain<sup>2</sup>, Karen Evans-Reeves<sup>2</sup>, Nino Paichadze<sup>3</sup>, Anna Gilmore<sup>2</sup>, Britta Matthes<sup>2</sup>

<sup>1</sup>Trinity College Dublin, Ireland, <sup>2</sup>University of Bath, United Kingdom, <sup>3</sup>George Washington University, United States

Understanding and addressing harmful corporate practices is a key building block in protecting and promoting public health internationally. Corporations are however aggressive and inventive in their responses to health professionals, civil society organizations, scholars, journalists, and government officials, whose work focuses on highlighting these corporate practices. The tobacco industry, for example, monitored and spied on the activities of public health professionals, used misleading criticism of their work, and attacked their reputation and motivation. With the present project, our Aims were i) to map industry responses to the work of health professionals, civil society organisations, and scholars involved in identifying, monitoring and raising awareness about the harmful practices of corporations, across the globe, ii) to identify solutions to address these responses and better protect public health professionals, and, ultimately, public health policy. Our project comprised three interrelated work packages. The first (WP1) involved a scoping review of: a) industry responses to the work of those exposing their harmful practices; b) public health community’s responses to these industry activities. The second (WP2) comprised an online survey sent to approximately 50 individuals who, through their profession, expose the harmful practices of corporations to generate new and up-to-date data on the form and trends in industry responses to health activities. We focused on the perceptions and experiences of the survey participants. Thirdly, we conducted interviews (WP3) aimed at identifying solutions to face these responses from the industry. Ethics approval was granted from the ethics committee of Trinity Business School,

Trinity College Dublin, Ireland.

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### The impact of care continuity on health care use and costs: evidence from movers

Anna Nicolet<sup>1</sup>

<sup>1</sup>University of Lausanne, Switzerland

**Background/Objective:** As healthcare expenditures continue to increase worldwide, strategies are needed to ensure healthcare is delivered in an efficient and sustainable way. One of the prominent strategies based on a construct of primary care, is continuity of care (COC) reflecting long-term patient-provider relationships, and greater knowledge of patient’s medical conditions. In this study, we exploit rich cAims data to study the causal effect of longitudinal COC on healthcare costs by analyzing the effect of moving to a region with better COC. **Methods:** We used data on 240’000 insured individuals aged 50+ in 2015-2018, obtained from one of the largest Swiss health insurance company. We calculated Bice-Boxerman index of COC in primary care based on visits to the general practitioners (COC GP). To identify the causal effect of COC on costs, we estimate individual fixed-effects models and exploit the fact that some individuals move across regions.

**Results:** The COC GP varied from 0.86 to 0.92, while mean total costs varied from 9768 CHF to 8,129 CHF (highest vs. lowest COC tercile). The model Results, controlling for 10-year age bins, calendar year fixed effects, morbidity status, deductibles level, and type of insurance model showed that the move to a region with higher COC GP Resulted in decrease of 1’817 CHF in total, 1,059 CHF in ambulatory, 409 CHF in inpatient, and 395 CHF in costs of medicaments.

**Conclusions:** Better COC Results in lower cost– this is an especially important finding in a highly fragmented health care systems like Switzerland, and in view of upcoming policy Discussions to implement generalized gatekeeping in the country. As COC is a multifaceted construct, future research and policy-makers should obtain additional evidence on informational COC (e.g., electronic health records promotion and effective management). The mechanisms behind the effects identified in this work should also be further investigated.

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### More for less: why some primary health care centers in Addis Ababa are more efficient than others

Serkalem Serkalem<sup>1</sup>

<sup>1</sup>Ethiopian Public Health Officers Association, Addis Ababa, Ethiopia

**Background:** Globally, it is estimated that 20% to 40% of all resources spent on health are wasted. Evidence from the African region shows a similar trend wherein limited health sector resources compounded with weak health systems and high disease burden impede effective health service delivery in the continent. The ongoing health sector transformation programme of Ethiopia places considerable interest and focus on improving the performance and efficiency of the health system. **Design and Methods:** An explanatory sequential mixed methods design was utilized to measure the technical efficiency scores of 94 primary health care facilities and explore the factors that lead to improved performance levels among efficient health care centres. Institutional survey conducted to collect health service input and output data for one fiscal year from July 2018 to 30 June 2019. The Results utilized to pick the best performing health centres. Followed by a qualitative study to explore why and how the high performers stand out and identify key drivers of efficiency.

**Results:** The Results showed that out of the ninety-one (91) healthcare centres included in the data envelopment analysis, four (4%) are found to be technically efficient. There is huge variability in efficiency levels of 91 healthcare centres the average tuned at 69 percent. Scale inefficiency was found to be the major source of inefficiency followed by pure technical inefficiency. This study evidenced that at the Addis Ababa level 15% of the healthcare budget can be saved if all healthcare centres achieve the best performance efficiency. The defining features that drive efficiency in three best performing health centres are multifaceted in nature.

**Conclusions:** Technical efficiency measurement sheds light on the possibility of maximising utilisation of limited primary healthcare centre resources. The study highlighted the individual staff, the team, and the institution are fundamentally inseparable components of efficiency drivers.

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### Governing the commercial determinants of health: the role of non-government organisations

Sharon Friel<sup>1</sup>, Belinda Townsend<sup>1</sup>, Rob Ralston<sup>2</sup>, Jeff Collin<sup>2</sup>, Fran Baum<sup>3</sup>, Katherine Cullerton<sup>4</sup>, Rodney Holmes<sup>5</sup>, Jane Martin<sup>6</sup>, Liz Arnanz<sup>7</sup>  
<sup>1</sup>Australian National University, Australia, <sup>2</sup>Edinburgh University, United Kingdom, <sup>3</sup>Adelaide University, Australia, <sup>4</sup>University of Queensland, Australia, <sup>5</sup>FARE, Australia, <sup>6</sup>Obesity Policy Coalition, Australia, <sup>7</sup>NCDAlliance, Switzerland

**Background and objectives:** There is accumulating evidence of the ways in which commercial entities influence population behaviours, daily living conditions, and the policy and regulatory environments in ways that affect human health. While non-government organisations are increasingly involved in the governance of the commercial determinants of health, the strategies used by them to effectively influence industry practices for public health purposes has been underexplored. The objective of the research presented here is to identify which non-government organizations are involved in the governance of the food and alcohol industry in Australia and globally, and to understand the different types of direct and indirect strategies used by non-government organizations to influence commercial actors, and the conditions that facilitate or constrain their effectiveness at positively influencing commercial practices.

**Methods:** We undertook a descriptive analysis of NGOs in Australia and globally, identified from an online search based on the typology we developed of type, issue area and governance function. In addition, a narrative review of the political science, policy studies, law, economics and public health literature identified the type of strategies used by non-government organizations to influence the practices of various industries relevant to public health.

**Conclusions:** Non-government organizations are involved in policy agenda setting, capacity building, program implementation and monitoring and accountability governance functions. The literature identified the use of a wide range of strategies to attempt to influence commercial practices across extractive, tobacco, alcohol, food, infant formula, and medicines industries. We present these strategies in a matrix according to inside and outside tactics, targeting either industry directly or targeting government and/or intergovernmental organizations.

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### Addressing the corporate determinants of ill-health and health inequity: a scoping review and proposed solutions-oriented research agenda

Benjamin Wood<sup>1</sup>, Jennifer Lacy-Nichols<sup>2</sup>, Kate Sievert<sup>3</sup>, Ella Robinson<sup>3</sup>, Gary Sacks<sup>3</sup>

<sup>1</sup>Global Centre for Preventive Health and Nutrition, Institute for Health Transformation, Deakin University, Burwood, Victoria, Australia, <sup>2</sup>Centre for Health Policy, School of Population and Global Health, The University of Melbourne, Parkville, Australia, <sup>3</sup>Global Centre for Preventive Health and Nutrition, Institute for Health Transformation, Deakin University, Burwood, Australia

**Background and Objective:** Despite the well-documented concerns about the myriad ways in which powerful business corporations negatively impact on health and equity, Discussions on how to fundamentally address excessive corporate power remain relatively uncommon and underdeveloped in the field of public health. This study aimed to review and categorise actions that have the potential to address excessive corporate power for the betterment of public health.

**Methods:** A scoping review of diverse literature, including from the fields of public health, law, business, economics, and political science, was conducted to identify actions to address excessive corporate power. Categorisation was guided by Meagher's '3Ds' heuristic, which broadly classifies actions to curb or address corporate power into three groups: dispersion, democratisation, and dissolution. Where possible, we identified real world examples at the local, national, and international level where actions have been implemented, and collated potential implementation challenges.

**Results:** We found 150 documents covering a broad range of policy, regulatory, and collective action levers. 15 strategies were identified and grouped under four interlinked strategic Objectives: i) disperse concentrated corporate wealth and power; ii) democratise corporate decision-making; iii) dissolve unchecked and harmful corporate power; and iv) developing and strengthening countervailing power structures. We found several examples from multiple regions where these actions have been effectively implemented. **Conclusions:** The 15 complementary strategies provide a blueprint for addressing the corporate determinants of ill-health and health inequity. Given that there are likely to be considerable political challenges in the implementation of many of these strategies, a rapid escalation in research, advocacy, activism, and collaboration is required to support efforts to implement and scale-up these strategies in and across many contexts.

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### Children's food environment

Anette Jansson<sup>1</sup>

<sup>1</sup>Swedish Heart Lung Foundation, Stockholm, Sweden

**Background and Objective:** Unhealthy dietary habits are causing a large part of the global disease burden. One third of the population lives with overweight or obesity. The cause of energy overconsumption is multifactorial and affected by both external and internal factors. One external factor affecting our attitudes, preferences and choice of food is our food environment, the social and physical environment in which we live.

**Methods:** Students (age 13-14 years), from four schools were asked to take pictures of food advertisements in their surroundings. The purpose was to investigate what type of food advertisements children see in their everyday lives. The project involved 54 children and aimed to: locate areas where children are exposed to food advertisements, investigate what proportion of all food advertisements that promote unhealthy food in comparison to healthier foods and investigate the children's thoughts about their food environment. The content of the ~3000 pictures was analysed. Six focus group interviews were conducted, where the students got to discuss their experiences of participating in the project and their thoughts about their food environment.

**Results:** The analysis showed that 78 percent of all the recorded food advertisements promoted unhealthy foods or beverages, 21 percent marketed fruits, vegetable, berries, fish, or other seafood. The dominance of advertisements for unhealthy foods was evident in all the analysed areas. The analysis showed that approximately one in every four food advertisements contained some kind of special offer (for example buy 3 pay for 2). Out of these, 74 percent contained unhealthy food or beverages.

**Conclusions:** The results of the report raises concerns about the food environment that children in Sweden are exposed to. The type of dietary patterns that are reflected in the Swedish advertising landscape are the opposite of how the national dietary guidelines recommend us to eat.

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### A global policy index to create healthy, equitable and environmentally sustainable food systems at national and local levels

Celia Burgaz<sup>1,2</sup>, Stefanie Vandevijvere<sup>3</sup>

<sup>1</sup>Sciensano, Belgium, <sup>2</sup>Université libre de Bruxelles, Belgium, <sup>3</sup>Sciensano, Ixelles, Belgium

**Background and Objective:** Current global food systems are unhealthy, unjust and environmentally unsustainable. Transitioning to healthy and sustainable food systems is challenging; needing "double and triple-duty actions", which are interventions and policies that have the ability to simultaneously reduce the risk or burden of undernutrition and/or overweight, obesity and/or climate change. Therefore, we propose the use of different policy indicators to inform policymakers in the design and implementation of policies towards healthy diets from sustainable food systems.

**Methods:** Through a compilation of international recommendations, a scoping review, four regional workshops with food policy experts, eight country-based policy mappings and policy stakeholder interviews, the International Network for Food and Obesity/NCDs Research, Monitoring and Action Support (INFORMAS 2.0) Aims to create a new Food Systems Policy Index to monitor governments' actions on sustainable food systems. The tool will take into account the impact of policy indicators on obesity/non-communicable diseases, undernutrition and environmental sustainability. Two secondary outcomes (nutrition inequalities and women's empowerment) will also be considered.

**Results:** A total of 291 international policy recommendations have been compiled, classified and merged into two policy domains (food supply chains and food environments) and ten subdomains (including, among others, agriculture, food waste and labelling) that impact food security, obesity and/or climate change. Their effect has been assessed both in a scoping review and through a survey, four workshops and a ranking consulting international experts, to decide the final list of 44 policy indicators with double and triple-duty potential. A mapping of the policies and interviews with national and local policy stakeholders from eight countries is to be conducted to pilot test the policy index.

**Conclusions:** Given the heterogeneity and complexity of food systems, the index will represent a useful tool for governments to tackle malnutrition in all its forms, nutrition-related inequalities, climate change and biodiversity loss.

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### Is implementing a national preeclampsia screening program worth it?

Gonzalo Sanchez<sup>1</sup>, Juan Bayon<sup>2</sup>, Lorea Galnares<sup>3</sup>, Asun Gutierrez<sup>2</sup>, Maria Portillo<sup>4</sup>, Jorge Burgos<sup>5</sup>, Ana Campo<sup>5</sup>

<sup>1</sup>Osakidetza, UPV/EHU, Spain, <sup>2</sup>Osteba, Spain, <sup>3</sup>OSTEBA - Basque Office for Health Technology Assessment, Spain, <sup>4</sup>Osakidetza, Biocruces, <sup>5</sup>Osakidetza, Biocruces, Spain

Preeclampsia is a multisystem progressive disorder characterized by the new onset of hypertension and proteinuria in the last half of pregnancy or postpartum. Due to the high risk for the mother and also the child it would be really useful to detect as early as possible if a woman is at high risk of developing preeclampsia or not. Nowadays the risk is assessed evaluating determined risk factors from clinical records which has a limited precision. In some places are developing a "combined preeclampsia screening" that uses medical records plus other factors such as biomarkers like placental growth factor, pregnancy associated plasma protein-A or uterine arteries pulsatility index. Our objective is to evaluate security, efficiency an efficacy of preeclampsia screening programs on pregnant women. To evaluate efficacy and security of screening programs based on predictive models and low dose aspirin for preeclampsia prevention we made a revision of systematic reviews from the latest scientific evidence available. To analyze the cost-effectivity of screening programs based on predictive models and low dose aspirin on women at high risk of developing preeclampsia versus common practice we made research on economic evaluations available. All selected articles were evaluated following AMSTAR-2 criteria. As results, we found that the first trimester models where biophysics and biochemical markers plus maternal characteristics were used, presented the best detection rate for early preeclampsia. We also found that the use of aspirin decreased between 15%-18% preeclampsia risk being statistically significative achieving a greater reduction when given to a high number of nulliparous women. To conclude, according to the evidence found, preeclampsia screening in first trimester based on Fetal Medicine Foundation algorithm plus low dose aspirin treatment in women at high risk of preeclampsia was more effective, prevented preeclampsia cases and was cheaper than costs related with preeclampsia's clinical management.

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### Determinants of COVID-19 vaccination worldwide: a retrospective observational study

Alberto Peano<sup>1</sup>, Gianfranco Politano<sup>2</sup>, Maria Gianino<sup>1</sup>

<sup>1</sup>University of Turin, Italy, <sup>2</sup>Polytechnic of Turin, Italy

**Background and Objective:** COVID-19 vaccines represented a light in the darkness, but a great disparity in vaccination coverage between countries still persists after 18 months their introduction. As this global public health issue rises, questioning the reasons becomes mandatory: the aim of this work is to analyse several variables to identify possible determinants of COVID-19 vaccination.

**Methods:** A retrospective observational study was conducted using pooled secondary data sourced from institutional sites, including 205 countries and territories worldwide. Two indicators of vaccine coverage were identified as outcomes: The percentage of the population vaccinated with at least one dose and the total doses administered per 100 residents. A raw and an adjusted for delivered vaccine doses multivariate GLM were fulfilled using R. Variables were in multiple fields: socio-demographic, cultural, infrastructural, economic, political and of health system performance.

**Results:** GDP per capita (Odds = 1.401 (1.299 to 1.511) C.I. 95%), Access to electricity (Odds = 1.625 (1.559 to 1.694) C.I. 95%), Political stability and absence of violence/terrorism (Odds = 1.334 (1.284 to 1.387) C.I. 95%) and Civil liberties (Odds = 0.888 (0.863 to 0.914) C.I. 95%) proved to be strong determinants of COVID-19 vaccination. Other several variables displayed a statistically significant association with outcomes, although the associations were stronger for Total doses administered per 100 residents. There was substantial overlap between raw outcomes and their adjusted counterpart.

**Conclusions:** This pioneering study identified strong determinants of vaccination coverage such as GDP per capita and Access to electricity. Political decision-makers should consider these Findings in order to organize a mass vaccination campaign able to reduce inequalities between nations in a pandemic context.

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### Cost-effectiveness analysis of procalcitonin and lung ultrasonography guided antibiotic prescriptions in primary care

Giulio Cisco<sup>1</sup>

<sup>1</sup>Health Economics and Policy Unit, Centre for Primary Care and Public

Health (Unisanté), University of Lausanne, Switzerland

Unnecessary prescription of antibiotics contributes to the development of treatment-resistant strains. Antimicrobial resistance comes with high morbidity and mortality burden, especially for future generations, with potential high impact on healthcare costs. Efficient strategies are therefore needed to limit overuse of antibiotics. This paper investigates the cost-effectiveness of screening patients suffering from lower tract inflammation with procalcitonin or lung ultrasonography, two diagnostic tools that help detect the presence of a bacterial infection, therefore guiding antibiotic prescription decisions. The clinical effectiveness of these strategies has been demonstrated in the primary care setting (Ihopittallier 2021), but evidence is needed on the cost-effectiveness of these options. We used data from a cluster-randomized multicenter clinical trial conducted in Switzerland and estimated patient-level costs using data on resource use to which we applied Swiss tariffs. By combining the incremental costs of the two treatments and the reduction in the 28-day antibiotic prescription rate (APR) compared to usual care, we calculated incremental cost-effectiveness ratios (ICER). We also used the cost-effectiveness acceptability curve as an analytical decision-making tool. The robustness of the findings is ensured by probabilistic sensitivity analysis and by scenario analysis. In the base case scenario, the icer with respect to usual care is 2.2 Swiss francs (CHF) per percentage point reduction in antibiotic prescription for the procalcitonin-treated group, while it is 4.2 for the ultrasonography group. This is because, despite similar clinical effectiveness, the incremental cost of the ultrasound group is almost double that of procalcitonin. Furthermore, we found that for a willingness to pay per patient more than 2 CHF per percentage point reduction in the APR, procalcitonin is the strategy with the highest probability to be cost-effective. Our findings suggest that testing patients with respiratory symptoms with procalcitonin to guide antibiotic prescription in the primary care setting represents good value for money.

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### Arguments made by the alcohol industry in submissions to the WHO consultation for the Alcohol Action Plan 2022-2030

Deborah Gleeson<sup>1</sup>, Paula O'Brien<sup>2</sup>, Robyn Dwyer<sup>1</sup>, Megan Cook<sup>3</sup>, Robin Room<sup>4</sup>

<sup>1</sup>School of Psychology and Public Health, La Trobe University, Australia,

<sup>2</sup>Melbourne Law School, University of Melbourne, Australia, <sup>3</sup>Institute of

Social Marketing and Health, University of Stirling, Stirling, United Kingdom,

<sup>4</sup>Centre for Alcohol Policy Research, La Trobe University, Australia

**Background and Objective:** A growing body of research has revealed the strategies and arguments used at the national level by alcohol industry actors to influence policy. To date, however, there has been little research into industry's arguments in global alcohol policy forums. The 2020 consultation by the World Health Organization (WHO) on a Working Document for the 'development of an action plan to strengthen implementation of the Global [Alcohol] Strategy' provided an opportunity to critically examine industry perspectives and arguments in relation to global alcohol governance.

**Methods:** Forty-eight alcohol industry submissions were coded in NVivo. Directed content analysis was used to examine the policy positions and arguments made by industry actors. Thematic analysis was employed to further explore the framing of industry arguments.

**Results:** In framing their arguments, alcohol industry actors positioned themselves as important stakeholders in policy debates; differentiated 'normal' drinking from consumption that merits intervention; argued that alcohol policy should be made at the national, rather than global, level; and supported industry self-regulation or co-regulation rather than cost-effective public health measures to prevent harms from alcohol.

**Conclusions:** The alcohol industry actors' submissions to the WHO's 2020 consultation repeated some of the same positions and arguments that industry actors have been found to have made in domestic policy processes. Their arguments could be seen as efforts to stymie improvements in the global governance of alcohol. The arguments appeared to have had some, but not complete, traction in the creation of the Alcohol Action Plan. There are moves towards improving global governance of alcohol in the future. The industry can be expected to continue strong advocacy against such developments.

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### The macro-economic determinants of health outcomes in EU member states

Joseph Piscopo<sup>1</sup>, Milena Pavlova<sup>2</sup>, Wim Groot<sup>3</sup>

<sup>1</sup>Malta, <sup>2</sup>Department of Health Services Research, CAPHRI, Maastricht University Medical Center, Faculty of Health, Medicine and Life Sciences,

Maastricht University, Netherlands, <sup>3</sup>Department of Health Services Research, CAPHRI, Maastricht University Medical Center, Faculty of Health, Medicine and Life Sciences, Maastricht University, The Netherlands

**Background:** Health outcomes differ between countries, even in a relatively homogenous area such as the European Union. Research has been inconclusive about the explanation of this heterogeneity in health outcomes. Our study contributes to the literature by analyzing the impact of health financing and economic, behavioral and country-specific characteristics on health outcomes in EU member states.

**Methods:** This study is based on macro-level EU panel data covering the period from 2000 to 2018. The association between health outcomes and explanatory variables is analyzed by random-effects and fixed-country effects regression models. To address the endogeneity problem of health expenditure, instrumental variables are applied. Life expectancy and infant mortality are used as outputs, and a vector of independent variables is used as inputs.

**Results:** The explanatory variables included in this study are more associated with infant mortality rather than with life expectancy. The impact of the explanatory variables on life expectancy appears to be only marginal. Public health expenditure, the number of physicians, consumption of fruit and vegetables, the decentralization of the health system, and fixed-country effects are the main determinants of both life expectancy and infant mortality.

**Conclusions:** Health status differences Results from complex and often intertwined processes. Increasing public health expenditure is not sufficient to achieve better health outcomes. Such increases must be complemented by giving more importance to the promotion of healthy lifestyles, improved education and additional human resources to sustain health services.

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### Aiding empirical research on the commercial determinants of health: a scoping review of lobbying research

Jennifer Lacy-Nichols<sup>1</sup>, Madalyn Quinn<sup>2</sup>, Katherine Cullerton<sup>3</sup>

<sup>1</sup>University of Melbourne, Australia, <sup>2</sup>The University of Melbourne, Australia,

<sup>3</sup>The University of Queensland, Australia

**Background and Objective:** Challenging the influence of powerful commercial actors on health requires a deeper understanding of corporate political activities. This project explores political science scholarship analysing lobbying to identify new datasets and research methods that can be applied to public health and stimulate further research and advocacy.

**Methods:** We undertook a systematic scoping review of peer-reviewed and grey literature reports analysing lobbying. Titles and abstracts of 4533 peer-reviewed and 285 grey literature reports were screened, with 233 peer-reviewed and 280 grey literature reports assessed for eligibility. We used a two-stage process for data extraction. In stage one, we collected information about data sources and indicators used to measure lobbying. In stage two, we extracted data from 16 studies that focused on meetings.

**Results:** The most common indicators used to measure lobbying activity were: registrations of active lobbyists; expenditure on lobbying; meetings; written comments and submissions made to government consultations; bills; and committee participation. A range of data sources were used to analyse lobbying, including from governments, not-for-profits and commercial sources. All 16 studies analysing lobbyist meetings were from high-income countries. The studies analysed three key variables: the types of government actors targeted by lobbying; the policies of interest; and the lobbyists and/or their clients. The studies used a range of taxonomies to classify policy issues and the types of actors engaged in lobbying. All studies discussed challenges with accessing and analysing lobbying data.

**Conclusions:** Political science scholarship offers many insights that can support public health research and advocacy concerned with the commercial determinants of health. This includes both conceptual frameworks and sources of empirical data. It is important for public health actors to advocate for government transparency and public integrity. Better political transparency will make it easier to monitor and take on the commercial determinants of health.

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### Implementation evaluation of regional health consortia in Bahia, Brazil

Daiane Melo<sup>1</sup>, Ana Chancharulo<sup>2</sup>, Luis Souza<sup>2</sup>

<sup>1</sup>Departamento de Ciências da Vida (DCV), Universidade do Estado da Bahia, Brazil, <sup>2</sup>Departamento de Ciências da Vida, Universidade do Estado da Bahia, Salvador, Brazil

**Background:** Although Brazil has a universal health system, the inequity of access to health care persists, especially to specialised services. To overcome it and guarantee full and equal access to health care, a federative (intergovernmental) cooperation strategy has been adopted: the regional health consortium. The implementation of these consortia, as a promising strategy, deserves research attention.

**Objective:** Estimate the degree of implementation of health consortia in three regions of the state of Bahia, in Brazil.

**Methods:** To estimate the actual degree of implementation of health consortia, we created an Evaluation Matrix of the Degree of Implementation, considering three dimensions: normative, managerial and services provision. Document analysis and interviews were carried out with key informants, with each consortium finally classified as totally, partially or incipiently implemented.

**Results:** The Bahia state government and municipalities formed the regional health consortia. The three evaluated consortia started their activities in 2017 by building and managing regional health polyclinics, which offer specialised medical care. Considering the normative, managerial and services provision dimensions, all consortia were classified as totally implemented. There was an increase in the services provision of all consortia, and the differences related to the access to services were reduced between the state regions.

**Conclusions:** The three health consortia are effectively implemented, increasing services provision and reducing access-related inequity. The federative (intergovernmental) cooperation was fundamental to organising the consortia and establishing the regional health polyclinics. Most importantly, it minimised the gap related to access to specialised clinical care in the different regions of Bahia.

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### How ready is the Italian healthcare system regarding the use of genomics in medicine? An application of the Beyond 1 Million Genomes (B1MG) Maturity Level Model (MLM)

Valentina Baccolini<sup>1</sup>, Erica Pitini<sup>2</sup>, Americo Cicchetti<sup>3</sup>, Stefania Boccia<sup>4,5</sup>, Paolo Villari<sup>1</sup>

<sup>1</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome, Rome, Italy, <sup>2</sup>General Directorate for Health Prevention, Ministry of Health, Rome, Italy, <sup>3</sup>Department of Management Studies, Faculty of Economics, Advanced School of Health Economics and Management (ALTEMS), Catholic University of the Sacred Heart, Rome, Italy, <sup>4</sup>Section of Hygiene, Department of Woman and Child Health and Public Health, Fondazione Policlinico Universitario A. Gemelli IRCCS, Rome, Italy, <sup>5</sup>Department of Life Sciences and Public Health, Catholic University of the Sacred Heart, Rome, Italy

**Background and Objective:** The integration of genomics into healthcare systems allows to fulfilling the potential of Personalised Medicine for patients and citizens. This demands countries to make extensive adjustments in key areas, such as technical infrastructure, health professional competencies, or ethical and legal frameworks. Within this context, effective identification of current challenges and barriers to integrating genomics in the healthcare system is crucial to define a path toward sustainable implementation.

**Methods:** We applied the B1MG MLM framework to assess the maturity of the Italian national health system (NHS) regarding the key aspects of genomics implementation. From March to June 2022, 18 experts from academic and non-academic institutions that participate in the B1MG activities rated on a 5-point scale (from ad hoc to fully implemented) the level of maturity of 49 indicators grouped into eight domains: governance (I), economic aspects (II), ethics and legislation (III), public awareness (IV), workforce skills (V), clinical organization (VI), clinical genomics guidelines (VII), and data infrastructure (VIII). From July to September 2022, consensus procedures were carried out within each domain. **Results:** The analysis showed that Italy stands at a local level of genomics implementation in most indicators, but several regional and/or national initiatives are currently ongoing. Specifically, genomic medicine is considered a priority but still lacks updated strategies, governance, and investment plans. The highest maturity is reached for ethical and legal aspects, followed by domain VII. There is a strong need to invest in workforce training for some health professionals, citizen engagement, and literacy. Infrastructures to improve data security and fairification are still under development.

**Conclusions:** We defined the status of genomics implementation in the Italian NHS, drawing a comprehensive picture of all key domains and identifying areas that need immediate investment. Regional and national initiatives currently ongoing need to be monitored.

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### Where is the evidence supporting voluntary and public-private partnership policies for promoting healthy food environments? Findings from four evidence syntheses

Laurence Blanchard<sup>1</sup>, Laurence Blanchard<sup>1</sup>, Stephanie Ray<sup>1</sup>, Cherry Law<sup>2</sup>, Matt Egan<sup>1</sup>, Harry Rutter<sup>3</sup>, Mark Petticrew<sup>1</sup>, Cécile Knai<sup>1</sup>

<sup>1</sup>London School of Hygiene and Tropical Medicine, United Kingdom,

<sup>2</sup>University of Reading, United Kingdom, <sup>3</sup>University of Bath, United Kingdom

**Background and Objective:** Policies are increasingly being implemented to promote healthy food environments. These include regulations by governments, voluntary actions by governments and private actors, and public private partnerships (PPP). PPPs have particularly been encouraged by global leaders. This project aimed to assess the effectiveness of these approaches.

**Methods:** Studies of national and state policies promoting healthy food environments were searched in 14 databases and two websites. Four evidence syntheses were generated relating to effectiveness: 1) An evidence map of primary research; 2) An overview of reviews of regulatory, voluntary and PPP approaches. Quality of the systematic reviews was assessed using the SIGN checklist; 3) A systematic review of PPPs; 4) A systematic review of voluntary commitments by private actors. In systematic reviews 3-4, risk of bias was appraised using a modified Newcastle-Ottawa Scale.

**Results:** Among the 483 publications in the evidence map, 60 % (n=288) reported on at least one regulatory initiative, 43% (n=209) on at least one voluntary, 15 assessed policies combining both, and 31 assessed a PPP (of which 22 on two partnerships in England and Australia). The overview of reviews included ten systematic reviews. Most regulatory approaches were effective at improving health, consumer behaviour (e.g. food intake, purchases), or food environment outcomes, whereas effects for voluntary approaches were mixed. No PPP was included. The review of PPPs included 17 studies on eight PPPs. Partnerships with the food industry were not effective to improve the food environment. Lastly, sixteen studies assessed nine voluntary approaches by private actors. The direction of effect for most outcomes was either inconclusive or worse for participants.

**Conclusions:** Regulatory approaches are generally effective for improving food environments while voluntary approaches by governments or private actors and PPPs are not. Data on PPPs are limited. This questions why PPPs have been encouraged globally.

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### Chronic diseases attributable to a diet rich in processed meat in Brazil: Burden and financial impact on the healthcare system

Mariana Menezes<sup>1</sup>, Carla Rocha<sup>1</sup>, Magda Parajára<sup>1</sup>, Ísis Machado<sup>1</sup>, Aline Folgal<sup>1</sup>, Adriana Meireles<sup>1</sup>

<sup>1</sup>Federal University of Ouro Preto, Brazil

**Objectives:** This study aimed to describe the burden of chronic noncommunicable diseases (NCDs) attributed to a diet rich in processed meat (PM) between 1990 and 2019 in Brazil and Federative Units, and the financial burden on the Unified Health System (SUS) in 2019. **Methods:** Secondary data from the Global Burden of Disease (GBD) and SUS Information Systems were used in this study. The metrics used to assess the burden of NCDs attributable to PM consumption were deaths and disability-adjusted life years (DALYs). The age-standardized rates per 100,000 people for both sexes are presented. The cost of hospitalizations and outpatient procedures covered by SUS for the treatment of NCDs attributable to PM consumption was estimated using the population-attributable fraction. The amount spent was converted into international dollars.

**Results:** The age-standardized mortality rates decreased between 2009 and 2019. The cost of hospitalization and outpatient procedures in Brazil for NCDs attributable to the consumption of PM was US\$8,672,668.30, of which US\$5,887,880.13 was spent on ischemic heart disease, US\$2,626,585.15 on colorectal cancer, and US\$1,582,033.02 on type II diabetes mellitus.

**Conclusions:** The NCD burden showed a slight decrease during the years evaluated, while the financial burden was high in 2019, with higher treatment costs for ischemic heart disease. These results can guide political, economic, and health education interventions to advance the fight against NCDs.

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### Territorialization of health care equipment in Minas Gerais, Brazil

Allan Barbosa<sup>1</sup>, Pedro Amaral<sup>2,3</sup>, Lucas Carvalho<sup>2,3</sup>, Maria Turci<sup>4</sup>, Philippe Mendes<sup>2,3</sup>

<sup>1</sup>Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Brazil,

<sup>2</sup>CEDEPLAR, Brazil, <sup>3</sup>UFMG, Brazil, <sup>4</sup>UNIFENAS, Brazil

This study analyses the supply of health equipment (tomograph, mammography, MRI, bone-densitometer) in the state of Minas Gerais, Brazil, between 2017 and 2020, considering the geographical distance in the provision of health services. The results point out that even if there exists, whether in the public or private network, this quantity is sufficient for total care of the population. However, the distribution needs to be more spatially assertive. Due to the parameters according to the Ministry of Health: (i) a maximum limit of the coverage distance and (ii) the capacity of each health equipment, the population of several municipalities may find themselves uncovered or without direct access to them.

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### Issues of high relevance for sustainable health: a validation study in Portugal, 2021

Ana Cristina Garcia<sup>1,2</sup>, Pedro Aguiar<sup>3</sup>, Paulo Ferrinho<sup>1</sup>

<sup>1</sup>Global Health and Tropical Medicine (GHTM), Institute of Hygiene and Tropical Medicine, NOVA University of Lisbon, Lisbon, Portugal, <sup>2</sup>Department of Epidemiology, National Institute of Health Doctor Ricardo Jorge, Lisbon, Portugal, <sup>3</sup>National School of Public Health, NOVA University of Lisbon, Portugal

**Background and Objective:** The 2030 Agenda for Sustainable Development represented a decisive advance for the planning and implementation of sustainable health strategies. Instruments such as the GAPFRAME framework are available to support its complex operationalization. The need to identify sustainability issues of high relevance to health was felt within the scope of the National Health Plan 2021-2030 of Portugal (NHP 2021-2030), not being known a validated reference for Portugal. The objective of this study is to assess the internal consistency of a framework for translating the Sustainable Development Goals (SDGs) into relevant issues for achieving high levels of sustainable health and well-being in Portugal, adapted from the GAPFRAME.

**Methods:** A descriptive study was conducted with data collection through a self-completion questionnaire, applied to 127 stakeholders of the NHS 2021-2030. Data were collected related to the perceptions about thirty-two sustainability issues as determinants or facilitators of achieving high levels of health and well-being. Issues were organized according to four sustainability dimensions (planet, society, economy and governance) in a frame adapted from GAPFRAME. Internal consistency was assessed using Cronbachs alpha coefficient.

**Results:** Seventy-five stakeholders participated (59.1%); 55 (75.3% of valid responses) reported working in the health area and 64 (85.3%) in the public sector. Fifty-five (in 61 valid responses) were from the social sector and 13 from the environmental and, or economic sectors. Cronbachs alpha coefficient of the framework as a whole was 0.93, varying between 0.76 (dimension: society) and 0.97 (dimension: planet), compatible with moderate to excellent internal consistency (0.84 for dimension: economy; 0.91 for dimension: governance).

**Conclusions:** The framework adapted from the GAPFRAME model seems to have adequate precision for its use in Portugal as a tool for translating the SDGs into relevant issues to include in the planning for sustainable health and well-being.

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### Seeking to be seen as legitimate members of the scientific community? An analysis of the involvement of two transnational tobacco companies in scientific events

Britta Matthes<sup>1</sup>, Alice Fabbri<sup>1</sup>, Sarah Dance<sup>1</sup>, Louis Laurence<sup>1</sup>, Karin Silver<sup>1</sup>, Anna Gilmore<sup>1</sup>

<sup>1</sup>University of Bath, United Kingdom

**Background and Objectives:** Tobacco companies have misused science for decades in order to protect and increase their profits. Among other things, they undertook research obscuring the harms of their products, created doubt about work that countered their interests and engaged in flawed publishing practices. Efforts to address this misconduct included rulings requiring the shut-down of scientific 3rd parties, journals refusing to publish tobacco industry-funded research, and conferences excluding the tobacco industry. In recent years, however, tobacco industry engagement in science appears to have increased. Evidence has shown, for example, the establishment of a new major scientific 3rd party and failure of industry-linked authors to declare conflicts of interest. The industry's engagement in scientific events, including conferences, symposia and workshops, has not yet been examined. We fill this gap focusing on the two largest transnational tobacco companies, British American Tobacco (BAT) and Philip Morris International (PMI).

**Methods:** To identify events, we collected and collated publicly available data from BAT and PMI's websites. To assess the nature of the involvement, we extracted

data from websites and materials linked to events.

Results: Between April 2012 and September 2021, BAT and/or PMI employees attended 213 scientific events, mostly held in Europe and North America. Events covered a diverse range of disciplines: toxicology (28.1%), medicine (11.7%), biology (11.3%), chemistry (10.8%), aerosol science (8.5%), dentistry (4.2%), pharmaceutical science (3.8%), and computing (3.8%). BAT and PMI provided 77 presentations linked to 65 events and 356 posters linked to 118 events. Companies rarely sponsored events (n=9), acted as exhibitors (n=3) or were represented in organising committees (n=1).

Conclusions: BAT and PMI were present at a large and diverse number of scientific events. The tobacco industry can use such events to (re-)build scientific credibility. This study underscores the need to address the tobacco industry's presence in such spaces.

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### Feasibility of the requirements and recommendations of the Brazilian school feeding program

Daniela Canella<sup>1</sup>, Ana Azevedo<sup>2</sup>, Daniel Bandoni<sup>3</sup>

<sup>1</sup>Rio de Janeiro State University, Brazil, <sup>2</sup>Rio de Janeiro State University, Rio de Janeiro, Brazil, <sup>3</sup>Federal University of São Paulo, Brazil

Background and Objective: Brazilian School Feeding Program offers adequate and healthy meals for public basic education students. In 2020, it aligned its recommendations to the Brazilian Dietary Guidelines establishing that most foods purchased should be unprocessed or minimally processed, in variety, and limiting the purchase of processed and ultra-processed foods. The study aims to analyze the percentage of municipalities that complied with the recommendation for variety and with the fund limit requirement established for the purchase of processed and ultra-processed foods.

Methods: Secondary data from the Accountability Management System of the National Fund for Educational Development was used. The foods were grouped according to the NOVA classification system. Resolution No. 6 recommends that the annual offer of at least 50 different types of unprocessed or minimally processed foods and establish that, at most, 20% of the funds can be used to purchase processed and ultra-processed foods. The feasibility of the municipalities to meet Resolution No. 6 were assessed using data from 2016. Descriptive analyses were run.

Results: A total of 3,698 municipalities were evaluated, equivalent to 66.4% of the Brazilian municipalities. The mean number of unprocessed or minimally processed foods purchased in Brazil was 33.77, ranging from 0 to 169, and the mean percentage of municipalities that followed the recommendation was 8.68%. Considering the funds used to purchase processed and ultra-processed foods, the mean was 25.77%, from 0 to 100%, and 35.83% of the municipalities were within the established limit.

Conclusions: The findings show the feasibility of the resolution, since some Brazilian municipalities had already been practicing to the established limits and recommendations. Combining the restriction on the purchase of processed and ultra-processed foods and a specific recommendation for a variety of unprocessed or minimally processed foods in the program is important to provide students with adequate and healthy meals.

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### Diagnostic technology: trends of use and disponibility in the last decade among sixteen OECD countries

Manuela Martella<sup>1</sup>, Jacopo Lenzi<sup>2</sup>, Maria Gianino<sup>1</sup>

<sup>1</sup>University of Turin Department of Public Health Sciences and Pediatrics Italy, <sup>2</sup>University of Bologna Department of Biomedical and Neuromotor Sciences Italy

Background: Appropriate use of medical technologies affects several aspects of clinical practice. Besides the analytical validity, examinations' clinical usefulness and validity allegedly lead to better outcomes. Further, a reasonable ethical and economic approach contributes to improving healthcare delivery. Conversely, imaging overuse and low-value care dramatically drive up costs with scarce or no benefit for patients. The current research aims to assess a trend over a 10-year timeframe on the proportion between imaging tests and radiology devices in 16 countries belonging to the Organisation for Economic Co-operation and Development (OECD).

Methods: A time-trend analysis based on OECD indicators on diagnostic imaging (Computer Tomography CT, Magnetic resonance imaging MRI, and Positron emission tomography PET) involved 12 European countries and four overseas countries. OECD indicators were annual number of exams per 1000 population,

annual number of devices per million population and annual number of exams per device. Country-specific trend was measured as average annual percent change. Results: The trend exam-to-scanner ratio for CT, MRI and PET grew during the study-period in most of countries (11, 13 and 12, respectively). Predominantly, it highlighted a faster rise of exams' amount than number of devices. During the same timeframe, Italy registered an increase of CT, MRI and PET units, although exams did not. However, the contraction of medical procedures during 2020 was crucial in defining this trend. Solely in Luxemburg, CT and PET examinations increased despite the reduction of scanners, whereas for MRI a reverse trend was reported.

Conclusion: According to our analysis, the exam-to-scanner ratio has grown in most of the countries involved, accounting for a raised amount of both exams and devices. Overuse is likely to be increasing worldwide, however these trends may reflect defensive medical decision making, or rather an improvement of diagnostic supply in response to a higher demand.

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### Healthcare costs of the progression of chronic kidney disease in patients with type 2 diabetes mellitus in Colombia

Luis Alvis Estrada<sup>1</sup>, David Vivas Consuelo<sup>2</sup>, Nelson Alvis Guzman<sup>1</sup>, Fernando Salcedo Mejia<sup>3</sup>, Justo Paz Wilches<sup>4</sup>, Cartagena

<sup>1</sup>Universidad de Cartagena, Colombia, <sup>2</sup>Universidad de Valencia, España Spain, <sup>3</sup>Alzak Foundation, <sup>4</sup>Mutual Ser EPS, Colombia

Background: chronic diseases represent significant economic costs for health systems. The study of the costs associated with the care of these diseases helps to develop strategies to reduce the economic impact of these pathologies Objective: To estimate the incidence and direct cost of care for chronic kidney disease (CKD) in patients with type 2 diabetes.

Methods: A survival analysis was performed with the Kaplan-Meier estimator, where the probability of the appearance of CKD is estimated. Direct costs were estimated in a cohort of 34,444 patients with type 2 diabetes mellitus over 4 years. The data on the costs were extracted from the database of patients registered with a health insurance company. A Markov chain model was built to measure the economic impact of the disease.

Results: 66% of the patients in the cohort are women. The average age of the patients is 59.4 years (SD = 12.5). CKD survival in the study cohort was 66%. The mean cost of patients with type 2 diabetes mellitus with CKD was US\$ 28,116 [US\$ 21,403 – US\$ 34,828]. Regarding chronic kidney disease transition costs, it is estimated that the discounted direct costs of care for the simulated cohort ranged from US\$ 62,599,647 to US\$ 190,157,827. However, by stages of CKD, the most expensive stage in average terms was CKD3b, where a higher prevalence of patients is recurrent in these stages.

Conclusions: The progression from diabetes mellitus to chronic kidney disease generates an escalation of costs that affects the health system.

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### Efficacy of low-level laser therapy in reducing local manifestations of bothrops atrox envenomations: a randomized clinical trial

Erica Carvalho<sup>1</sup>, Lioney Cabral<sup>1</sup>, Felipe Araujo<sup>1</sup>, Andre Sachett<sup>1</sup>, Andrea Souza<sup>1</sup>, Dessana Melo<sup>2</sup>, Altair Farias<sup>1</sup>, Beatriz Rodrigues<sup>1</sup>, Gabriela Ribeiro<sup>1</sup>, Mariela Caggy<sup>1</sup>, Wuelton Monteiro<sup>1</sup>, Jacqueline Sacchet<sup>1</sup>

<sup>1</sup>Universidade do Estado do Amazonas, Brazil, <sup>2</sup>Fundação de Medicina Tropical Dr Heitor Vieira Dourado, Brazil

Introduction: Antivenom is the only treatment that neutralizes the systemic effects of snake venoms. For local results, the inflammatory process of residual tissue damage remains. Laboratory research directs the use of laser therapy as a regenerative option for tissues. To evaluate the use of low-level laser in sites with the presence of Bothrops venom to minimize skin damage, reduce inflammatory effects, and reduce myonecrosis.

Methodology: The phase II A clinical trial was randomized and double-blind performed in patients who had bothropic accidents from May 2020 to March 2022, coming from Tropical Medicine Foundation Doctor Heitor Vieira Dourado. The study was carried out with 60 patients divided into 2 groups: 1. Control; 2. Those who Received laser 30 minutes after antivenom. The laser was applied to the skin lesions at 24, 48, and 72 hours in both groups at a dose of 4j/cm<sup>2</sup>, to the extent shown by thermography, in placebo with the device turned off. As outcomes, a 53.0% decrease in CK was obtained in the laser group while the control group increased by 35.0%, with p=0.03, thus evaluating myonecrosis.

Results: As for the outcomes of inflammatory signs, this clinical trial showed a decrease in pain on the third day of 33.0% in the control group, while the laser

group decreased by 66.0%, with a significance of  $p=0.001$ . Edema in extension measures decreased in the laser group by 21.0%, and in the control group, there was an increase of 15%,  $p=0.006$ . As for the circumference of the edema, the control group had an increase of 23% while the group that received the laser treatment showed a decrease of 29%,  $p = 0.018$ .

Conclusion: The effects of low-level laser were positive in reducing the local pathological effects caused by snake venom of the *Bothrops atrox* genus and accelerating myotoxicity-related tissue regeneration.

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### How can public participation improve health equity? a case study comparison of citizens' juries and health impact assessment

Katie Hiron<sup>1</sup>

<sup>1</sup>RPS Consulting UK, PhD candidate, University of Edinburgh, 1 BOTHWELL STREET, Edinburgh, EH7 5PY, United Kingdom

Background and Objectives: For over thirty years we have known that social, environmental and political factors are the primary causes of health inequities[1], yet policy efforts to improve these have largely failed[2]. To address this, recent initiatives have aimed to create 'healthier' policies by incorporating public perspectives in their design. While there has been increasing scholarship on public and patient involvement in healthcare delivery, there remains a lack of evidence on how public participation can affect health equity outside of healthcare settings.

Methods: This research examines how participatory processes affect health equity through changes to non-healthcare governance (such as social housing or infrastructure spending). This research was undertaken through qualitative comparison of four cases in the UK and Australia using two forms of public participation: health impact assessment and citizens' juries.

Results: The participatory processes generated governance and interpersonal outcomes. Outcomes were largely influenced by the context in which the process took place and the expectations of participants. Despite limited evidence of direct improvements to health, changes in governance structures that influence the social determinants of health have the potential to improve health equity.

Conclusion: Though evidence on public participation often focuses on perfecting the form, this research found that the technology was less relevant than other context-specific features. This comparative research can help to develop a better understanding of how public participation can improve health equity through examination of the mechanisms and context in which they take place.

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### Organizational setups and strategies for new healthcare models: integrated practice units

Alessandro Berionni<sup>1</sup>, Angela Ancona<sup>1</sup>, Roberta Pireddu<sup>1</sup>, Hesham Gaafar<sup>2</sup>, Fabrizio Vaccaro<sup>3</sup>, Carlo Signorelli<sup>1</sup>, Verdiana Morando<sup>3</sup>

<sup>1</sup>Università Vita-Salute San Raffaele, via martiri delle foibe istriane 7, Italy,

<sup>2</sup>WHO, Egypt, <sup>3</sup>GSD Healthcare, Italy

Background: Throughout the whole care cycle, IPUs are positioned functionally around the health issue. A committed multidisciplinary team that operates as a unique organizational unit prioritizes the patients needs, offering various health services. This reviews objectives are to describe and examine IPUs, evaluate their effectiveness, and provide suggestions for future integration initiatives.

Methods: In March 2022, three search queries were introduced on different Academic Databases. Only 61 publications were chosen in a double-blind review by two separate researchers out of 1300 findings, using inclusion and exclusion criteria.

Results: "Integrated Care Model" and "Integrated Practice Units" were the most commonly used terms to allude to integration in the collected papers, 57% and 26%, respectively. 85% of the studies addressed chronic illnesses. Primary medical centres and tertiary facilities comprised the bulk of integrated delivery models, 51% and 49%, respectively. The most prominent professional category was the speciality consultant (80%). Only 16% of the initiatives had a well-defined finance model, with public funding predominating on private ones. Numerous research (82%) that primarily evaluated clinical outcomes demonstrated improved results. Conclusions: Research showed that care integration had a favourable effect on medical expenses and clinical results. IPUs continue to receive scant citations

in the literature, demonstrating a paucity of comprehensive and well-organized integration. Due to the underreporting of financial information, further study and work are required to fully understand values-based payments.

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### The extent of financial risk protection among households enrolled under national health insurance schemes in West Africa

Sydney Odonkor<sup>1</sup>, Salma Mekkes<sup>2</sup>, Ferdinand Koranteng<sup>3</sup>, Lorena Dini<sup>1</sup>, Martin Appiah-Danquah<sup>4</sup>

<sup>1</sup>Charité - Universitätsmedizin Berlin, Institute of General Practice and Family Medicine, Charitéplatz 1, 10117 Berlin, Germany, <sup>2</sup>Charité - Universitätsmedizin Berlin, <sup>3</sup>University of British Columbia, Life Science Institute, V6T 1Z3, Canada Germany, <sup>4</sup>Parkside Hospital

Background: To facilitate the drive towards Universal Health Coverage (UHC) several countries in West Africa have over the years adopted the National Health Insurance (NHI) to finance their health services. However, most of these countries continue to face challenges safeguarding insured populations against catastrophic health expenditure (CHE) and impoverishment due to health spending. The aim of this review is to describe the extent of financial risk protection among NHI enrolled households in West Africa from published literature.

Methods: A systematic review of articles published in English between 2005 and 2022 was conducted. Articles were searched using keywords related to NHI and financial risk protection in all West African countries on PubMed/Medline, Web of Science and CINAHL, Embase and Google Scholar. Two independent reviewers assessed the articles for inclusion, extracted data and conducted quality assessment. A narrative synthesis consisting of thematic synthesis for qualitative data and Synthesis Without Meta-analysis (SWIM) for quantitative data was done.

Results: Of the 1,279 articles initially identified, nine were eligible for inclusion. These were cross-sectional studies (n=8) and retrospective cohort study (n=1) published between 2011 and 2021 in Ghana (n=8) and Nigeria (n=1). Two-thirds of the included studies reported enrollment into the NHI had a protective effect on CHE at different thresholds whereas one study reported a protective effect of NHI on impoverishment due to health spending. However, almost all of the included articles (n=8) reported that a proportion of insured households encountered CHE with one-third of included articles reporting more than 50% of insured households incurring CHE.

Conclusion: To protect insured households from the financial burden due to health spending in West Africa, governments should consider investing more in NHI research, implementing nationwide compulsory NHI programmes and establishing a multinational West African collaboration to design a sustainable context-specific NHI system based on solidarity and equity.

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### The costs of psoriasis and atopic dermatitis in Europe: a systematic literature review

Floriana D'Ambrosio<sup>1</sup>, Ada Maida<sup>1</sup>, Ciro Pappalardo<sup>1</sup>, Anna Scardigno<sup>1</sup>, Anna Nisticò<sup>1</sup>, Roberto Ricciardi<sup>2</sup>, Giovanna Calabrò<sup>1</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore, Roma, Section of Hygiene, University Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>2</sup>VIHTALI (Value In Health Technology and Academy for Leadership & Innovation), Spin-Off of Università Cattolica del Sacro Cuore, Rome, Italy

Background & Objective: Psoriasis and Atopic dermatitis (AD) are chronic, noncommunicable, painful, and disabling diseases included in the so-called group of inflammatory skin diseases. Their rising prevalence and consequent quality-of-life impairment represent an important but still underestimated public health issue. An assessment of their costs may be useful in providing recommendations for policy and decision makers, in order to avoid incorrect or delayed diagnosis, inadequate treatment options and insufficient access to care. Thus, this study aimed to summarize existing literature regarding the costs of psoriasis and AD in Europe.

Methods: A systematic literature review was performed querying three database (PubMed, Scopus, Web of Science) from January 2012 to October 2022. It included studies carried out in European countries, written in English language, and focused on the economic burden of psoriasis and AD in the adult population.

Results: Overall, 18 studies were considered. Across countries, psoriasis and AD were associated with large healthcare expenditures. Annual direct costs per patient with psoriasis, whose main expenses were hospitalizations, medications, and outpatient care, ranged between €4755,00 and €7999,00. Similarly,

pharmacological treatments, specialized care and hospitalizations contributed to total direct costs within a variable range of €3133,00-€5191,00 for AD patients. Mean out-of-pocket (OOP) expenditures to manage psoriasis and AD per patient per year were approximately €60,00-€531,00 and €350,00-€927,12, respectively. Productivity loss was the key driver of annual indirect costs, which amounted, per patient, to €379,00-€4221,00 for psoriasis and €370,00-€14.236,00 for AD. The severity of skin lesions, gender, age, and the involvement of comorbidity also affected the economic burden of these diseases.

Conclusion: The management of psoriasis and AD requires an urgent need for public health measures in Europe, in order to save personal and social resources. Assessing the burden of lifelong conditions could guide the identification of the most appropriate patient-centred responses.

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### The shift to domestic healthcare before and after COVID in South-East Tuscany

Sandro Limaj<sup>1</sup>, Simona Dei<sup>2</sup>, Maria D'Amato<sup>3</sup>, Roberto Turillazzi<sup>4</sup>, Gabriele Messina<sup>5</sup>, Nicola Nante<sup>6</sup>

<sup>1</sup>University of Siena. Post Graduate School of Public Health, Italy, <sup>2</sup>Azienda USL Toscana Sud Est, Health management, Italy, <sup>3</sup>Azienda USL Toscana Sud Est, Tuscany, Italy, <sup>4</sup>Azienda USL Toscana Sud Est, Tuscany, Italy. Health Management, Italy, <sup>5</sup>University of Siena, Department of Molecular and Developmental Medicine, Italy, <sup>6</sup>University of Siena

Background and Objectives: The South-Eastern area of Tuscany covers a wide surface but has a significantly low density of population. This scenario, alongside the COVID pandemic, has brought the Local Health Authority to find a solution and a governance model based on telemedicine and e-health, to treat patients in the domestic environment or close to it. Furthermore, creating a network of health professionals with different competencies and specialties proved crucial to allow them to work together. This study aims to describe how the South-Eastern Tuscany Local Health Unit tackled this issue while dealing with chronic patients before and after the COVID years.

Methods: After describing all the models created and adopted for the health governance in the area, we performed a retrospective study gathering data from our repositories, collected by the related software which were and are used during the selected timeframe, and we confronted them with the data from ARS Toscana. Results: 1/1/2020 to 31/05/2022, the LCA followed 12,6671 COVID+ patients, 32573 of whom were 65 years old or older. 976579 health services were performed, and 66 health residences were followed. Over 90% of COVID patients were treated in their own houses, with rates for mortality and lethality lower than the regional mean (197.79 vs 288.67, 0.54 vs 0.77)

Conclusions: The centralization of all data in a single repository allowed our COVID Central to coordinate patients, follow them constantly, to create a multidisciplinary team of different health professionals who can discuss and help each other to treat patients in their home setting, even the unstable ones, to prevent avoidable ER accesses. In the era of the new Community Healthcare Italian law (DM77), community medicine is going in the same direction: empowering telemedicine and an increased reach of health services and health professionals.

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### National recovery and resilience plan: a framework to strengthen the Italian territorial health care system

Domenico Mantoan<sup>1</sup>, Alice Borghini<sup>1</sup>, Mimma Cosentino<sup>2</sup>, Ivano Leta<sup>1</sup>, Marica Scotellaro<sup>1</sup>, Maddalena Iodice<sup>2</sup>

<sup>1</sup>National Agency for Regional Health Services (AGENAS) Via Piemonte 60, 00187 Rome Italy, <sup>2</sup>National Agency for Regional Health Services (AGENAS)

Background and Objective: COVID-19 pandemic has highlighted the need to strengthen the capacity of the Italian National Health Service (NHS) to provide outreach health services, integrated with social services. In this context, Mission 6 Health Component 1 (M6C1) of the National Recovery and Resilience Plan (NRRP) 'Proximity networks, facilities and telemedicine for territorial health care' was developed. The NRRP-M6C1 aims to strengthen territorial health care through the creation of territorial facilities and proximity networks throughout the country, the strengthening of home care, the development of telemedicine and of a more effective integration between health and social services.

Methods: Italy issued Ministerial Decree No. 77/2022, as ratification of the reform planned by M6C1-NRRP, defining models and standards for the development of territorial care in the NHS. The reform defines services offered and operating hours, as well as health workforce personnel involved, and catchment area of the population served, starting from socio-health needs, orographic conditions of the

country, taking into account ecological and digital transition.

Results: By 2026, M6C1 investments and reform will provide a new territorial healthcare organization, described as follows: a) 1350 Community Health Houses, easily identifiable and accessible for health and social needs; b) 600 Territorial Coordination Centres, which coordinate the taking charge of the person and will facilitate the relations between services and professionals involved; c) 400 Community Hospitals, healthcare facilities of the territorial network characterized by short-term hospitalization and medium/low clinical intensity; d) the taking charge at home of 10% of the population over 65 years old (estimated at around 1,500,000 people in 2026); e) consolidation of telemedicine within the Italian NHS to improve health outcomes and equity.

Conclusion: Enhancing public primary care services across the country, through the NRRP resources, will improve overall health status and decrease health inequalities across population also by reducing geographical variation.

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### Healthcare Homes and Community Health Homes: strengthening community-based care to build resilient health systems. The case study of the Romagna Local Health Authority.

Chiara Reno<sup>1</sup>, Chiara Reno<sup>1</sup>, Irene Gabutti<sup>2</sup>, Fiorella Lanzillotta<sup>1</sup>, Ruben Biagini<sup>1</sup>, Maria de la Rosa<sup>2</sup>, Massimo Menozzi<sup>1</sup>, Gabriele Gentilini<sup>1</sup>, Tiziano Carradori<sup>3</sup>, Maria Fantini<sup>1</sup>

<sup>1</sup>Alma Mater Studiorum - Università di Bologna Department of Biomedical and Neuromotor Sciences Italy, <sup>2</sup>Alma Mater Studiorum - Università di Bologna, <sup>3</sup>Romagna Local Health Authority General Management Italy

Background and Objective: The Italian National Recovery and Resilience Plan and the National Decree (ND) n.77 boosted the reorganisation of community-based care focusing on Community Health Homes, an evolution of Healthcare Homes (HH), previously introduced in some Regions. The goal is to strengthen a population management approach. The aim of this study is to analyse the state of the art of the HH in the Romagna Local Health Authority (LHA) providing a picture before the implementation of ND n. 77.

Methods: A database with 130 variables describing the 38 HH of the LHA was built. The 38 HH were geolocalised, their Hub&Spoke networks mapped, and the organisation of General Practitioners (GPs) explored. An organisational analysis was performed for 7 HH through semi-structured interviews to key stakeholders. Results were validated with professionals.

Results: The territorial distribution of HH is variable. GPs are present in every HH, but 40% of the GPs operate outside these structures. 35 out of 38 HH have a nurse-led ambulatory for chronic patients. Informal communication with GPs and specialists is favoured by spatial contiguity. Occasionally, electronic platforms shared among professionals are available. Social services are present in less than half of the HH. Community building activities are present but vary depending on the context. The HH organisational manager is always a nurse, supported by a board with different professionals and institutional actors and varying strategic or operational functions. Of note, 80% of the considered HH are former hospitals. Conclusion: Different professional composition and managerial solutions emerged. Each HH is based on "contingent" pillars that affect organisational design. There is no one best way to organise services, rather a best fit: the trade-off between standardisation and personalisation must be found. This also implies the need of a monitoring and evaluation system to understand what works under which conditions.

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### Global and regional governance of One Health and implications for global health security

Olaa Mohamed-Ahmed<sup>1</sup>, Azza Inaiem<sup>2</sup>, Osman Dar<sup>1</sup>

<sup>1</sup>UK Health Security Agency (UKHSA) University of Oxford United Kingdom,

<sup>2</sup>Royal Free London NHS Trust

Introduction: The apparent failure of global health security to prevent or prepare for the COVID-19 pandemic has highlighted the need for closer cooperation between human, animal and environmental health sectors. However, the vast number of institutions, processes, regulatory frameworks and legal instruments with a direct and indirect role in the global governance of One Health, has led to a fragmented global multilateral health security architecture.

Methods: We used a grounded theory approach to identify and evaluate the structures and processes underpinning the global and regional governance of One Health, with a focus on legal and financial frameworks.

Results: We explore four challenges: first, the sectoral, professional and institutional silos and tensions existing between human, animal and environmental health;

second, the challenge which the international legal system, state sovereignty and existing legal instruments pose for the governance of One Health; third, the power dynamics, and asymmetry in power, between countries represented in multi-lateral institutions and its impact on priority-setting; fourth, the current financing mechanisms which predominantly focus on response to crises, and the chronic underinvestment for epidemic and emergency prevention, mitigation and preparedness activities. We illustrate the global and regional dimensions to these challenges and how they relate to national needs and priorities, through three case studies on compulsory licensing, the governance of water resources in the Lake Chad basin and the desert locust infestation in East Africa. Finally, we propose 12 recommendations for the global community to address these challenges.

Conclusion: Despite its broad and holistic agenda, One Health continues to be dominated by human and domestic animal health experts. Significant efforts must be made to address the socioecological drivers of health emergencies. These drivers include climate change, biodiversity loss and land use change and therefore require investment, capacity building and integration of other sectors and professionals beyond health.

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### The impact of two decades of conditional cash transfers on child health in Latin America: An integrated evaluation and forecasting analysis to mitigate effects of the economic crisis

Davide Rasella<sup>1</sup>, Daniella Cavalcanti<sup>2</sup>, Jose Ordoñez<sup>2</sup>, Temidayo Aransiola<sup>1</sup>, Cristina Almeida<sup>3</sup>, Juan Diaz<sup>4</sup>, Daniela Zuluaga<sup>4</sup>, Alejandro Zamudio<sup>5</sup>, Renato Tasca<sup>6</sup>, Tereza Campello<sup>7</sup>, Luiz de Souza<sup>2</sup>, Philipp Hessel<sup>8</sup>, Carlos Chivardi<sup>9</sup>, Ana Moncayo<sup>3</sup>, Davide Rasella<sup>10</sup>

<sup>1</sup>Institute of Collective Health (ISC) at the Federal University of Bahia (UFBA), Bahia, Brazil, <sup>2</sup>Institute of Collective Health, Federal University of Bahia, Bahia, Brazil, <sup>3</sup>Centro de Investigación para la Salud en América Latina (CISEAL), Pontificia Universidad Católica del Ecuador, <sup>4</sup>Universidad de los Andes, School of Government Colombia, <sup>5</sup>Health Research Consortium - CISIDAT Mexico, <sup>6</sup>School of Business Administration at the Getulio Vargas Foundation (EAESP/FGV) Brazil, <sup>7</sup>Center for Epidemiological Research in Nutrition and Health. (NUPENS), at the University of São Paulo (USP) Brazil, <sup>8</sup>Swiss Tropical and Public Health Institute, Department of Public Health and Epidemiology Switzerland, <sup>9</sup>Center for Health Economics, University of York, United Kingdom, <sup>10</sup>Institute of Global Health (ISGlobal), Barcelona, Spain

Background: The COVID-19 pandemic, Climate change, and Conflict/war(3C's) slowed down the progress of the achievements of the Sustainable Development Goals(SDGs), and they even reversed years of progress in child deaths. On the other hand, social programs can contribute to mitigating these effects. We aimed to investigate the effect of conditional cash-transfer programs(CCT) coverage on child health in Latin-America and the Caribbean(LAC) and forecast the relationship between these programs and under-five mortality rate(U5MR) up to 2030 in the context of the 3C's and current global economic crisis.

Methods: This study has a multicountry municipal-level design, covering 7,204 municipalities in Brazil, Ecuador, and Mexico(BEM). We estimated the impact of CCT target coverage on child hospitalizations and mortality, adjusting for relevant factors, using fixed-effects negative binomial models in 4,882 municipalities with adequate quality of civil registration and vital statistics(CRVS) from 2000-19. Several sensitivity analyses were performed to warranty the robustness of results, including difference-in-difference(Diff-in-diff) with propensity-score matching(PSM) like a triangulation approach. Thereafter, we integrated this with validated dynamic microsimulation models, projecting U5MR trends for 7,204 municipalities up to 2030.

Results: High coverages of CCT programs were associated with a statistically significant reduction in child, infant, and post-neonatal mortality rates, with rate ratios(RR) of 0.76(95%CI:0.75-0.76), 0.73(95%CI:0.72-0.73), and 0.69(95%CI:0.68-0.70), respectively; avoiding 738,919(95%CI:695,641-782,104) child deaths between 2000-19 in the hypothetical case these programs did not exist. The effect of consolidated CCT coverage was highest on poverty-related U5MR such as malnutrition 0.33(95%CI:0.31-0.35), HIV-AIDS 0.32(95%CI:0.28-0.37), diarrhea 0.41(95%CI:0.40-0.43), and lower-respiratory infections 0.66(95%CI:0.65-0.68). Considering a scenario of moderate economic crisis, a mitigation strategy that increases the coverage of CCT proportionally to the increase of poverty could avert 114,513(95%CI:93,846-135,896) deaths by 2030.

Conclusion: CCT could strongly reduce childhood hospitalization and mortality in LAC and their expansion should be considered an effective mitigation strategy for the adverse health impact of the current global economic crisis.

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### Effectiveness of regional health polyclinics in the state of Bahia, Brazil

Erika Aragão<sup>1</sup>, Vinícius Mendes<sup>2</sup>, Diana Gonzaga<sup>3</sup>, Kécia Miranda<sup>4</sup>, Samilly Miranda<sup>1</sup>, Márcio Natividade<sup>5</sup>, Kionna Bernardes<sup>6</sup>, Rafael Damaceno<sup>7</sup>, Laura Schiavon<sup>8</sup>, Luis Portela<sup>1</sup>

<sup>1</sup>Institute of Collective Health (Instituto de Saúde Coletiva: ISC), Federal University of Bahia (Universidade Federal da Bahia: UFBA) Associação Brasileira de Pós-Graduação em Saúde Coletiva - Abrasco Brazil, <sup>2</sup>Faculty of Economics (Faculdade de Economia), Federal University of Bahia (Universidade Federal da Bahia: UFBA) Brazil, <sup>3</sup>Faculty of Economics (Faculdade de Economia), Federal University of Bahia (Universidade Federal da Bahia: UFBA), <sup>4</sup>Institute of Collective Health (Instituto de Saúde Coletiva: ISC), Federal University of Bahia (Universidade Federal da Bahia: UFBA) Brazil, <sup>5</sup>Institute of Collective Health (Instituto de Saúde Coletiva: ISC), Federal University of Bahia (Universidade Federal da Bahia: UFBA), <sup>6</sup>Faculty of Medicine (Faculdade de Medicina), Federal University of Bahia (Universidade Federal da Bahia: UFBA) Associação Brasileira de Pós-Graduação em Saúde Coletiva - Abrasco Brazil, <sup>7</sup>Faculty of Nursing (Faculdade de Enfermagem), UFBA Brazil, <sup>8</sup>Faculty of Economics (Faculdade de Economia), Federal University of Juiz de Fora (Universidade Federal de Juiz de Fora: UFJF) Brazil

Introduction: In 2017, in order to overcome regional inequalities related to healthcare, Regional Health Polyclinics (Policlínicas Regionais de Saúde: PRS) were set up in the state of Bahia. These were principally aimed at filling the gap between Primary and Hospital Healthcare by providing specialized services of medium and high complexity.

Aim: To assess the effectiveness of the implementation of PRS in 8 health regions in the state of Bahia.

Methods: An impact assessment of the polyclinics was undertaken using municipal-level health indicators, which were followed over time, from January 2015 to December 2019. Two groups were defined, a border treatment group, which assessed, between 2017 and 2019, municipalities that belong to one of the 8 regional polyclinics and are located at the consortium's geographical boundary, creating a border with the non-treatment municipalities; and a border control group, containing municipalities that do not belong to any of the polyclinics we assessed, but share a border with those that do. We used Difference-in-Difference and Event-Study approaches to capture the effect of the PRS.

Results: The PRS were seen to be effective locally. Medium and high complexity care increased by 14.8% and 32.3% respectively within the treatment municipalities compared to the controls. There was also an increase in the number of diagnostic procedures, for example MRI and echocardiography, which increased by an estimated 79.1% and 60% respectively. There was a reduction in urgent admissions (-4.5%, or -14 admissions per quarter), admissions due to preventable causes of death (-3% or -6 admissions per quarter) and their respective filtering for urgent admissions due to diseases with a preventable cause of death (-3.4%, or -5 admissions per quarter).

Conclusion: The polyclinics we assessed are effective and have had a positive impact on improving access to specialized outpatient care, with consequent reductions in admissions and deaths."

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### Are hospital beds endowment a driver of patients' migration?

Giovanni Guarducci<sup>1</sup>, Giovanni Guarducci<sup>1</sup>, Simona Carbone<sup>2</sup>, Gabriele Messina<sup>3</sup>, Nicola Nante<sup>3</sup>

<sup>1</sup>University of Siena Post Graduate School of Public Health, University of Siena, Italy Via Aldo Moro, 2 - 53100 Siena (SI) Italy, <sup>2</sup>Ministry of Health, <sup>3</sup>University of Siena Department of Molecular and Developmental Medicine, University of Siena, Italy Via Aldo Moro, 2 - 53100 Siena (SI) Italy

Background and Objective: In a decentralized healthcare system like the Italian, where regions are in a potentially competitive regime since citizens are free to choose their place of treatment, healthcare migration is particularly relevant. The study aims to analyze the fulfilment of the need for hospital rehabilitation services on site and to assess whether bed endowment is a driver of patients' migration.

Methods: From 2011 to 2019, admission data for rehabilitation were collected from the Hospital Discharge Cards database of the Italian Ministry of Health (IMH). For the same period, data of bed endowment were collected from the website of IMH and population data from the Italian National Institute of Statistics website to calculate the number of beds (NB) x 1,000 inhabitants. For each region, data on Residents, Attractions and Escapes were developed through Gandys Nomogram and summarised through Attraction (AI) and Escape (EI) Indexes. NB x 1,000 inhabitants were correlated with AI and EI through Spearman's test.

Results: Gandy's Nomogram showed that only Piedmont, Lombardy, A.P. of Trento, Veneto had good hospital planning for rehabilitation. A statistically significant correlation ( $p < 0.05$ ), between AI and NB x 1,000 inhabitants was found for Veneto ( $\rho = 0.7000$ ), Latium ( $\rho = 0.7333$ ), Molise ( $\rho = -0.8667$ ) and Basilicata ( $\rho = 0.8500$ ), while between EI and NB x 1,000 inhabitants were found for A.P. of Bolzano ( $\rho = -0.667$ ), E.Romagna ( $\rho = -0.7000$ ), Umbria ( $\rho = -0.6667$ ), Latium ( $\rho = -0.8333$ ), Molise ( $\rho = -0.7333$ ), Basilicata ( $\rho = 0.7667$ ), Calabria ( $\rho = -0.7776$ ) and Sicily ( $\rho = -0.9500$ ).

Conclusion: Only four regions appear able to satisfy the care needs of their Residents, with an Attractions minus Escapes positive balance. The beds' endowment seems to be a driver of Patients' migration, mainly for escapes. Indeed, the research of Patients' migration drivers needs further investigation, given the paradoxical situation that appeared in Molise and Basilicata.

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### Hunters' behavior change preferences and perceived risk of Tuberculosis and Brucellosis infection from bison in Canada

David Hall<sup>1</sup>, Louise Caplan<sup>1</sup>, Kyle Plotsky<sup>1</sup>

<sup>1</sup>University of Calgary Canada

Background and Objectives: Although Canada is officially free of bovine tuberculosis (bTB) and brucellosis, wood bison in Wood Buffalo National Park are a known reservoir of these and other zoonotic diseases. Several issues complicate the situation: wood bison are a threatened species; the species is an important cultural and food resource for indigenous communities; and the zoonotic diseases pose an economic and public health risk. As part of a larger project, we wanted to know if hunters would change behavior based on proximity to infected bison. Methods: We investigated potential influences on Alberta hunters' stated willingness to change (WTC) their hunting practices in response to a hypothetical case of a zoonosis in a species they hunt. We anticipated significant predictors would include demographics, risk perceptions, and knowledge of zoonoses. A questionnaire link was distributed to 100,000 hunters in Alberta exploring opinions on managing wood bison health; 139 useable responses were evaluated. Hunters' were asked how close an animal infected with bTB or brucellosis could be before hunters would change hunting practices. Risk awareness was calculated as an aggregated score from questions addressing bTB and brucellosis impact on health and economic livelihood; knowledge was similarly based on questions evaluating knowledge of bTB and brucellosis.

Findings: Results of multiple variable linear regression models show significant predictors of WTC ( $p < 0.05$ ) include income, knowledge of brucellosis and tuberculosis, and threats to hunting opportunities. Age and education were not significant predictors.

Discussion and Conclusions: Although hunters show WTC practices, they were not as sensitive to risk of zoonoses as we expected. Part of the reason may be a false sense of ability to recognize a bTB+ve animal without laboratory confirmation. Our research provides important findings addressing potential policy support that engages hunters in wildlife conservation and their willingness to engage in the particular supportive behaviors.

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### A sustainable resource management model: Establishment of an orphan drug-day for the administration of patisiran

Margherita Cozzio<sup>1</sup>, Alessandro Melis<sup>1</sup>, Marco Montalti<sup>1</sup>, Pasquale Siravo<sup>2</sup>, Donatella Scarlatte<sup>2</sup>, Flavia Lioi<sup>2</sup>, Andrea Ziglio<sup>3</sup>

<sup>1</sup>Hygiene Unit, Department of Biomedical and Neuromotor Sciences, University of Bologna Via San Giacomo 12, 40126, Bologna, Italy,

<sup>2</sup>Pharmaceutical Department IRCCS Istituto delle Scienze Neurologiche di Bologna - AUSL Bologna Via Altura 3, 40139, Bologna, Italy, <sup>3</sup>UOC Health Management IRCCS Istituto delle Scienze Neurologiche di Bologna - AUSL Bologna Via Altura 3, 40139, Bologna, Italy

Background and Objective: Patisiran is the first therapy based on short interfering RNA technology indicated for a lifelong treatment of hereditary transthyretin-mediated amyloidosis. It is administered through intravenous infusion at a dosage of 0.3 mg/kg of body weight (KBW) once every three weeks. Patisiran is supplied in single-use 10 mg/5mL vials, and any drug residues must be disposed of immediately; it is sold at an ex-factory price of €8,529.41/vial.

This work aims to demonstrate how unifying patisiran administration sessions on a single day ('Drug-Day') for patients followed by different clinicians is advantageous for containing pharmaceutical expenditure.

Methods: We conducted an observational study in an Italian Research Institute for Neurological Sciences (ISNB) in the period between February 2021 and November

2022, divided into two phases: Phase 1 (February 2021-March 2022) and Phase 2 (April-November 2022), corresponding to before and after the establishment of Drug-Days, respectively. Applying this model (Drug-Day), at the beginning of Phase 2 at the ISNB the nine patients undergoing treatment with patisiran were divided into two groups for two distinct drug administration sessions according to their body weight: the sum of the total body weight of each group was a value very close to a multiple of 33 (each vial covers 33.3 KBW).

Results: During Phase 1 patisiran monthly wastage was on average 9.2% of the vials used; during Phase 2, we recorded a drug wastage of 1.8%.

The data collected show that this strategy resulted in a saving of €27.29/KBW/administration and €32,480/model patient (70 KBW)/year (corresponding to 3.8 vials).

Conclusion: This study showed that careful management of drug administration sessions, by reducing the leftover drug, allows creation of a more economically sustainable model and redirection of resources.

Therefore, a multidisciplinary collaboration between different professionals is necessary for implementation of strategies to make pharmaceutical spending more sustainable.

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### Delivering prevention in an ageing world: the healthy ageing and prevention index

Arun Himawan<sup>1</sup>, Patrick Swain<sup>1</sup>

<sup>1</sup>International Longevity Centre UK United Kingdom

Introduction and objectives

People are living longer but not necessarily healthier, resulting in significant health and economic costs. Yet policy makers continue to fail to invest in preventative health, with OECD countries spending on average only 3% of their health budgets on prevention. Our global initiative will:

\* Hold Governments to account by tracking progress on prevention through the launch of a digital Healthy Ageing and Prevention Index.

\* Demand action by forming a Global Coalition with leading organisations

Methods: \* Our Index ranks 118 countries on six dimensions (life, health and work span, income, the environment and happiness). Data is obtained from: United Nations; World Bank; World Health Organisation; International Labour Organisation; and Yale.

\* Our coalition will elevate the importance of prevention among global actors and respond to key calls to action.

Results: \* We've ranked countries using 2019 data – the most complete dataset currently available. We are currently developing the online tool.

\* We have identified the top 100 stakeholders to invite to join the Coalition. Invitations will be sent out before the new year.

Conclusion: With the Decade of Healthy Ageing and the European Union revising its Global Health Strategy, we're presented with an important opportunity to drive change. We will hold a series of global policy forums to get commitment from senior policymakers and key stakeholders to drive action. Last month, we held a policy debate at the House of Lords on the future of healthy ageing ahead of G20 in India. We aim to launch the Index and Coalition alongside the 76th World Health Assembly.

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### The community pharmacy integration in colorectal cancer screening: the Italian model

Silvia Deandrea<sup>1</sup>, Silvia Deandrea<sup>2</sup>, Petra Valle<sup>3</sup>, Francesca Battisti<sup>4</sup>, Paola Brusa<sup>5</sup>, Paola Mantellini<sup>6</sup>, William Mantovani<sup>7</sup>, Elena Narne<sup>8</sup>, Anna Odone<sup>1</sup>, Carlo Senore<sup>9</sup>

<sup>1</sup>Pavia Health Protection Agency, Pavia, Italy, <sup>2</sup>Pavia Health Protection Agency, Directorate General for Health Pavia Health Protection Agency, Pavia, Italy, <sup>3</sup>University of Pavia, Pavia, Italy, <sup>4</sup>Istituto per lo Studio, la Prevenzione e la Rete Oncologica, <sup>5</sup>Dipartimento di Scienza e Tecnologia del Farmaco, Università degli Studi di Torino, Torino, Italy, <sup>6</sup>Istituto per lo Studio, la Prevenzione e la Rete Oncologica, Firenze, Italy, <sup>7</sup>Azienda Provinciale per i Servizi Sanitari di Trento, <sup>8</sup>Azienda Zero, Padova, Italy, <sup>9</sup>AOU Città della Salute e della Scienza di Torino, Torino, Italy

Background and objective: Despite its effectiveness, compliance to colorectal cancer (CRC) screening remains low. Different strategies to improve uptake are available, including the involvement of stakeholders such as the community pharmacists. In Italy a recent national initiative developed this strategy, scaling-up the collaboration between pharmacies and screening programs from the local level up to the national level.

**Methods:** The regional representatives of the CRC screening programs provided to the National Screening Monitoring Centre the agreements arranged between the Regions/Autonomous provinces and their respective pharmacy owners representatives. The agreement decrees were analysed describing the fecal occult blood test pathway (e.g. kit supply and delivery) and supplementary activities provided by the pharmacies together with the CRC screening kit delivery, such as health promotion.

**Results:** Eighteen Regions and Autonomous provinces (86% of the total) provided requested data. The amount paid for each kit varies a lot, with a range from 0 to 18 EUR. The number of kit pathway processes covered by the agreements ranged from a maximum of 16 (out of 18) to a minimum of none. Processes more frequently included were the supply of the kit, the delivery of the kit, and education/awareness of CRC screening (68.8%), followed by sample transfer to the laboratory, test tube tracing and counselling (62.5%). Less covered processes were the warehouse management and awareness of other healthcare initiatives (12.5%); a supplementary agreement on delivery of preparation for intestinal cleansing was included only once.

**Conclusions:** The Italian model showed good potential for collaboration, but the lack of a unique collaboration model. Integration of pharmacies in CRC programs is promising and quality standards of the service should be set at international level.

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### The experience of approaching child labor in a Brazilian public school

Michelly Andrade<sup>1</sup>, Camila Nascimento<sup>2</sup>, Bruna Silva<sup>3</sup>, Carla Chamouton<sup>3</sup>, Helenice Nakamura<sup>2</sup>

<sup>1</sup>University of Campinas - UNICAMP Luso Ventura Street, number 410.

Jardim Santa Genebra. Campinas - São Paulo. Code Zip: 13080-170. Brazil,

<sup>2</sup>University of Campinas - UNICAMP, <sup>3</sup>University of Campinas - UNICAMP Brazil

**Background and objective:** In Brazil, child labor is defined as being carried out by children or adolescents under the age of sixteen years old, except in cases of minor apprentices programs. However, according to data from 2019, 1.8 million children and adolescents are working in Brazil. The complexity of the reality experienced by children and adolescents in front of work mobilizes the engagement of various governmental and non-governmental agencies and institutions for the eradication and prevention of child labor, as well as actions to encourage learning. The objective of the present work is to present the experience of a health promotion action developed by Speech, Language and Hearing Sciences undergraduate students about child labor in one Brazilian public school.

**Methods:** The activity was developed as part of a practical discipline of worker's health in a Speech, Language and Hearing Sciences undergraduate course. The selected public school is located in an area of high social and economic vulnerability. The actions included a theoretical discussion about child labor and its health repercussions, the pact with the school board and the planning of the strategies to approach the students.

**Results:** Ten Speech, Language and Hearing Sciences undergraduate students conducted the activities in which 300 students, between nine and twelve years, participated. The approach consisted of defining what child labor means and the repercussions of work for children and adolescents, impacting health, education, and the future. The undergraduate students evaluated the experience as being important for developing specific knowledge and communication abilities. The school board perceived the importance of discussing child labor and saw their students using the new information in their daily lives.

**Conclusion:** Child labor is a matter to be discussed and approached in health and educational institutions, considering its repercussions on all aspects of children's lives and their future possibilities.

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### Economic impacts of covid-19 on patients with type 2 diabetes in Tanzania and Kenya: a costing analysis

Caroline Karugu<sup>1</sup>, Peter Binyaruka<sup>2</sup>, Shukri Mohammed<sup>1</sup>, Richard Sanya<sup>1</sup>, Sally Mtenga<sup>2</sup>, Gershim Asiki<sup>1</sup>, Eleanor Grieve<sup>3</sup>, Manuela Diedda<sup>3</sup>

<sup>1</sup>African Population and Health Research Centre (APHRC) APHRC Kenya,

<sup>2</sup>Ifakara Health Institute, <sup>3</sup>University of Glasgow United Kingdom

**Introduction:** Globally, healthcare systems were adversely affected by the COVID-19 pandemic. COVID-19 affected healthcare access, utilization, and affordability, especially for patients suffering from chronic diseases including diabetes. We estimated direct healthcare costs among patients with type 2 diabetes in Kenya

and Tanzania.

**Methodology:** This cross-sectional study was conducted in Kenya and Tanzania in March-June among 1000 patients with type 2 diabetes (500 in each country). Data entailed the direct healthcare costs, societal costs, and other clinical and social variables for the period before COVID-19 and during the pandemic. The main outcome was the total direct healthcare costs, while the primary predictor was the time before and after COVID-19 adjusted for patient sociodemographic and clinical factors. A generalized linear regression model (GLM) was used in Kenya, while the Two-part model (logit + GLM) was used for Tanzania to identify predictors of costs.

**Results:** A small non-statistically significant increase in total direct costs was observed in both countries. The mean direct healthcare costs for patients with type 2 diabetes in Kenya and Tanzania during COVID-19 increased to Kshs. 5,267.0(0-60,000) and TZshs. 17075.8(0-180,800), respectively. Type 2 diabetes testing costs increased significantly in both countries (Kenya: increase by Kshs. 567(233.56), p<0.05); Tanzania TZshs.754 (144.20), p<0.01). Outpatient costs increased substantially in Tanzania (TZshs. 902.50(2,151.79), p<0.01, but decreased significantly in Kenya (Kshs. 385(370.34), p<0.05). Type 2 diabetes medication costs decreased significantly in Kenya: increase by the amount (SE) of Kshs. 649.49(289.32), p<0.05, but the decrease in Tanzania was not statistically significant (TZshs. 166.20(568.02), p>0.01).

**Conclusion:** Overall, all costs increased slightly over time in Kenya and Tanzania illustrating that the COVID-19 pandemic situation has some impact on patients' management of diabetes. Economic measures and policies should be implemented to improve the funding and financing of patients with chronic conditions in East Africa during emergencies and pandemics.

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### Relations between the public administration and the private sector in the contracting of health services in a hospital complex in the city of Rio de Janeiro, Brazil

Tiago de Carvalho<sup>1</sup>, Mônica Morangueira<sup>1</sup>

<sup>1</sup>Hospital Municipal Evandro Freire Brazil

**Background, objective:** The Brazilian Public Health System, provides in its Organic Law the actions of the private sector in health. The public administration partners with the private sector to manage the provision of assistance to the population. The objective is to present the conflicting relationships due to the scarcity of resources and the impacts of this on access and quality of care for the population. **Methods:** Michel Porters Value equation model was used, presenting strategies to improve quality and reduce costs considering the scarcity of resources in public health, applied in the management of the Evandro Freire hospital, which is composed of an emergency room and a hospitalization.

**Results:** In the midst of a scenario with restrictions on the minimum functioning of the services contracted by the partnership with the municipal administration, measures were adopted based on a decision matrix, namely: alignment of processes, people and technologies; turnaround to increase operational excellence and reduce the variability of indicators. As a result, there was a gain in production and an increase in the quality of care expressed by care indicators such as the reduction of institutional mortality through the management of care protocols, in addition to the reduction of costs and engagement with the purpose of delivering a result of value to the community. user population of the Public Health System. **Conclusion:** Despite the conflicting situations between the public administration and the hospital complexes management operation in fundraising, the implemented measures impacted the work process and the quality of care provided to the population. The differentiated position with the public power for the recognition of the quality services generated possibilities of negotiation in the partnership of the successful results. Concluded that despite the weakening of public health policies in Brazil, it is possible to deliver valuable results for users Public Health System.

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### Public health actions implemented by the Lombardy Region to revamp cervical cancer prevention

Silvia Deandrea<sup>1</sup>, Chiara Marrocu<sup>2</sup>, Sudwaric Sharma<sup>2</sup>, Roberta Lattanzio<sup>2</sup>, Giovanni Cicconi<sup>2</sup>, Sara Piccinelli<sup>2</sup>, Danilo Cereda<sup>1</sup>, Catia Borriello<sup>1</sup>, Silvana Castaldi<sup>2</sup>, Riccardo Vecchio<sup>2</sup>, Gaia Ferraguzzi<sup>2</sup>

<sup>1</sup>Directorate General Welfare Region Lombardy Italy, <sup>2</sup>Postgraduate School in Public Health, Department of Biomedical Sciences for Health, University of Milan

**Introduction:** In Italy in 2020, 2,400 new cases of cervical cancer were diagnosed, equal to 1.3% of all cancers occurring in women.

Even though organized cervix screening was part of the Italian Essential Levels of Assistance (LEA), it was not actively offered in Lombardy Region, where opportunistic screening was more widespread. Instead, an active papillomavirus vaccination campaign was in place. This study aims to describe the public health strategies adopted in the Lombardy Region to revamp cervical cancer prevention. Methods: To achieve this goal, crucial regulatory acts were implemented. Some of these are:

- Issue of the Regional Prevention Plan 2021-2025 (DGR 5389 of 18/10/2021).
- Inclusion of screening programs among the performance evaluation objectives of the General Directors of the Health Protection Agencies (ATS) and the Local Social Healthcare Agencies (ASST) (DGR 5832 of 29/12/2021)
- Creation of the "Regional Oncological Screening Multidisciplinary Coordination" and of the "Cervix Working Group" (Decree 2125 of 22/02/2022)
- Launch of the primary screening pilot project for the prevention of cervical cancer using self-collected sampling combined with the HPV test (DGR 7435 of 11/30/2022)

Results: As a result of the above actions, significant results were obtained:

\* Primary prevention goal: active invitation of the 1997 cohort to vaccination on their first screening appointment, which led to a 32.4% vaccination coverage in this cohort

\* Secondary prevention goal: 153,703 invitations to HPV screening

\* Issue of a guidance document covering all aspects of the screening pathway, from laboratory to follow-up management

Conclusions: The Lombardy Region has successfully initiated the screening for cervical cancer with ongoing roll-out, expecting a complete invitation coverage in few years.

New goals in perspective include expanding the free offer of the vaccine to young women between 18 and 25 years of age and increasing overall immunization coverage.

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### **A conceptual framework to evaluate the socioeconomic impact of in-silico models for implantable medical devices**

Siegfried Eisenberg<sup>1</sup>, Miriam Reiss<sup>1</sup>, Thomas Czyponka<sup>1</sup>, Markus Kraus<sup>1</sup>, David Rösler<sup>1</sup>

<sup>1</sup>Institute for Advanced Studies Vienna Austria

Background/Objectives: The use of in-silico technologies in the development of implantable medical devices has gained importance in the last decade, but impacts on the economy and society have been hardly investigated. As part of the EU-funded project SIMCOR, we therefore developed a conceptual framework to describe the impact channels from primal effects along the product development cycle to numerous socioeconomic endpoints.

Methods: We applied an iterative process to build concepts from data and set them in relation to each other using the method described in Jabareen (2009). Information from a scoping review of the literature were complemented with expert interviews from academia, companies and regulatory bodies. Repeated steps of literature work, exploratory interviews and frequent discussion sessions among the research team led to the presented framework. The resulting framework was validated through feedback from experts.

Results: The conceptual framework describes the whole chain of impacts from the technical changes brought about by the use of in-silico technologies along the product development cycle up until the socio-economic endpoints. These are allocated to four different levels, namely 'Firm', 'Market', 'Health System' and 'Society'. The conceptual framework indicates that in-silico methods could not only accelerate product development and reduce costs, but also patient safety is expected to be improved, innovations are supported and the price for a medical treatment might decrease. Underrepresented patient groups may also benefit from the use of the technology, as it expands the possibilities to augment the number of individuals in clinical trials and model rarer anatomical configurations. Conclusions: The conceptual framework serves as a basis for the quantification of the impacts of in-silico technologies on firm, market, health system, and society and, consequently, the potential benefits as well as disadvantages can be estimated and better classified from different perspectives.

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### **Dots therapy as an "idealized body" making project: Participation of pulmonary tuberculosis patients in the national tuberculosis control program (ntp) of Bangladesh**

Sudipta Gupta<sup>1</sup>, AFM Zakaria<sup>1</sup>

<sup>1</sup>Shahjalal University of Science and Technology, Sylhet Bangladesh

The fight against TB has a long history in Bangladesh since 1965. By 2007, NTP reached 100% DOTS coverage nationwide, with a 96% success rate of tuberculosis treatment in Bangladesh. Additionally, TB care coverage improved to 81% in 2019. We employ the concept of Biological Citizenship to critically examine the mechanisms of creating and turning pulmonary tuberculosis patients into "Idealized Body" through governing techniques of DOTS therapy in Bangladesh. This study followed a Focused Ethnographic Study (FES) approach, including 28 In-depth Interviews and 16 key informant interviews with TB patients, caregivers, community people, and TB healthcare officials, along with multiple short field visits, direct observations, and relevant document review. The study took place in the urban settings of Sylhet city, Bangladesh, and the participants were selected purposively. Based on the existing TB control program implemented by government organizations and non-government organizations to understand the notion of the pulmonary TB healthcare-seeking and providing process and its effect on the pulmonary TB patients as 80% of TB in Bangladesh are pulmonary Tuberculosis. Our study highlights how pulmonary tuberculosis patients are disciplined, governed, and turned into "Idealized Bodies" through DOTS therapy. The DOTS therapy for Tuberculosis emphasizes self-management, individual responsibilities, health optimization, and disease prevention. Our study showed that the governing mechanisms of DOTS therapy help pulmonary TB patients to understand the disciplinary mechanisms currently effective in DOTS therapy in Bangladesh to make a self-disciplined patient that eventually and gradually turns into an "Idealized Body."

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### **The comprehensive health impact of cash transfer, social pensions and primary health care in Brazil: An integrated evaluation and forecasting analysis to mitigate the effects of the global economic crisis**

Jose Ordoñez<sup>1</sup>, Temidayo Aransiola<sup>2</sup>, Davide Rasella<sup>3</sup>, Jose Ordoñez<sup>1</sup>, Daniella Cavalcanti<sup>1</sup>, Temidayo Aransiola<sup>4</sup>, Phillip Hessel<sup>5</sup>, Ana Moncayo<sup>6</sup>, Carlos Chivardi<sup>7</sup>, Alberto Sironi<sup>2</sup>, Renato Tascia<sup>8</sup>, Tereza Campello<sup>9</sup>, Romulo Souza<sup>10</sup>, Gulnar Silva<sup>11</sup>, Felipe Rubio<sup>2</sup>, Luis de Souza<sup>12</sup>, James Macinko<sup>13</sup>

<sup>1</sup>Federal University of Bahia Federal University of Bahia Brazil, <sup>2</sup>Federal University of Bahia, Brazil, <sup>3</sup>Institute of Collective Health (ISC), Federal University of Bahia (UFBA), Brazil, <sup>4</sup>Federal University of Bahia, <sup>5</sup>Swiss Tropical and Public Health Institute, Department of Public Health and Epidemiology Switzerland, <sup>6</sup>Centro de Investigación para la Salud en América Latina (CISEAL), Pontificia Universidad Católica del Ecuador Ecuador, <sup>7</sup>Center for Health Economics, University of York, UK, <sup>8</sup>School of Business Administration at the Getulio Vargas Foundation (EAESP/ FGV) Brazil, <sup>9</sup>Center for Epidemiological Research in Nutrition and Health. (NUPENS), at the University of São Paulo (USP) Brazil, <sup>10</sup>Fiocruz Brazil, <sup>11</sup>Universidade Estadual de Rio de Janeiro Brazil, <sup>12</sup>Institute of Collective Health, at the Federal University of Bahia (ISC-UFBA) Brazil, <sup>13</sup>University of California, Los Angeles (UCLA) United States

Background: In the past few years, Brazil has implemented some of the world's largest Conditional Cash Transfers (Bolsa Familia Program -BFP), Social Pensions (Benefício de Prestação Continuada -BPC), and Primary Health Care (Family Health Strategy -FHS). We evaluated their impact on morbidity and mortality indicators over the last two decades. We then forecasted their mitigation effects on the adverse health impact of the economic crisis due to the COVID-19 pandemic.

Methods: In the retrospective impact evaluation, we used fixed-effects negative binomial models with a cohort of Brazilian municipalities from 2004-19 to estimate the impact of BFP, BPC, and FHS coverage on hospitalizations and mortality, adjusted for all relevant demographic, social, and economic factors. Subsequently, we integrated the longitudinal dataset and parameters with validated dynamic microsimulation models, projecting hospitalization and mortality trends up to 2030 according to different intensities and durations of the economic crisis, and alternative policy responses.

Findings: Consolidated coverages of BFP, FHS, and BPC were associated with a statistically significant reduction of overall age-standardized mortality rates. Stronger effects were found for under-five mortality, with RR of 0.87 (95%CI:0.85-0.90), 0.90(95%CI:0.88-0.93), and 0.84(95%CI:0.82-0.86), respectively. A significant impact was also found on over-70 mortality and hospitalizations. Considering a scenario of moderate economic crisis, a mitigation strategy that will increase the coverage of BFP, FHS, and BPC proportionally to the increase of poverty will avert 778,845 (95%CI: 665,074-893,674) deaths and 10,780,108 (95%CI: 8,003,123-13,523,359) hospitalizations by 2030, if compared with the current coverage trends, and 1,424,624 (95%CI: 1,264,552-1,587,859) deaths and 15,656,283 (95%CI: 11,963,641-19,358,468) hospitalizations, if compared with

scenarios of fiscal austerity.

Interpretation

Cash transfers, social pensions, and primary health care could strongly reduce morbidity and mortality in low and medium income countries, and their expansion should be considered as an effective mitigation strategy for the adverse health impact of the current economic crisis.

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### Analysis of melanoma-related cost factors based on clinical and pathological features

Ruggero Geppini<sup>1</sup>, Alessandra Buja<sup>2</sup>, Massimo Rugge<sup>3</sup>, Manuel Zorzi<sup>4</sup>, Claudia Cozzolino<sup>5</sup>, Andrea Miatton<sup>2</sup>, Carlo Formaro<sup>1</sup>, Antonella Vecchiato<sup>6</sup>, Saveria Tropea<sup>7</sup>, Del Fiore<sup>8</sup>, Carlo Rossi<sup>9</sup>, Simone Mocellin<sup>10</sup>

<sup>1</sup>University of Padua, Padua, Italy Department of Cardiologic, Vascular and Thoracic Sciences, and Public Health, University of Padua, Padua, Italy "Via Loredan, 18 35131 Padova - Italy" Italy, <sup>2</sup>University of Padua, Padua, Italy Department of Cardiologic, Vascular and Thoracic Sciences, and Public Health, University of Padua, Padua, Italy "Via Loredan, 18 35131 Padova - Italy" Italy, <sup>3</sup>University of Padua, Padua, Italy Department of Medicine - DIMED, Pathology and Cytopathology Unit, University of Padua, Padua, Italy "Via Giustiniani, 2 35128 Padova - Italy" Italy, <sup>4</sup>Azienda Zero, Padua, Italy Veneto Tumor Registry, Azienda Zero, Padua, Italy, <sup>5</sup>University of Padua, Padua, Italy Department of Statistical Sciences, University of Padua, Padua, Italy "Via Loredan, 18 35131 Padova - Italy", <sup>6</sup>Veneto Institute of Oncology IOV- IRCCS, Padua, Italy Soft-Tissue, Peritoneum and Melanoma Surgical Oncology Unit, Veneto Institute of Oncology IOV- IRCCS, Padua, Italy, <sup>7</sup>Veneto Institute of Oncology IOV- IRCCS, Padua, Italy Soft-Tissue, Peritoneum and Melanoma Surgical Oncology Unit, Veneto Institute of Oncology IOV- IRCCS, Padua, Italy Paolo, <sup>8</sup>Veneto Institute of Oncology IOV- IRCCS, Padua, Italy Soft-Tissue, Peritoneum and Melanoma Surgical Oncology Unit, Veneto Institute of Oncology IOV- IRCCS, Padua, Italy Vincenzo Baldo University of Padua, Padua, Italy Department of Cardiologic, Vascular and Thoracic Sciences, and Public Health, University of Padua, Padua, Italy "Via Loredan, 18 35131 Padova - Italy" Italy, <sup>9</sup>University of Padua, Padua, Italy Department of Surgery, Oncology and Gastroenterology (DISCOG), University of Padua, Padua, Italy "Via Giustiniani, 2 35124 Padova - Italy" Italy, <sup>10</sup>University of Padua, Padua, Italy Department of Surgery, Oncology and Gastroenterology (DISCOG), University of Padua, Padua, Italy

**Background & Objective:** The incidence of cutaneous malignant melanoma (CMM) has continued to rise with predominantly fair-skinned populations in recent decades. The introduction of innovative therapies has resulted in a rising burden on healthcare resources for this condition. This study analyzes potential drivers of the direct costs of healthcare services for the melanoma patient care pathway.

**Methods:** A cohort study was conducted, based on all CMMs collected in 2015 and 2017 by the Veneto Cancer high-resolution registry of incident cases of melanoma (RTV). Costs were assessed from the perspective of the Italian national health system. Each patient was linked via an anonymous unique identification code to all administrative data regarding their hospital admissions, day hospital service usage, drug prescriptions, admission to the emergency room, medical devices used at home, ambulatory services, and hospice admissions. The data used to calculate the melanoma-related costs spanned from one year before the diagnosis to four years afterwards. Data were stratified by age, sex, tumor characteristics (TNM stages and histologic subtypes), and survival time.

**Results:** The cost analysis showed that expenditure peaked in the first year after diagnosis and then decreased over time. Males incurred higher costs, especially during the peak (+37%). Stratifying by TNM stage, the average melanoma-related expenditure for stage I was 15 times lower than for stage IV. The largest cost item was for drugs, except for stage I disease. The nodular subtype was associated with higher costs.

**Conclusion:** Hospitalization, inpatient drugs, and outpatient visits emerged as the main cost items for CMM patients. The cost of hospital stays was higher in the first year after diagnosis. In subsequent years, spending of hospitalization decreased and spending on drugs increased proportionally.

Significant differences in the average costs over the 4 years after diagnosis depended on tumor's anatomopathological features, stage of disease, and patients' sociodemographic characteristics.

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### Opportunistic hepatitis c screening in emergency department to curb undiagnosed fraction

Antonello Agostini<sup>1</sup>, Angelo Baggiani<sup>2</sup>, Caterina Rizzo<sup>1</sup>, Lara Tivoschi<sup>1</sup>

<sup>1</sup>Università di Pisa Italy, <sup>2</sup>Università di Pisa

**Background and objective:** WHO (World Health Organization) aims at eliminating HCV (Hepatitis C Virus) by 2030. To reach the purpose increase testing activity is required in order to reduce undiagnosed fraction. Screening performed in hospital settings and Emergency Department (ED) in particular has the potential to reach large number of individuals, including those with suboptimal access to healthcare services.

**Methods:** We searched in PubMed, Scopus and Google Scholar the keyword HCV and screening and hospital. We included articles published between 2013 and 2022 dealing with HCV hospital or ED screening activities in European Countries.

**Results:** We found 27 articles across 7 countries.

According to two United Kingdom cost-effectiveness studies, HCV screening is cost-effective in high prevalence areas, and is likely to be so in low prevalence areas.

Subnational studies focusing on opportunistic screening in ED (n=15) were performed in Belgium, Germany, Ireland, Italy and UK. Included individuals were 15 years or older. The rate of new HCV diagnosis (i.e. HCV RNA+ or HCVAg+) ranged from 0.08% to 0.75% in UK

Subnational studies focusing on opportunistic screening among hospitalised individuals (n=10) were carried out in Germany, Italy, Poland, Romania. Patients included were aged 0-104 years. In Germany, Italy, Spain studies focused on pre-surgical screening. In Italy, Poland, Romania and Spain studies focused on individuals hospitalised for different reasons, including three studies on SARS-CoV2 patients. New HCV diagnoses rate (i.e. HCV RNA+) ranged from 0.02% in Germany to 0.37% in Italy, where new diagnoses represented the 38.59% of the total.

**Conclusion:** ED screening resulted cost effectiveness in high prevalence areas. HCV opportunistic screening in hospital settings is effective in identifying previously undiagnosed individuals, including those with suboptimal access to preventive healthcare services. Policy makers could evaluate whether to promote ED screening in order to reduce the undiagnosed fraction

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### Primary healthcare and health district : Regulatory, functional and application aspects

Elisa Gabrielli<sup>1</sup>, Mara Morini<sup>2</sup>

<sup>1</sup>University of Bologna Alma Mater Studiorum University of Bologna Bologna Italy, <sup>2</sup>StI

**Background and Objective:** The Health District in Italy is an organizational unit of the Local Health Authority system. It is deputed to analyze the District healthcare needs, plan economic and technical healthcare resources, and monitor healthcare services, according to the "Health Needs Assessment" model. During years the functions of the Health District have constantly evolved and now in consideration of the large European investments (PNRR) we would analyze with this article the challenges for a future Health District.

**Methods:** In the present paper we analyzed the legislation during the year on Health District function, governance and healthcare management. We collected the Italian population features on ISTAT data. We identified the best practices for a new Health District paradigm.

**Results:** From a regulatory perspective, the functions of the Health District have constantly evolved since it was established in 1978, and they currently include production, governance, purchasing, planning, guarantee towards citizens and integration between territorial and hospital healthcare services.

The Health District represents the practical application of the Primary Health Care founding principles and it can best respond to the peculiar Italian epidemiological and social setting. Given the progressive aging of the Italian population coupled with the increase in chronic diseases, the growth of small nuclear families that struggle to assist their sick elderly people and the rise in healthcare costs, a paradigm change is necessary to help move towards health promotion and disease prevention, as well as to implement strategies of healthcare co-production and community building.

**Conclusion:** In the current post-pandemic scenario and in consideration of the large European investments (PNRR), it is crucial for the Italian Health System to focus on the Health District organizational structure, and to identify and share its best practices in order to effectively respond to community social-clinical needs and improve the territorial healthcare services.

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### Understanding the normative leadership of the world health

**organization (who): a mixed-method approach**

Catherine Regis<sup>1</sup>, Miriam Cohen<sup>1</sup>, Jean-Louis Denis<sup>1</sup>, Pierre Larouche<sup>1</sup>, Gaëlle Foucault<sup>1</sup>, Marie-Andrée Girard<sup>1</sup>

<sup>1</sup>Université de Montréal Canada

**Background and objective:** Created to achieve the highest attainable level of health for all, the WHO is empowered to adopt international norms to guide Member States (MS). If the adoption of a norm can be an essential step in global health governance, ensuring compliance by MS is equally important if WHO normative leadership is to reach its full potential. How can we evaluate the WHO normative leadership? Answering this complex question calls for an interdisciplinary approach with the purposeful addition of a mixed method approach.

**Methods:** To ensure a global approach to the research question, we designed a novel four-step mixed-method approach led by an interdisciplinary team (scholars from law and social sciences, with clinical experts). Our first step was the building of an initial theoretical framework on the implementation of international norms, based on an in-depth study of the relevant literature. This step allowed us to identify factors influencing state compliance, in order to build an analytical grid for our case studies (second step) and a guide for semi-structured interviews (third step). The second and third steps were conducted in a convergent parallel design, with quantitative and qualitative analysis of WHO references in the domestic law of 7 countries and interviews with key international and national actors.

**Results:** Developing a specific design ensures that the research object is thoroughly understood. The interdisciplinary approach improves on the current theories on the WHO normative leadership. Various challenges arose from this mixed method, such as the selection of key actors and the plurality of working languages.

**Conclusion:** A comprehensive study of the WHO normative leadership requires a novel mixed-method approach that better captures both legal and governance aspects.

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**The role of family practitioners in the primary healthcare system in Rio de Janeiro**

Maria Falcão<sup>1</sup>, Gabriel Velloso<sup>2</sup>

<sup>1</sup>Secretaria Municipal de Saúde do Rio de Janeiro Coordenadoria Geral de Atenção Primária 3.2 R. Aquidabã, 1037 - Lins de Vasconcelos, Rio de Janeiro - RJ, 20720-292 Brazil, <sup>2</sup>Secretaria Municipal de Saúde do Rio de Janeiro

**Background and objectives:** The historical, political and geographic context determine complex obstacles for healthcare managers and staff in the Brazilian public health system, that require managerial strategies which could induce positive changes for healthcare services, professionals and patients. In this sense, a new model of managerial intervention started in the early 2000s in Brazil, named Institutional Support, defined as a series of actions including coordination, planning, evaluation and supervision of a healthcare service shared by its own workers and professionals of other management levels. Traditionally, in the Brazilian Primary Healthcare (PHC), the medical specialists in Family Practice are kept away from managerial roles. The purpose of this study is to present the PHC system in Rio de Janeiro and the role of Family Practitioners in its management.

**Methods:** This is an experience report based on the narrative of Family Practitioners working in public PHC management and in the identification of their role in Institutional Support.

**Results:** Family Practitioners have several roles as managers in the PHC management, such as medical directors of PHC services, regional medical coordinators and administrator in the Municipal Secretary of Health. Potentialized by an expanded understanding of care demands, including clinical and administrative aspects, and by developing institutional democratization and co-management, Family Practice specialists have been qualifying the PHC system through Institutional Support, strengthening its role in health promotion and prevention, treatment and rehabilitation of diseases, and also promoting financial sustainability for the health system.

**Conclusions:** Family Practice is a comprehensive medical specialty, with focus on individual, familiar and community care, but also with important competencies that can contribute for healthcare management, especially in roles of Institutional Support.

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**COVID-19 'infodemic' management: Russia's key tool for influencing geopolitics**

Halyna Padalko<sup>1</sup>, Plinio Morita<sup>2</sup>

<sup>1</sup>National Aerospace University "Kharkiv Aviation Institute" Ukraine,

<sup>2</sup>University of Waterloo Canada

Russian propaganda has become a famous tool for influencing geopolitics, significantly impacting the US election. The research aims to analyze the Russian foreign influences in the info space of the USA and Ukraine using infodemic about COVID-19 in social media and affiliated media. As a research method, we used comparative case studies of countries, including qualitative analysis of open sources, reports from analytical companies, journalistic investigations, and governmental documents. The research results showed that Russia has a significant impact on sharing disinformation about COVID-19 in US and Ukraine, aiming to undermine countries authorities efforts to eliminate pandemic consequences and try to cause a substantial public health crisis. They used similar narratives, such as conspiracy theories, but their strategies differed. In terms of the US, they used the polarisation of society to amplify polar opinions on social media, increasingly dividing society. In Ukraine, many narratives were building around the inability of the authorities to protect the population and offering of Russian vaccine for Ukrainians. The weakening of Ukrainian power and delegitimization of the Ukrainian government, using the infodemics about COVID-19, was strategically significant for Russia to prepare solidly for a full-scale invasion of Ukraine on February 24th, 2022. The rising power of authoritarian regimes in Russia and worldwide strengthens their ability for digital totalitarianism, allowing them to use foreign propaganda to undermine other countries health systems. Democratic governments, which respect the freedom of speech, are especially vulnerable to disinformation challenges. In that case, democracies need strategic changes and new approaches to information warfare. This requires in-depth research and interstate coordination to launch campaigns that will include data sharing and countermeasures to effectively counter Russian propaganda and fight digital totalitarianism.

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**Impact of covid-19 policy responses on health, socio-economic and environmental dimensions in five countries**

Federica Morani<sup>1</sup>, Stefano Odelli<sup>1</sup>, Edoardo Croci<sup>2</sup>, Annamaria Bagaini<sup>1</sup>, Federica Morani<sup>1</sup>, Stefano Odelli<sup>1</sup>, Alessandra Candia<sup>1</sup>, Silvia Steri<sup>1</sup>, Cristina Renzi<sup>3</sup>, Anna Odone<sup>2</sup>, Carlo Signorelli<sup>1</sup>, Gianmarco Imperiali<sup>1</sup>

<sup>1</sup>School of Public Health, Vita-Salute San Raffaele University Italy, <sup>2</sup>Bocconi University Italy, <sup>3</sup>School of Public Health, Vita-Salute San Raffaele University College London Italy

The COVID-19 pandemic generated devastating impacts on human health and economic activities. Three groups of policy strategies are adopted to address health and socio-economic problems: containment, economic and health policies. This report is part of the Coronadx EU funded project (n. D7.4) and aims to examine the impact of COVID-19 policy responses on health, socio-economic and environmental dimensions in five countries.

The analysis (2020-2021) involved Denmark, Italy, Israel, Sweden, United Kingdom. For each country we set up a matrix aimed at identifying the relevance of statistical relationships between the economic, social, health and environmental variables and the policy responses examined in the study cases. The effectiveness of each country's policies was examined using a cost-effectiveness approach. We attributed monetary values to the costs of policy responses and their effect indicators. The policy response costs included national economic support and health policies (vaccination campaigns, contact tracing, face masks). The policy effect indicators included GDP recovery, CO2 emission reduction and COVID-19 deaths averted.

Stricter containment policies have significant economic, environmental, and health impacts. Economic support policies had limited relevance, and health policies, especially vaccination campaigns, were highly effective. Italy, Sweden and the United Kingdom are the countries where the overall positive effects overcome costs. Overall positive effects are two times higher than costs in the UK and almost three times higher in Italy and Sweden. Conversely, Denmark and Israel report a negative balance. Denmark shows the lowest policy effectiveness, with policy costs four times higher than positive effects. The cost-effectiveness assessment shows high effectiveness for the Italian and the UK models.

Countries that eased measures quickly after the epidemic curve declined benefited economically without significant negative health effects. High cost-effectiveness has been demonstrated for models with strong lockdown and strict health policies. Long-term impact of stronger economic policies could be further evaluated.

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**Acceptance rate, cost avoidance of clinical pharmacy**

**Interventions: A follow up interventional study from Palestine.**Raya Sawalha<sup>1</sup>, Raya Sawalha<sup>1</sup><sup>1</sup>An Najah National University Assistant Professor Ramallah/Palestine  
Palestinian Territory, Occupied

**Background and objective:** The increase in drugs numbers and their complexity and the potential of drugs interactions have increased the need for the introduction of a unique clinical pharmacy services. Having a clinical pharmacist in all health care settings in general and in hospitals in specific is important to promote the rational use of medicines and to increase the awareness about the potential harms of medicines. This study aimed to find out the acceptance rate of physicians to clinical pharmacy interventions and cost avoidance resulting from clinical pharmacy interventions.

**Methods:** An interventional, follow up study was performed over a period of 6 months using well-constructed clinical pharmacy interventions note form in surgery department at An-Najah National University Teaching hospital in Palestine, the acceptance rate of clinical pharmacy interventions was calculated. The cost of each prescription was calculated before and after each intervention to find out the cost avoidance from every intervention and to calculate the cost avoidance from overall interventions.

**Results:** 313 interventions were done of the 1075 the admissions to the surgery department. The most prevalent interventions were changing the regimen as the clinical pharmacist saw that it was not appropriate, followed by the conversion of the dosage form for the patient from the Intravenous (I.V) route into the oral route. Physicians in the surgical department were seen highly cooperative and accepted by 97.70 %. The reduction in the average daily drug costs throughout the period of 6 months followed the application of clinical pharmacy interventions was clear. Some interventions resulted in clear cost reductions; others had minor reductions.

**Conclusion:** Clinical pharmacy practice has the potential to reduce costs and ensuring rational use of drugs.

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**The association between informal care and labour market outcomes in South Africa and Zambia: a cross-sectional analysis of data from HPTN071 (PopART) study**Rebecca Anderson<sup>1</sup><sup>1</sup>Imperial College London, United Kingdom

**Introduction:** Fragmented access to health and social care in low- and middle-income countries places the burden of care for the sick and elderly on informal carers (ICs). Whilst literature highlights detrimental impacts of caring on ICs workforce participation in high-income countries, there is a scarcity of empirical evidence on this area in Sub-Saharan Africa. This paper investigates the relationship between employment and informal caring in South Africa and Zambia, with a specific focus on gender differences.

**Methods:** Data were obtained from the baseline survey of the HPTN071 (PopART) study, a cluster-randomised controlled trial in 21 communities across South Africa and Zambia. Here, randomly selected adults (18-44 years) were asked about employment status, caring responsibilities, and other socio-demographic factors. Respondents' employment status was modelled as a function of informal caring duties, age, sex, education, and wealth, using multiple logistic regression models. **Results:** The sample consisted of 5,881 individuals (71.7% female), including 376 ICs (72.3% female). Analysis showed being an IC was associated with increased employment odds for men (Odds Ratio (OR):1.732, 95% confidence intervals (CI):1.073-2.797). Whilst no association between employment and caring was seen for women, they experienced significantly lower employment odds than their male counterparts, in the total sample (OR:0.335, 95%CI:0.283-0.397) and the subsample of ICs (OR:0.238, 95%CI:0.188-0.298). Tertiary education increased employment odds, particularly for female carers ((OR: 8.798, 95%CI:4.985-15.526)).

**Conclusions:** The Results highlight a major disparity between mens and womens employment odds – with women disadvantaged, irrespective of their caring status. This imbalance threatens achievement of sustainable development goal 5, gender equality, evidencing the economic barriers facing women in Sub-Saharan Africa. Incentivising retention of women at the highest levels of education is recommended as one route to dismantling this inequality. Whilst formalised support for ICs is also recommended, thorough cost-benefit analysis is needed to ensure productive resource allocation.

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**A qualitative exploration of dentists' insight, perceptions, and acceptability related to different payment mechanisms and****incentive schemes: the perspective of a group of Italian key informants**Alessandro Vitali<sup>1</sup><sup>1</sup>Università degli Studi di Brescia, Italy

**Background:** Even though oral disorders are among the most common diseases worldwide and have a considerable influence on private and public health expenditures, oral health is a neglected area of health. There is evidence that how dentists are paid can affect the type and amount of treatment they deliver. In Italy, oral healthcare is primarily paid for out-of-pocket, which carries the danger of under-servicing patients because of financial constraints. A limited public provision is managed through salaried dentists. The amount of care supported by employer-sponsored health insurance has significantly expanded because of recent legislative reforms.

**Methods:** After a scoping review of quantitative and qualitative scientific literature on how the payment model could impact the provision of oral health care and a policy review on the intermediation of care through third-party payers in Italy, an interview guide was developed to interview seven Italian key-figures investigating their insight, perceptions, and acceptability on different payment mechanisms and how they impact on oral health care provision analysed through a thematic framework.

**Results:** Public dentists recognized that the motivational role of being in a formative team compensated for the economic limitation attributable to salary, which doesn't reward increased job efforts. Private dentists recognize how the reimbursement system affects clinical decisions made by both the dentist and the patient. They complained a severe reduction in reimbursement and an increase in administrative workload. They emphasized the complete absence of communication with the insurance companies, whose input they strongly value in order to deliver better care.

**Conclusions:** Dentists support a legislative and policy intervention to promote dialogue with insurance providers and recognize the structure and management of insurance coverage as a powerful tool to influence the provision of care, both positively and negatively. According to dentists, these policy tools could improve both clinical outcomes, access, and quality.

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**Framework for implementing and monitoring the national public health policy in Sweden: towards a new national public health infrastructure**Malin Kark<sup>1</sup>, Chatrine Höckertin<sup>2</sup>, Nina Lindqvist<sup>2</sup><sup>1</sup>Institute for Collective Health, Public Health Agency of Sweden, Sweden,<sup>2</sup>Public Health Agency of Sweden, Sweden

**Background and Objective:** In 2019, the Swedish Government commissioned the Public Health Agency of Sweden (PHAS) to develop a framework to enable systematic and coordinated efforts for realizing the national public health goal. The framework builds on the work of The Swedish Commission for Equity in Health and the national public health policy.

**Methods:** The framework requires systematic and coordinated efforts among key stakeholders at different societal levels and comprises four parts; Monitoring, Coordination, In-depth analysis and Dissemination of knowledge. The four parts are inter-connected and driven by the indicator-based monitoring. PHAS started implementing the framework in 2021.

**Results:** The PHAS has developed a monitoring system to track social determinants of health and health outcomes. This system includes a set of core indicators and annual reporting of public health developments published in various formats for different target groups. Additionally, the monitoring identifies areas where further knowledge is required. In 2022, the PHAS initiated cross-sectoral collaboration by inviting 14 national authorities to a strategic dialogue within the target area; Work, working conditions and working environment. This resulted in two joint seminars and one in-depth analysis. Seminar 1 focused on education and opportunities on the labour market and Seminar 2 on an inclusive working life and sustainable work environment for people with disabilities. The in-depth analysis focuses on individuals enrolled in adult education programmes, looking at their health status and possibilities for increased employability. Public health work is in many ways the responsibility of county councils and municipalities. The PHAS has been commissioned to, in partnership with county administrative boards, support public health work of county councils and municipalities. The framework forms a basis for this work.

**Conclusions:** A structured framework building on systematic monitoring and collaborative efforts can optimize public health work and provide a fitting knowledge base for end-users.

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### Confidence in midwives in prevention of HPV - associated diseases in Bulgaria

Elitsa Stoyanova<sup>1</sup>, Mariela Kamburova<sup>2</sup>, Eleonora Mineva<sup>2</sup><sup>1</sup>Medical university, Pleven, Bulgaria, <sup>2</sup>Medical University, Pleven, Bulgaria

**Introduction:** The main methods of prevention of viral infection caused by human papilloma virus (HPV-associated diseases) are: the health literacy, prevention through vaccination and the quality of health care. The lack of confidence in the health professionals is one of the main reasons for the high prevalence of HPV-associated diseases in developed countries and Bulgaria. The aim of the study is to analyze the confidence of female patients towards the midwife as a health care specialist, in the prevention of HPV-associated diseases.

**Methods:** In the period 2020-2022 in the city of Pleven, Bulgaria, a case-control study was conducted. 200 female patients with and without HPV-associated disease are covered in the study. The sociological method through direct individual questionnaire was applied. The data analysis throws MS Office Excel software program 2019 and SPSS v.28 was performed.

**Results:** 200 women are included in the study: 100 of them (cases) were diagnosed with HPV-associated disease, and 100 were clinically healthy or with another gynaecological problem (controls). More than half of the surveyed reported that they would turn to the midwife for advice on preventing HPV-infection. The proportion of cases (61.0%) prevail that of controls (54.0%). A statistically significant relationship was established between the high level of education and turning to the midwife for help ( $\chi^2=30.744$ ,  $df=6$ ,  $p=0.00$ , Cramers  $V=0.277$ ). Over 50% of participant declare trust in midwives regarding the screening of HPV-associated disease: 54.0% of the control group and 51.0% of the cases. Statistically significance between education and confidence in the midwife as a health provider specialist ( $\chi^2=27.071$ ,  $df=6$ ,  $p=0.00$ , Cramers  $v=0.260$ ) was proven. **Conclusions:** The higher level of education of the women increases the trust in the midwife in the preventive activity and proves that there is a need to popularize the midwives activities at prevention of HPV- associated diseases.

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### Impact of COVID-19-related economic crisis and mitigation effects of social protection on AIDS and Tuberculosis: a mathematical modelling approach

Felipe Rubio<sup>1</sup>, Temidayo Aransiola<sup>1</sup>, Robson Oliveira<sup>1</sup>, Rodrigo Anderle<sup>1</sup>, Davide Rasella<sup>2</sup><sup>1</sup>Federal University of Bahia (UFBA), Brazil, <sup>2</sup>Institute of Global Health (ISGlobal), Spain

**Background and Objective:** Mathematical models are widely used to perform experiments in silico and predict how diseases evolve over time under different scenarios. It is estimated that the COVID-19 pandemic will still have long-term effects in increasing poverty and social inequalities, compromising the achievement of the Sustainable Development Goals (SDGs) for diseases such as Tuberculosis (TB) and HIV/AIDS. Our aim is to estimate the future impact of different economic crisis scenarios on AIDS and TB incidence and mortality, and the mitigating effect of alternative policy responses to reduce poverty by 2030 in Brazil.

**Methods:** We developed two compartmental models of HIV/AIDS and TB transmission dynamics, integrating economic and epidemiological aspects. The annual poverty rate in Brazil was included in the formulation of the models main parameters, based on the National Household Sample Survey. We project three poverty scenarios (no mitigation, one-year mitigation, and long-term mitigation). Using a genetic algorithm, the model parameters were estimated to fit the AIDS and TB incidence and death rates from 2003 to 2019.

**Results:** The models suggest that the implementation of social protection policies could mitigate lasting increases in poverty, avoiding a 13% (CI: 4% - 31%) increase in incidence and 21% (CI: 12% - 34%) in mortality from HIV/AIDS, and 16% (CI: 10% - 25%) in incidence and 22% (CI: 15% - 31%) in mortality from TB. Also, more than 140 (CI: 87 - 240) thousand cases and 22 (CI: 15 - 32) thousand deaths from HIV/AIDS and TB could be prevented by 2030.

**Conclusions:** Understanding complex phenomena such as the pandemic effects of COVID-19 on socioeconomic and health outcomes requires the integration of multidisciplinary models. Here, we show the importance of implementing social protection policies to avoid a large increase in morbidity and mortality from HIV/AIDS and TB during the post-pandemic period.

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### Towards the implementation of the first National Health Policy in Tunisia

Hind Bouguerra<sup>1</sup>, Hela Mesmia<sup>1</sup>, Seifeddine Rhouma<sup>1</sup>, Chokri Zoghalmi<sup>1</sup>, Awatef Touihri<sup>1</sup>, Oussama Daly<sup>1</sup>, Ali Mrabet<sup>2</sup><sup>1</sup>Studies and Planning Directorate, Ministry of Health, Tunisia, <sup>2</sup>Ministry of Health, Tunisia

**Introduction:** For the first time in Tunisia, all health system actors highlighted the problems related to health and social equity. In response to that, the Societal Dialogue for health system produced the first National Health Policy (NHP) that was officially adopted by the government in 2021. Currently, the Ministry of health is leading the operationalization process of this policy. Our objective was to present this process and its state of progress.

**Methods:** The operationalization process of the NHP is a strategic planning process based on a results-based management approach. Four working groups, which included the main stakeholders, treated the four main reforms identified: (i) primary healthcare services (ii) health insurance (iii) hospital sector and (iv) health system governance. Deep problems analysis was conducted to set the appropriate results and find realistic solutions.

**Results:** This work provided a coherent framework with three types of results: (i) the impact that aims to improve health and well-being for all, (ii) the outcomes based on the universal health coverage dimensions (essential health services, protection against catastrophic expenditure), citizen satisfaction, health in all policies, and health security and (iii) the outputs based on health services accessibility and quality, effective demand of users and health system resilience. Strategic focus areas were then classified according to the seven pillars of the health system. In each area, intermediate results and strategic activities were identified.

**Conclusions:** Post COVID-19, the HNP 2030 is an important opportunity to improve the Tunisian health system and a major effort towards achieving universal health coverage. These results will be discussed and finalized during regional meetings with citizens and health professionals to keep the same participatory approach of the societal dialogue, key to the success of this policy and a model for several countries in the world.

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### Is the Portuguese National Health Accreditation program suitable to its reality? - a review

Gustavo Paiva Monteiro<sup>1</sup><sup>1</sup>USP Entre Douro e Vouga I, Portugal

**Background and Objective:** Accreditation programs have many benefits that contribute to a more effective and efficient performance of the healthcare institutions: improvement in organizational efficiency, cost reduction, better communication between professionals and consequently improved teamwork and greater satisfaction on the part of users.

The National Health Accreditation Program (NHAP) was implemented in 2009 due to the need to standardize the accreditation of all healthcare institutions and it was adapted from the Quality Model of the Andalusia Agency (ACSA).

The main goal is to evaluate three models used to accreditate healthcare institutions, comparing their methodologies and verify which model is more suitable to the Portuguese reality.

**Methods:** It was revised three accreditation models, such as the Joint Commission International, the Caspe Healthcare Knowledge Care and the ACSA that were compared taking into account the eight principles of certification of the ISO 9000. **Results:** The ISO 9000 certification is not fully adapted to the healthcare units, but has eight principles that are a good referential to establish comparisons. It was found that ACSA model is suitable for most portuguese healthcare institutions, since it takes into account all the principles of ISO certification - customer focus, leadership, involvement of people, process approach, system approach to management, continual improvement, factual approach to decision-making and relationship management, and it was built for a similar reality to the Portuguese health system - the spanish one, so it was a good basis to build the NHAP.

**Conclusion:** NHAP has adequate characteristics and answers to the main needs of the Portuguese health system and it's suitable for most healthcare institutions.

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### Cadmium and risk of cardiovascular disease and stroke: a systematic review and dose-response meta-analysis

Pietro Verzelloni<sup>1</sup>, Teresa Urbano<sup>1</sup>, Marco Vinceti<sup>1</sup>, Tommaso Filippini<sup>1</sup><sup>1</sup>University of Modena and Reggio Emilia, Environmental, Genetic and Nutritional Epidemiology Research Center (CREAGEN), Department of Biomedical, Metabolic and Neural Sciences, Medical School - University of

**Modena and Reggio Emilia, Modena, Italy**

**Background and Objective:** Exposure to environmental toxic metals is known to be a global public health concern because of the serious adverse effects on human health. Many studies reported an increased risk of developing cardiovascular diseases (CVD), the leading cause of death in the “developed world”, linked to cadmium (Cd) exposure. This meta-analysis aims to assess the correlation between different levels of cadmium exposure and the risk of overall CVD and of stroke.

**Methods:** The protocol registration in PROSPERO has been submitted for publication (registration number CRD42022360751). To find eligible articles, we conducted a literature search on three different databases from inception up to 7 December 2022: PubMed, Web of Science and Embase. We used MeSH terms and keywords related to “cadmium”, “cardiovascular diseases” and “stroke”, excluding reviews. We defined the following inclusion criteria according to the PECOS statement: adult population, lower or higher Cd exposure (occupational, smoking, food products and water) and the related risk of developing overall CVD or stroke, and observational studies (cohort, cross-sectional or case-control). Whenever possible, we will perform a dose-response meta-analysis using the one-stage approach through a random-effects model.

**Results:** In the preliminary literature search, we found a total of 1459 articles and we deleted 312 duplicates. Further study selection according to inclusion criteria is ongoing.

**Conclusions:** The study is currently under way and its results will be presented at the Congress.

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**Cervical cancer elimination in Italy: current scenario and priority actions for a values-based prevention**

Giovanna Calabrò<sup>1</sup>, Floriana D'Ambrosio<sup>1</sup>, Carolina Castagna<sup>2</sup>, Martina Sapienza<sup>2</sup>, Maria Riccardi<sup>1</sup>, Rossella Millevolte<sup>3</sup>, Andrea Pellacchia<sup>3</sup>, Roberto Ricciardi<sup>4</sup>, Rosa de Vincenzo<sup>5</sup>, Chiara de Waure<sup>3</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore, Rome, Italy, <sup>2</sup>Università Cattolica del Sacro Cuore, Rome, Italy, Section of Hygiene, University Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>3</sup>University of Perugia, Italy, Department of Medicine and Surgery, University of Perugia, Perugia, Italy, <sup>4</sup>VIHTALI (Value in Health Technology and Academy for Leadership and Innovation), Spin-off of Università Cattolica del Sacro Cuore, Rome, Italy, <sup>5</sup>Università Cattolica del Sacro Cuore, Rome, Italy, Gynecologic Oncology Unit, Fondazione Policlinico Universitario A. Gemelli, IRCCS, Dipartimento Scienze della Salute della Donna, del Bambino e di Sanità Pubblica, Rome, Italy; University Department of Life Sciences and Public Health, Università Cattolica Italy

**Background and Objective:** In 2020, the World Health Organization (WHO) called for the elimination of cervical cancer (CC). In order to get it, vaccination against Human Papillomavirus (HPV), CC screening and timely management of the disease must be implemented at international level. Our study aimed to describe the current scenario of HPV prevention in Italy and to get a consensus on indicators and priority actions for the CC elimination at national level.

**Methods:** In order to address the progress of HPV-vaccination and CC screening at regional level in Italy, a project was conducted in 2021-2022. In particular, information was collected on both coverage indicators (for vaccination and screening), screening adherence, history and characteristics of the vaccination and screening offer. Collected data were shared with a multidisciplinary experts' panel to issue recommendations to foster the CC elimination in Italy. A survey was also conducted to identify potential actions in respect to vaccination, screening and treatment.

**Results:** The mapping of the Italian Regions highlighted an important regional heterogeneity in respect to organizational/operational issue of HPV vaccination and CC screening. Indicators for monitoring CC elimination strategies have been distinguished by disease outcomes, vaccination coverage, screening participation and treatment uptake. The following actions were identified to implement vaccination, screening and treatment: educational campaigns, reminders and active calls for both vaccination and screening and more data interoperability and definition of clinical pathway involving a multidisciplinary medical team for the proper management of all HPV-related diseases.

**Conclusion:** The identification and constant assessment of specific indicators for monitoring the progress toward CC elimination are fundamental actions to be able to respond to the WHO call. To achieve the CC elimination, all available means must be used focusing on a comprehensive approach in favor of value-based interventions of prevention and best practices to be implemented at regional level.

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**Institutional support as a device for implementing policies in Brazil's unified health system**

Fabiane Lima Simões<sup>1</sup>, Margareth Nunes Neves Conceição<sup>2</sup>, Dherik Fraga Santos<sup>3</sup>, Caroline Feitosa Dibai De Castro<sup>4</sup>, Rafael Vulpi Caliarì<sup>2</sup>, Gabriela De Brito Martins<sup>4</sup>, Stephanie Mendes Demarchi<sup>4</sup>, Jeremias Campos Simões<sup>4</sup>, Jeanine Pacheco Moreira Barbosa<sup>4</sup>, Maria Carvalho Andrade<sup>4</sup>

<sup>1</sup>Universidade Federal do Espírito Santo, Vitória - ES, Brasil Programa de Pós-graduação em Saúde Coletiva “Avenida Fortaleza 1500” Brazil,

<sup>2</sup>Universidade Federal do Espírito Santo, Vitória - ES, Brasil, <sup>3</sup>Universidade

Federal de Catalão, Catalão-Go, Brasil Departamento de Medicina Brazil,

<sup>4</sup>Universidade Federal do Espírito Santo, Vitória - ES, Brasil Programa de Pós-graduação em Saúde Coletiva Brazil

**Introduction:** The COVID-19 pandemic provoked uncertainties, disrupted implementation of health policies in the Unified Health System, known as SUS in Brazil, and new healthcare demands. Therefore, efforts to assemble resilient health systems with post-pandemic recovery plans, maintenance and protection of advances in public health, which narrate experiences with the practice of institutional support and collaborate with the implementation of public health policies are necessary to inspire governments and people in other health related projects. **OBJECTIVE:** To share the learning synthesis developed with institutional support during the implementation of SUS regionalization policies.

**Method:** The following study was developed in three Brazilian states, in the Project for Development of Institutional Support in SUS (PROADISUS). Thus, virtual meetings were held between specific working groups of institutional supporters and those supported: health managers and technicians respectively. Furthermore, the following strategy expanded the technical debate within working groups, strengthened the process of planning activities and agreed on the expanded work agenda to carry out the Health Situation Analysis and identification of regional health priorities, mediating the intervention proposals, products of the interaction and reflection between the tripartite strategic actors, their priorities and demands of healthcare areas.

**Results:** The greater interaction, debate and instrumentalization of managers and technicians affected transformations in work processes, contributing to overcoming the challenges of regionalization and building the tripartite agenda, strengthening regionalization beyond a physical plane, that is, capturing the perceptions and subjective views that mediate the desires of the responsibilities assumed in joining the project.

**Conclusion:** In the context of the pandemic, the institutional support strategy transformed work processes, operated as a strategic method that induces new ways of health management by expanding institutional democracy, impacting the implementation of policies capable of responding to health needs directed by the values of equity and social solidarity.

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**New wine in old bottles: wicked problems associated with inter-LGU cooperation and its implication on the governance of integrated local health systems**

Vergil Claro<sup>1</sup>, Ma. Torralba<sup>1</sup>, Laurentiu Stan<sup>1</sup>

<sup>1</sup>RTI International Philippines Philippines

**Introduction:** Achieving universal health coverage (UHC) has gained wide acceptance and is considered a key health policy goal in many countries. In the Philippines, a national legislation on UHC served as an overarching policy for implementing sector-wide health reforms. Central to the process is the concept of health systems integration which policymakers look toward as a means to address longstanding fragmentation in health. The underlying push is the belief that bringing together of inputs, delivery, management, and organization of services in an integrated manner will improve access, efficiency, and quality of health services. Experience from other countries shows that the road to UHC is inextricably linked to the complex process by which policy decisions take place - one that is fraught with challenges, diverse pathways, and pitfalls. To jumpstart the reform, inter-LGU cooperation was the main governance mechanism that was proposed.

**Methods:** A descriptive and explorative case comparison methodology was used involving three individual case studies followed by a cross-case analysis for the selected study sites. The study aims to understand the socio-economic and political underpinnings, consensus-building process, and integration pathways using Bosserts decision space framework. We synthesize the findings to identify issues and challenges associated with inter-LGU cooperation and its implication on governance in integrated health systems.

Findings: Results show that there was no uniform conceptual model for local health systems integration across the study sites. Local health systems resort to implementing cooperative models that are contextually appropriate based on local evidence and competence. However, potential diverging interests of cooperating LGUs were observed to have created collective action problems resulting in large inefficiencies termed as wicked problems. The study offers evidence for comparing experiences in other settings. It is also imperative that the identified wicked problems be further explored to understand their mechanism and impact on health systems performance

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### Impact of price reductions on pharmaceutical expenditure in Greece

Isidoros kougioumtzoglou<sup>1</sup>, Panagiotis rigopoulos<sup>2</sup>, Apostolos stratopoulos<sup>3</sup>, Kalliopi mortaki<sup>4</sup>, Areti lagiou<sup>1</sup>, Nikos maniadakis<sup>1</sup>, Dimitrios kouvelas<sup>1</sup>

<sup>1</sup>Laboratory of Hygiene & Epidemiology, School of Public Health, University of West Attica Greece, <sup>2</sup>Laboratory of Clinical Pharmacology, Faculty of Life Sciences, School of Medicine, Aristotle University of Thessaloniki,

<sup>3</sup>Laboratory of Pharmacogenomics and Individualized Therapy, Faculty of Life Sciences, Department of Pharmacy Greece, <sup>4</sup>Barcelona School of Management, Pompeu Fabra University Greece

Background and objective: The annual re-pricing procedure in pharmaceutical products in Greece has been instituted as a measure to control public pharmaceutical expenditure. However, price reductions over the past decade, combined with increasing mandatory pharmaceutical industry's contribution (clawbacks and rebates), have led to the withdrawal of low-cost treatments (retail price 2.5€ million at 2011. Total values and units were calculated along with their respective absolute and relative change during the period of 2011-2021.

Results: Six ATC4 categories were included in the analysis, with a total expenditure of 90,657,197€ in 2011. In three of the respective categories, the change in units due to withdrawal of low-cost treatments, did not lead to an equivalent change in total expenditure. Specifically, the withdrawal of treatments in iron products, thyroid preparations and intestinal anti-inflammatory/anti-infective agents led to a change in units of 212%, 99.1% and -4.4% respectively. At the same time, the change in pharmaceutical expenditure for the aforementioned categories was 445% (30,254,755€), 182% (13,212,534€) and 18% (468,676€) respectively, with the cumulative expenditure increasing from 16,714,697€ to 60,750,762€. For the remaining categories, the withdrawal of low-cost treatments was associated with proportionate reduction in expenditure.

Conclusion: Price reductions are not panacea for the containment of pharmaceutical expenditure. The exclusion of low-cost treatments from further price reductions and/or clawbacks and rebates should be considered to ensure treatments' viability by avoiding potential withdrawals, which can lead to increased pharmaceutical expenditure.

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### Conflicts of interest (Col) and undue corporate influence in public health: from the international context to local interventions

Mélissa Mialon<sup>1</sup>, Rima Nakkash<sup>2</sup>, Martin McKee<sup>3</sup>

<sup>1</sup>Trinity College Dublin, Ireland, <sup>2</sup>George Mason University, United States,

<sup>3</sup>The London School of Hygiene and Tropical Medicine, United Kingdom

Participants will first learn about conflicts of interest (Col) and undue corporate influence in public health. They will then participate in an interactive session, where they will reflect on their personal experiences. They will collectively identify solutions to these issues, and discuss challenges they may face in trying to adopt those solutions, individually and collectively. Finally, participants will discuss the next steps, which will build on the new knowledge they will get from the workshop, the reflection they will have made, and the collective Discussion on solutions. Specific Aims/Objectives: 1. To introduce the issues of conflicts of interest and undue corporate influence in public health, in the international and local contexts,

2. To reflect on the personal experiences of participants in relation to this topic, 3. To discuss solutions to address these issues, with a focus on local interventions. Component parts: 1. Introduction to the workshop and topic, 2. Presentations Col and undue corporate influence: examples and risks to population health,

3. Q&A, 4. Interactive session , 5. Next steps, as identified by participants and closing remark. Key questions that the workshop will address: 1. What examples of conflicts of interest and undue corporate influence participants have they observed in the professional practice/during their training? 2. How to address these issues in our professions? What examples of good practices do we know exist? 3. What are our challenges?

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### Governing for planetary health equity

Sharon Friel<sup>1</sup>, Megan Arthur<sup>1</sup>

<sup>1</sup>Planetary Health Equity Hothouse, Australian National University, Australia  
Planetary health equity (PHE) – the equitable enjoyment of good health in a sustainable ecosystem – is in crisis. Addressing this demands ambitious and urgent action on the structural drivers of social inequity and climate change. These drivers come in the potent form of the global consumptogenic system. Yet, despite the unfolding catastrophe, little effective political and policy attention is given to transform the consumptogenic system and act in the interests of PHE. The overarching aim of this workshop is to explore theoretical and analytical approaches to unpack and understand the role of actors and institutions, policy processes, power dynamics, and governance possibilities that could transform the consumptogenic system towards PHE goals. Specific Aims/Objectives and component parts: 1. Unpack the meaning and relationship between the global consumptogenic system and planetary health inequities, 2. Identify and discuss approaches to understanding how to optimise mitigation policy for climate, social and health goals, 3. Explore new conceptual and methodological approaches for researching governance for planetary health equity, 4. Expand and deepen networks of governance for health equity among the academic, government and civil society communities internationally. Drawing on emerging work from the Planetary Health Equity Hothouse [1], the workshop will present two short provocations (20 mins total) based on the new research from speakers Friel and Arthur. This will be followed by small group work focused on three PHE issues, with plenary feedback. Presentation: 1. Transforming the consumptogenic system – key to planetary health equity. 2. Optimising climate change mitigation policy and coherent governance for planetary health equity goals. 3. Critical dimensions of climate change mitigation policy design for reducing planetary health inequities. 4. Understanding dimensions of power that shape governance for PHE in different contexts. 5. A research and advocacy agenda to mobilise structural change for PHE. The key questions that the workshop will address: The workshop asks: What does planetary health equity mean and how to measure it? What does climate mitigation policy look like that optimises social and health outcomes? How do power dynamics in policy systems shape the outcomes of mitigation policies? What does coherent governance for planetary health equity look like? Links: -----[1] <http://www.hothouse.anu.edu.au>

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### Anemia and its determinants among apparently healthy women from pastoralist communities of Ethiopia: a community based cross sectional study

Sahardiid Abdilahi<sup>1</sup>

<sup>1</sup>Jigjiga University, Ethiopia

This study examined the magnitude of anemia and its determinants among 468 apparently healthy women randomly selected from the pastoralist communities of Somali region, Ethiopia. The overall prevalence of anemia was 39.98%, of which mild, moderate and severe anemia were 108(25.17%), 57(13.29%) and 6(1.40%), respectively. Most (65%) of the anemic women are from rural settings. The mean Hgb level (adjusted for altitude) was 12.01(±2.1SD) gm/dl and ranged from 7-16gm/dl. As expected, anemia was significantly lower among contraceptive users (p=0.005), got iron supplementation (p=0.104), had no malaria (p=0.901) and counseled on anemia (p=0.375). Low consumption of meat (p=0.001) and fruits (p=0.029) were the significant factors associated with Anemia. To improve anemia in the community, a concerted effort comprising of public health measures and nutrition counseling in addition to the ongoing weekly iron folic acid supplementation is recommended.

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### Ending the epidemic: High- and middle-income country responses to scaling HIV prevention strategies in real world settings

Inês Dourado<sup>1</sup>, Henrique Barros<sup>2</sup>, Amy Nunn<sup>3</sup>

<sup>1</sup>Instituto de Saúde Coletiva, Universidade Federal da Bahia, Brazil, <sup>2</sup>Institute of Public Health, University of Porto, Portugal, <sup>3</sup>Brown University School of Public Health, United States

Outline: Strategies to reduce HIV transmission can radically reduce HIV transmission, including pre-exposure prophylaxis (PrEP), with the use of one daily pill. Clinical trials have demonstrated its efficacy in reducing HIV transmission from 92-96% for people at the highest risk for HIV acquisition. Objectives AND

**COMPONENT PARTS:** We propose to discuss how the epidemiological profile of HIV/AIDS in the South and in the North, as well as the country responses and new prevention technologies adopted by countries such as Brazil, the USA, Spain, and Portugal, taking into consideration that the epidemic was driven by different key population and under extremely disparate political, social and cultural conditions in the four contrasting countries. Key Questions: 1- While access to PrEP has improved since its regulatory approval in 2012, access for populations at the highest risk for HIV acquisition is suboptimal and uneven. 2- While these factors vary by country and population, global trends suggest that disparities in access to PrEP and retention in PrEP care, and access to other HIV prevention strategies can be observed in many different global settings. 3- We will discuss several upper and middle-income countries' efforts to eliminate HIV transmission by expanding access to PrEP, other HIV prevention strategies, and the epidemiological and health system challenges in a variety of different contexts. This includes efforts to eliminate HIV by expanding access to prevention measures in the United States Deep South among African Americans; through Brazil, Portugal, and Spain HIV/AIDS Programs of the National Health System of these countries. We present several programs that have successfully expanded access to PrEP and other HIV prevention strategies among populations at high risk for HIV acquisition. 4- Participants will learn about comparative health systems as well as trends in scaling up PrEP and other prevention method for vulnerable populations in real-world settings outside of clinical trials. 5- The response to the HIV/AIDS epidemic indicates the stabilization of the incidence of cases in some regions of the country and in some populations. However, there are regional inequalities in epidemic surveillance indicators and a worrying increasing trend among adolescents and youth. 6- People living with HIV/AIDS face challenges in maintaining good health, including those related to economic well-being and ongoing health needs. 7- Discuss the countries response to HIV/AIDS and the goal of EHE (ending the HIV epidemic), based on the various innovative prevention, treatment, and care strategies, and the challenges of taking into account the issues of social determinants, inequalities, discrimination, and stigma.

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### The commercial determinants of health: models, tools and solutions

Anna Gilmore<sup>1</sup>, Jennifer Lacy-Nichols<sup>2</sup>, Sharon Friel<sup>3</sup>, Monika Kosinska<sup>4</sup>  
<sup>1</sup>University of Bath, United Kingdom, <sup>2</sup>University of Melbourne, Australia,  
<sup>3</sup>Australian National University, Australia, <sup>4</sup>WHO, Switzerland, Tobacco Control Research Group, Department for Health, University of Bath, United Kingdom

Presentation 1: Defining and Conceptualising the CDOH, Anna B Gilmore  
 This presentation outlines a definition for and simple conceptual model of the CDOH. It explains the system nature of the problem in which our current global political and economic system enables rather than constrains harmful commercial practices and, consequently, why downstream interventions are wholly insufficient to address NCDs and other commercially driven health harms.

Presentation 2: Understanding Commercial Actors: A new Framework, Jennifer Lacy-Nichols

This presentation outlines a new framework to enable meaningful distinctions between commercial entities. It explores how this framework can be operationalised, for example as tool for decision-making about engagement, managing conflicts of interest, or monitoring and research around the CDOH.

Presentation 3: Finding Solutions to the Commercial Determinants of Health: The need for Systemic Transformative Change, Sharon Friel

This presentation explores solutions to the CDOH. It proposes a multi-level governance system that privileges public interests over profits and challenges contemporary capitalism. This includes progressive economic models, international frameworks, government regulation, compliance mechanisms for commercial entities and business models that incorporate health, social and environmental goals.

Key Questions that the Workshop Will Address

How can we best define and understand the CDOH? Can we develop a simple model that allows us to conceptualise and therefore address the CDOH? What are they key pathways through which the commercial sector influences health? How can we better understand and deal with the diversity of corporate actors? What potential solutions can be taken to redress the inequitable health harms arising from this complex problem? What role can be played by WHO and other public health actors?

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### Is the HIC/LMIC country classification still relevant in today's health equity dialogue?

Colette Cunningham<sup>1</sup>, Bettina Borisch<sup>2</sup>, Fatia Kiyange<sup>3</sup>, Brian Turner<sup>4</sup>, Olga Kalinowska-beszczynska<sup>5</sup>, Colette Cunningham<sup>6</sup>, Bettina Borisch<sup>7</sup>

<sup>1</sup>School of Public Health, University College Cork, Ireland ASPHER Western Gateway Building, University College Cork Ireland, <sup>2</sup>World Federation of Public Health Associations, Institute of Global Health, University of Geneva, Geneva, Switzerland, <sup>3</sup>ASPHER, Kampala, Uganda, <sup>4</sup>School of Economics, University College Cork ASPHER Aras na Laoi, University College Cork Ireland, <sup>5</sup>Department of Public Health, Medical University of Gdansk ASPHER "Department of Public Health and Social Medicine, Medical University of Gdansk, Poland Dębinki 7, budynek nr 15, 80-211 Gdańsk" Poland, <sup>6</sup>School of Public Health, University College Cork, Ireland ASPHER University College Cork Ireland, <sup>7</sup>WFPHA WFPHA Geneva Switzerland

**Background and Objectives:** The World Bank categorises economies into Low Income Countries, Lower Middle-Income Countries, Upper Middle-Income Countries and High-Income Countries (HICs), based on Gross National Income (GNI), with 136 (63%) countries in the Low- and Middle-Income Country (LMIC) categories. The ubiquitous use of LMIC suggests it represents something meaningful, however, we argue that its far-reaching impact lacks a people-centred focus required for health equity. The measurement requires change in today's world where there are low-income settings (LISs) in HICs and vice-versa. Are health outcomes in LISs in HICs better or worse than those of HICs in LMICs? The use of these terminologies cannot be separated from decisions on resource allocation and their impact.

**Methods:** A rapid literature review was conducted from peer reviewed journals, published during the last 5 years. Search terms included public health; health equity; in combination with terms such as LMIC; HIC, deprived community; deprivation index. WHO data was used to examine the proportions of the population in LMICs and HICs exposed to catastrophic health expenditure.

**Results:** We conclude from the literature that the human aspect should be a key thread to follow when assessing LISs. The evidence points toward the need to talk about specific groups; indigenous, migrants, travellers or those from deprived communities and their settings. This approach provides a better insight into health equity. The structure of national health systems also plays a role in determining the extent to which sections of the population are exposed to catastrophic health expenditure.

**Conclusions:** Considering the purely economic nature of the categories, we conclude that the current classification requires adaptation, specifically a shift towards a human-focused perspective rather than a geographical focus. In changing to a setting approach, we believe that health-related challenges and health equity will be better addressed.

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### EU4Health Programme and the role of national focal points for 2023 and beyond.

Leticia Copano Casanova<sup>1</sup>, Marilena di Stasis<sup>2</sup>, Giovanni Nicoletti<sup>2</sup>, Florina Telea<sup>3</sup>, Claudia Habl<sup>4</sup>, Matthias Wismar<sup>5</sup>

<sup>1</sup>Ministerio de Sanidad Paseo del Prado Madrid Spain, <sup>2</sup>Italian Ministry of Health, Italy, <sup>3</sup>HaDEA - Health and Digital Executive Agency Pl. Saint-Josse-ten-Noode, Brussels Belgium, <sup>4</sup>Austrian National Public Health Institute - Vienna Austria, <sup>5</sup>European Observatory on Health Systems and Policies Place Victor Horta/Victor Hortaplein, Brussels - Belgium

**Background/Outline:** The EU4Health programme is the 4th programme of the EU for action in the field of health, established by EU Regulation 2021/522. Adopted in the wake of the COVID-19 pandemic, it represents the most ambitious European Health Programme yet, providing substantial financial support to post-COVID-19 recovery efforts and the resilience of European healthcare systems, as well as to the EU's preparedness in facing major cross-border health threats such as large-scale communicable disease outbreaks. However, strengthening the compatibility of health systems and policies across the EU must reach beyond acute responses to current and future health crises, which is why the programme is likewise geared toward addressing long-term challenges in public health such as antimicrobial resistance, access to medicinal products, and non-communicable diseases (Regulation (EU) 2021/522, 2021).

Since 2014, Member States and associated countries have designated National Focal Points (NFPs) to assist the European Commission in promotion of the EU Health Programmes, and to build capacity among national stakeholders so as to ultimately enhance engagement with the Programmes across all participating countries. With the significant extension of the Health Programme's content and budget in its fourth programming period, the role of NFPs in national dissemination,

consultation, and capacity building has become even more crucial. The Joint Action on Increasing Capacities of National Focal Points (JA NFP4Health, www.nfp4health.eu), supported by funding from the third EU Health Programme, aims to strengthen NFPs' knowledge and foster a consolidated and sustainable NFP network that can support Member States in achieving the health objectives established under EU4Health.

**Aim and Key Questions:** The workshop has a TRAINING CHARACTER and aims to give an overview of the current EU4Health Programme, recent calls and funding opportunities to show existing and explore potential synergies with other health related funds and programmes, to introduce and discuss the roles of National EU4Health Focal Points and finally to learn which topics and features are of interest for future research and training purposes

After a state-of-play of the EU4Health Programme (e.g., current open calls) by the European Agency in charge, HADEA three interventions from JA NFP4Health Work package leaders will take place. They will give an insight into the role and tasks of a National Focal Point and will seek the input of delegates on their features (e.g., which activities could be expanded, or which seem not necessary).

The workshop will be concluded by a FAQ session, where delegates have the excellent opportunity to receive firsthand feedback on their questions regarding the EU4Health Programme and other health related funds and programmes.

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### Decolonising Global Health: understand, reflect, improve

Domitilla Marconi<sup>1</sup>, Beatrice Sgorbissa<sup>2</sup>, Elena Mazzalai<sup>3</sup>, Anna Zannoner<sup>4</sup>

<sup>1</sup>School of Public Health, University of Siena, Italy, <sup>2</sup>University of Padova

Italy, <sup>3</sup>University of Roma La Sapienza Italy, <sup>4</sup>University of Bologna Italy

In recent years, the question of decolonisation has progressively become more and more central, involving various sectors, including Public and Global Health. After the global protests over the death of the Afro-descendant George Floyd in America, decolonising and anti-supremacist instances also reached the major European Global Health institutes thanks to the mobilisation of students. The students' movement started a debate on the link between Global Health and colonialism and the need for the Global North to confront their colonial heritage. The result has been an intense production of papers, whose authors include Dr. Seye Abimbola, chief of BMJ Global Health: the need to become aware of the roots on which the discipline of Global Health is based is highlighted, with reflections on approaches, metrics and relationships that underlie a legacy of domination. Tropical Medicine, as the ancestor of Global Health, was born in the period of Western colonialism and was often subjected to opportunistic logics to justify the expropriation of resources and property by leveraging biological differences between colonised and coloniser. But that is not all: reflections of this colonial legacy can still be found in Global Health institutions and academies today, for example in the almost absent representation of minorities in decision-making positions, the limited access of students and lecturers from the Global South to the most prestigious schools of Global Health in the Global North, the poor representation of local authors in the research, and the difficult access for local colleagues to impact journals. This is not just about diversity and inclusion and it does not have to turn into "whitewashing": the debate also focuses on the need for a paradigm shift in how Global Health is understood, operated and taught. Starting from a collective reflection on the violations of the past and the power dynamics that are still current, there is a need to rebuild a community of Global Health researchers and practitioners based on the understanding that there is no health without social justice. While the debate is enriching at a global level, involving various actors (academies, NGOs, activists), in Italy the topic still remains largely neglected, including in the field of health, where resistance and hesitancy coexist, despite it being well recognised that inequalities and power imbalance are determinants that can negatively impact the health outcomes of populations. As the Junior Working Group on Health Inequalities of the Italian Society of Hygiene, we believe that the World Congress on Public Health is a great opportunity to promote and facilitate a workshop with experts on decolonisation of the Global Health, to better understand the topic, to create space for reflection and to look forward to future perspectives.

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### Geospatial Analysis of Type 2 Diabetes Mellitus and Hypertension in South Sulawesi, Indonesia

Andi Zainuddin<sup>1</sup>, Haerani Rasyid<sup>1</sup>

<sup>1</sup>Faculty of Medicine, Hasanuddin University, Indonesia

**Background and objectives :** Indonesia has faced the problem the prevalence of non-communicable disease has increased with the prevalence of Type 2

Diabetes Mellitus (T2DM) and Hypertension recently rising. Spatial analysis gives more information about risk based on spatial variation making prediction more accurate. Knowledge about the risk of diabetes mellitus and hypertension in each district or city area can help health agencies carry out activities to prevent these two diseases effectively. This study aimed to determine the level of risk of diabetes mellitus and hypertension in each district or city area in South-Sulawesi Province, which can be done by identifying spatial cluster in the number of people with the disease, carrying out geospatial analysis and applying a Generalized Poisson Regression (GPR) model to determine the potential effect of diabetes mellitus on hypertension.

**Methods:** The Local Moran's I, the Getis-Ord, and regression analysis were applied to identify the characteristics involved. The methods were performed based on T2DM and hypertension of the Social Health Insurance Administration Body data from 2017 and 2018 in South Sulawesi Province, Indonesia. **Results :** The spatial variation of T2DM and Hypertension showed that the prevalence rate of T2DM tends to form a cluster hotspot and there is no cold spot and spatial outlier. Meanwhile, the prevalence rate of hypertension tends to occur randomly. In analyzing the relationship between T2DM and Hypertension, we utilized the Generalized Poisson regression analysis and the Results showed that there is a significant relationship between T2DM and hypertension (p-value = 1.695e-10). **Conclusions:** The districts have the same characteristics but have different patterns in the distribution of T2DM and hypertension in South Sulawesi. T2DM and hypertension prevention programs in South Sulawesi Province need comprehensive monitoring and evaluation.

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### Understanding what really drives 'healthy' public policy: the human systems coherence framework

David Lilley<sup>1</sup>

<sup>1</sup>University of New South Wales (UNSW), Sydney, Australia

**Background and Objective:** Public policies and projects usually have multiple and potentially conflicting goals, some of which are unstated. This means that the explicit use of health-related language is an unreliable indicator of the actual priority accorded to health. The objective of this research was to develop a framework that could be applied to existing or proposed policies and projects, to assess the priority and coherence of health relative to other goals and factors. **Methods:** The framework was developed iteratively. Its application involves coding and analysing policy and project documents based on their boundary judgements (sources of motivation, control, expertise, and legitimacy), their core policy content (goals, instruments, and settings), and their strategic content (diagnoses, approach, and actions). The Resultsing data is then assessed for coherence within and across policies and projects. The framework was validated by applying it to the redevelopment of a large public housing estate in Sydney, Australia.

**Results:** Looking for coherence proves a strong entry point for policy assessment. Assessing the coherence of variables within individual policy and project documents clarifies their underlying rationale, which can then be compared to their stated goals. In the case study project, this revealed a superficial commitment to health, accompanied by a constraining focus on instrumental and financial outcomes. A comparison of variables across different policies and projects revealed the same pattern, providing evidence that the case study is representative of a broader value base and approach to public policy and administration at this time.

**Conclusions:** The Human Systems Coherence Framework is a useful tool for disentangling explicit and implicit policy and project goals, and assessing the priority and coherence of health relative to other policy factors. It can be applied to any area of public policy and administration where health is or should be a priority (i.e., all areas).

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### Co-creation of health-enabling initiatives in food retail: academic perspectives

Carmen Vargas<sup>1</sup>, Jillian Whelan<sup>2</sup>, Julie Brimblecombe<sup>3</sup>, Steven Allender<sup>4</sup>

<sup>1</sup>Global Centre for Preventive Health and Nutrition (GLOBE), Institute for Health Transformation, School of Health and Social Development, Deakin University, Australia, <sup>2</sup>Deakin University, Australia, <sup>3</sup>Department of Nutrition, Dietetics and Food, School of Clinical Sciences, Monash University, Australia, <sup>4</sup>Global Centre for Preventive Health and Nutrition (GLOBE), Deakin University, Australia

**Introduction:** Co-creation of healthy food retail comprises the systematic collaboration between retailers, academics and other stakeholders to improve the healthiness of food retail environments. Research into co-creation of healthy food

retail is in its early stages. Knowledge of the roles and motivations of stakeholders in intervention design, implementation and evaluation can inform successful co-creation initiatives. This study presents academic experiences of stakeholder roles and motivations in co-creation of healthy food retail environments. Methods: Purposive sampling of academics with research experience in the co-creation of healthy food retail initiatives. Semi-structured interviews gathered participants' experiences of multi-stakeholder collaborative research. Thematic analysis identified enablers, barriers, motivations, lessons and considerations for future co-creation of healthy food retail.

Results: Nine interviewees provided diverse views and applications of co-creation research in food retail environments. Ten themes were grouped in three overarching areas: i) identification of stakeholders required for changes to healthier food retail; ii) motivations and interactions which included the intrinsic desire to build healthier communities along with recognition of their work; and iii) barriers and enablers included adequate resourcing, effective and trusting working relationships and open communications. Conclusions: This study provides insights that could help future co-creation in healthy food retail environments. Trusting and respectful relationships and reciprocal acknowledgement between stakeholders are key practices in the co-creation process. These constructs should be considered in the development and testing of a model that helps to systematically co-create healthy food retail initiatives that ensure all parties meet their needs while also delivering research outcomes.

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### Development and internal validation of a diagnostic prediction model for psoriasis severity

Mie Liljendahl<sup>1</sup>

<sup>1</sup>Department of Dermatology and Allergy, Herlev and Gentofte Hospital, University of Copenhagen, Hellerup, Denmark

Background and objectives: While administrative health records such as national registries may be useful data sources to study the epidemiology of psoriasis, they do not generally contain information on disease severity. To inform clinical and public health research on psoriasis treatment at the country level, it is crucial to estimate the national distribution of the disease severity based on clinical characteristics to identify the patients who are candidates for systemic therapy but not receiving this treatment yet. This study aimed to develop a diagnostic model to distinguish psoriasis severity based on administrative register data.

Methods: We conducted a retrospective registry-based cohort study using the Danish Skin Cohort linked with the Danish national registries. We developed a diagnostic model using a gradient boosting machine learning technique to predict moderate-to-severe psoriasis. We performed an internal validation of the model by bootstrapping to account for any optimism.

Results: Among 4,016 adult psoriasis patients (55.8% women, mean age 59 years) included in this study, 1,212 (30.2%) patients were identified as having moderate-to-severe psoriasis. The diagnostic prediction model yielded a bootstrap-corrected discrimination performance: c-statistic equal to 0.73 [95% CI: 0.71 – 0.74]. The internal validation by bootstrap correction showed no substantial optimism in the Results with a c-statistic of 0.72 [95% CI: 0.70 – 0.74]. A bootstrap-corrected slope of 1.10 [95% CI: 1.07 – 1.13] indicated a slight under-fitting.

Conclusions: Based on register data, we developed a gradient boosting diagnostic model returning acceptable prediction of patient with moderate-to-severe psoriasis. This model allows one to identify patients with moderate-to-severe psoriasis in the national registries and estimate patients who are candidates for systemic therapy but not receiving this treatment.

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### Antitumor activity of Xiaoaiping injection on human gastric cancer SGC-7901 cells

Djelassem Ferdinand<sup>1</sup>, Koumtebaye Elysee<sup>2</sup>

<sup>1</sup>Association of Chadian Researchers for Health and Development, Chad,

<sup>2</sup>Association des Chercheurs en Science pour la Santé au Tchad, N'Djamena, Chad

Xiaoaiping, extracted from *Marsdenia tenacissima* (Asclepiadaceae), is a Chinese medicine used to treat cough and asthma. Previous studies have shown that its active ingredients possess anti-inflammatory and anticancer effects. The aim of this study was to investigate the antitumor activities of Xiaoaiping through apoptosis induction in human gastric cancer SGC-7901 cells. The MTT assay was used to assess cell growth and cell viability. SGC-7901 cells were treated with Xiaoaiping injection [(20-40)mg·mL<sup>-1</sup>] for 24 and 48 h. The apoptotic cells and the cell cycle distribution were analyzed by flow cytometry. The in vivo activity

of Xiaoaiping was determined by the growth inhibition of the established tumor xenografts in nude mice. Caspase-3 activity, Bax, and Bcl-2 proteins in tumor tissue were measured by immunohistochemistry, and apoptosis was assayed by the terminal deoxynucleotidyl transferase-mediated deoxyuridine triphosphate-biotin nick end labeling (TUNEL) method. Xiaoaiping inhibited SGC-7901 cell growth in a time and dose dependent-manner and the estimated IC50 was (38.20 ± 0.27) mg·mL<sup>-1</sup> after 24 h of treatment. The body weight and the tumor volume were significantly reduced in nude mice bearing human gastric tumor treated with Xiaoaiping. The inhibition rate of tumor growth in the mid-dose (200 mg·kg<sup>-1</sup>) group and high-dose (400 mg·kg<sup>-1</sup>) group were 61.19% and 69.07%, respectively. Immunohistochemical staining showed an increase in caspase-3 and Bax expression whereas Bcl-2 expression decreased gradually. Xiaoaiping exerted potent antitumor activity in vitro and in vivo against human SGC-7901 cells; induced apoptosis and G1 cell cycle arrest. These Results suggest that Xiaoaiping is a promising antitumor agent for the treatment of human gastric cancer. Keywords: antitumor, Xiaoaiping, apoptosis, SGC-7901 cells

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### Food literacy, food environments and monitoring and surveillance in public health

Courtney Thompson<sup>1</sup>, Jean Adams<sup>2</sup>, Helen Vidgen<sup>3</sup>

<sup>1</sup>Queensland University of Technology, Kelvin Grove, Australia, <sup>2</sup>University of Cambridge, United Kingdom, <sup>3</sup>Queensland University of Technology, Australia

Background and Objective: While many aspects of the food environment, such as affordability, accessibility and availability have been extensively explored and evaluated, there is still a limited understanding of the relationship between these aspects and consumer behaviours; such as food literacy. While 66 measures exist to assess aspects of food literacy, only one used cognitive interview methods and all varied in their ability to capture totality of eating. This study aimed to determine items for inclusion in a food literacy item pool and capture general public's Interpretation of everyday food literacy practices to develop a comprehensive questionnaire.

Methods: Beginning with an item pool from previous studies, cognitive interviews were conducted using think-aloud and verbal probing Methods. Data were first analysed for applicability, clarity, ambiguity, and logic, then for emergent themes to ensure items captured the totality of the participant's eating. Australian residents over 18 years of age recruited via Facebook residential groups (n=20).

Results: Of the original 116-items, 11 items had limited applicability; 13 items had unclear references; 32 items had lexical problems and 11 items had logical problems. In total, 29 items were deleted, 31 retained and 56 revised. Thematic analysis revealed participants limited their responses to consider only conventional practices such as grocery shopping, cooking and planned meals rather than the totality of their eating. An additional 84 items were developed to address eating out, incidental eating occasions and inconsistencies between participants assumed correct knowledge and that of public health guidelines. This Resulted in a refined 171-item pool.

Conclusions: This study identified important elements of people's Interpretations of food and eating that should be considered when evaluating and monitoring in public health nutrition and progressed development of a comprehensive food literacy questionnaire.

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### Positionality, reflexivity and ethics in global public health research

Chloe Tuck<sup>1</sup>, Isaac Boadu<sup>2</sup>, Robert Akparibo<sup>1</sup>, Laura Gray<sup>1</sup>, Richmond

Aryeetey<sup>3</sup>, Richard Cooper<sup>1</sup>

<sup>1</sup>School of Health and Related Research, University of Sheffield, United Kingdom, <sup>2</sup>School of Public Health, University of Ghana, Ghana, <sup>3</sup>School of Public Health, University of Ghana

Background and Objectives: As global public health researchers, we strive to increase health system efficiency and reduce inequity due to factors associated with healthcare access and societal wellbeing. Many of the areas of greatest health need are in low-income contexts. However, the majority of funding remains tied to institutions and individuals in high-income settings. Poorly considered research across settings can create disconnect between the researcher and research, further instils colonialist attitudes, and enforces power hierarchies. Yet, the neglect of major health-related challenges facing other environments is ethically more problematic. The Objective of this research was to critically reflect on levels of discordance to foster more ethical and collaborative research.

Methods: Reflectivity and positionality were applied to better understand the role of the researcher, their social experiences, position and power hierarchies

influence knowledge generation. This involved sharing researchers' experience following an exchange between the Universities of Ghana and Sheffield and in fostering a collaboration to conduct mixed methods data collection and analysis with a teaching hospital in northern Ghana.

Results: Numerous aspects of person and place influenced research experience, how the research was conducted and knowledge generation. However, power dynamics can be fluid and change with the environment. This required what geographers have called 'radical humility' in research – an integral openness for researchers to learn, be wrong, change, and acknowledge they are unaware how they are unaware.

Conclusions: Reflexivity and positionality are vital to consider in ethical global health research.

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### Times trends of atopic dermatitis among the Chinese population, 1990-2019: a joinpoint and Bayesian age-period-cohort analysis

Jingjing Zhou<sup>1</sup>, Huijing Chen<sup>1</sup>, Shanshan Liang<sup>2</sup>, Ailing Liu<sup>1</sup>, Chengcheng Li<sup>1</sup>, Shangcheng Zhou<sup>1</sup>

<sup>1</sup>Guangzhou University of Chinese Medicine, China, <sup>2</sup>Department of Mathematics - Science Studies, Guangzhou University of Chinese Medicine, China

Background: Atopic dermatitis (AD) is a chronic inflammatory skin condition, which has become a serious public health problem and has the highest disease burden among skin diseases. Objectives: This study investigates the independent effects of age, period, and cohort on the AD prevalence from 1990 to 2019 in China, compares these effects by gender, and then predicts the future burden over the next decade.

Methods: Data were obtained from the Global Burden of Disease, Injuries, and Risk Factors Study 2019 (GBD 2019). We used Joinpoint regression model to calculate the annual percentage change (APC) in AD prevalence, the age-period-cohort analysis (APC) to estimate the independent effects of age, period, and cohort, the Bayesian age-period-cohort model to predict the epidemic of AD in 2020-2030.

Results: In 2019, there were 35.58 million cases of AD in China, with an age-standardized prevalence rate (ASPR) of 2460.183 (per 100000 population), 1847.290 (per 100,000 population), and 3097.672 (per 100,000 population) in both sex, men, and women, respectively. From 1990 to 2019, the ASPR of AD fluctuant. The periods of 2017-2019 were "joinpoint" for men and women (APC: 7.1% and 4.0%). The age-period-cohort analyses showed that the prevalence of AD was associated with age, being higher in the 1 to 4 years old, 90 to 94 years old, and 95 + years age groups. The cohort effect generally peaked in the cohort born in 2015-2019. Within 2030, the age-standardized incidence rate of AD was projected to be 8.8 and 5.9 in men and women, respectively. Conclusions: Substantial variations exist in AD burden between males and females, and in age groups. Given the increasing AD burden in China, researchers should pay attention to AD, and help policymakers identify modifiable risk factors to take targeted measures to reduce the AD burden, particularly in children and older adults.

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### Identifying predictors of frequency of 1-year readmission in adult patients with diabetes using count data regression models

Jade Soh<sup>1</sup>, Amartya Mukhopadhyay<sup>2</sup>, Bhuvaneshwari Mohankumar<sup>3</sup>, Swee Chye Quek<sup>3</sup>, Bee Tai<sup>1</sup>

<sup>1</sup>Saw Swee Hock School of Public Health, National University of Singapore, Singapore, <sup>2</sup>Respiratory and Critical Care Medicine, National University Hospital, Singapore, <sup>3</sup>Medical Affairs - Clinical Governance, National University Hospital, Singapore

Background: Diabetes mellitus is the third most common chronic condition associated with frequent hospital readmission. Predictors of the number of readmissions within one year among patients with diabetes are less often studied compared with those of 30-day readmission.

Objective: This study Aims to identify predictors of number of readmissions within one year amongst adult patients with diabetes and compare different count regression models with respect to model fit. Research methods: Data from 2008-2015 were extracted from the electronic medical record system of the National University Hospital, Singapore. Inpatients aged  $\geq 18$  years at the time of index admission with a hospital stay  $>24$  hours who survived until discharge were included. The zero-inflated negative binomial (ZINB) model was fitted and compared with three other count models (Poisson, zero-inflated Poisson and negative binomial) in terms of predicted probabilities, misclassification proportions and model fit.

Results: Adjusted for other variables in the model, the odds ratio for expected number of readmissions was 1.42 (95% confidence interval [CI] 1.07 to 1.90) for peripheral vascular disease, 1.60 (95% CI 1.34 to 1.92) for renal disease and 2.37 (95% CI 1.67 to 3.35) for Singapore residency. Other predictors included number of emergency visits, number of drugs and age, with length of stay fitted as a zero-inflated component. Model comparisons suggested that ZINB provides better prediction than the other three count models.

Conclusions: The ZINB model outperformed other count regression models but should be validated in prospective studies before clinical adoption.

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### Biased, wrong and counterfeited evidences published during the COVID-19 pandemic, a systematic review of retracted COVID-19 papers

Angelo Capodici<sup>1</sup>, Aurelia Salussolia<sup>1</sup>, Francesco Sanmarchi<sup>1</sup>, Davide Gori<sup>1</sup>, Davide Golinelli<sup>1</sup>

<sup>1</sup>Department of Biomedical and Neuromotor Science, University of Bologna, Italy

Background and Objective: In 2020 COVID-19 led to an unprecedented stream of papers being submitted to journals. Scientists and physicians all around the globe were in need for information about this new disease. In this climate, many articles were accepted after extremely fast peer-reviews to provide the scientific community with the latest discoveries and knowledge. This also led to articles retraction due to authors' misconduct or errors in Methodology/Conclusions. The aim of this study is to investigate the number and characteristics of retracted papers, and to explore the main causes that led to retraction. Methods: We conducted a systematic review on retracted articles, using PubMed as data source. The inclusion criteria were the following: English-language retracted articles reporting original data, results, opinions/hypotheses on COVID-19, and the article being published between December 1, 2019 and December 31, 2021.

Results: 69 records were identified, 66 full-text articles matched our inclusion criteria and were assessed and included in the review. 38 studies were published in 2020 and 28 in 2021. The majority of retracted articles were either observational studies (n = 34, 52%) or opinion papers (n = 11, 17%), followed by reviews articles (n = 9, 14%), experimental (n = 7, 11%), meta-analysis (n = 4, 6%), study protocol (n = 1, 1%). Twenty-seven retracted articles were identified, mainly reporting observational studies and opinion pieces.

Conclusions: Many articles published during the first year of the pandemic have been retracted, mainly due to the authors scientific misconduct. Duplications, plagiarism, frauds and absence of consent, were the main reasons for retractions. In modern medicine, researchers are required to publish frequently, and, especially during situations like the COVID-19 pandemic, when articles were rapidly published, gaps in peer-reviews system and in the path to scientific publication arose.

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### The use of anthropology, ethnography and cognitive sciences for understanding the influence of online communities on public health: measles outbreak and anti-vaccination movement - lesson not learned

Milica Vucurovic<sup>1</sup>, Verica Jovanovic<sup>2</sup>

<sup>1</sup>Institute of Public Health of Serbia "Dr Milan Jovanovic Batut", Belgrade, Serbia, <sup>2</sup>Institute of Public Health of Serbia Dr Milan Jovanovic Batut, Belgrade, Serbia

Background and Objective: The past several years have been pivotal in revealing how much of an impact social groups on the internet have on the public health in general. Understanding that such groups comprise of relatively stable sets of links that have specific structure and include resource exchange depends on using the methods of medical anthropology, cyber ethnography, and cognitive sciences for recognition and full analysis of the virtual communities. The application of the methodologies is demonstrated by an analysis of the anti-vaccination movements actions in relation to the measles outbreak and the effects of those actions on the general public health. Methods: Qualitative research is conducted using the observation of 12 social groups on the internet chosen by the criteria of existing anti-vaccine narrative, analysis of people interactions within and between those groups, 5 structured interviews in vivo, Roy DAndrades folk model of the mind, and systematic analysis of the topic-related literature from PubMed and Google Scholar.

Results: Processing the example of social groups it was confirmed that the lack of trust in conventional medicine directly correlates to the belief in conspiracy theories, miraculous properties of alternative medicine, and even magic. The

study has determined the cognitive schemes and culture models explaining the principles and providing the information on the cultural thought that lies behind the Interpretation of public health on the internet. Conclusions: The multidisciplinary approach made it possible not just to recognize the existence of the influence of virtual communities on public health, but to determine its source, analyze its development, discover prospective branching, and predict its outcomes, directly affecting the planning of future public health interventions, in order to avoid further repetition of the same mistakes like the difficulties during coronavirus disease 2019 (COVID-19) vaccination process.

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### High risk of death from multiple causes following release from incarceration: an individual participant data meta-analysis of 1,471,526 adults in eight countries

Rohan Borschmann<sup>1</sup>, Claire Keen<sup>2</sup>, Matthew Spittal<sup>3</sup>, Jane Pirkis<sup>1</sup>, David Preen<sup>4</sup>, David Rosen<sup>5</sup>, Sarah Larney<sup>6</sup>, Jesse Young<sup>2</sup>, Stuart Kinner<sup>7</sup>

<sup>1</sup>University Of Melbourne, Australia, <sup>2</sup>University of Melbourne, Australia, <sup>3</sup>University of Melbourne, Melbourne, Australia, <sup>4</sup>University of Western Australia, Australia, <sup>5</sup>University of North Carolina, United States, <sup>6</sup>University of Montreal, Canada, <sup>7</sup>Curtin University, Australia

**Background:** Formerly incarcerated people have exceptionally poor health profiles and are at increased risk of adverse health outcomes when compared to their general population peers. However, not enough is currently known about the epidemiology of preventable mortality in this population to inform the development of targeted, evidence-informed responses.

**Methods:** We analyzed mortality data relating to 1,471,526 people released from incarceration in eight countries from 1980-2018, across 10,534,441 person-years of follow-up time (range: 0-24 years). We used individual participant data meta-analysis to estimate pooled all-cause and cause-specific crude mortality rates (CMRs) with 95% confidence intervals (95%CI) for specific time periods after release, overall and stratified by age, sex, and region.

**Results:** 75427 deaths were recorded. The all-cause mortality rate was highest during days 2-7 following release, with the highest cause-specific rates during this period due to alcohol and other drug poisoning (CMR: 657; 95%CI: 332-1,076), suicide (CMR: 135; 95%CI: 36-277), and cardiovascular disease (CMR: 71; 95%CI: 16-153). We observed considerable variation in cause-specific CMRs over time and across regions, yet little difference in pooled all-cause CMRs between males (731; 95%CI: 630-839) and females (660; 95%CI: 560-767). Pooled all-cause CMRs were higher in older age groups.

**Conclusions:** The markedly elevated rate of death in the first week post-release underscores an urgent need for coordinated transitional healthcare, including pre-release treatment for mental and substance use disorders to prevent post-release deaths suicide and overdose deaths. Variations in causes of death according to time since release highlights the need for routine monitoring of post-release mortality.

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### Modelling HIV/AIDS epidemiological complexity: a scoping review of Agent-Based Model and their application

Felipe Rubio<sup>1</sup>, Rodrigo Anderle<sup>2</sup>, Robson Oliveira<sup>3</sup>, Davide Rasella<sup>3</sup>

<sup>1</sup>Institute of Collective Health at the Federal University of Bahia (ISC-UFBA), Brazil, <sup>2</sup>Instituto de Saúde Coletiva (ISC) - UFBA, Brazil, <sup>3</sup>Instituto de Saúde Coletiva (ISC) da UFBA, Brazil

**Objective:** To end AIDS epidemic by 2030 despite the new challenges brought by COVID-19, such as increasing poverty rates and inequalities, policies should be designed to deal with population heterogeneity and environmental changes. Bottom-up designs, such Agent-Based Model (ABM), have the potential to deal with such complexity by explicitly model these features. HIV/AIDS have a complex dynamic by structural factors, risk behaviors, biomedical characteristics, and interventions. All this embedded into a social structure with inequalities, stigma, and prejudice. To understand how this complexity is faced with ABMs, we performed a scoping review of its applications for HIV to highlight the gaps and potentialities of such approach.

**Methods:** We search PubMed, Web of Science and Scopus repositories, following the PRISMA extension for scoping reviews. We identified the main articles by a co-citation network, and categorize the literature Aims, (sub)populations, and countries/regions under study.

**Results:** We found 73 articles that applied ABM to HIV. From them, we identified 16 main articles. Most of the studies model Transmission Dynamics (23/78 – relate to aim categories) into specific key populations (19/73 – related to papers) of US

and South Africa (50/66 – related to country appearances). More recent studies applied ABM to model PrEP interventions (10/78 – related to aim categories) and Racial Disparities (9/101 – related to populations appearances).

**Conclusions:** Availability of data, computational power and specific know-how are the major barriers to its diffusion. We also identified the literature is highly concentrate on researchers located on the United States with low levels of outsiders collaboration. This reveals how infant is the applications yet. Overall, ABMs are still underused considering their potentialities, and should be applied more broadly to support the implementation of HIV/AIDS control interventions aimed to end AIDS epidemic by 2030.

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### Prevalence and profile of Tinnitus in Brazilian primary health care

Carla Chamouton<sup>1</sup>, Helenice Nakamura<sup>1</sup>

<sup>1</sup>University of Campinas (UNICAMP), Brazil

**Background and Objective:** Tinnitus is an auditory symptom characterized by the perception of a sound without an external sound source. The literature shows a prevalence from 10-15% in the general population and a relation with the occurrence of insomnia, depression, substance addiction and suicidal ideation, among other health conditions. Due to its high prevalence and negative impact on the quality of life, tinnitus can be considered as a public health issue. The objective of the study was to estimate the prevalence and characterize the health profile, and tinnitus complaint, of the adult and elderly population of a health district in a large Brazilian city. **Methods:** An in-service survey was conducted in all primary health centers in the district with a random approach to the adult and elderly population. The sample consisted of 1720 people and the data collection included a questionnaire about general health and tinnitus. Three regression models were performed according to the variables and a 5% significance level was adopted for the statistical analysis.

**Results:** 1569 people answered the questionnaire, with 496 reporting tinnitus, which represented a prevalence of 31.6%. Most of the sample was female, had at least one chronic disease and made continuous use of some medication. The regression models showed a higher chance of tinnitus with advancing age and with the occurrence of diabetes and hormone disorder. **Conclusions:** Tinnitus is related to the occurrence of chronic diseases and advancing age, may cause discomfort and is a reason for seeking treatment. Therefore, it needs to be considered in the health services and the quality of life of these people must be guaranteed by the health professionals.

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### Supporting the achievement of global goals for health and wellbeing through social prescribing: defining the concept

Caitlin Muhl<sup>1</sup>, Kate Mulligan<sup>2</sup>, Imaan Bayoumi<sup>1</sup>, Rachele Ashcroft<sup>2</sup>, Christina Godfrey<sup>1</sup>

<sup>1</sup>Queen's University, Canada, <sup>2</sup>University of Toronto, Canada

**Background and Objective:** With the social prescribing movement rapidly spreading across the globe, there is a need for an agreed definition of social prescribing. As there are two types of definitions – conceptual and operational, agreement on both types of definitions is needed. The aim of this study was to establish internationally accepted conceptual and operational definitions of social prescribing.

**Methods:** A three-round Delphi study was conducted with an international, multidisciplinary panel of experts. The expert panel (n=48) represented 26 different countries across five continents, numerous expert groups, and a variety of years of experience with social prescribing. Consensus was defined a priori as ≥80% agreement. In Round 1, participants were asked to list key elements that are essential to the conceptual definition of social prescribing and to provide corresponding statements that operationalize each of the key elements. In Round 2, participants were asked to rate their agreement with items from the first round for inclusion in the conceptual and/or operational definitions of social prescribing. Based on the findings from this round, the conceptual and operational definitions of social prescribing were developed, including long and short versions of the conceptual definition. In Round 3, participants were asked to rate their agreement with the conceptual and operational definitions of social prescribing.

**Results:** Internationally accepted conceptual and operational definitions of social prescribing were established. The Common Understanding of Social Prescribing (CUSP) conceptual framework was developed from the definitions. The CUSP acronym reflects the potential of this foundational work to bring about a point of transition in the social prescribing movement through the advancement of common understanding.

Conclusions: This foundational work offers a common thread – a shared sense of what social prescribing is, which may be woven into social prescribing research, policy, and practice to foster common understanding of this concept.

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### Student involvement in implementation and evaluation of a school-based health promotion program in upper secondary school: a participatory research approach

Vibeke Krane<sup>1</sup>, Sabrina Schmidt<sup>2</sup>, Solfrid Bratland-Sanda<sup>2</sup>, Lise Trangsrud<sup>2</sup>

<sup>1</sup>Department of Health Social and Welfare Studies, University of South-Eastern Norway, Oslo, Norway, <sup>2</sup>Department of Sports, Physical Education and Outdoor Studies, University of South-Eastern Norway, Norway

Background and Objective: School is a core setting for health promotion in children and adolescents. However, several large school-based health promotion programs fail to succeed, often because of a top-down approach. The aim of this study was therefore to explore involvement of students in the evaluation and implementation of a school-based, health promotion program in a vocational study program in a Norwegian upper secondary school. The program aimed to increase school-based physical activity, improve quality of the school meal, and the psychosocial school environment.

Methods: The study had a participatory research design where students were involved in the knowledge development. A student competence group (SCG, n=8) collaborated with the researchers in the evaluation of implementation of the school-based health promotion program. Data were collected in three waves (spring 2021, autumn 2021, and spring 2022), the SCG met with the researchers twice per data collection. The empirical data for this study is based on a total of these six meetings.

Results: The involvement of SCG was crucial for the ability to identify important topics for the data collection. The SCG influenced the study by contributing to the development of the interview guide for the qualitative study. Moreover, the SCG modified questions for the survey. The SCG contributed and nuanced the interpretation of the quantitative and qualitative data.

Conclusions: The study showed how participatory research can influence different stages of an evaluation and implementation process for health programs in school settings. The involvement of students in SCG provided wider perspectives and pointed out practical implications of the study. There is a need for further research to explore power dynamics and new methods of youth participation in public health research.

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### Heller's concept of needs: a theoretical approach to analyze health management practices

Cristian Figueroa<sup>1</sup>, Ana Vilasbôas<sup>2</sup>, Níliá Prado<sup>3</sup>

<sup>1</sup>Instituto de Saúde Coletiva, Universidade Federal da Bahia, Guatemala, <sup>2</sup>Instituto de Saúde Coletiva, Universidade Federal da Bahia, Brazil, <sup>3</sup>Instituto Multidisciplinar em Saúde, Universidade Federal da Bahia, Brazil

Background and Objective: Recently, the world experienced a major health crisis and social inequities exacerbated. In response of the ongoing crises, recent scholarly work addresses the urge of modifying current healthcare models through health management practices focused on social determination of health. Rooted in the Latin American collective health thought, this study aims to search in the work of the philosopher Agnes Heller answers to study health management practices.

Methods: We conducted a theoretical-reflective study. We focused on Agnes Heller's thought on needs and everyday life. Particularly, in Heller's "The Theory of Need in Marx", "A Theory of Needs Revisited" and "Alltag und Geschichte: zur sozialistischer Gesellschaftslehre".

Results: Needs in Heller's work is not an alienated category or restricted to possessing goods. Rather, appears as material, intangible, and effective demands, qualitatively different and socially constructed. Heller aims to promote social change through emancipation, since it is impossible to satisfy needs within the capitalist system. This requires collective subjects carrying radical needs. These subjects disrupt the individualistic and narcissistic approach on everyday life, without denying their singular experience. Heller proposes to analyze the characteristics of everyday life to determine the alienation of needs. Three elements are important for understanding needs: the ontological element denies the needs' naturalistic character and recognizes its historicity. The ethical element states that satisfying needs should not invert the relation between means-ends, and quantity-quality. Finally, the political element centers on social institutions and a democratic culture to satisfy needs.

Conclusions: Health management practices focused on social needs allow avoiding the reductionism of health care models limited to medical-assistance services. Heller's concept of needs is useful for overcoming the fragmentation of social demands into numerous individual needs. Permitting us to think about democratic governance mechanisms to capture needs. New ways of satisfying needs outside the capitalist system pends.

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### Holism vs. Individualism in public health methodology: a case study of capitalism and infant mortality

Agasthya Vedre-Kyanam<sup>1</sup>

<sup>1</sup>School of Public Health, Department of Sociology, University of Alabama at Birmingham, Birmingham, United States

The development of American capitalism facilitated the dominance of a bioessentialist paradigm in public health research. This has resulted in a systematic individualization of health problems that is financially beneficial for the corporate leaders and funders in health research- exacerbating health inequity and degrading research ethics and scientific integrity. The US has the highest rate of infant mortality of the OECD countries. This study investigates the link between capitalism and infant mortality in this context. There has not yet been a systematic analysis of the effect of capitalism on infant mortality research Methodology and how both affect infant mortality. Mixed-method synthesis of 40 studies was conducted to study infant mortality in the US and countries with lower wealth stratification. Thematic analysis of infant mortality calls to action/initiatives from the UN, WHO, and other major centers/organizations was conducted to understand the academic predispositions guiding infant mortality research methodology. Conflict-theoretical and critical-theoretical frameworks were used to guide investigation. Infant mortality is significantly higher in countries with higher levels of wealth stratification. Research attitudes attributing infant mortality to the individual behavior of the mother rather than social factors was also higher in countries with higher wealth stratification. Capitalism is increasingly becoming a determinant of both health and knowledge. This research is important to guide future inquiry into how power affects the nature of public health epistemologies, and subsequently population health. New avenues of research could study how capitalism affects the outcomes and epistemologies of other diseases, such as mental illnesses.

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### Linking 1.7 million non-EU migrants and refugees to hospital data in England: linkage process and quality

Rachel Burns<sup>1</sup>

<sup>1</sup>University College London, London, United Kingdom

Background and Objective: Difficulties identifying migrants in national data sources such as hospital records has limited large-scale evaluation of migrant healthcare needs and use of health services in European countries like the UK. We aim to describe the novel linkage process and quality of linkage of 1.7 million non-EU migrants and resettled refugees within national health service (NHS) hospital care enabling research into the relationship between migration and health for a large cohort of international migrants in England.

Methods: We use stepwise deterministic linkage algorithms to link longitudinal records from non-EU migrants and refugees to records in the NHS personal demographics services (PDS; linkage stage 1), and HES-ONS (linkage stage 2). We calculated linkage rates and compared migrant characteristics in linked and unlinked samples for each stage of linkage. Results of the 1,799,307 unique migrant records, 1,134,007 (63%) linked to an NHS number and 451,916 (25%) linked to a hospital record in England. Individuals on settlement and dependent visas and refugees had the highest odds of having linked to a hospital record, compared to those on work, student, or working holiday visas. Migrants from the middle east and north Africa and South Asia had four times the odds of having at least one hospital record, compared to those from East Asia and the Pacific. Differences in migrant characteristics between linked and unlinked samples were moderate to small.

Conclusions: We linked over half of the migrants to an NHS number and one fourth to a hospital record. This linked dataset represents a unique opportunity to explore hospitalization rates in migrants. However, missed links disproportionately affected individuals on shorter-term visas and could be mitigated by increasing the quality and completeness of identifiers recorded in administrative data.

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### Integratedness of qualitative research Results into public health measures and policies in the Republic of Serbia

Milica Vučurović<sup>1</sup>, Sofija Jovanović<sup>2</sup>

<sup>1</sup>Institute of Public Health of Serbia "Dr Milan Jovanovic Batut", Serbia,

<sup>2</sup>Faculty of Medicine, University of Belgrade, Serbia

**Background and Objectives:** Besides quantitative research, the Introduction of qualitative research into the inquiry of challenges in the field of public health was conditioned by the multidisciplinary of public health itself. It was recognized that qualitative research delivers better contextualization of the challenge, along with providing depth and breadth to the statistical data, a new dimension – three-dimensionality. This study aims to realize the place and the role of qualitative research in the practice of forming public health measures and policies from the perspective of 10 interviews with the decision makers that defined the public health strategy in the Republic of Serbia.

**Methods:** Semi-structured interviews on the topic of qualitative and quantitative research were conducted with the 10 people on positions responsible for forming the public health strategy and policies in the Republic of Serbia. The narrative analysis was used for the Interpretation of the findings. **Results** Despite the fact that the value of the qualitative research was recognized at academic level, their use in practice is limited. Of the 10 interviewees, all 10 give priority to quantitative research studies, since they are easier to navigate, provide the number of occurrences, are easier to use for perceiving the scope of the challenge and risk factors and allow the generalization of the Findings beyond the participant group. **Conclusions:** Despite being recognized as a part of the public health curriculum, qualitative research does not bear the strength of the statistical evidence used for defining public health measures and policies. The formed public health measures and policies often lack depth and they neither contextualize the challenge nor do they adjust towards the intended population. For this reason, many measures in public health don't have the desired or even expected level of efficiency.

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### Reaching and targeting more effectively: a local experimentation of segmentation to improve access to preventive health examinations

Emilie Labbe-Lobertreau<sup>1</sup>, Damien Viillard<sup>2</sup>, Sophie Labarre<sup>3</sup>, Camille Rondelart<sup>2</sup>, Audrey Bérard<sup>4</sup>, Louis Gibernon<sup>5</sup>, Chrystelle Marchand<sup>5</sup>, Armelle Cotte<sup>6</sup>, Bienvenu Bongue<sup>7</sup>

<sup>1</sup>Centre Technique d'appui et de Formation des Centres d'Examens de Santé (CETAF), France, <sup>2</sup>CPAM de la Loire (Caisse Primaire d'Assurance Maladie), France, <sup>3</sup>Centre Technique d'Appui et de Formation des Centres d'Examens de santé (CETAF), France, <sup>4</sup>Centres d'Examens de Santé de Saint-Etienne, France, <sup>5</sup>CETAF (centre technique d'appui et de formation des centres d'examens de santé), France, <sup>6</sup>Centres d'examens de santé de Saint-Etienne, France, <sup>7</sup>CETAF (centre technique d'appui et de formation des centres d'examens de santé), SAINBIOSE, INSERM, U1059, University of Lyon, France

**Background and Objective:** The adherence to prevention actions remains a major public health issue. French Health Examination Centres (HEC) provide preventive health examinations. However, it is difficult to get people to attend these prevention consultations. The aim of this study is to test different strategies related to the promotion of preventive health examinations based on social marketing techniques, including the use of segmentation.

**Methods:** Intervention research with a mixed approach was conducted using medical and administrative databases from the local health insurance system in 2019. The study's population consist of 124.377 people +18 years, living in the Loire department and already targeted to a preventive examination. Multiple correspondence analyses were performed to summarize information from 31 variables related to sociodemographic and medical characteristics into a set of continuous principal components (PCs). The population was segmented into eight clusters based on a hierarchical cluster analysis applied to the 10 first PCs. 34 individual interviews were hereafter conducted to explore barriers and facilitating factors related to health examination invitations.

**Results:** We focused on 3 clusters with social vulnerability criteria: cluster 3 (14%) had a higher frequency of young people without health insurance and with poor adherence to health examinations; cluster 4 (15%) was represented by low-income families with better adherence to the healthcare system; cluster 7 (10%) grouped people aged 40-70 years old not affiliated to the general healthcare system and with a lower frequency of health examinations. The qualitative study showed barriers such as 'misunderstanding the content', 'not concerned' by health examinations, and 'intended to people who don't care about health'.

**Conclusions:** Social marketing campaigns have been implemented with carefully selected messages that communicate the most relevant information

to the segments. The next step will be to assess whether the strategies improve adherence to the preventive health examinations.

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### Analysis of burnout and fulfillment levels in rehabilitation health professionals

Natasha Cepparulo<sup>1</sup>, Pierpaolo Vittorini<sup>1</sup>

<sup>1</sup>Università degli Studi dell'Aquila, Italy

**Background and Objective:** The study presented in this abstract aimed to analyze burnout and professional fulfillment levels within a sample of rehabilitation health professionals. **Methods:** With this objective in mind, the Professional Fulfillment Index (PFI), a validated test composed of 16 items and measuring these aspects, was selected. The test was translated from its original language, English, to Italian, and it was administered to a small sample of rehabilitators in order to validate the translated version: we calculated a Chronbach's alpha equal to 0.805, that suggested its adoption also in the Italian context. Then, it was administered to 79 rehabilitators. We also collected information about gender, age, educational qualification, place of work, work structure, years of work, work composition.

**Results:** The results showed moderate level of job satisfaction and medium level of burnout. A marginally significant statistical difference was found between the fulfillment values and the years of work: it was observed that the rehabilitators who had been employed since 6-11 years had a medium-to-low job satisfaction level, unlike those employed for more than 20 years, who showed a medium-to-high job satisfaction level. Moreover, a medium burnout value was observed among rehabilitators with a Bachelor's degree, and a no-burnout level among those with a Master's degree. **Conclusions:** The study investigated burnout and professional fulfillment levels, showing ups and downs. These results pave the way for future research on the subject, which could provide better results by including a larger sample of rehabilitators.

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### Is Vitamin supplementation effective in the prevention and management of SARS-CoV-2 infection and in Long COVID? A systematic review of randomized clinical trials

Claudia Isonne<sup>1</sup>, Alessandra Sinopoli<sup>2</sup>, Valentina Baccolini<sup>1</sup>, Antonio Sciurti<sup>1</sup>, Maria Santoro<sup>3</sup>

<sup>1</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome, Rome, Italy, <sup>2</sup>Department of Prevention, Local Health Authority Roma 1, Rome, Italy, <sup>3</sup>Department of Experimental Medicine, University of Rome Tor Vergata, Rome, Italy

**Background and Objective:** SARS-CoV-2 plays with an individual's immunity and the severity of the infection depends on patient's immuno-competence. While it is well known that nutritional deficiencies can impair the immune system, making it particularly susceptible to infections, evidence on the efficacy of Vitamin supplementation in the prevention and management of viral infections is still fragmented. Therefore, we conducted a systematic review aimed at summarizing the clinical effects of vitamin supplementation against SARS-CoV-2 infections.

**Methods:** PubMed, Scopus, and Web of Science were searched. RCTs comparing the effects of any vitamin supplementation in any form vs. placebo or standard of care in the prevention and/or management of confirmed SARS-CoV-2 infection in people of any age were included. A narrative synthesis of the Results was conducted. The revised Cochrane Risk-Of-Bias tool was used to assess quality.

**Results:** A total of 10684 records resulted from the initial search, of which 30 RCTs were included. Two studies investigated the administration of multivitamin complexes, 20 the administration of vitamin D, whereas eight the administration of vitamin C. Four studies evaluated the prevention of SARS-CoV-2 infection in high-risk individuals. Prevention of Long COVID was studied by only one author. The populations under investigation were mainly hospitalized. Preliminary results indicated that findings were heterogeneous in relation to the clinical management of patients included, whereas no significant results were found in the prevention area. Individuals supplemented with vitamin D had a better prognosis. The most studied outcome was mortality, which appeared significantly reduced especially in the case of vitamin D supplementation.

**Conclusions:** Despite the initial stage, we found that differences in populations considered, as well as variety in recruitment and treatment protocols, highlight the need to conduct further investigations to estimate the clinical benefits of vitamin administration in COVID-19 patients.

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### Nanoparticle concentration in Exhaled Breath Condensate as a novel biomarker for assessing exposure to nanomaterials in occupational environment

Marco Panizzolo<sup>1</sup>, Francesco Barbero<sup>2</sup>, Giulia Squillacioti<sup>1</sup>, Valeria Bellisario<sup>1</sup>, Federica Ghelli<sup>1</sup>, Ivana Fenoglio<sup>2</sup>, Enrico Bergamaschi<sup>1</sup>, Roberto Bono<sup>1</sup>

<sup>1</sup>Department of Public Health and Pediatrics, University of Turin, Italy,

<sup>2</sup>Department of Chemistry, University of Turin, Italy

**Background & Objective:** The rapid growth of the technological use of nanomaterials (NMs) has led to a consequent increase in their aero dispersion. This exposure may represent a risky condition for a large number of workers. The study aimed to assess the relationship between the chronic exposition of workers exposed to NMs and the biological response, quantified using some internal-dose and early biological effect biomarkers measured in a non-invasive way. **Methods:** 59 subjects were recruited as exposed to NMs, 26 working with "EPC" paints and coatings, and 33 with "ECC" construction chemicals. 41 unexposed subjects were enrolled as controls. At the end of the working shift, each subject provided a spot of urine, for metal quantification by ICP-MS, and an Exhaled Breath Condensate (EBC) sample, to quantify nanoparticles and local inflammation by Nanoparticles Tracking Analysis (NTA) and ELISA technique, respectively. Differences between groups and companies were tested by Kruskal-Wallis tests, according to the data distribution.

**Results:** workers exposed to EPC and ECC demonstrated significantly higher nanoparticles concentration in EBC ( $p < 0.0001$ ) when compared with unexposed. Regarding inflammation, high sensitivity-CRP, interleukin (IL)-1 $\beta$ , and TNF- $\alpha$  showed significantly higher levels ( $p < 0.0001$ ) in EPC and ECC, when compared to unexposed. Conversely, IL-10 was significantly higher only in ECC compared to unexposed ( $p < 0.001$ ). Metals in urine revealed the same trend for 29Si, 47Ti, and 118Sn, with higher significant levels in both EPC and ECC when compared to unexposed ( $p < 0.0001$ ,  $p < 0.0001$ , and  $p = 0.001$ , respectively). 52Cr and 27Al proved no differences between workers from different companies. **Conclusions:** The results support a possible relationship between nanoparticle exposure and particle load in the airways, which in turn may cause both sustained inflammation and higher levels of metal in urine. Further investigations on these biomarkers in other occupational scenarios could be useful to devise new preventive strategies.

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### Bayesian approaches in public health: a cross-campus comparison of sexual violence victimization

Kamilla Bonnesen<sup>1</sup>, Kevin Swartout<sup>1</sup>

<sup>1</sup>Georgia State University, United States

Bayesian statistics have recently become computationally possible for more complex public health research questions. Bayesian method offer a novel approach to public health research, they account for non-normally distributed variables, and provide a probabilistic approach to testing null hypotheses. In this worked example, we compare sexual violence victimization (SV) rates on two- and four-year campuses and test whether contextual alcohol-related factors impact risk of victimization. We chose campus SV and heavy episodic drinking (HED) for this example due to the global public health significance; SV is endemic on college campuses and HED is a robust risk factor of victimization. We hypothesized that 1) students at four-year campuses experience more SV than their two-year campus peers, 2) HED predicts victimization across both campus types, and 3) students who engage in HED experience the same amount of SV risk, regardless of campus type. We found reliable differences in SV and HED across two- and four-year campuses: four-year campus students were twice as likely to have experienced SV (OR=1.98, 90% CI=1.61-2.46) and 2.5 times as likely to engage in HED (OR=2.63 90 CI=2.24-3.10) compared with two-year campus students. Finally, the results suggest campus type does not impact the association between SV and HED; therefore, students who drink heavily experience similar SV risk regardless of the campus type they attend. In addition to understanding how institution type and heavy drinking affect students SV experiences, this study presents a novel statistical approach to violence research and elucidates the experiences of violence for an understudied group of college students (i.e., those who attend a two-year campus). This example highlights how Bayesian approaches are valuable in public health. A Bayesian perspective provides a quantitative approach to establishing similarity across groups, which is of clear value to public health evaluations.

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### A territorial turn in research on health inequities

Elis Borde<sup>1</sup>, Elis Borde<sup>1</sup>

<sup>1</sup>Federal University of Minas Gerais (UFMG), Brazil

**Background:** Research on health inequities mostly focuses on describing different levels of exposure to (social) factors that influence health outcomes. While this overcomes still dominant biomedical and lifestyle approaches, it does not sufficiently engage with the processes that (re)produce health inequities and shape processes of embodiment. Territory and its correlates are increasingly being considered to explore such processes. Nonetheless, there remains a problematic ambivalence between notions of territory that broadly correspond to localization and an acknowledgement of territory as a relational, dynamic, and inherently conflictual appropriation of space. We make a case for a critical territorial turn in health inequity research.

**Methods:** On the basis of theoretical insights from Critical Geography, Ecosocial Theory and Latin American Social Medicine and Collective Health, case studies on processes of health-disease and death in territories shaped by urban violence in Bogotá and Rio de Janeiro are analyzed with a territorial lens, revealing ways in which territorial dynamics shape processes of embodiment and health inequities. **Results:** The case examples underline the importance of understanding and systematically integrating a territorial lens in health inequity research as the territorial dynamics provide insights and reveal pathways of embodiment that results from direct and indirect territorial (un)making of both emancipatory and dominating, state-centered and bottom-up political projects that shape unequal exposure, susceptibility, experience and impact of what compromises health and wellbeing at multiple levels. In the case examples this is illustrated by mostly violent territorial (dis)ordering imposed by militarization of urban space, state violence, militias and globalized drug trade and its implications for well-being, ill-being and death in urban Latin America.

**Conclusions:** A territorial turn is necessary to inform more sensitive and complex readings of health inequities and to reveal pathways of embodiment that challenge essentialist and individualistic approaches to population health (inequities), including urban violence and violent death.

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### Small-area deprivation index does not improve the capability of multisource comorbidity score in mortality prediction

Federico Rea<sup>1</sup>, Mauro Ferrante<sup>2</sup>, Salvatore Scondotto<sup>3</sup>, Giovanni Corrao<sup>1</sup>

<sup>1</sup>University of Milano-Bicocca Italy, <sup>2</sup>University of Palermo, <sup>3</sup>Sicily Regional Health Service Italy

**Background and objective:** The stratification of the general population according to health needs allows to provide better-tailored services. A simple score called Multisource Comorbidity Score (MCS) has been developed and validated for predicting several outcomes. The aim of this study was to evaluate whether the predictive ability of the MCS improves by incorporating socioeconomic data (as measured by a deprivation index).

**Methods:** Beneficiaries of the Italian National Health Service who in the index year (2018) were aged 50–85 years and were resident in the Sicily region for at least 2 years were identified. The 1-year mortality was the outcome of interest. For each individual, the MCS was calculated according to his/her clinical profile, and the deprivation index of the census unit level of the individual's residence was collected. Akaike information criterion and Bayesian information criterion statistics were used to compare the goodness of fit of the model that included only MCS and the model that also contained the deprivation index. The models were further compared by means of the area under the receiver operating characteristic curve (AUC).

**Results:** The final cohort included 1,062,221 individuals, with a mortality rate of 15.6 deaths per 1,000 person-years. Both MCS and deprivation index were positively associated with mortality.

The goodness of fit statistics of the two models were very similar. For MCS only and MCS plus deprivation index models, Akaike information criterion were 19,566 and 19,578, respectively, whereas Bayesian information criterion were 19,528 and 19,516, respectively. The AUC values were 0.78 for both models.

**Conclusion:** The present study shows that socioeconomic features as measured by the deprivation index did not improve the capability of MCS in predicting 1-year risk of death. Future studies are needed to investigate other sources of data to enhance the risk stratification of populations.

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### The impact of COVID-19 pandemic on HIV screening scientific production

Irene Gintoli<sup>1</sup>, Fabrizio Bert<sup>1</sup>, Valerio Brescia<sup>1</sup>, Giacomo Scaioli<sup>1</sup>, Giuseppina

Lo Moro<sup>1</sup>, Roberta Siliquini<sup>1</sup>

<sup>1</sup>University of Torino Department of Public Health Sciences, University of Torino Italy

**Background and Objective:** The COVID-19 pandemic has had a significant impact on many areas of preventive, diagnostic and therapeutic assistance. Some preventive activities may have been neglected in terms of implementation or research. These include the accessibility to HIV screening and the cost-effectiveness of this preventive measure. This study aimed to investigate the attention of the scientific community on the cost-effectiveness of HIV screening through a bibliometric analysis referring to the period 2020-2022. The aim was to evaluate publication and citation related metrics, identify major keywords and topics, and assess geographic distribution of published articles.

**Methods:** A list of all publications containing specific keywords and Mesh terms related to HIV screening and its cost-effectiveness in all fields was extracted from Scopus on date 2022/11/23. Bibliometric analysis was then conducted using the bibliometrix and biblioshiny packages on RStudio.

**Results:** Total publications (TP) were 155 with an annual growth rate of -7,58%. Contributing authors were 1442, with an average of 2,923 citations per paper. The origin of TP is heterogeneous; 67,1% of them were produced by International co-authorships. The countries with the most conspicuous literary production were the USA, UK, South Africa, China and Switzerland. The United States and South Africa were the countries with the highest number of mutual collaborations. Trending topics about HIV screening cost-effectiveness include "Cost-effectiveness analysis", "Controlled study" and "Mass screening".

**Conclusions:** The covid 19 pandemic has caused a setback to primary health care and secondary prevention services such as screenings, and related research. The study demonstrates a reduction of scientific production on this topic and the need to focus again both in research and in public health services implementation on other important pandemics that could accelerate their expansion such as HIV.

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### The use of artificial intelligence and natural language processing for visualizing social media discussions surrounding the repeal of Roe v. Wade in the United States of America

Rodina Bizri-Baryak<sup>1</sup>, Lana Ivanitskaya<sup>1</sup>, Elina Erzikova<sup>2</sup>, Lisa Gandy<sup>2</sup>

<sup>1</sup>Central Michigan University, 122 Falling Rock Way, United States, <sup>2</sup>Central Michigan University, 1200 S. Franklin St., Mount Pleasant, Mich. 48859, United States

**Background and Objective:** We present a novel method of network visualization with computer-assisted processing of text. We leverage human and computer collaboration to develop and validate algorithms. We apply a network analysis and natural language processing to the corpus of 28,693 YouTube comments surrounding the repeal of Roe v. Wade. In addition, we connect visualizations to qualitative study, to deepen our exploration of social media users' understanding of policy and implications for women's health.

**Methods:** We analyzed comments to nine most watched YouTube newscasts about the repeal of Roe v. Wade by ABC, CBS, CNN, Fox News, MSNC and Vice News. We applied a Gender API through google and computer-scored social and psychological states from Linguistic Inquiry Word Count (LIWC-22). VOSviewer visualizations of Roe v. Wade relevant terms extracted from YouTube comments are overlaid with computer-generated LIWC scores.

**Results:** Our colorful map – a network of 256 interconnected terms extracted from 28,693 comments has 4 thematic clusters of terms: 1) overturning of Roe v. Wade/states' rights/political debate/Supreme Court rulings/abortion rights; 2) Consequences of eliminating the right to choose/possible solutions; and 3) Argument for determining when life begins/fetal development/health complications; 4) Religion and morality. Clusters 2 and 3 score high on female usernames (Gender API), in-text references to females (LIWC), and health related concerns. In contrast, male usernames are more prevalent in Clusters 1 and 4 with discussions on religion, policy, and the political implications of the Supreme Court decision.

**Conclusion:** Eye-catching term networks and LIWC overlays help researchers visualize and communicate about policy issues, as they are deliberated in social media. Overlaid with gender-specific information, networks of co-occurring terms can assist in audience segmentation. To make data analysis more efficient, some human validation and curation is needed with automated text scoring to identify discussion areas with specific linguistic features.

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### Nutrition literacy assessment in oncology informal caregivers:

### preliminary data of a cross-sectional study

Daniele Nucci<sup>1</sup>, Erica Manzan<sup>2</sup>, Marta Tesolin<sup>3</sup>, Cristiana Zordan<sup>3</sup>, Leda Lo Mauro<sup>2</sup>, Valentina Moretto<sup>3</sup>, Caterina Bardazzi<sup>4</sup>, Letizia Fattorini<sup>4</sup>, Daniela Costardi<sup>5</sup>, Heater Gibbs<sup>6</sup>, Chiara Lorini<sup>7</sup>, Guglielmo Bonaccorsi<sup>7</sup>, Mariateresa Nardi<sup>1</sup>

<sup>1</sup>Veneto Institute of Oncology IOV-IRCCS, Dietetics and Clinical Nutrition Unit, Via Gattamelata, 64, 35128 Padua, Italy, <sup>2</sup>Veneto Institute of Oncology IOV-IRCCS, <sup>3</sup>Veneto Institute of Oncology IOV-IRCCS, Dietetics and Clinical Nutrition Unit, Italy, <sup>4</sup>University of Florence, Medical Specialization School in Hygiene and Preventive Medicine, viale GB Morgagni, 48, 50134 Florence, Italy, <sup>5</sup>Veneto Institute of Oncology IOV-IRCCS, Patient Education and Empowerment Unit, Via Gattamelata, 64, 35128, Padua, Italy, <sup>6</sup>University of Kansas Medical Center, Department of Dietetics and Nutrition, 3901 Rainbow Blvd, MS, 4013, Kansas City, KS, 66160, USA, United States, <sup>7</sup>University of Florence, Department of Health Science, viale GB Morgagni 48, 50134, Florence, Italy

**Background and Objective:** Malnutrition with weight loss in cancer patients (CPs) represents one of the most important problems to prevent and treat. Cancer-associated malnutrition is mainly due to the tumor itself and/or to treatments, and can lead to cachexia, which is responsible for up to 20% of cancer deaths. The informal caregivers (ICs) play a key role in the management of CPs. In particular, a good level of ICs' nutritional literacy (NL) is essential to help CPs in facing malnutrition and improve their quality of life. The aim of our study is to measure NL level of ICs of CPs.

**Methods:** We designed a 12-month cross-sectional study that will include 400 ICs of CPs of the Veneto Institute of Oncology in Padua. The Italian version of the Nutrition Literacy Assessment Instrument (NLit-IT) was used to measure the NL level of ICs. NLit-IT allow identifying three levels of NL: i)probability of low NL; ii)possibility of low NL; iii)possibility of good NL. The study included ICs of both sexes, aged 18- 80, responsible for the diet of the assisted cancer patient.

**Results:** Currently a sample of, 103 ICs (M=35; F=68) aged 54 (±14.5) participated in the study. Almost half of the participants (48%) were overweight (35%) or obese (13%). After the analysis of the NLit-IT score, 56% (n=58) and 42% (n=43) of the ICs participating in the study showed a probability of low NL and a possibility of low NL, respectively. Significantly lower levels of NL were seen in subjects aged ≥50 (p=0.042) and with low educational level (p=0.039).

**Conclusions:** Our preliminary results highlighted the need for further investigation into the level of NL of ICs of CPs Furthermore, we argue that it is necessary to develop nutrition promotion interventions to adequately support ICs with limited NL in their care activities.

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### Use of quasi-experimental studies to evaluate causal effects of public health interventions in Portugal: a scoping review

Andreia Leite<sup>1</sup>, Irina Kislaya<sup>1</sup>, Ausenda Machado<sup>1</sup>, Pedro Aguiar<sup>1</sup>, Baltazar Nunes<sup>1</sup>, Carlos Matias Dias<sup>1</sup>

<sup>1</sup>Departamento de Epidemiologia, Instituto Nacional de Saúde Doutor Ricardo Jorge, Lisbon, Portugal, NOVA National School of Public Health, Public Health Research Center, Universidade NOVA de Lisboa, Portugal, Comprehensive Health Research Center, Portugal

**Background and Objective:** Evaluating causal effects of public health interventions using traditional randomized controlled trials might not be feasible. Quasi-experimental designs are a valid option but still not widely used in Portugal. Knowing their application in real public health problems will support the development of this research area. We thus performed a scoping review aiming at identifying and characterising the use of quasi-experimental studies to evaluate causal effects of public health interventions in Portugal.

**Methods:** We included studies that used a quasi-experimental design to assess causal effects of one or more public health intervention in Portugal. PubMed, Scopus, Web of Science and CINAHL were searched from inception, combining free text and controlled vocabulary terms. Grey literature was identified through screening of tables of contents of non-indexed publications and institutional repositories of national Public Health PhD and MSc programmes theses. Studies were selected after title and abstract followed by full-text, double-screening. Searches were supplemented by reference mining and contact with authors of eligible studies. We extracted information on the intervention assessed, study design, statistical analysis approach and reporting guidelines followed using a standardised extraction form.

**Results:** This study is ongoing, we present preliminary results from the databases search. After deduplication we identified 500 studies, 38 were included for full-text screening, and 25 were eligible. Studies assessed interventions in various areas,

namely healthcare services (40.0%), tobacco and drugs control policy (20.0%), and pharmaceuticals policy (16.0%), among others. Study designs were mainly interrupted time series (44.0%), followed by difference-in-differences approaches (40.0%).

Conclusion: There is a paucity of studies in this area with interrupted time series and difference-in-differences approaches being the most often used study designs. Training in this area might promote the use and dissemination of quasi-experimental studies.

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### The social determination of the health-disease process approach in dialogue with racial inequities in Indigenous peoples' oral health

Lucas dos Santos<sup>1</sup>, Tainá Mafra<sup>2</sup>, Herika Mauricio<sup>3</sup>, Rafael Moreira<sup>4</sup>

<sup>1</sup>Fiocruz Pernambuco, PhD Student, Brazil, <sup>2</sup>Fiocruz Pernambuco, MSC Student, Brazil, <sup>3</sup>Universidade de Pernambuco, Brazil, <sup>4</sup>Fiocruz Pernambuco, Brazil

Background/Objective: The social determination of the health-disease process (SDHDP) approach, differing from the widespread approach on social determinants of health, understands health articulated with social/historical processes. It takes social formation and organization, and their consequences on the population as fundamental for reality analysis. SDHDP approach leads to the questioning of the need for social/systemic change for health promotion, aiming at a society without unjust and avoidable inequalities. The objective of this study is to produce reflections on racial inequities in indigenous peoples oral health from the perspective of the SDHDP approach.

Methods: A critical essay on the themes of oral health of indigenous peoples, racial inequities in health, and the SDHDP approach was conducted. Notes on the articulation of the themes are presented and debated.

Results: Several countries built on colonial legacies of slavery, exploitation, and racialization present an intense and violent profile of racial inequalities in health, framed as health inequities, intrinsically linked to the inability to treat the avoidable, unjust, and oppressive historical-political process denominated by racism. It overcomes discrimination at the individual level, reaching institutional and structural expressions. Oral health inequities among indigenous peoples are high in several countries, with a solid relationship between the implementation of neoliberal policies, racism, and the increase in social inequalities, with more indigenous communities living in poverty.

Conclusion: Discussions on the racialized/indigenous peoples health need to incorporate the impacts of a colonialist legacy that acts via political/social processes. Racism impacts general and oral health. It is essential to overcome the methodological approach to racism as a simple risk factor, moving to understand it as a multilevel oppression system with structural, institutional, and cultural dimensions. The oral health field allows a distinct look at social injustices since it reflects unequal material circumstances and healthcare access, and structural inequities throughout life.

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### Experiences in the application of logic models in the context of workplace health promotion - a focus group study

Madeleine Gernert<sup>1</sup>, André Schuber<sup>1</sup>, Andrea Schaller<sup>1</sup>

<sup>1</sup>Working Group Physical Activity-Related Prevention Research, Institute of Movement Therapy and Movement-oriented Prevention and Rehabilitation, German Sport University Cologne, Germany

Background and Objective: Researchers gathering evidence on complex workplace health promotion interventions face various challenges. Applying logic models as a theory of change might support the outcome and process evaluation of such application-oriented interventions. The present study explores the challenges and opportunities of logic models in application-oriented intervention research on workplace health promotion.

Methods: A focus group (5 females and 1 male) consisting of scientists and external workplace health promotion consultants who had worked with a logic model, was conducted along a semi-structured interview guide. The recorded qualitative data were transcribed and analysed using the structuring content analysis method.

Results: According to the focus group, logic models provide several opportunities for the planning and evaluation of complex interventions in workplace health promotion. Furthermore, logic models support the communication between science and practice, and also have benefits for the provider of workplace health promotion interventions. However, the focus group identified challenges of the

logic model in the working process and the applicability in practice, which was especially related to the evaluation aspects. Finally, the focus group highlighted experience in the application of logic models and certain framework conditions regarding the working environment as prerequisites for working with logic models. Conclusion: Working with logic models shows great potential to increase the quality regarding evidence development in workplace health promotion interventions. At the science-practice interface, in application-oriented studies, logic models could support the communication between all stakeholders involved to enhance the integrative understanding and the further development of evidence-based workplace health promotion. "

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### Early Assessment of expansion of New Born Screening panel in the Italian context

Marco Marchetti<sup>1</sup>, Simona Paone<sup>1</sup>, Matteo Ruggeri<sup>2</sup>, Donatella Mandolini<sup>2</sup>, Paolo Roazzi<sup>2</sup>, Alessandra Lo Scalzo<sup>1</sup>, Antonio Russo<sup>1</sup>, Emanuela Tagliente<sup>1</sup>, Silvia Vainieri<sup>1</sup>, Michela Santurri<sup>1</sup>

<sup>1</sup>Agenzia Nazionale per i Servizi Sanitari Regionali, Italy, <sup>2</sup>Istituto Superiore di Sanità, Italy

Background and Objective: Newborn screening (NBS) is the test that detects potential fatal or disabling conditions during the first days of neonatal life. As the number of conditions assessable by NBS is increasing it is necessary to identify criteria which can inform health decision-maker. Under the Italian legislation, which in 2016 established the extended NBS as an Essential Level of Care and a periodic update of screened diseases, we piloted an early assessment model on which conditions to add to screening panels for decision making process.

Methods: Eight diseases were included in the early assessment model according to the MoH request. A Strengths/Weaknesses, Opportunities/Threats (SWOT) and a Multicriteria Decision (MCDA) analysis were performed. Two expert panel groups were established. The former identified the issues from a predefined list that were relevant to the four categories according to the SWOT, the latter assigned the score according to SWOT results. Scores were weighted according to different perspectives (health professionals, decision-makers, and citizens/patients) represented in the second panel and presented in a scatter plot-type graph showing the positioning of technology according to the potential value and the perceived risk associated with the screening of the single proposed disease.

Results: All the eight diseases resulted in the area associated with a low risk and a high value (defined as a Comfort Zone). Two out of the eight had all the SWOT issues marked as strengths and opportunities. Over the remain six diseases, some weakness and threats issues were associated to effectiveness and costs domain due to the specific disease characteristics.

Conclusion: The proposed model is a useful tool to support the Italian MoH in decision making process on the early assessment of introduction of proposed diseases in the NBS panel and related coverage.

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### Professional health literacy - first results of a pilot study in Austria, Germany, and Switzerland

Saskia De Gani<sup>1</sup>, Doris Schaeffer<sup>2</sup>, Robert Griebler<sup>3</sup>, Rebecca Jaks<sup>4</sup>, Alexander Haarmann<sup>5</sup>, Lennert Griese<sup>2</sup>, Denise Schütze<sup>3</sup>, Christa Straßmayr<sup>3</sup>

<sup>1</sup>Careum Center for Health Literacy Switzerland, <sup>2</sup>University of Bielefeld, Germany, <sup>3</sup>Gesundheit Österreich GmbH, Austria, <sup>4</sup>Careum Center for Health Literacy, <sup>5</sup>Hertie School Berlin Germany

Background: Population's health literacy (HL) is low in many countries, including Austria, Germany, and Switzerland. To improve HL of the population, health professionals (HP) play an essential role. However, there is a lack of a clear definition, concept, and reliable data on professional HL of HP so far.

Methods: A new concept of professional HL and a survey instrument were developed and applied in a quantitative pilot study in all three countries. The four defined key tasks of professional HL are knowledge and information management, knowledge and information explanation, communication, and professional digital HL. Data on corresponding items were collected in 2022 by online surveys. 921 nurses and physicians in Germany, 3,876 nurses, physicians, and physiotherapists in Austria, and 1,613 nurses, physicians, physiotherapists, and pharmacists in Switzerland were surveyed. Based on the answers, 4 dimensions and 6 sub-dimensions of professional HL were found and related to aspects linked to training and job.

Results: In all three countries HP report greatest difficulties in strengthening digital HL of patients, while enabling patient-centred conversation and explaining information are considered less challenging. Even though difficulties vary between

HP, in Switzerland, physicians report less difficulties in most of the four key tasks. In Austria this is mostly the case for physiotherapists. In Germany, differences between the professions are mostly small. The results indicate that HP are generally unfamiliar with the concept of HL and communication techniques are unfamiliar accordingly. Moreover, most HP reported inadequate education in communication and information explanation.

Conclusion: Professional HL is essential to improve patients' HL. The results show a need for action as well as for further research in this field. Efforts in supporting HP should be taken to adequately address patients' HL and enable them to improve their health and well-being by including key tasks in the education of HP.

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### Audit & feedback design and implementation in emergency care: a regional level experience within the easy net program

Anna Acampora<sup>1</sup>, Carmen Angioletti<sup>2</sup>, Nera Agabiti<sup>1</sup>, Laura Angelici<sup>3</sup>, Luigi Pinnarelli<sup>1</sup>, Paola Colais<sup>1</sup>, Francesca Mataloni<sup>3</sup>, Egidio de Mattia<sup>4</sup>, Antonio de Belvis<sup>4</sup>, Marina Davoli<sup>1</sup>

<sup>1</sup>Department of Epidemiology, Regional Health Service - Lazio, Via Cristoforo Colombo, 112, 00147, Rome, Italy, <sup>2</sup>Sant'Anna School of Advanced Studies, Piazza Martiri della Libertà, 33 - 56127 Pisa, Italy, <sup>3</sup>Department of Epidemiology, Regional Health Service - Lazio, Via Cristoforo Colombo, 112, 00147, Rome, Italy, <sup>4</sup>Catholic University of Sacred Heart, Largo Francesco Vito, 1, 00168 Roma, Italy.

Background and Objective: Due to the complexity in management of acute myocardial infarction (AMI) and ischemic stroke, the Lazio region (Italy) realized an emergency network, involving different hospitals and emergency care providers. Although Audit&Feedback (A&F) is often the foundation of multidimensional quality improvement activities, the optimal design is still unknown. This work reports the dynamics in development and implementation of an A&F intervention to improve appropriateness and timeliness of emergency care for AMI and stroke, within the EASY-NET research program (NET-2016-02364191).

Methods: All the emergency network hospitals were invited to participate. An expert team was involved in a two rounds Delphi survey to identify a set of indicators to evaluate AMI and stroke care pathways. The way for feedback reporting was defined through a web-based survey including objective and subjective assessment of clarity, completeness, and comprehensibility of different proposals. Starting from literature, a form to collect information on Audit conduction and provide a guide was developed. In the end, a controlled pre-post study will be performed. The control group has public access to a regional web platform that periodically updates the same indicators.

Results: A total of 18 hospitals have joined the intervention group. The Delphi procedure validated the final set of indicators (11 for AMI and 16 for stroke). Two feedback reports were delivered. Additionally, an evidence-based Audit form was developed and disseminated to collect information on Audit characteristics (team composition, main audit process activities, improvement action proposed and timing for the implementation). Several hospitals organized the audit and returned the form to the research group.

Conclusion: At this point, we learned that sharing methods and instruments with the target increases the acceptability of the intervention. Strong collaboration with the stakeholders keeps the interest high and reduces drop-outs. Staying informed about audits conducted at hospitals remains an open challenge.

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### Characterization of complex multimorbidity patterns through network models: epidemiology and impact on mortality and health services use

Javier Alvarez-Galvez<sup>1</sup>, Jesus Carretero-Bravo<sup>1</sup>, Begoña Ramos-Fiol<sup>1</sup>, Esther Ortega-Martin<sup>1</sup>

<sup>1</sup>University of Cadiz Spain

Background: Multimorbidity has been defined as the presence of two or more chronic diseases, and is associated with reduced quality of life, increased disability, greater functional impairment, increased health care utilization, and increased mortality. Thus, understanding its epidemiology and inherent complexity is essential to improve the quality of life of patients and to reduce the costs associated with this condition. Through this study we aim to characterize multimorbidity patterns and later describe their impact on mortality and health service use through a network science approach.

Methods: Using a large dataset of 1.5 million health records on chronic diseases from 2014 to 2021, and combined with mortality and use of health care services data, we explore the application of mixed graphical models and its combination

with social network analysis techniques for the detection and profiling of complex multimorbidity patterns.

Results: We found large age differences between multimorbidity patterns, with respiratory, mental and addiction patterns in the younger groups, while in the older groups the chronic disease profiles identified were mainly muscular, cardiovascular, and complex. Mental health patterns presented a higher prevalence among women. Geographic differences were also observed by county and in the use of services and mortality, with cardiovascular and complex patterns being the more prevalent in poorer neighborhoods.

Conclusion: Our initial findings demonstrate the suitability and usefulness of this approach for the study of multimorbidity based on the use of disease networks, which offer both the researcher and health professionals a holistic and organic view of the relational structure of chronic disease. This analytical approach offers methodological advantages for working with complex data sets and with high dimensionality, as well as a better measurement of the impact of multimorbidity on mortality and health services.

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### The View of the Approaches of Health Professionals and Patient Relatives to Stem Cell Treatments

Selin Dal<sup>1</sup>

<sup>1</sup>Ankara University Faculty of Language and History-Geography Turkey

There is a sub-project of the medicine project, which aims to develop innovations related to stem cell treatments and is supported by the "Scientific and Technological Research Council of Turkey". The sub-project is named as "Socio-Cultural, Economic, Mental Health, Ethical and Legal Impact Assessment Study of Regenerative and Restorative Medicine Practices in Turkey". The project aims to determine the level of awareness that exists in society about stem cell studies. For the field study, 'Izmir' was selected from the west of Turkey, 'Erzurum' from the east and 'Ankara' from the point of view of being the capital of the country and 'Istanbul' from the point of view of being the largest province of the country. It is planned to conduct interviews with patient relatives and health workers (doctor, nurse, technician) at the designated public hospital and private hospital in these four provinces. In the field studies in Erzurum and Ankara, where I took part as a researcher, I observed the tendencies of the interviewed people towards research. The perspective of the patients relatives on the study and the questions, the level of awareness differed from each other in Ankara and Erzurum. The socio-economic situation and educational level of the participants in Ankara have a different view than those in Erzurum formed this result. In the context of the professional experiences of health professionals, their unique perspectives and suggestions were also noteworthy. The fact that the working environment is a hospital and the research group has a sensitive structure made it necessary for me to develop an appropriate approach to the individuals I was interviewing as a researcher. As a result, this study has created a valuable experience in terms of observing why the social approach to stem cell, which is a medical field, may differ in which regions in Turkey.

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### Conducting rapid reviews for health policy makers during the pandemic in an evolving evidence ecosystem: New synthesis methods and dissemination plans

Maureen Dobbins<sup>1</sup>, Nayab Choudhry<sup>1</sup>, Leah Hagerman<sup>1</sup>, Robyn Traynor<sup>1</sup>, Sophie Neumann<sup>1</sup>, Alyssa Kostopoulos<sup>1</sup>, Emily Clark<sup>1</sup>, Sarah Neil-Sztramko<sup>1</sup>, Stephanie Hopkins<sup>1</sup>

<sup>1</sup>National Collaborating Centre for Methods and Tools Canada

Background and Objective: As the COVID-19 pandemic continues, public health decision makers' need to easily access high-quality synthesized evidence for policy and programming decisions remains paramount. In response, the National Collaborating Centre for Methods and Tools (NCCMT) developed the Rapid Evidence Service (RES). The RES synthesizes the best available evidence on priority COVID-19 public health questions.

Methods: Our process involves: developing focused questions; conducting a search; screening; critically appraising evidence using validated tools; summarizing key findings; GRADE-ing the evidence; and synthesizing the findings into a final report. The summary includes the certainty of the findings and an overview of knowledge gaps. Evaluation on the uptake, use and impact of the RES rapid reviews on public health decisions at regional and national levels in Canada is also conducted. Evaluation findings are synthesized with findings from a parallel study by partners at the Monash Sustainable Development Institute (MSDI) Evidence Review Service in Australia to inform improvements to the reach,

usefulness and accessibility of rapid reviews.

**Results:** We have conducted 80 rapid reviews since the onset of the COVID-19 pandemic. We continue to update reviews as new evidence emerges through both updates and maintaining living rapid reviews. Our reviews and review updates are proactive and responsive to the current public health climate. We have answered questions from and worked collaboratively with regional, national, and international organizations. Webpage analytics demonstrate the impact of the RES; reviews are highly accessed across Canada and supported by positive feedback from users.

**Conclusion:** Our rapid review process is a real-world example of how review-level evidence can be mobilized rapidly and rigorously in response to decision-makers' needs. These evidence syntheses can be used by public health decision-makers at all levels of governance as they plan for pandemic recovery.

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### **Congenital anomalies and environmental exposure - susceptibility to atmospheric pollution**

Carlos Aniceto<sup>1</sup>, Paula Braz<sup>1</sup>, Carlos Matias Dias<sup>1</sup>, Ausenda Machado<sup>1</sup>

<sup>1</sup>Department of Epidemiology, National Institute of Health Doutor Ricardo Jorge, Lisbon, Portugal

**Background and Objectives:** Environmental exposure to teratogenic factors during pregnancy has been associated with some congenital anomalies (CA). In 2015, a cluster of CA in newborns (NB) was detected in an area with high industrial density. We developed an epidemiological study to analyse the association of CA and atmospheric pollution (AP) in this area in Portugal.

**Methods:** A case-control study was developed between 2016 and 2021. A multicriteria spatial analysis using Geographic Information System software was adopted to identify the AP susceptibility map. The variables included: (i) Euclidean distance to industrial units, (high(H)moderate(M)4000m); (ii) kernel estimation of industrial units density; (iii) land occupation: H susceptibility - industrial areas, roads, landfills and dumps; M susceptibility - residential areas; L susceptibility - natural, forest and agricultural areas; (iv) Euclidean distance to the main roads (H M300m); (v) areas of fog, modelled by the digital terrain model using Jenks Natural Break method. The map of AP susceptibility (High, Moderate and Low) derived from previous variables normalization, weighting and crossed in raster matrices using the weighted linear combination.

**Results:** Three areas of AP susceptibility were identified, a consolidated urban, a peri-urban area and a southern zone of an urban zone. 21 cases (21%) and 53 controls (25%) were observed in high susceptibility area; 77 cases (75%) and 146 controls (70%) located in areas of moderate susceptibility and 4 cases (9%) and 9 controls (5%) referred to areas of low susceptibility.

**Conclusion:** The creation of a map of susceptibility to AP proved to be useful to assess the possible environmental exposure of NB to AP agents during pregnancy. The results, integrated into a more complex analysis, may contribute to the evaluation of potential causal links in NBs with CA.

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### **Conspiracy theories about vaccines in Portugal: Using the vaccine conspiracy beliefs scale to study the association between conspiracy beliefs and behaviours/attitudes towards vaccination against COVID-19**

Ana Santos<sup>1</sup>, Afonso Moreira<sup>2</sup>, Andreia Leite<sup>3</sup>, Mariana Neto<sup>4</sup>

<sup>1</sup>National Health Institute Doutor Ricardo Jorge Centro de Saúde Pública Doutor Gonçalves Ferreira Rua Alexandre Herculano, 321 | 4000-055 Porto | Portugal, <sup>2</sup>Public Health Unit of the Community Health Center Group of North Lisbon Largo Professor Arnaldo Sampaio, 1549-010 Lisboa Portugal, <sup>3</sup>National School of Public Health, <sup>4</sup>National Health Institute Doutor Ricardo Jorge Portugal

Conspiracy theories contribute to vaccine hesitancy and pose a serious challenge to vaccination campaigns. The Vaccine Conspiracy Beliefs Scale (VCBS) is a short 7-item scale to assess adherence to conspiracy ideation about vaccines. This scale has not been validated to the Portuguese setting. This work intended to explore the applicability of the VCBS in this population, study conspiracy beliefs and its association with behaviours/attitudes towards vaccination against COVID-19. A cross-sectional study was conducted, using data from a representative sample of the national population ("At home we observe health" - ECOS panel). Reliability and structural validity of the scale were assessed, using confirmatory factor analysis. Five outcome variables were defined, regarding to behaviours/attitudes towards vaccination against COVID-19. We estimated odds ratios adjusted (ORa) for sociodemographic variables, and corresponding 95% confidence intervals (95%CI),

through logistic regression. We included 767 individuals. The VCBS scale showed good internal consistency (Cronbach's alpha value=0.912). Principal component analysis identified only one component, explaining 66.4% of the variance. The average VCBS score was 17.4 (95%CI=16.24-18.56). Items with the highest scores referred to conspiracy theories about the pharmaceutical industry and the safety/security of vaccines. Negative associations were observed between VCBS scores and two outcome variables: taking the vaccine (ORa=0,958; 95%CI=0,925-0,992; p<0,05) and vaccination adherence (ORa=0,916; 95%CI=0,872-0,961; p<0,001). A positive association was observed between VCBS scored values and vaccine hesitancy (ORa=1,044; 95%CI=1,008-1,081; p<0,05). VCBS has shown to be a unidimensional scale, have high internal consistency and good structural validity. The level of conspiracy theories in Portugal seems to be lower than in other countries. Higher values of conspiracy beliefs were associated with lower vaccine intake and with a lower adherence to vaccination, but associated with greater vaccine hesitancy. This study may contribute to better strategies and policies directed at tackling conspiracy theories and aimed at achieving high levels of vaccination.

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### **A framework for implementing pilot studies on medical deserts in Cyprus, Finland, France, Hungary, Italy, the Republic of Moldova and Romania**

Monica Georgiana<sup>1</sup>, Marius Ungureanu<sup>2</sup>, Răzvan Cherecheș<sup>3</sup>, Federica Vitello<sup>4</sup>, Paolo Michelutti<sup>5</sup>, Cătălin Baba<sup>3</sup>

<sup>1</sup>Brinzac Babeș-Bolyai University Babeș-Bolyai University Romania, <sup>2</sup>Babeș-Bolyai University, <sup>3</sup>Babeș-Bolyai University Romania, <sup>4</sup>AGENAS AGENAS Italy, <sup>5</sup>AGENAS

The OASES project will implement pilot studies to mitigate medical deserts in Cyprus, Finland, France, Hungary, Italy, the Republic of Moldova, and Romania.

The objectives of the pilot studies are:- To create a national overview of medical deserts in the seven countries;- To assess and characterize medical desert in the seven countries and the current and future mitigation strategies;- To facilitate consensus regarding mitigation strategies targeting medical deserts among stakeholders in each of the seven countries;- To provide evidence-based recommendations to mitigate medical deserts in the seven countries.

The pilot studies undertake a consensus-building exercise, the Delphi modified methodology, consisting of several rounds of online disseminated questionnaires and virtual or in-person meeting(s) per country with the relevant stakeholders. Each country identified a series of indicator to measure the medical deserts and will identify the stakeholders relevant to the discussion on medical deserts. The mapping of the stakeholders shall be done using the snowball technique until saturation is reached, with no minimum or a maximum number of stakeholders. The stakeholders should be pooled both from the local/regional level – from the implementation site – and from the national level – to offer a more comprehensive picture and aid the translation of the results from particular to general. The results of the consensus-building exercise will be translated from the level of the identified medical desert at the local or regional level to national policy recommendations. The translation will be done based on the characteristics of the implementation site in terms of demographics of the health workforce, geographic and socio-economic characteristics, and particularities of the area. The pilot studies will make it possible to develop a set of indicators that will be measured, and through the contribution of the identified stakeholders, strategies to mitigate medical deserts can be developed.

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### **Investigating the impacts of an alcohol outlet zoning policy on substance misuse and violent crimes : A spatial agent-based simulation**

Tingting Ji<sup>1</sup>, Ji Tingting<sup>1</sup>, Ivana Stankov<sup>2</sup>, Takeru Igusa, Zhixi Chen, Pamela Matson<sup>3</sup>

<sup>1</sup>Johns Hopkins University; Hong Kong Polytechnic University Department of Civil and Systems Engineering, Johns Hopkins University Whiting School of Engineering, Baltimore, Maryland, USA; Department of Building and Real Estate, Hong Kong Polytechnic University, Kowloon, Hong Kong, China Hong Kong, <sup>2</sup>Johns Hopkins University Department of Civil and Systems Engineering, Johns Hopkins University Whiting School of Engineering, Baltimore, Maryland, USA United States, <sup>3</sup>Johns Hopkins University

**Background and Objective:** Associations between off-premise alcohol outlet density and violent crime have been well established and explained partly by availability theory, which posits that greater access to alcohol leads to greater

intoxication-related violence. However, few studies have investigated the effectiveness of alcohol outlet zoning policies in reducing alcohol misuse and violent crime in low-income neighborhoods. By adopting a systems approach, this study aimed to 1) model the interconnected individual, social, and environmental factors shaping substance misuse and violent crime; and 2) simulate the potential impacts of alcohol outlet zoning policies on these outcomes.

**Methods:** We developed a spatial agent-based model representing a low-income, predominantly black neighborhood in Baltimore City, which was impacted by a recent amendment to the city's alcohol zoning code. Informed by a conceptual framework developed using a community-based participatory approach, we characterized residents' routine activities (e.g., alcohol and drug use, purchasing behavior) and social interactions. The model was calibrated and validated using empirical data and used to simulate various policy scenarios. **RESULTS:** Most simulated policy scenarios appeared ineffective in reducing alcohol consumption, even with the closure of over half the neighborhood alcohol outlets. In contrast, our findings suggest that illicit drug use could increase as some alcohol misusers may turn to illicit substances for self-medication. Consequently, the policies could have the unintended consequence of increasing both alcohol and drug-related crimes by driving residents to purchase and gather at alternate stores and outside of their neighborhoods.

**Conclusions:** Our modelling shows the possible limitations of using alcohol availability theory to support reductions in alcohol outlet density and thereby crime. It also highlights the need for community engagement to understand the complex and multi-level dynamics that shape patterns of alcohol misuse and violent crime in neighborhoods, to minimize the potential for unintended consequences.

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### Developing health research impact assessment in Italy: The case of piedmont region

Erica Picasso<sup>1</sup>, Anna Odone<sup>1</sup>, Guido Resani<sup>2</sup>, Erica Picasso<sup>2</sup>, Guglielmo Pacileo<sup>3</sup>

<sup>1</sup>University of Pavia Italy, <sup>2</sup>University of Pavia - ASL AL Italy, <sup>3</sup>Health Management Research Center (CeSIM) - Department of Integrative Activities to Research and Innovation (DAIRI) - ASL AL Italy

**Background and Objective:** Research Impact Assessment (RIA) is complex to analyze, but there are not internationally validated standards and procedures. The actual challenge is experimenting with RIA approaches and sharing findings with scientific community.

Alessandria Local Health Authority and Alessandria Hospital together created DAIRI (Department of Integrative Activities to Research and Innovation) that receive from Italian Piedmont Region mandate to establish the IRCCS for "Environmental Diseases and Mesothelioma" and to monitor regional health research.

This work aims to identify a RIA framework to be applied to health research organizations in Piedmont.

**Methods:** We pursued the objective in two steps: carrying out a literature review to identify a pool of frameworks suitable for DAIRI reality needs and using a focus group (composed by DAIRI board) to identify the most appropriate one to use.

**Results:** Considering that adopting an existing framework requires adapting it to the needs of the research organization, DAIRI focus group decided to select the framework proposed by Banzi et al. in "Conceptual frameworks and empirical approaches used to assess the impact of health research: an overview of reviews" for RIA on research organizations in Alessandria province and to shape it to the reality in which DAIRI operates.

**Conclusions:** Since Regional Health Directorate set up a working group with regional health organizations' research referents, the aim is to share with them both the RIA literature review and the results of first RIA activity carried out by DAIRI in Alessandria Province in order to adapt and apply the framework at the regional level in the future.

We aim to be able to disseminate the results of these evaluations to contribute to the growth of RIA process within the scientific community and start a continuous RIA process.

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### A comprehensive one-year correlation analysis between prevalence and number of sars-cov-2 rna copies detected in wastewater from 8 sicilian cities in Italy

Carmelo Maida<sup>1</sup>, Walter Priano<sup>1</sup>, Roberta Palermo<sup>1</sup>, Giuseppa Purpari<sup>2</sup>, Arianna Russo<sup>3</sup>, Viviana Giangreco<sup>3</sup>, Gina Andolina<sup>3</sup>, Giorgio Graziano<sup>3</sup>, Francesco Vitale<sup>1</sup>, Annalisa Guercio<sup>2</sup>, Francesca Gucciardi<sup>2</sup>, Fabio Tramuto<sup>1</sup>,

Walter Mazzucco<sup>1</sup>

<sup>1</sup>University of Palermo Department of Health Promotion, Mother and Child Care, Internal Medicine, and Medical Specialties "G. D'Alessandro" (PROMISE) Via del Vespro, 133, 90127 Palermo Italy, <sup>2</sup>Istituto Zooprofilattico Sperimentale della Sicilia Area diagnostica virologica Via Gino Marinuzzi, 3, 90129 Palermo Italy, <sup>3</sup>University Hospital "P. Giaccone." Clinical Epidemiology Unit and Regional Reference Laboratory of Western Sicily for the Emergence of COVID-19 Via del Vespro 133, 90127 Palermo Italy

**Background and objectives:** Several authors have reported positive correlations between wastewater SARS-CoV-2 concentrations and the community's burden of infection, providing information about the disease's epidemiological trend. This pre-post study evaluated – within a year of active surveillance, from October 1st, 2021, to September 30th, 2022 – the relation between daily SARS-CoV-2 prevalence and the number of genome copies/L detected in West Sicily wastewater samples. This study is part of a national framework coordinated by Istituto Superiore di Sanità.

**Methods:** Quantitative data from analysing 486 wastewater samples collected from 9 purification plants in 8 Sicilian cities (Agrigento, Bagheria, Caltanissetta, Enna, Marsala, Mazara del Vallo, Palermo, and Trapani) were obtained. Correlation and logistic regression analysis were performed between the communal-based aggregated prevalence of daily SARS-CoV-2 cases obtained from the integrated national surveillance system and the number of genomic copies/L derived from wastewater analysis for different times (day-prevalence t0, t7, t14) and different periods (0- to 6-, 6- to 12- and comprehensive 12 months).

**Results:** A moderate-high correlation index was retrieved for 0- to 6- months (October 2021–March 2022, t0: r=0.75, R2=0.57; t7 r=0.76, R2=0.58, t14 r=0.76, R2=0.58) and overall analyses (October 2021–October 2022, t0 r=0.63, R2=0.40; t7 r=0.62, R2=0.38; t14 r=0.59, R2=0.35). On the other hand, 6- to 12- months analysis displayed a relevant decline in correlation (March 2022–October 2022, t0 r=0.19, R2=0.04; t7 r=0.17, R2=0.03, p=0.004; t14 r=0.11, R2=0.01). All data except t14 were statistically significant (p<0.0001).

**Conclusions:** Significance results were displayed for 0- to 6- and overall analysis at 0,7 and 14 days. Despite 6- to 12- months samples tested positive for RNA copies, a progressive loss of significance was found probably mainly attributable to a progressive loss of function in prevalence estimation of the swab-related SARS-CoV-2 positivity detecting system due to underreporting of cases.

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### A multi-step methodology to identify the food biodiversity that underlies Brazilian diets

Fernanda Leite<sup>1</sup>, Neha Khandpur<sup>2</sup>, Giovanna Andrade<sup>1</sup>, Euridice Steele<sup>1</sup>, Josefa Garzillo<sup>3</sup>, Renata Levy<sup>3</sup>, Carlos Monteiro<sup>3</sup>

<sup>1</sup>Center of Epidemiological Research in Nutrition and Health, School of Public Health, University of São Paulo, São Paulo, Brazil, <sup>2</sup>Department of Nutrition, Wageningen University, Wageningen, The Netherlands, <sup>3</sup>Center of Epidemiological Research in Nutrition and Health, School of Public Health, University of São Paulo, São Paulo, Brazil

**Background and objective:** Food biodiversity has intrinsic potential to underpin diverse, healthy diets and improve Earth system resilience. However, there is limited work on methods that capture the diversity of species in human diets through national surveys. This study presents a multi-step approach for identifying the food biodiversity that underlies Brazilian diets.

**Methods:** A sequential, five-step approach, determined a priori, was followed to identify the plant and animal species that underlie Brazilian diets: 1 - Household data retrieval, 2 - Unique food item identification and compilation, 3 - Classification of food items according to the Nova food classification system, 4 - Identification of species (single- and multi-ingredient items), 5 - Linking identified species back to household data. Data from the 2017-18 Household Budget Survey were used to identify all foods and beverages purchased by household aggregates (n=575). Food items were classified according to the Nova classification system into four groups: 1) unprocessed or minimally processed foods, 2) processed culinary ingredients, 3) processed foods, 4) ultra-processed foods. Food items classified as Nova groups 1 and 2 were identified at the species level by using taxonomical classification from four data sources. Ingredient lists from the UNC/IDEC/NUPENS national food label database were used to determine the composition of processed and ultra-processed foods.

**Results:** Brazilian households acquired 1,866 unique food items: 49.8% unprocessed/minimally processed foods, 4.2% culinary ingredients, 10.2% processed foods and 35.8% ultra-processed foods. A total of 234 plant and 127 animal species were identified. The number of plant and animal species underlying the Nova food groups were: G1=227, G2=21, G3=19, G4=26; and G1=125, G2=4,

G3=6, G4=5, respectively.

Conclusion: This study adds new evidence on methods to operationalise and measure the food biodiversity in diets, as well as an approach to measure the impacts of foods purchased/consumed at the household level on biodiversity.

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### The case for a socio-ecological approaches in the evaluation of mosquito larval source management for malaria control in Haiti

Vena Joseph<sup>1</sup>

<sup>1</sup>Université de Montréal PhD Student \*7101 Ave du Parc, Suite 3091 Montréal QC H3N 1X9 \*Canada

Background and Objective: Larval source management is a malaria control strategy which relies on the reduction of immature stages of the mosquitoes transmitting malaria through the mechanical, chemical, or biological modification of the environments where mosquitoes breed. In Haiti, LSM is used in conjunction with other malaria control strategies. However, there is limited evidence on the effectiveness of LSM. A qualitative evaluation of the LSM program in Haiti was performed to identify opportunities to optimize the program's functioning.

Methods: This article is based on a single qualitative case study. The unit of analysis was the larval source management program of Haiti's national malaria control program. A documentary analysis was performed based on multiple data sources including historical documents, policy documentation, training materials, meeting notes, work plans and evaluation reports. The data was analyzed using thematic analysis.

Results: Multiple factors and processes interact synergistically and across different levels (interpersonal, organizational, environmental, social) to influence the implementation of LSM in Haiti. For this reason, the LSM strategy within Haiti's national malaria control program can be viewed as a complex adaptive system. Emerging tools and frameworks in the complexity sciences are viable strategies to tackle the complexity of LSM program implementation and evaluation research. Socio-ecological models can help understand and improve the effectiveness sustainability of LSM efforts. Larval source management research and practice in Haiti should make use socio-ecological models. Different approaches to socio-ecological models can help create an in-depth understanding of how the LSM program is operationalized in Haiti, to document the mechanisms and contextual factors which impact the efficiency and effectiveness of the program.

Conclusion: Larval source management research and practice in Haiti should make use socio-ecological models. These models can help shape research goals, policy approaches, governance frameworks, and the operationalization of the LSM program in Haiti and similar contexts.

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### Title- exploring the experiences of black, asian, and minority ethnic family members living with black, asian, and minority health care workers in the UK during the covid-19 pandemic: an interpretative phenomenological analysis

Ufuomanefe Jones<sup>1</sup>

<sup>1</sup>University of Wolverhampton Wulfruna Road Wolverhampton WV1 1LY United Kingdom

Background and objective: As COVID-19 has spread globally, evidence suggests that the disease disproportionately affects people from the Black, Asian, and Minority Ethnic (BAME) population, with the risk of death among people diagnosed with COVID-19 higher in those living in more deprived areas and BAME groups than in White ethnic groups. The disproportionate deaths in BAME groups may also be attributable to risk factors, including unemployment and working in lower-skilled jobs, older age, hypertension, and diabetes. Furthermore, people from BAME populations are more likely to be employed in frontline jobs leading to increased exposure to the risks of contracting COVID-19. There is evidence that healthcare staff experiences stress and anxiety during the pandemic; specifically, this is about their own risk or risk to their families. It is crucial to explore the experiences of BAME family members living with BAME healthcare workers because they are a vulnerable group, and their experiences are unknown.

Methods: Interpretative Phenomenological Analysis (IPA) was used to analyze their data, eliciting the meanings this group of people gives to their experiences of living with BAME healthcare workers during the pandemic. Six participants were recruited using a snowball technique, and one-to-one semi-structured interviews were conducted.

Results: The cross-case comparison of idiographic accounts of the participants revealed that external influences, including living with healthcare workers, had an emotional and mental impact on this group. Participants said they felt vulnerable,

hopeless, and helpless due to being from a BAME background, subsequently seeking coping strategies/reassurance.

Conclusion: The findings illuminate the participants experiences in the UK during COVID-19 Pandemic, providing an original contribution to knowledge and insight into the nature of support and services needed by this group.

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### Challenges and facilitators to conduct community-based participatory research to improve health equity among homeless people in Switzerland: an ethnographic fieldwork

Evelyne Hangartner<sup>1</sup>, Colin Ballif<sup>1</sup>, Ariane Clot<sup>2</sup>, Justin Nikles<sup>1</sup>, Luana Schaad<sup>1</sup>, Patrick Bodenmann<sup>1</sup>, Véronique Grazioli<sup>1</sup>, Chantal Berna<sup>3</sup>

<sup>1</sup>University Center for Primary Care and Public Health (Unisanté), Switzerland, <sup>2</sup>Sleep-in Association (ASI), Switzerland, <sup>3</sup>University Hospital of Vaud (CHUV), Switzerland

Background and Objective: Emerging findings indicate that community-based participatory research is well positioned to improve health equity among populations with social and medical vulnerabilities, such as homeless people. However, less is known about the articulations needed to conduct research projects with and for homeless people in the complex contexts of low-threshold structures. In response, this case study aimed to describe the challenges and facilitators experienced during the data collection period (April to August 2022) of a larger participatory research project. This larger study called "Homeless people in French-speaking Switzerland and integrative medicine: Desirable? Feasible?" Aims to understand the health needs and inequities among homeless people in Switzerland.

Methods: The analysis was based on field observation notes taken during 38 data collection visits to homeless people structures. This ethnographic data were analyzed through thematic analysis.

Results: This study highlighted three areas of challenges: a) logistics of collecting data in structures for homeless people; b) participants' recruitment planning; c) collecting health-related data in collective environments; and two areas of facilitators: a) iteration throughout the field experiences; b) feedback from homeless people and social workers. Findings showed that the difficulties were mainly related to the functioning of the data collection sites. To overcome these barriers and adapt strategies to successfully approach participants, it was necessary to continuously learn from experience in the field and rely on involved people's feedback and recommendations.

Conclusions: Findings suggest that ethnographic fieldwork coupled with participatory paradigm are well positioned to help face encountered challenges in this field of research. Whereas ethnographic fieldwork allowed us to achieve a deep understanding of the homeless people structure' functioning and to identify potential problems with data collection, the participatory paradigm enabled a reliance on the expert knowledge of involved individuals and adjust strategies accordingly when necessary.

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### Thirty years of global research on transgender-related topics: a bibliometric analysis and visualization

Kathleen Riselay<sup>1</sup>, Lana Ivanitskaya<sup>2</sup>, Salma Haidar<sup>2</sup>

<sup>1</sup>Advanced Wellbeing Research Centre, Central Michigan University, Freeland, United States, <sup>2</sup>Central Michigan University, United States

Background: The interdisciplinary nature of transgender-related studies, coupled with the complexity of transgender people's experiences with family dynamics, violence, discrimination, inequality, and health systems, make it hard for researchers to develop a holistic view of the transgender research landscape.

Objective: We use natural language processing to visualize many strands of research into transgender people's issues to reveal scientific terminology, research directions, and historic evolution of transgender scholarship.

Methods: This study is based on 20033 Web of Science records of transgender-related studies. Inclusion criteria was the word "transgender" in the titles, abstracts, or Keywords of documents published over the past 30 years. The VOSviewer software for bibliometric analysis was used to map clusters of journals and Keywords used to index transgender studies.

Results: The number of transgender-related publications increased dramatically from 162 articles in 1994-2002 (there were no publications in 1992-1993) to 1,970 in 2002-2012, followed by a 9-fold increase to 17651 publications in 2012-2022. Journal of Homosexuality (10.6% of all publications), AIDS and Behavior (7.7%) and LGBTQ Health (7.5%) contributed the most publications. Transgender research was authored by scientists from 147 countries but the United States

contributed the most (N = 12,578, 62.8%). We mapped a co-occurrence network of 1000 keywords. It is a multidisciplinary network with 6 clusters that represent research on transgender health and gender dysphoria; LGBTQ experiences; mental health; HIV prevention and STDs; and healthcare access and inequities. The citation map of journals replicates these research directions and offers additional insights, for example, a strong focus on youth and adolescents.

Conclusions: In sum, we offer bibliometric evidence that transgender studies are a rapidly developing field with established terminology, dedicated journals, and a global research community involved in the knowledge construction from the perspective of many disciplines such as public health, medicine, social sciences, education, and law.

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### Toxicological assistance in the context of a public and universal health system: a normative evaluation

Ana da Rocha<sup>1</sup>, Mareni Rocha Farias<sup>2</sup>, Luana Gabriele Nilson<sup>2</sup>, Marlene Zannin<sup>2</sup>, Jaqueline Weber<sup>3</sup>, Rita Franz Vieira<sup>4</sup>, Maria Boucinha Marques<sup>1</sup>

<sup>1</sup>Universidade Federal de Santa Catarina (UFSC), 1977 Rodovia Francisco

Magno Vieira, Brazil, <sup>2</sup>Universidade Federal de Santa Catarina (UFSC),

Brazil, <sup>3</sup>Associação Brasileira de Centros de Informação e Assistência

Toxicológica, <sup>4</sup>Secretaria de Saúde de Santa Catarina, Brazil

Objective: To normatively evaluate CIATox in the context of toxicological assistance and surveillance in the SUS to seek the integrality of what the National Policy for Emergency Care and Ordinance proposes.

Methodology: Semi-structured interviews on the axes of structure, processes and results of the CIATox for data collection and computation using SurveyMonkey® software.

Results: CIATox are often in the media, in health surveillance and education activities. All carry out the classification and follow-up of the cases until the outcome, 85% of the CIATox attend 24 hours a week and multiprofessionally, 48% recognize themselves inserted in the RUE, 36% pass on data to the Epidemiological Surveillance for notification and none received the funding provided for in the Ordinance.

Conclusions: Different points of the axes analyzed are in normative non-compliance, such as the different formalizations in the RUE and the lack of funding, which compromise the CIATox. There is a need to structure and qualify the service so that assistance and toxicological surveillance fully meet the objectives of the Policy and principles of the SUS.

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### Effects of selenium supplementation on blood lipids: a systematic review and a dose-response meta-analysis

Gianluca Fiore<sup>1</sup>, Gianluca Fiore<sup>1</sup>, Marco Vinceti<sup>2</sup>, Tommaso Filippini<sup>1</sup>

<sup>1</sup>University of Modena and Reggio Emilia, Environmental, Genetic and Nutritional Epidemiology Research Center (CREAGEN), Department of Biomedical, Metabolic and Neural Sciences, Medical School - University of Modena and Reggio Emilia, Modena, Italy, <sup>2</sup>University of Modena and Reggio Emilia

Background and Objective: Selenium is a trace element with both nutritional and toxicological properties, depending on the dose and the chemical species. Several studies have shown an association between selenium exposure and cardiovascular risk, focusing on lipid profile and blood pressure. In particular, there is an indication that selenium overexposure may raise the risk of dyslipidemia, but uncertainties still apply to such evidence. The aim of our study is to assess the relation between selenium exposure and the effects on lipid profile in experimental human studies.

Material and Methods: The protocol registration in PROSPERO has been submitted for publication. We conducted a preliminary literature search in the following databases: PubMed, Web of Science, Embase and Cochrane Library with no language restrictions. We used MeSH terms and keywords related to "selenium", "lipid profile", "LDL", "VLDL", "HDL", "cholesterol", and "randomized clinical trials". We defined the following inclusion criteria according the PICOS statement: adult population, exposure to selenium through supplementation as specific difference between intervention and control groups and evaluation of internal exposure using blood biomarker (e.g. serum/plasma levels), assessment of lipid profile as outcome, randomized clinical controlled trials as study design.

Results: In the preliminary search, we found 865 records. After duplicate removal, 622 articles were screened by title and abstract. At this stage, we discarded 565 articles, and we reviewed the full-texts of the remaining 56 records to confirm eligibility. Five articles were additionally found through citation chasing

techniques and added to the review. We excluded 29 articles due to missing data about outcome of interest. In total, 27 studies met the inclusion criteria and were included.

Conclusions: The study is currently ongoing and results will be presented during the Congress.

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### Analysis of a historical series of oral health care provided by the Odontosec project in Rio de Janeiro state in the period between 2015 and 2019

Taís Feris<sup>1</sup>, Rafaela Souza<sup>1</sup>, Katia Andrade<sup>1</sup>

<sup>1</sup>SESC - SOCIAL OF COMMERCE IN RIO DE JANEIRO, Health Management, 1100, Av prefeito Dulcideo Cardoso, Barra da Tijuca apt 201-1, RJ 22620-311, Brazil

Objective: This study aims to evaluate oral health education programme and ambulatory dental care service activities of the Mobile Health Units: OdontoSesc-RJ Project, of the Social Service of Commerce in the Regional Department of Rio de Janeiro from 2015 to 2019.

Methods: An exploratory study was conducted using a historical analysis of the dental procedures, obtained from OdontoSesc-RJ database, in the period 2015-2019. The database included the number of patients seen at the Ambulatory Dental Care (AC) and at the Clinical Session (CS) as well as the total number of appointments provided at AC and CS. The evolution of ambulatory dental care services and health education programmes was evaluated. The data was analyzed in a descriptive manner, using Microsoft Excel 365 software.

Results: Between 2015 and 2019, a total of 533,603 people were seen and 1,012,126 dental appointments were provided at the OdontoSesc-RJ Project when combining both types of services. An average of five appointments per patient was observed, which maintained constant throughout the four years (2015-2019). The number of appointments at the AC remained constant throughout the four years but a drop was observed at the CS between 2015 and 2016, followed by an increase on the following years, becoming considerable high from 2018 through 2019.

Conclusion: Between 2015 and 2019, around 500,000 people were seen at the OdontoSesc-RJ Project and more than one million of dental appointments were provided in primary care dentistry. Thus, the importance of this project in providing dental care was observed.

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### Visualizing social media discussions of policy-relevant issues surrounding the opioid crisis in the United States

Lana Ivanitskaya<sup>1</sup>, Leeza Bacon<sup>2</sup>, Elina Erzikova<sup>1</sup>, Lisa Gandy<sup>1</sup>

<sup>1</sup>Central Michigan University, United States, <sup>2</sup>Northwood University, United States

Background and Objective: We present a novel method of network visualization with computer-assisted text processing. What do visualizations add, above and beyond a qualitative study, to our understanding of social media users' policy discussions?

Methods: We apply a network analysis and natural language processing to the corpus of 8,761 manually-coded social media user comments on opioid crisis-related videos (N=20) on CNN and Fox News YouTube channels. Manual codes on pain patients' experiences and crisis solutions are combined with computer-scored social and psychological states from Linguistic Inquiry Word Count (LIWC-22). VOSviewer visualizations of opioid-relevant terms extracted from YouTube comments are overlaid with manual codes and computer-generated LIWC scores.

Results: Our colorful map – a network of 196 interconnected terms extracted from 8,761 comments included three thematic clusters of terms: 1) patients' stories of pain management/relief/addiction; 2) cannabis legalization; and 3) organizations/entities involved in the opioid crisis. Manually-coded and computer-generated overlays indicate some overlap. Cluster 1 has manually-coded pain patients' stories and stigma and also scores high on several LIWC dimensions: 1st person pronouns, feeling, and emotion. User-proposed solutions to the opioid crisis (represented by such terms as kratom, insurance, and suboxone) are concentrated around cluster 2. Cluster 2 has high audience engagement (counts of likes/comments per view) and above average LIWC scores for negation, cause-and-effect cognition, and discrepancy cognition. Legal solutions (manually-coded) and power drive (LIWC scores) are high for terms in Cluster 3.

Conclusion: Networks of terms that frequently occur across multiple comments add value to the manual codes from content analyses. To make data analysis

more efficient, some human coding may be substituted for automated text scoring to identify discussion areas with specific linguistic features. Most important, eye-catching term networks and LIWC overlays help researchers visualize and communicate about policy issues, as they are deliberated in social media.

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### Development and validity evidence of a questionnaire to assess the risk of hypertension in primary health care

Rafssa Ferreira<sup>1</sup>, Luiz Junior<sup>2</sup>, Karine Correa<sup>1</sup>, Marília Alvares<sup>1</sup>, Raquel Mendonça<sup>1</sup>, Renata Vieira<sup>1</sup>, Julia Carraro<sup>1</sup>

<sup>1</sup>Universidade Federal de Ouro Preto Brazil, <sup>2</sup>luiz.menezes@aluno.ufop.edu.br Brazil

**Background and objective:** Arterial hypertension (AH) is the greatest risk factor for global mortality, however, many patients hospitalized for its complications were never correctly diagnosed or even had their blood pressure measured. Therefore, this study aims to develop and validate a screening protocol to assess the risk of SAH in Primary Health Care (PHC).

**Methods:** Questions related to the etiology of SAH were elaborated, based on national guidelines and literature review. A panel of experts assessed the questionnaires content validity in terms of clarity, relevance, and pertinence. From the responses, the item content validity index (CVI) was obtained by averaging the items and indexes >0.8 were considered adequate. The instrument was applied to 200 PHC users and exploratory and confirmatory factor analysis were performed, adopting the following cut-off points: RMSEA < 0.09; CFI and TLI > 0.90; H index >0.80; and Cronbachs  $\alpha$  >0.70.

**Results:** 23 experts responded to the content analysis. The CVI for clarity was 0.81, and relevance and pertinence, 0.94. Of the 21 initial items, one was excluded and eight reformulated. After exploratory factor analysis, only ten items remained, being grouped into two dimensions (sociodemographic factors and health and lifestyle conditions), explaining 52.15% of the variation. The factorial structure presented adequate adjustment indices, except for CFI/TLI (RMSEA: 0.068; CFI: 0.893; TLI: 0.818; H index: 0.890). Reliability analysis showed Cronbachs  $\alpha$  of 0.535, indicating poor reliability and validity.

**Conclusion:** The questionnaire proved to be adequate in the content analysis and in the factorial analyses, however, regarding the reliability assessment, the data were not adequate, so that it is necessary to adapt the instrument so that it meets its objective. Financial support: CNPq; UFOP.

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### Respondent-driven sampling, methodological developments and applications to public health

Michael Rotondi<sup>1</sup>, Nooshin Rotondi<sup>2</sup>

<sup>1</sup>School of Kinesiology and Health Science, York University, Canada, <sup>2</sup>Faculty of Health Sciences, Ontario Tech University, Canada

Respondent-Driven Sampling (RDS) is an increasingly common sampling and analysis strategy for studies that recruit hidden, often socially excluded populations. That is, populations that cannot be reached using traditional sampling methods. Similar to snow-ball sampling, RDS relies on peer recruitment. Initial study participants, called seeds, are selected by the research team from the desired population. Each seed is then asked to recruit  $k$  (typically between three and five) individuals, who are then asked to recruit up to  $k$  individuals, and so on, until the desired sample size is reached. Through leveraging information about participants' social networks, including adjustments for homophily and unequal probability of recruitment, RDS provides statistically valid and robust estimators of population traits of interest, such as the percentage of individuals who tested positive for COVID-19, or the proportion of individuals with diabetes in the population. RDS has been successfully applied in a variety of public health settings, including persons who inject drugs (PWIDs), transgendered people, and home-care workers. This interactive workshop will present an overview of the appropriate use of rds and highlight some of our recent methodological efforts to determine which analysis strategy is optimal depending on the research question and population of interest. Key questions that the workshop will address: At the end of the workshop, participants will be able to: -Identify research questions and populations for which RDS methods are best suited. -Recognize the methodological strengths, limitations and unique challenges of RDS. -Apply the RDS estimator that is most appropriate for their research context. -Develop a basic understanding of how to analyze RDS data using appropriately adjusted descriptive and inferential methods.

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### The impact of health systems and health services on inequalities in population health

Peter Groenewegen<sup>1</sup>, Alastair Leyland<sup>2</sup>, Ilmo Keskimäki<sup>3,4</sup>, Alastair Leyland<sup>5</sup>

<sup>1</sup>Netherlands Institute for Health Services Research NIVEL, NIVEL, Otterstraat 118 - 124, 3513 CR Utrecht, PB 1568, 3500 BN Utrecht, Netherlands, <sup>2</sup>MRC/CSO Social and Public Health Sciences Unit, University of Glasgow, Glasgow, United Kingdom, <sup>3</sup>Finnish Institute for Health and Welfare (THL), Helsinki, Finland, <sup>4</sup>Finnish Institute for Health and Welfare, THL, P.O. Box 30, FI-00271, Helsinki, Finland, Finland, <sup>5</sup>MRC/CSO Social and Public Health Sciences Unit, University of Glasgow, Berkeley Square, 99 Berkeley Street, Glasgow G3 7HR, Scotland, United Kingdom

**Outline:** Health inequalities are unjust and avoidable and, as a focus of health policy in many governments, are widely studied in public health research. But studies of health inequalities too often ignore the role that health systems and health services play in population health and, as a consequence, their potential to create or reduce inequalities in health. As experts in public health, health services research and health systems research our belief is that the reason for this is that these areas have become siloed as academic disciplines; researchers tend to specialise in their own disciplines with interaction between the three hampered by specialist journals and conferences serving each separately.

Health services research, in a well-known definition, 'is the multidisciplinary field of scientific investigation that studies how social factors, financing systems, organizational structures and processes, health technologies, and personal behaviors affect access to health care, the quality and cost of health care, and ultimately our health and well-being' (Lohr and Steinwachs 2002). Health systems research covers two broad areas: the first addresses questions about how health systems are organised and how they develop, while the second focuses on the effects of health systems, such as improvement of health of the population. Both health services research and health systems research can be seen to include the impact on population health. However, the impacts on population level health and inequalities are not often studied.

Studies of inequalities in health often incorporate the social determinants of health: the conditions in which people are born, grow, work, live, age and die. The same societal structures that form the social determinants of health determine the health system structure and impact on access to and the provision of health services and the benefits of health service use to patients with different socioeconomic background. This means that attempts to reduce health inequalities by addressing the social determinants of health must also consider the potential pathway through the health system and the provision of health services.

**Aims:** The aim of the workshop is to understand the contribution that health services research and health systems research may have to offer public health research in general and the study of inequalities in health in particular. We will achieve this aim with a structured discussion based on the key questions listed below. Each of the questions will be introduced by short presentations covering (i) health services research and its relationship to public health; (ii) health systems research and its relationship to public health; and (iii) the development of an agenda for the better integration of the three disciplines.

**Key Questions:** As a discipline, how can public health be strengthened by including health services research?

What contribution can health systems research make to public health?

What are the barriers and facilitators to bringing these disciplines into the public health arena?

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### Methodological innovations in climate change research applied to communicable and non-communicable human diseases

Piotr Wilk<sup>1</sup>, Kelachi Nsitem, Ngianga-Bakwin Kandala<sup>1</sup>, Saverio Stranges<sup>1</sup>

<sup>1</sup>Western University, Department of Epidemiology and Biostatistics, Schulich School of Medicine & Dentistry, Western University, Rm. 3134, Western Centre for Public Health and Family Medicine, 1465 Richmond Street, London, ON N6G 2M1, Canada

**Background:** Several human diseases are often observed in some seasons and specific geographic locations, and it has been suggested that climate change may represent a major contributing factor. Climate change may increase the risk of communicable diseases and exacerbate the burden of chronic illnesses. Climate alterations may interplay with geographic areas and demographic factors, as well as behavioral and social habits. Changes in temperature, rain precipitation, relative humidity, and air pollution may influence viral activity and transmission of respiratory infections especially in infants and elderly.

**Objectives and Key Questions:** Our objective is to develop participants knowledge and facilitate discussion in: 1) emerging data and statistical methodologies to

investigate the link between climate change and human diseases, 2) how these methodologies have been applied in climatology and public health to date, and 3) how public health practitioners view the potential impact of these new approaches on public health policy and practice.

#### Brief Overview

Introduction (10 min), 3 case studies (each 10 min), and discussion (20 min):

**Brief Introduction (Kandala and Saverio Stranges)**The availability of high-quality granular data from multiple sources offer unique platforms for modelling the interactions between the climatic and non-climatic factors on disease burden. For better evidence in public health, evaluating methodological challenges for model-based disease surveillance for forecasting outbreaks will enhance preparedness to the impacts of climate change on human health.  
**Case Study 1: Forecast of Malaria Morbidity and Mortality using Climatic and non-climatic Data (Kandala)** Mathematical malaria transmission models are increasingly used for evaluating the effects of control interventions on disease dynamics. However, our knowledge about their forecasting potentials for early warning systems compared to purely statistical models is limited. We discuss spatio-temporal statistical models to forecast malaria; and project future malaria burden based on scenarios driven by climatic and non-climatic factors.  
**Case Study 2: Extreme Ambient Temperature and Cardiovascular-Related Emergency Visits (PIOTR WILK)**Extreme ambient temperatures have been found to be associated with cardiovascular health. However, few studies have assessed whether neighbourhood-level factors related to social, built, and natural environments moderate this relationship. This study aims to evaluate the associations between short-term variations in outdoor ambient temperatures and cardiovascular-related emergency department (ED) visits in Alberta and Ontario, Canada between 2004-2020 using gridded data at a 1 km x 1 km spatial resolution and conditional logistic regression. Findings provide evidence that the impacts of heat on cardiovascular ED visits may be modified by neighbourhood-level risk factors.  
**Case Study 3: Spatial Distribution Of Asthma and its Effect on Marginalized Communities in Canada (Kelachi NSITEM)** Marginalized communities are disproportionately affected by communicable and non-communicable diseases, including asthma. Although asthma is a result of both genetic and environmental factors, significant contributors include spatial displacement and disproportionate exposure to pollutants. Using geographic Informational System techniques and population-based data, the connection between traffic and industrial proximity, environmental pollutants, and disproportionate asthma prevalence is supported.  
**Discussion**

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### Using a systems thinking approach to support healthy and sustainable food systems

Miranda Blake<sup>1</sup>, Cedric Middel<sup>2</sup>, Joreintje Mackenbach<sup>3</sup>, Tari Forrester-Bowling<sup>1</sup>

<sup>1</sup>Deakin University, Australia, <sup>2</sup>UMC Amsterdam, The Netherlands, <sup>3</sup>UMC Amsterdam, Australia

**Outline of Workshop:** Public health interventions and policies are often implemented outside the health care system. These interventions and policies require the involvement of a diverse range of stakeholders, many without a health background. Additionally, while some interventions and policies may be implemented in a single setting (for example, a school), they often need to be implemented in multiple, interacting settings in order to achieve the desired results. Systems thinking offers opportunities to deepen our understanding of complex environments, stakeholder perspectives, causal structures driving organisational behaviour, and potential unintended consequences of policy decisions and interventions.

This workshop will introduce participants to the potential of systems thinking approaches applied to healthy, equitable and sustainable food systems. It will present methodology and a range of simple tools that can be used to address complex problems and help map the dynamics of a system (e.g. feedback loops, systems pyramids). Feedback loops are an important tool within systems thinking to help people better understand how a system may respond to interventions and policies. Participants will also be introduced to a specific framework used in food retail environments - Systems Thinking Approach to Retail Transformation map (START map), how it might be used to advance research and practice, and examples of how systems thinking concepts can guide stakeholder engagement, identification of leverage points, and implementation planning. This workshop will be building on workshops delivered across Australia and the Netherlands to public health practitioners, policy makers, and researchers.

**Aim:** To increase the capacity of participants to apply a systems lens to complex public health problems through practical application of systems thinking tools to engage stakeholders, identify leverage points, and plan implementation

approaches, by drawing on a case study of healthy food retail change.

**Components:** Introduction to systems thinking (10 min)

**What do we mean by 'systems thinking'?** Introduction to feedback loops Benefits of using systems thinking when planning and implementing interventions to tackle complex problems Overview of some of the main 'tools' used Systems thinking concepts in healthy food systems (25 min)

**Deep dive into systems pyramid as a tool (15 min)** Practical application of systems pyramid using case studies – participants apply their learnings through provided worksheets (10 min) Case study of healthy food retail tool (10 min)

**Overview of the START map and its potential use by researchers and practitioners** Discussion (10 min) Close (5 min)

**Key Questions Workshop Will Address**

What are practical systems thinking tools that can be applied to better understand complex problems and identify dynamic solutions within healthy and sustainable food systems? What are the benefits of using systems thinking when planning and implementing healthy food retail interventions or policies?

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### Research methods for global public health oriented health services research - what can we learn from each other?

Lorena Dini<sup>1</sup>, Daniel Maceira<sup>2</sup>, Jaqueline Alcalde Rabanal<sup>3</sup>, Stefania Boccia<sup>4</sup>, Angelo Pezzullo<sup>5</sup>, Saverio Stranges<sup>6</sup>, Chiara de Waure<sup>7</sup>, Lyazzat Koscherbayeva<sup>8</sup>, Shehzad Ali<sup>9</sup>, Sumiko Ogawa<sup>10</sup>, Lorena Dini<sup>1</sup>

<sup>1</sup>Charité Universitätsmedizin Berlin Germany, <sup>2</sup>Center for the Study of State and Society, Argentina, <sup>3</sup>Health Systems Research Center, National Institute of Public Health Mexico, Mexico, <sup>4</sup>Università Cattolica del Sacro Cuore (UCSC) and IRCCS "Fondazione Policlinico A. Gemelli" (FPG) in Rome Italy, <sup>5</sup>Università Cattolica del Sacro Cuore in Rome Department of Public Health Italy, <sup>6</sup>Schulich School of Medicine & Dentistry, Western University, Canada, Canada, <sup>7</sup>Public Health at the University of Perugia Italy, <sup>8</sup>Kazakh National Medical University, Kasakstan Kazakhstan, <sup>9</sup>Western University Canada, <sup>10</sup>Meio University, Okinawa, Japan

This workshop is designed as a global and interdisciplinary international dialogue on current and innovative methodological approaches relevant to the field of public health on the basis of focused presentations by the thematic sections of the European Public Health Association (EUPHA-Sections) health service research (EUPHA-HSR), epidemiology (EUPHA-EPI) health technology assessment (EUPHA-HIA), health impact assessment (EUPHA-HTA), economic evaluations (EUPHA-ECO) and public policy and practice (EUPHA-PHPP). The presidents and vice-presidents of the EUPHA Sections will present in the form of a panel an overview of the diversity of each methodology. Each theme will be commented by a colleague from other regions in particular from non-European regions of the Global South i.e., Latin-America, Japan and Central Asia who will share their views and perspectives on innovations based on case examples from their countries. The line-up of the workshop covers the following topics: 1. Introduction and framing from the perspective of health systems research applied to primary care, Lorena Dini, (EUPHA-HSR), invited panelist Daniel Maceira (Argentina) and Jacqueline Alcalde (Mexico) 2. Methodologies and techniques applied in Public Health Epidemiology and how they contribute to decision-making and evidence-informed policymaking by Stefania Boccia and Angelo Pezzullo, (EUPHA-EPI), invited panelist Saverio Stranges (Canada) 3. Overview of methods used for the quantification of health impacts, both following a risk assessment approach or an epidemiological approach. (Piedad Martin-Olmedo and Odile Mekel (EUPHA-HIA) invited panelist Jaqueline Alcalde (Mexico) 4. Methodologies and techniques applied in Health Technology Assessment and how they contribute to decision-making and evidence-informed policymaking (Chiara De Waure and Elena Petelos, EUPHA-HTA), invited panelist Lyazzat Koscherbayeva (Kasakstan) 5. Health Systems Performance Assessment (HSPA) and Economic evaluations (Lyazzat Koscherbayeva, invited panelist Daniel Maceira (Argentina) and Shehzad Ali (Canada) 6. Evidence-based approach for feasible public health policy for community: case study in Okinawa by Jacqueline Alcalde (Mexico), invited panelist Sumiko Ogawa (Japan) Each topic will be covered in 10 minutes starting with a 5 min focused key input from the European Region followed by comments from the invited panelists from another region and option for a dialogue with the audience. Target audience: young and old professionals interested in updating their methods skills discussing and sharing their own experiences on innovation in methods for a stronger public health research. Message 1 A Global Dialogue on research methods in public health is crucial to share knowledge as methods evolve sharing knowledge amongst different regions and across fields is key to contribute to a stronger health systems, better health policy decisions and a better health for all including expanding perspective on fairness and equity. Message

2 That one size does not fit all is true as well for methods in public health and are no better or worse research methods. Research methods are just a tool, that when applied properly support evidence and action for a stronger public health at global scale.

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### Bagasse dust exposure and chronic respiratory health symptoms among workers in the sugar factories in Ethiopia: a longitudinal study design

Mitiku Debela<sup>1</sup>

<sup>1</sup>School of Public Health, College of Medicine and Health Sciences, Bahir Dar University, Bahir Dar, Ethiopia

**Background:** Ethiopias sugar plants are growing to help the countrys economy prosper. However, there is inconclusive evidence on the level of bagasse dust exposure and its respiratory health impacts among workers in sugar plants. This study assessed the degree of bagasse dust exposure and its effect on the respiratory health of workers.

**Methods:** A longitudinal study was conducted among randomly selected samples of 1,043 participants in the sugar factories in Ethiopia. We measured the dust intensity using a calibrated hand-held real-time dust monitor once a month for five months, totaling 50 dust samples. Chronic respiratory symptoms were assessed using the American Thoracic Society respiratory symptoms questionnaire. Statistical analyses were done by SPSS version 26 software.

**Results:** In the boiler and power turbine sections, the geometric means of the dust concentrations were 9.55 and 7.89 mg/m<sup>3</sup>, respectively. This represented an exposure level to bagasse dust of 85.52% (95 % CI: 83.2 % -87.6 %). The extent of chronic respiratory symptoms was 60.6%, with wheezing (96.8%), cough (89.7%), and breathlessness (80.9%). Lack of dust control technology ( $\beta = 0.64$ , 95% CI; 0.53–0.75), and not practicing of wet spray ( $\beta = 0.27$ , 95% CI; 0.21–0.41) were factors associated with dust exposure. Chronic respiratory symptoms were associated with not wearing respiratory protection devices ( $\beta = 0.12$ , 95% CI; 0.30–0.56) and being exposed to bagasse ( $\beta = 0.56$ , 95% CI; 0.14–0.98).

**Conclusions:** Occupational dust exposure and respiratory health abnormalities were worrying concerns for sugar factory workers. The absence of dust control technologies and the practice of wet spray increased the level of exposure. Also, being exposed to bagasse dust and not wearing the correct respiratory protection gear increased the odds of having respiratory abnormalities. Thus, use of mechanical solutions to stop dust emissions at their sources and the wearing of respiratory protection gear is highly advised.

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### Knowledge, attitudes, and practices regarding ergonomic hazards among healthcare workers in a Saudi Government hospital

Nawal Herzallah<sup>1</sup>

<sup>1</sup>Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia

**Background:** Musculoskeletal disorders (MSDs) affecting healthcare workers (HCWs) must be considered and addressed as a serious issue. Thus, it is important to incorporate ergonomics into clinical practice to prevent MSDs. The Objectives of this study were to investigate HCWs' knowledge, attitudes, and practices regarding ergonomics in a large governmental healthcare facility. **Methods:** A cross-sectional study was conducted in which the participants were interviewed to complete a validated four-section questionnaire (demographic data, knowledge, attitudes, and practice information related to ergonomics). The questionnaire was newly self-developed based on a literature review and was pilot tested after development.

**Results:** This study included 273 HCWs. Their average knowledge score regarding ergonomics was 2.6, or "fair to good." Overall, the participants reported good attitude scores, with a total average score of 1 and 2, or "agree to strongly agree." The findings also 20 indicated that appropriate ergonomics practices were often not implemented, as the average practice score was 1 to 2, or "always to sometimes engaging in bad practice." The risk factors of being Saudi, being a woman, and having low academic achievement were associated with poor knowledge, attitudes, and practices related to ergonomics among HCWs. **Conclusions:** This study showed that the majority of the participants had fair knowledge and good attitudes toward ergonomics at work while practicing. However, the practice of ergonomics at work was not implemented. It is important to apply ergonomics at work to prevent MSDs; therefore, ergonomic principles should be included in the undergraduate health curriculum for all HCWs, with emphasis on practicing ergonomics in their routine clinical work.

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### Have work-related accidents and ill-health in Brazil declined since the introduction of the accident prevention factor?

Helena Shimizu<sup>1</sup>, Josierton Bezerra<sup>2</sup>, Luciano Arantes<sup>3</sup>, Edgar Merchán-Hamann<sup>1</sup>, Walter Ramalho<sup>1</sup>

<sup>1</sup>Universidade de Brasília, Brazil, <sup>2</sup>Potiguar University, Brazil, <sup>3</sup>Unaf Municipal Department of Health, Minas Gerais, Brazil

**Background:** Since 2004, Brazil has had a national policy for occupational health and safety. This study was designed to investigate the incidence of work-related accidents and ill-health in Brazil according to their causes, their severity, and the economic activity in which they occur, and to compare the data before and after the Introduction of the Accident Prevention Factor.

**Methods:** An ecological study was conducted by analyzing the time series of work-related accidents/ill-health between 2008 and 2014 from the Brazilian social security system (Previdência Social) statistical yearbooks. Incidences were calculated per cause, economic activity, and severity of the accident/ill-health. Data from before and after the Introduction of the Accident Prevention Factor were compared using the Mann-Whitney test per cause and per economic activity. Statistical analyses were made using the SPSS software, with significance set at 5%.

**Results:** A reduction in the incidence of work-related accidents/ill-health was found across all the groups of causes analyzed, except for the groups "external causes of morbidity and mortality" and "factors influencing health status or contact with health services." Greater reductions were found for diseases of the musculoskeletal system and connective tissue and diseases of the nervous system. Reductions in work-related accidents/ill-health were found in the different economic activities and in the different severity groups. The highest reduction after the Introduction of the Accident Prevention Factor was in manufacturing and production ( $p < 0.05$ ).

**Conclusions:** Overall, the incidence of accidents/ill-health was found to be on decline, except those with external causes of morbidity and mortality and those involving factors influencing health status or contact with health services. The biggest reduction was found in manufacturing and production. However, generally speaking progress still needs to be made in accident prevention and occupational health across a whole range of work environments.

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### Knowledge and adherence to the Mediterranean Diet in subjects who practice regular physical activity

Miriam Belluzzo<sup>1</sup>, Walter Mazzucc<sup>2</sup>, Francesco Balsamo<sup>3</sup>, Nicole Bonaccorso<sup>3</sup>, Alessandro Carubia<sup>3</sup>, Luciano D'azzo<sup>4</sup>, Tania Vitello<sup>4</sup>, Maria Poto<sup>4</sup>, Luigi Zaga<sup>4</sup>, Santi Fruscione<sup>4</sup>, Angelo Fertitta<sup>4</sup>, Martina Sciortino<sup>4</sup>, Francesco Vitale<sup>4</sup>, Claudio Costantino<sup>4</sup>

<sup>1</sup>Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties, G. D'Alessandro University of Palermo, Italy,

<sup>2</sup>Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties "G. D'Alessandro", University of Palermo, Italy,

<sup>3</sup>Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties, "G. D' Alessandros" University of Palermo, Italy,

<sup>4</sup>Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties "G. D'Alessandro", University of Palermo, Italy

**Background and Objective:** The Mediterranean Diet (MD) is a universal model of nutrition based on the balanced intake of micro and macronutrients which, in synergy with regular physical activity, can prevent metabolic, cardiovascular and oncological diseases and promoting longevity. Although numerous promotion campaigns, MD isn't adequately valued. The Objective of this study was to analyze the adherence to MD of amateur athletes [1] in the Metropolitan Area of Palermo. **Methods:** A cross-sectional study was conducted between October 2020 and 2021 in the metropolitan Area of Palermo. An anonymous questionnaire previously validated and approved by the Ethical Committee of the University Hospital of Palermo, was administered through both paper and mobile devices, in 10 Palermo Sports Centers (Gyms, Swimming Pools, Tennis or Padel Clubs, etc...). The questionnaire was divided in 5 sections and 74 items (general information, physical activity, eating habits, adherence to MD, knowledge of correct eating habits).

**Results:** 337 subjects replied to the questionnaire, 57.3% were under or equal to 40 years of age, 73% had normal weight, 57.9% reported knowing MD and 82.8% were busy working. Only 42.1% of the sample adhere to the main principles of MD. Multivariable analysis showed that adhere more to MD non-employed athletes [Adj-OR 2.15(1.05 - 4.41)] and those who better known MD [Adj-OR 11.9(6.55

-21.61]).

Conclusions: Based on the analysis conducted, the knowledge of MD represents a key factor to follow it better. The data reported on better adherence on non-employed athletes could be related to having for preparing healthier meals. In future Public Health Authorities should favour the accessibility to principles of MD based meals on workplaces and the formation, already since the school age, about MD to make it clear how a healthy diet combined with regular physical activity is necessary to a better quality of life. Links: -----[1] <https://context.reverso.net/traduzione/inglese-italiano/athletes>

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### Assessment of knowledge, attitude and practice and associated factors on the prevention of occupational health risks among solid waste collectors in Lideta Subcity

Fikrom Girmay<sup>1</sup>

<sup>1</sup>Addis Ababa City Administration Health Bureau, Ethiopia

Introduction: Municipal waste includes nonhazardous wastes from households, commercial establishments, institutions, markets, and industries. Municipal solid waste handling and disposal is a growing environmental and public health concern. There is no adequate credible evidence on workers occupational health practices and factors affecting the practice of waste handlers in Addis Ababa which help for designing strategies to address the problem for both government and non-government organizations.

Objective: The Objective of this study is to assess knowledge, attitude and practice on prevention of occupational risks and associated factors among solid waste collectors in Lideta sub-city, A.A.

Methods: A cross sectional quantitative study was employed to assess knowledge, attitude, and practice and associated factors on occupational health risks among solid waste collectors in Lideta sub-city Addis Ababa from March to April 2013. All 427 solid waste collectors found in Lideta sub-city are included in the study. Structured pretested questionnaire and observational checklist has been used for data collection. The data was entered, cleaned, edited and analyzed by using epi info 3.5.1 and spss 16 version statistics software.

Results: The response rate of this study was 94.4% and female respondents accounted 69.7%. The median age of the study subjects was 35 years (ranging from 17 to 65 years). 64% of study participants had good knowledge on preventing occupational health risks. 76.4% of solid waste collectors had good attitude and only 8.9% had good practice on preventing occupational health risks. Job dissatisfaction is statistically significant factor for failing to have good practice among Lideta sub-city solid waste collectors.

Conclusions: The magnitude of having good practice on preventing occupational health risks among solid waste collectors in Lideta sub city is very low. So, implementation of basic occupational health services with provision of personal protective equipments and supervising solid waste collectors on appropriate utilization is advisable.

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### Study of the viability of community-based mutual health insurances in the Department of Vélingara in 2019 in Senegal

Cheikh Diop<sup>1</sup>

<sup>1</sup>Université Alioune DIOP Bambey, Senegal

Introduction: Access to basic healthcare services for the whole population has been a priority the successive governments in Senegal since independence. Mutual health insurance has been the driving force behind health coverage since the 2000s. This policy aimed to reach 75% coverage of the population by 2019. This study aims to describe the characteristics and also analyze the viability of mutual health insurances in Vélingara. Methodology: The mixed method was used to evaluate both the viability of mutual health insurances and the perception of the communities. Viability was evaluated in its four technical, functional, financial and institutional aspects. For the population's perception, interviews were conducted with beneficiaries, non-beneficiaries, community leaders and UHC officials.

Results: At the institutional level, all of the mutual health insurances were viable and had internal regulations, a statute, a license and a bank account. On the technical level, they were exposed to the risk of adverse selection. On the other hand, from a functional point of view, none of mutual health insurances was viable, with a very low rate of retention. Finally, from a financial point of view, none of the mutual health insurances had the capacity to honor their medium- and long-term debts without resorting to external resources. In addition, the results of the survey showed a lack of information and a high cost of membership. Conclusions: All the mutual health insurances were experiencing difficulties and required urgent

corrective measures and support from the state and local authorities.

Keywords: mutual health insurance, evaluation, viability, perceptions, Sénégal

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### The role of local health and community actors in delivering social protection during the COVID-19 pandemic in Gujarat, India

Sanjana Rajasekar<sup>1</sup>

<sup>1</sup>Center for Development Research, Germany

The objective of this study is to find out how different local-level health and community actors are engaged in the last-mile delivery of social protection in Gujarat, India. During the COVID-19 pandemic, the Government of India introduced several new social protection instruments such as the Garib Kalyan Ann Yojana and the Atma Nirbar Bharat Package for health and food security. However, due to the national lockdown, strict social distancing regulations and curfew, the last-mile delivery of these new instruments was a challenge. Additionally, the last-mile delivery of existing social protection programmes or schemes was also complicated. In this situation, several local-level health and community actors such as Anganwadi workers, ASHA workers, ration shop workers, heads of dairy cooperatives, and heads of women's collectives had to collaborate for targeting households, disseminating information and ensuring that the benefits from social protection had been availed. This qualitative study was carried out through in-depth Key Informant Interviews with local women's groups, community health workers, heads of dairy cooperatives, and ration-shop workers (n=40). The study was carried out in Ahmedabad and Gandhinagar districts of Gujarat. Areas of inquiry included the implementation of social protection during the COVID-19 pandemic, information dissemination, participation in social networks, linkages between different implementation actors, and their role in preventive health. The recordings of the interviews were transcribed and coded in English, and common themes were subsequently identified and analyzed. The primary findings were that while there is no formal protocol for communication and coordination between these different local-level actors, they relied on personal social networks between themselves to coordinate the implementation of social protection that did not necessarily fall in their jurisdiction. Additionally, women's groups and social networks played a crucial role in information dissemination.

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### Equity in mobility: an intersectional policy analysis from India

Jagnoor Jagnoor<sup>1</sup>, Inayat Singh<sup>1</sup>, Margie Peden<sup>2</sup>

<sup>1</sup>The George Institute for Global Health, India, <sup>2</sup>The George Institute for Global Health, ICL, UK, United Kingdom

Background: Sustainable Development Goal Target 11.2 states that by 2030 countries should provide access to safe, affordable, accessible and sustainable transport systems for all. Transportation inequities have serious implications for public health, and thus transport policy becomes an important social determinant of health. The social circumstances affecting under-served populations are influenced by societal constructs and complex hierarchies, including policy and implementation of transportation systems.

Objective: To explore how social equity considerations can be more effectively incorporated and operationalised in transportation planning.

Methods: Guided by intersectional lens and domains of PROGRESS- Plus, policy at the national and subnational level (Delhi) were analysed. Further in-depth interviews were conducted for 30 participants and were anchored for non-binary gender participants, differently-abled people, and adolescents in an urban setting. Findings: Policy documents were found to stigmatise groups based on disability and gender. The policymaking process was found to be exclusionary and 'expert-driven'. Voices of vulnerable groups and civil society were left out of the policymaking process. Policies did not detail what evidence was relied upon. The challenges faced by "vulnerable groups" ranged from accessibility, affordability, availability and quality/safety. Softer infrastructure- such as attitudes of service providers were identified as a major limitation to an equitable access of transportation.

Conclusion: Adopting an intersectional lens for understanding transport experiences and analysing policies allows for a deeper understanding of the impact of multi-level interacting social locations and structures of domination that shape human experience

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### Access to healthcare among the elderly suffering from COVID-19 and catastrophic health expenditure in West Bengal, India

Arista Lahiri<sup>1</sup>, Sweety Jha<sup>2</sup>, Sweety Jha<sup>1</sup>, Madhumita Dobe<sup>3</sup>

<sup>1</sup>Indian Institute of Technology Kharagpur, Dr. B. C. Roy Multi-Speciality Medical Research Centre, Room no. 735, Life Science Building, IIT Kharagpur, India, <sup>2</sup>Dr. B. C. Roy Multi-Speciality Medical Research Centre, Indian Institute of Technology Kharagpur, India, <sup>3</sup>Foundation for Actions and Innovations Towards Health Promotion, India

**Background and Objective:** Access to healthcare among the elderly is an important issue, particularly in low-and middle-income countries like India because of the devastating effect of the COVID-19 pandemic. To curb inequity, home-based care of the elderly through family caregivers is noted to be a cost-effective strategy with need-based institutionalization in the resource constraint settings. Against this backdrop, this study explored the socio-economic inequities in COVID-19-related healthcare access among the elderly and determined the factors associated with catastrophic health expenditure (CHE).

**Methods:** This community-based study recruited age and gender-matched cohorts of elderly ( $\geq 60$  years) first-time COVID-19-positive patients in home-based care ( $n=1392$ ) or institutional care ( $n=1412$ ) during the first and second waves of the pandemic in Kolkata, India. During follow-up, information was obtained regarding monthly per capita income (PCI) and monthly out-of-pocket expenditure on health (OOPEH) in view of COVID-19 illness. CHE was considered for OOPEH  $\geq 40\%$  of non-food monthly spending. The contribution of different factors in CHE was assessed through generalized linear models.

**Results:** The majority of the participants were in the median income quantile with an average monthly per capita income (PCI) of Rs. 5040.09 ( $\pm 182.36$ ) and an average monthly OOPEH of Rs. 4994.39 ( $\pm 1602.07$ ). Among initially home-isolated and immediately institutionalized patients, respectively, 38.45% and 15.80% had health insurance (HI), while 84.91% and 94.40% of respective families sustained CHE. HI did not have an effect on CHE. Lower PCI was associated with CHE. During the 1st and the 2nd waves, hospital-based care had a relative risk (95% Confidence Interval) of 1.31 (1.20–1.43) and 1.25 (1.20–1.31), respectively, for CHE in the families.

**Conclusion:** Insurance of health was not a prevalent practice in the case of elderly patients. Income inequity contributed to CHE. Independently, institutional care among the elderly further increased the inequity through a higher risk of CHE.

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### The mediating effect of sleep quality and psychological distress on the relationship between precarious employment and physical health

Saeed Jaydarifard<sup>1</sup>, Simon Smith<sup>1</sup>, Kalina Rossa<sup>1</sup>, Dwayne Mann<sup>1</sup>, Elahe Nikooharf Salehi<sup>1</sup>, Shamsi Shekari Soleimanloo<sup>1</sup>

<sup>1</sup>The University of Queensland, Institute for Social Science Research, The University of Queensland, Australia

**Background:** Precarious work is characterised by high job insecurity, low income, and reduced rights and social protections. Current evidence suggests that precarious work is a risk factor for self-rated physical health. It has also been demonstrated that precarious workers are vulnerable to sleep disturbances and psychological distress. This study explored the hypothesis that the relationship between precarious employment and physical health is mediated by poor sleep and psychological distress.

**Methods:** Data were obtained from the Household, Income and Labour Dynamics in Australia (HILDA) survey (2017). A novel precarious employment score (PES) was developed using exploratory factor analysis and confirmatory factor analysis in 8,127 workers. Structural equation modelling was used to evaluate the mediating effect of sleep quality and psychological distress on the relationship between precarious employment and physical health (SF-36 physical health subscale), after controlling for age, sex, marital status, educational attainment, and tenure. **Results:** The PES identified 648 workers in high precariousness and 7,431 workers in a low or moderate level of precariousness. There was a significant direct association between precarious employment and physical health ( $P < 0.001$ ). We also observed a significant change due to sleep quality (Indirect path coefficient=0.14, 95% CI: 0.06-0.22,  $P < 0.001$ ) and psychological distress (Indirect path coefficient=0.23, 95% CI: 0.11-0.35,  $P < 0.001$ ) in the association between precarious employment and physical health. **Conclusion:** Sleep quality and psychological stress play a mediating role in the association between precarity and physical health. Encouraging precarious employees to prioritise sleep and well-being may mitigate the adverse effects of precarious work on their physical health. Effective measures should be developed to reduce the role of precarity in psychological distress.

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### Evaluation of the number of accesses with "codice rosa" to the emergency department of Azienda Ospedaliero-Universitaria Pisana (A.O.U.P.): a care path for victims of violence/abuse

Niccolò Grassi<sup>1</sup>, Marzia Pellegrini<sup>1</sup>, Milena Pasquale<sup>2</sup>, Lucia Rago<sup>1</sup>, Mojgan Azadegan<sup>3</sup>, Federica Marchetti<sup>4</sup>, Carola Martino<sup>4</sup>, Chiara Toni<sup>4</sup>, Francesca Frassi<sup>4</sup>, Francesca Baroncini<sup>4</sup>, Francesca Foltran<sup>4</sup>, Sonia Susini<sup>4</sup>, Michele Cristofano<sup>4</sup>, Andrea Porretta<sup>1</sup>, Cterina Rizzo<sup>1</sup>, Angelo Baggiani<sup>1</sup>

<sup>1</sup>University of Pisa - School of Hygiene and Preventive Medicine University of Pisa - Department of Translational Research - School of Hygiene and Preventive Medicine Via San Zeno 35-37, 56127 Pisa (PI) Italy, <sup>2</sup>University of Pisa - School of Hygiene and Preventive Medicine, <sup>3</sup>Azienda Ospedaliero Universitaria Pisana, <sup>4</sup>Azienda Ospedaliero Universitaria Pisana University Hospital of Pisa Via Roma 67, 56126 Pisa (PI) Italy

**Introduction:** Since 2014 the "codice rosa" care path, formalized throughout the regional network in 2016, has been active in the University Hospital of Pisa (A.O.U.P.). Emergency Department (ED) personnel are trained on how to recognize the signs of violence suffered, whether declared or not, to place the victim within a multidisciplinary and territorial assistance network. The aim of our study is to analyze the number of accesses with "codice rosa" in ED before and during the pandemic, to identify the characteristics and the trend of accesses.

**Materials and methods:** A retrospective study was carried out from 2018 to 2021 by analyzing data from the "codice rosa" medical records stored in a dedicated archive at the Organizzazione dei Servizi Ospedalieri (UO OSO) and by cross-checking using the application in use in the ED. Accesses to ED by "codice rosa" were collected by: age range, gender, citizenship, type of violence and period (pre-pandemic=2018-19 and pandemic=2020-21). The processing was carried out using Excel®.

**Results:** A total of 620 accesses were reported during the study period. 289 in the pre-pandemic and 311 in the pandemic period. Females were the most affected in both periods ( $n=208,72\%$ , 2018-19;  $n=265,80\%$ , 2020-21). During the pandemic period the percentage of minors decreased slightly (from 9.5% to 7.5%); while the percentage of males increased (from 15.5% to 20%) as for the foreigners (from 28.5% to 33.5%). The type of violence most frequently recorded in both periods was ill-treatment.

**Conclusions:** The analysis highlights how accesses with "codice rosa" have been steadily increasing over the years with a slight increase during the pandemic. Victims of abuse are generally adults, females and Italians. The analysis carried out can provide useful tools for identifying the most fragile categories and the trend of the phenomenon, in order to plan specific interventions for the prevention of violence.

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### Effects of smart working on productivity and personal and job wellbeing in a sample of employees of the university of l'aquila: analysis two years after the COVID-19 Emergency

Loreta Tobia, Simona D'onofrio, Pierpaolo Vittorini, Giada Mastrangeli, Pietro di Benedetto, Leila Fabiani

**Introduction:** Since March 2020, the University of LAquila, has adopted different measures against COVID-19, including the introduction of distance learning for students and smart working for almost all of its employees. The possibility to opt for smart working, albeit partial, and on individual basis, was left possible also after the end of the emergency period.

**Aim:** The aim of this study is to investigate the impact of smart working on job productivity and on personal and professional well-being of workers, in two different periods: April 2022 and December 2022.

**Materials and Methods:** A questionnaire consisting of 29 multiple-choice questions was sent by mail to all workers of the University of LAquila in two different periods: April 2022 and December 2022. Participation was free and voluntary. Data obtained were processed through software R4.2.1.

**Results:** A total of 118 and 157 office workers participated respectively on April and December 2022 to the study. The most represented age group was 50-59 years. The GHQ-12 items score showed a reduction - even though non statistically significant - between the two periods. The analysis of the individual items showed a significant difference between items 6 and 9 of GHQ (9 not being able to overcome difficulties and 6 to feel unhappy or depressed), marginally significant in items 5 and 10 (5: constantly under pressure and 10: as if he as lost faith in himself). There was no significant difference in terms of sleep quality and duration. Statistically significant difference was instead in energy levels and ability to concentrate.

**Discussion:** Our results show that the use of smart working is well accepted by office workers and seems to determine an improvement of the wellbeing of the workers, in terms of energy levels and ability to concentrate mainly between those

that freely choose this kind of work.

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### Assessing perceptions on the burden and health systems preparedness for snakebite in Odisha, India: a qualitative study

Deepti Beri<sup>1</sup>, Sucharita Panigrahi<sup>1</sup>, Jaya Kshatri<sup>2</sup>, Jagnoor Jagnoor<sup>1</sup>, Sanghamitra Pati<sup>2</sup>, Soumyadeep Bhaumik<sup>1</sup>

<sup>1</sup>The George Institute for Global Health, India 308, Third Floor, Elegance Tower Plot No. 8, Jasola District Centre, New Delhi 110025 India,

<sup>2</sup>Regional Medical Research Centre - Indian Council of Medical Research (RMRC-ICMR), Bhubaneswar, Odisha NALCO Nagar, Chandrasekharpur,, Bhubaneswar, Odisha 751023 India

**Background and Objective:** Snakebite kills 64,100 people in India annually. Odisha, a state in eastern India, is one of the high burden states for snakebite. In 2015, the Government of Odisha declared snakebite a 'state-specific disaster'. We aimed to explore stakeholder perceptions on the burden and systems preparedness for addressing the issue and suggest areas for future research and funding to reduce snakebite burden in Odisha.

**Methods:** We conducted 21 in-depth interviews with key stakeholders, including clinicians, academicians, community health workers, wildlife workers and snake rescuers. We anonymised interview data, developed coding framework and conducted thematic analysis using NVivo 12 software.

**Results:** The following four themes emerged based on interim results of 17 interviews – 1) There is discordance on the status of availability of snake anti-venom between clinicians, healthcare workers and the wildlife workers and snake rescuers. 2) There is a strong felt need, across all stakeholders, for community-based interventions for promoting use of formal healthcare system, increasing awareness about decreasing snake-human conflict and awareness on government scheme for snakebite death compensation. 3) Clinicians and health workers identified the need for training and support to address hesitancy to treat snakebite patients at the primary health centers. 4) Lack of funding, partnerships, and coordination between government, community-based organisations, and advocacy groups was identified as a key challenge in Odisha.

**Conclusion:** There are multiple challenges at different levels for addressing snakebite burden in Odisha. There is a need for conducting more policy and systems research in the domain along with active involvement of policy makers and government stakeholders to develop and implement a dedicated state-specific strategy for snakebite. Such a strategy should focus on awareness and education of communities, training of healthcare workers, and strengthening of formal primary healthcare system of the state, which is first point of seeking care for snakebite.

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### Return to work after total hip arthroplasty

Nicky Wouters<sup>1</sup>, Nina Wijnands<sup>2</sup>, Martijn Schotanus<sup>3</sup>, Bert Boonen<sup>3</sup>, Jasper Most<sup>3</sup>, Chantal Gielen<sup>1</sup>

<sup>1</sup>Dutch National Institute for Employee Benefits Schemes (UWV), Heerlen, The Netherlands. <sup>2</sup>Netherlands. <sup>3</sup>Care and Public Health Research Institute (CPHRI) Netherlands, <sup>3</sup>Department of Orthopaedic Surgery, Zuyderland Medical Center Sittard-Geleen, The Netherlands

**Background and objective:** Worldwide, enhance numbers of patients receive total hip arthroplasty (THA), primarily due to arthrosis. In addition, the number of patients of working age is rising, partially due to decreasing age at surgery. As a result, a wider and diverse range of outcome goals including daily participation and return to work (RTW) are gaining interest. As for the Netherlands, implementing the gatekeeper improvement act requires a minimum of two years of sick-leave payment by the employer, which makes early RTW of primary importance for society. Thus far, studies on RTW have only focused on the first year after surgery. In this study, the aim is to gain insight into factors influencing RTW two years after receiving THA.

**Methods:** In this single-center retrospective cohort study, performed at Zuyderland Medical center, Sittard-Geleen, all primary THA patients aged under 65 (n=398), operated between January 2016 and February 2018, received a questionnaire including qualitative and quantitative questions addressing RTW and factors influencing this process. Descriptive statistics were used to analyze.

**Results:** In total, 182 patients responded (response rate 45.7%), of which 145 patients (mean age 58.6 ± 5.6 years; female: n=74) completed the questionnaire. Prior to surgery, 112 patients were employed; 9 patients were self-employed. Within 12 weeks after surgery, 52% returned to work, 14% within 104 weeks. (pre)Retirement took place in 32 patients. In 19 cases, adjustments were made

to working- hours or activities. For patients, who had an occupational physician involved, RTW was 85%. Contributing factors to early RTW were personal and social support, whereas physically demanding work conditions delayed or inhibited RTW Conclusion: Overall, the majority of patients returned to work within 12 weeks after surgery. After two years, all of them were still at work. They were satisfied with the guidance of their specialist and occupational physician.

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### Implementation integrated total worker health approaches for promoting worker safety and health, and well-being in southern Thailand

Phayong Thepaksorn<sup>1</sup>, Wiphawan Kaewlai<sup>2</sup>, Elizabeth Thepaksorn<sup>1</sup>, Suthat Siammai<sup>1</sup>, Manoppon Pedmetha<sup>3</sup>, Prakrit Prapa-Inthara<sup>4</sup>, Jammaree Sornboot<sup>5</sup>

<sup>1</sup>Trang Research Center for Occupational Health, Sirindhorn College of Public Health, Trang, Faculty of Public Health and Allied Health Sciences, Praboromarajchanok Institute Thailand, <sup>2</sup>Trang Research Center for Occupational Health, Sirindhorn College of Public Health, Trang, Faculty of Public Health and Allied Health Sciences, Praboromarajchanok Institute, <sup>3</sup>Sirindhorn College of Public Health, Trang, Faculty of Public Health and Allied Health Sciences, Praboromarajchanok Institute Sukhumaporn Sriwisit Sirindhorn College of Public Health, Trang, Faculty of Public Health and Allied Health Sciences, Praboromarajchanok Institute Thailand, <sup>4</sup>Sirindhorn College of Public Health, Phitsanulok, Faculty of Public Health and Allied Health Sciences, Praboromarajchanok Institute Thailand, <sup>5</sup>Sirindhorn College of Public Health, Yala, Faculty of Public Health and Allied Health Sciences, Praboromarajchanok Institute Thailand

In the South, there were top 5 provinces with high accidents and injuries, including Satun, Trang, Songkhla, Phatthalung and Surat Thani provinces, respectively, with the highest rate of injury at 17.37 per thousand. Preventive actions, promoting safety, occupational health and working environment are therefore important in order to foster worker health and safety working environment. The main concept of Integrated Total Worker Health (iTWH) is aspects linked as an integrated operation, promotion and prevention work-related safety and health hazards, reducing injuries and illnesses for better workers well-being. iTWHs focus is on the safety and good health of workers. However, little research has examined the impact of iTWH interventions in Southern enterprises. The aim of this study was to explore and characterize health and safety practices, working conditions, occupational health and safety policies, and programs in Southern enterprises from an iTWH perspectives (n=6). Engaging science studies and approaches, site visits, walk-through surveys, questionnaires interviews (n=660), group discussion were conducted with enterprises, between 150 and 1,250 employees in 2022. Qualitative data from 54 interviews and tracking documents were coded and thematically analyzed. By assessing the context of the enterprise settings in which the intervention was situated, we explored factors preventing and facilitating the working conditions and improvement, including organizational factors and atmosphere, engaging employees, low-cost strategies, evaluation, and integration. The enterprises have fewer resources and financial supports for occupational health and safety, are more likely iTWH precarious, and have higher rates of occupational injury and illness compared with larger enterprises. Interventions that address the promotion of health and well-being in addition to conventional occupational intervention and health hazards are crucial supports for improving iTWH. These themes overlapped with both the different governmental agencies and fundamentals. As iTWH expands to organizations of all sizes, it is necessary to address the needs of the enterprises.

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### Impact of social assistance on poverty-related infectious diseases: A longitudinal study in 51 countries

Gabriel de Sampaio Morais<sup>1</sup>, Elisa Basterra<sup>2</sup>, Natanael Silva<sup>2</sup>, Laio Magno<sup>3</sup>, James Macinko<sup>3</sup>, Luis Souza<sup>4</sup>, Inês Dourado<sup>4</sup>, Davide Rasella<sup>1</sup>

<sup>1</sup>Institute of Collective Health Federal University of Bahia Brazil, <sup>2</sup>Institute for Global Health of Barcelona (ISGlobal), Barcelona, <sup>3</sup>University of the State of Bahia, Life Science Department Brazil, <sup>4</sup>Institute of Collective Health, Federal University of Bahia Institute of Collective Health, Federal University of Bahia Brazil

**Background:** 95% confidence interval (CI): 0.9898-0.9958) of HIV, 6.02% (IRR: 0.9938; CI: 0.9926-0.9951) of tuberculosis, 16.60% of malaria (IRR: 0.9820; CI: 0.9787-0.9853) and 1.88% (IRR: 0.9981; CI: 0.9972-0.9990) of NTD; and reductions of 3.15% of HIV/Aids-related mortality rates (IRR: 0.9968; CI: 0.9952-0.9985),

1.88% (IRR: 0.9981; CI: 0.9969-0.9993) of tuberculosis, 19.20% (IRR: 0.9789; CI: 0.9757-0.9821) of malaria, and 1.29% (IRR: 0.9987; CI: 0.9859-0.9916) of NTD-related mortality.

Conclusion: Our findings suggest that Social Assistance should be part of any strategy of health policies fighting the diseases analyzed. We highlight that Social Assistance Programs may have effects on health, direct and indirectly via poverty alleviation. Thus, Social Assistance should be a tool in the achievement of Sustainable Development Goals, which advocates the end of Aids, Tuberculosis, Malaria and NTD by 2030.

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### What are the attributes of a household vulnerable to catastrophic health expenditure? using national survey data to analyse health expenditure for non-communicable diseases in India

Piyush Kumar<sup>1</sup>

<sup>1</sup>Sambodhi Research and Communications India

Background and objectives: Precise identification of households vulnerable to catastrophic health expenditure (CHE) is crucial in the efforts towards Universal Health Coverage. This paper has two main objectives. Firstly, to map the household-level determinants of CHE for people who have required medical care (hospitalization or ambulatory) due to non-communicable diseases (NCDs). Secondly, estimation of proportion of households that have been pushed into poverty due to the incurring of catastrophic health expenditure as a result of NCDs. Methods: Data from the 71st and 75th Rounds of NSSO morbidity and healthcare surveys was used for analysis, encompassing a sample of over 179,755 households. Key information on expenditure for hospitalization (inpatient) and ambulatory care (outpatient) was collected pertaining to NCDs. An array of household level socio-economic, demographic and need-based correlates embedded in the Anderson and Newman model were incorporated in the study. Incidence and intensity of CHE was calculated using overshoot and mean positive overshoot measures. Probit regression was undertaken to estimate the impact of correlates on the probability of incurring catastrophic expenses (out-of-pocket expenditure as share of monthly per capita expenditure greater than 10% ) due to health shocks. Adjustment of monthly per capita expenditure was done using OECD equivalence scale.

Results: Household income level, location (rural/urban), type of facility where care was sought (public or private), availability of insurance cover and number of household members with chronic ailments influence the likelihood of incurring CHE for both inpatients and outpatients. Roughly 60% of all households with members affected by NCDs incurred CHE, with 24% of them pushed into poverty (World Bank poverty line).

Conclusion: This highlights the urgent need for schemes like the National Health Protection Mission to identify vulnerabilities at the household level that go beyond income or occupation-based classifications and also expand the coverage to include outpatient services.

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### The impact of covid-19 on child drowning prevention activities in rural Bangladesh

Md Bhuiyan<sup>1</sup>, Rehana Parveen<sup>2</sup>, Zobaer Alam<sup>1</sup>, Md Borkat<sup>1</sup>, Aminur Rahman<sup>2</sup>, AKM Rahman<sup>1</sup>

<sup>1</sup>Centre For Injury Prevention And Research, Bangladesh (CIPRB) Centre For Injury Prevention And Research, Bangladesh (CIPRB) House# B-120, Mosque Road, New DOHS, Mohakhali, Dhaka-1206, Bangladesh Bangladesh, <sup>2</sup>Centre For Injury Prevention And Research, Bangladesh (CIPRB)

Background: Drowning is the major cause of mortality among children aged 1-4 years in Bangladesh. The COVID-19 pandemic impacted personal and family practices, which may have an influence on drowning prevention measures either directly or indirectly. To prevent child drowning in rural Bangladesh, the CIPRB is intervening with a package that includes Anchals (community-daycare facilities), family education, community sensitization, and stakeholder awareness. Approximately 32,202 rural children were unable to access Anchal supervision services due to the shutdown of over 1,775 Anchals during the pandemic. The purpose of the study was to explore the COVID-19 impact of child drowning in rural Bangladesh before and during the pandemic.

Methodology: Passive surveillance was carried out in 45 unions in rural Bangladesh between March 2019 and February 2021, encompassing approximately one million inhabitants. A pre-tested, structured questionnaire was used to collect information on fatal drowning events.

Findings: Before COVID-19 (March 22, 2019–March 21, 2020), the fatal drowning rate among children who attended creches was 72.1/100,000 per year. The fatal

drowning rate increased to 108.7/100,000 people per year during COVID-19 (March 22, 2020–March 21, 2021). The fatal drowning rates among creche children increased over 1.5 times, and the majority of drownings happened near dwellers homes. As per government instruction, all crèche-enrolled children could not participate in the crèches activities, and the parents or primary caregivers also could not supervise them. Boys had higher rates, and the majority of drownings happened near dwellers homes. Ponds and ditches were the most common drowning locations (73.7%), and nearly all drownings (86%) happened throughout the day between 9:00 a.m. and 18:00 p.m.

Conclusion: Comparing rates in the intervening areas prior to the pandemic, the fatal drowning rate during the pandemic was consistently higher. Higher rates of child drowning may have resulted from a lack of child supervision services. The methodology used in this study may allow researchers to differentiate between COVID-19s pre- and post-impact on child drowning in Bangladesh and other similar settings.

Recommendations: Future approaches to prevent child drowning should concentrate on providing intervention, especially through ECCD-integrated supervision services, to increase child safety and reduce the fatality rate from drowning among young children.

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### Authors of sexual violence: a scope review

Sheila Lindner<sup>1</sup>

<sup>1</sup>Universidade Federal de Santa Catarina (UFSC), Brazil

Considering sexual violence as a complex, multifaceted, endemic and underreported public health problem, as well as its consequences for victims and society, in this review we look at the perpetrator of sexual violence in order to identify his characteristics based on national and international literature. The NCBI/PubMed, APA PsycInfo, CINAHL, Web of Science, Scopus and LILACS databases were used, including studies about perpetrators of sexual violence published in Portuguese, English and Spanish, without year of publication or methodological type restriction. Forty-six studies were included. The results show the profile of the men and women author in relation to life cycle, marital status, education, skin color/ethnicity, work, if they had suffered violence in childhood, if they had used alcohol and drugs, as well as behaviors related to violence. It is concluded that men are the main perpetrators of sexual violence against women in all life cycles, but children who suffer violence from family members of both sexes demand special attention.

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### Occupational exposure to chemical pollutants among warehouse workers at logistics companies

Szabolcs Lovas<sup>1</sup>

<sup>1</sup>Department of Public Health and Epidemiology, Faculty of Medicine, University of Debrecen, Hungary

Introduction: During intercontinental shipping, freight containers and closed transport devices are applied. These ambiances can be polluted with harmful chemicals that may accumulate in poorly ventilated environments. The major pollutants are fumigants as well as volatile organic compounds. While handling cargos, workers can be exposed to these chemicals, frequently without adequate occupational health and safety precautions. Aim of the study: To investigate presumed occupational chemical exposures and their experienced health impacts, as well as the related KAP among workers at Hungarian logistics companies.

Methods: A cross-sectional questionnaire survey was conducted among potentially exposed warehouse workers and office workers as controls at Hungarian logistics companies (1) to investigate the health effects of chemical pollutants occurring in closed environments of warehousing and (2) to collect information about the knowledge of workplace chemical exposures as well as the occupational health and safety precautions applied.

Results: Pre-existing medical conditions did not show significant differences between the working groups. Numbness or heaviness in the arms and legs (AOR = 3.99; 95% CI = 1.72–9.26) and dry cough (AOR = 2.32; 95% CI = 1.09–4.93) were significantly associated with working in closed environments of transportation and storage, while forgetfulness (AOR = 0.40; 95% CI = 0.18–0.87) and sleep disturbances (AOR = 0.36; 95% CI = 0.17–0.78) were significantly associated with employment in office. Warehouse workers who completed specific workplace health and safety training had more detailed knowledge related to this workplace chemical issue, and they were significantly more likely to use certain preventive measures against the pollutants.

Conclusions: Warehouse workers at logistics companies may be exposed to

different chemical pollutants and the related health risks may remain unknown. Applied occupational health and safety measures at logistics companies are not adequate enough to manage this workplace chemical issue, which warrants effective preventive strategies to protect workers' health.

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### Community member perspectives on gun violence intervention in the Southeast United States

Sarah Maness<sup>1</sup>

<sup>1</sup>College of Charleston, United States

**Introduction:** South Carolina ranks 8th in the United States for its firearm death rates. Black non-Hispanic residents have the highest firearm death rates and when combined with sex, Black non-Hispanic men have a firearm death rate that is nearly nine times the rate of White non-Hispanic women. The rate of murders in South Carolina increased by 22.1% in 2020, the highest rate since 1993, identifying an urgent need for intervention. The purpose of this research was to learn more from community members regarding the necessary steps to achieve a reduction in local gun violence.

**Methods:** We conducted an online survey of community members, law enforcement and local government in the tri-county Charleston area regarding steps to reduce local gun violence (n=90). Participants were recruited to the study based on advertisements at local gun violence events, email and targeted social media ads. The survey was conducted through Qualtrics and took approximately 30 minutes to complete.

**Results:** A majority of participants identified as white (n=79) and having at least a bachelor's degree (n=48). The political affiliation of participants included a wide mix of those identifying as liberal and conservative. Over half of participants identified as concerned community members, with 29% being medical professionals (n=26). Participants ranked the most important initiative to focus on as offer youth at risk for gun violence social resources and mentor services.

**Discussion:** The greatest consensus on gun violence areas to focus on included mentorship, resources, and programming for at-risk youth. This strategy aligns with reducing community gun violence in that those most affected are young adults. Despite collaborating with a grassroots community organization for recruitment, the demographics of participants indicate that this sample was overrepresented by white community members with college degrees. Future research should examine the specific needs of communities most affected by gun violence.

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### A case report: Erythema Pernio or Perniosis, with SARS-CoV 02;

Patrícia Maluly<sup>1,2</sup>, Patrícia Maluly<sup>3,4</sup>, Valéria Petri<sup>5</sup>, Adriana Schwartz<sup>6</sup>

<sup>1</sup>Instituto de Assistência Médica ao Servidor Público Estadual (IAMSPE), São Paulo, Brasil, <sup>2</sup>Universidade Federal de São Paulo (UNIFESP), São Paulo, Brasil, <sup>3</sup>IAMSPE, Brazil, <sup>4</sup>Universidade Federal de São Paulo, Brazil, <sup>5</sup>Instituto da Pele, UNIFESP, Brazil, <sup>6</sup>Family Medicine, UNIFESP, United States

During the COVID-19 pandemic, many pathological cutaneous manifestations occurred before, during or after the viral infection. But many cases are complicated by systemic inflammatory response and its vascular complications. The evolution to vascular conditions such as livedo, purpura and necrosis, associated with thromboembolic phenomenon, is late, more severe and has a worst prognosis. Patient T.B., female, 30 years old, on January 15, 2020, we assisted a woman with violaceous erythema on the ends of her fingers. Her pathological historic was her mother had hospitalized in October 2019, with severe lung disease, which was not explained. And her 23 years old sister presented with exuberant urticaria in October 2019, during the hospitalization of her mother and grandmother about severe lung disease nonspecific. Everything happened before it was declared a pandemic COVID-19 in Brazil which the similar infections had happened endemic a long time ago without notification assertive specific in Brazil and the world and were underreported or not reported by the Ministry of Health and WHO. The patient was not treated immediately diagnoses with Sars-cov 02 infection, and the severity of the skin lesions was evaluated by the dermatologist examination. The patient had a systemic inflammatory evolution with the worst erythema lesions on the hands and feet. She presented an increase in the time of illness and treatment. In this period of little information about the COVID-19 disease in Brazil, the pathophysiology of symptoms and many different clinical manifestations prevailed to guide diagnosis and treatment, with some pathological and epidemiological features not yet explained by more specific tests. Differential clinical diagnosis and subjective medical experience were essential in this practice to provide medical attention to define

therapeutic solutions for healing and better clinical evolution about Erythema pernio with individual and collective quality of life.

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### Predisposing factors affecting the psychomotor vigilance of nurses working night shift

Merve Colak<sup>1</sup>, Melek Esin<sup>2</sup>

<sup>1</sup>Uskudar University, Nursing Department, Turkey, <sup>2</sup>Istanbul University-Cerrahpasa, Public Health Nursing, Turkey

**Background:** Shifts and long working hours decrease the psychomotor vigilance of healthcare workers during night shifts and adversely impact the health of nurses and patient safety in particular.

**Aim:** The aim of this study is to determine the predisposing factors affecting the psychomotor vigilance of nurses working night shift.

**Methods:** This descriptive cross-sectional study was conducted with 83 nurses working in a private hospital in Istanbul and voluntarily participating in the study between 25 April and 30 May 2022. Data were collected using descriptive characteristics form, psychomotor vigilance task, Pittsburgh Sleep Quality Index, and Epworth Sleepiness Scale. SPSS version 24.0 was used to analyze the data. Independent sample t-test and one-way ANOVA were used to compare nurses' PVT test results with their descriptive characteristics, and Scheffé's test, a Post-Hoc test, was used for pairwise comparisons. In order to determine the factors affecting the PVT test, meaningful models were created using multiple linear regression.

**Results:** When the time-dependent variation of the nurses' PVT performances during the night shift was examined, it was observed that there was a significant difference, and the nurses' mean reaction time and number of lapses of attention increased at the end of the night shift. It was found that 88% of the nurses had poor sleep quality and 38.55% had daytime sleepiness.

**Conclusion:** Factors affecting nurses' PVT performance were found to be associated with age, smoking, physical activity, daily water consumption, daytime sleepiness, and sleep quality. Suggestions for health policy include the need to determine the attention levels of nurses working night shift for ensuring employee and patient health and safety and creating a healthy working environment, and to implement workplace health promotion programs in order to increase the attention level of nurses.

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### Mortality due to motorcycle accidents in Mexico

Maria Vega-Lopez<sup>1</sup>, Guillermo Gonzalez-Perez<sup>1</sup>

<sup>1</sup>University of Guadalajara, Mexico

**Background/Objectives:** In Mexico, mortality from motor vehicle traffic accidents (MVTA) is one of the main causes of death in the country; coincidentally, the number of registered motorcycles has increased in recent years. While the increased risk of injuries faced by users of this type of vehicle has been documented, this study aims to analyze the evolution of mortality from motorcycle accidents (MA) by sex and age in Mexico in the last two decades and its association with the number of registered vehicles of this type.

**Methods:** This study is based on official sources of information. MVTA and MA were classified according to the Tenth International Classification of Diseases. Age-standardized rates were calculated for each sex between 1998 and 2020. Through a regression analysis, both the rate behavior trend and the association between the rate and the number of motorcycles in Mexico were calculated. Likewise, the proportional weight of deaths from MA in the total number of deaths from MVTA was calculated.

**Results:** The study reveals that the mortality rate from MA increased in Mexico by more than 800% in both sexes in the period analyzed. The highest rates are observed between the ages of 15 and 29 in men and between the ages of 15 and 19 in women. A strong correlation is observed between the registered number of motorcycles and mortality from MA. On the other hand, deaths from MA represented only 1% of deaths from MVTA in Mexico at the beginning of the period, but around 20% in 2020.

**Conclusions:** Thus, it is necessary to implement specific actions to reduce this cause of death, especially in younger ages, given the growing number of motorcycles that circulate in the streets of Mexico and the few existing regulations.

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### Jet fuel and hearing loss: a systematic review of impacts to the auditory system

Helen Wu<sup>1</sup>, Hugh Davies<sup>1</sup>

<sup>1</sup>University of British Columbia, Canada

**Background and Objective:** Globally, millions of people are exposed to ototoxic solvents at work, which can permanently damage their hearing. Jet fuel is a chemical mixture containing ototoxic solvents, and the exposure to jet fuel alone or with noise is associated with negative impacts to the auditory system. The International Ototoxicity Management Group's (IOMG's) Environmental and Occupational Exposures Focus Group is conducting a series of systematic reviews on solvent ototoxicity. IOMG plans to issue international occupational health guidance to facilitate improved protections and hearing health management for ototoxic exposures. The objective of this systematic review is to synthesize observed ototoxic effects of jet fuel exposures and discuss the translation of these findings to occupational health.

**Methods:** A systematic review on auditory outcomes of animals following jet fuel exposures was conducted using the Medline and Embase databases. All available articles were screened, then full text reviews were conducted in those matching the inclusion criteria.

**Results:** A total of 952 abstracts were screened and reviewed to synthesize relevant findings. Significant impairment of auditory outer hair cell function was demonstrated in three key studies. Further, two key studies also found that jet fuel exposures caused central auditory processing disorder (CAPD). One study suggested oxidative stress as a potential mechanism for hearing loss caused by jet fuel, with findings demonstrating significant increases in liver glutathione concentrations.

**Conclusion:** This review summarizes evidence demonstrating jet fuel as a potential hazard to worker's hearing. Those exposed to jet fuel may exhibit normal auditory sensitivity, yet develop brainstem dysfunctions resulting in auditory or non-auditory symptoms, such as CAPD, which may be missed during routine occupational audiometric assessments. Ultimately, more research is needed on hearing outcomes following jet fuel exposure, in both animals and humans, to improve guidance for protecting worker's auditory health.

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### Quadbike Injury Risk Clusters - A Cluster Analysis of Emergency Records in Dubai, United Arab Emirates

Preetha Menon<sup>1</sup>, Mohamed

El-Sadig<sup>1</sup>, Ibrahim Abdalla Alfaki<sup>1</sup>, Omar Al Sakkaf<sup>2</sup>, Rashad Gamar<sup>2</sup>, Rami Al-Rifai<sup>1</sup>, Michal Grivna<sup>1</sup>

<sup>1</sup>United Arab Emirates University, United Arab Emirates, <sup>2</sup>Dubai Corporation Ambulatory Services

**Background and Objective:** Desert recreational sports in the middle east, especially Dubai is an integral part of tourism, and local winter recreation. Quadbike riders in this region ride in different terrain with varying degree of riding competency. This study tries to identify unique riding habits and risk clusters among quadbike riders that lead to different injury outcomes in Dubai. Identifying these rider clusters with unique risk habits could help in optimizing resources with tailored intervention strategies. This study aims to identify and describe the different clusters of quadbike riders in Dubai.

**Methods:** Two-step cluster analysis helped identify clusters from incident reports of injured patients who availed Dubai Corporation for Ambulatory Services (DCAS) ] between 2017 and 2021. The variables for cluster analysis were identified by Principal Component Analysis and ANOVA helped quantify the dissimilarities between the four clusters.

**Results:** Our study showed four risk clusters among quadbike riders in Dubai. They are grouped as Night collisions, Night rollover, Daytime mild rollover and Daytime severe rollover. Emirati riders of younger age groups were more likely to ride at night and get a severe injury due to collision and rollover. Non-nationals appear much older, more likely to stick to daytime driving and more likely to get mild skin abrasions due to rollovers.

**Conclusion:** Distinct injury mechanism in different demographic groups of quadbike riders help identify targeted interventions among rider groups. Younger nationals at risk of night collisions and rollovers would benefit from increased guardianship, vehicle modification and crowd control. Resources can be conserved among the mildly injured tourists and non-nationals through first aid posts at tour companies.

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### The acceptability of implementing an ongoing surveillance tool of behavioral risk factors for noncommunicable diseases in the Republic of Moldova

Elena Raevschi<sup>1</sup>

<sup>1</sup>Nicolae Testemitanu State University of Medicine and Pharmacy, Chişinău, Republic of Moldova

**Background and Objective:** Noncommunicable Diseases (NCDs) are a main challenge for health systems. Monitoring and evaluating modifiable behavioral risk factors are essential for managing NCDs. Deploying a risk factor management tool is essential to successfully address the crisis of NCDs in the Republic of Moldova. The study Objective was to evaluate the acceptability of implementing an ongoing risk factor surveillance tool which should enable timely collection and processing of detailed behavioral data to inform health decision makers and strengthen NCDs strategies.

**Methods:** We performed a cross-sectional landline telephone survey in the Republic of Moldova based on systematic random sampling of 800 adult respondents (aged 18-69 years) using the US Behavioral Risk Factors Surveillance System (BRFSS) Methodology. Four main calling-outcome measures were used to assess population acceptability: (1) interview completion rate; (2) cooperation rate; (3) refusal rate; and (4) resolution rate.

**Results:** Final disposition categories were assigned after all calling attempts were exhausted: 248 (31.0%) fully completed interview; 5 (0.6%) partially completed interview; 13 (1.6%) eligible respondent refusal; 222 (27.8%) no answer; 180 (22.5%) answering device, unknown whether eligible; 96 (12.0%) telecommunication barrier; 2 (0.3%) physical impairment; and 34 (4.2%) non-eligible participants. The calling-outcome rates based on final disposition codes were: (1) interview completion rate 95.1% (95% CI 91.8% to 97.1%); (2) interview cooperation rate 95.1% (95% CI 91.8% to 97.1%); (3) refusal rate 1.8% (95% CI 1.1% to 3.1%); and (4) resolution rate 37.5% (95% CI 34.2% to 40.9%).

**Conclusions:** High interview completion and cooperation rates, along with low refusal rates, indicate that adult Moldovans are likely to accept a landline telephone survey for the purpose of assessing behavioral risk factors. However, the low resolution rate indicates that response rates could increase significantly if alternate communication methods(e.g., mobile phones) were used.

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### Assessment of sterilization services in Mongolia from public health perspective

Oyun Chimedamba<sup>1</sup>, Bayan-Undur Dagvadorj<sup>2,3</sup>, Batsaikhan Batsuuri<sup>4</sup>, Sarnai Erdene<sup>5</sup>

<sup>1</sup>Global Leadership University, Mongolia, <sup>2</sup>Urology and Andrology Centre, State Clinical First Hospital, Mongolia, <sup>3</sup>Mongolian Surgeons' Association, Mongolia, <sup>4</sup>Mongolian Surgeons Association, State Clinical First Hospital, Mongolia, <sup>5</sup>Mongolian National University of Medical Sciences, Mongolia

**Background:** Sterilization services are the basis of all safe and affordable surgery—as well as infection prevention and control activities to prevent surgical site infections (SSIs), sepsis and other health care associated infections (HAIs). Sterilization quality improvement rarely included in public health programs. Therefore, we aimed to assess the current state of sterilization services as a first step of foundational importance to safe surgical care and infection prevention and control at primary and referral level in Mongolia. **Methods:** One national and 4 sub-national facilities were identified for the first sterilization assessment and planning in Mongolia using checklists of the WHO/WPRO guideline: Making Hospitals Safe: Sterilization Services. Data were collected in 6 key areas: sterilization environments, sterilization practices for cleaning and disinfection, inspection and packing, sterilization, sterilizer review and sterilization function tests and sterilization system supports and quality mechanisms.

**Results:** All sterilizers were functional and met temperature, pressure and time parameters. Wet packs at the end of the sterilizer cycle were noted in 17% of test packs observed. 52% cleaning and disinfection sinks observed met standards. 86% staff protection standards were met. 28% of inspection and function testing tasks were completed. Common gaps in inspection and function testing were instruments not all inspected separately, joints, serrations and crevices not all inspected for cleanliness (no magnifiers used). 26% packing standards were met. 52% sterilizer loading standards were met. 60% unloading standards were met. 88% of central sterilization rooms met wall, floor and work surface standards. **Conclusions:** Improving cleaning, inspection and packaging, sterilization, sterile storage, infection prevention and control measures and SOPs for sterilization processes to maximize outcomes with current resources is needed. Many can be addressed by practice changes that require little additional equipment or resources.

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### An epidemiological early warning system for COVID-19 dynamics

Bernhard Pfeifer<sup>1,2</sup>, Werner Hackl<sup>3</sup>, Marco Schweitzer<sup>4</sup>, Patrick Raudaschl<sup>5</sup>, Bernhard Tilg<sup>6</sup>, Andreas Huber<sup>2</sup>, Herbert Oberacher<sup>7</sup>, Harald Schennach<sup>8</sup>, Anita Siller<sup>8</sup>, Heinz Zoller<sup>9</sup>, Sabrina Neururer<sup>10</sup>

<sup>1</sup>Division for Digital Medicine and Telehealth, UMIT Tirol - Private University for Health Sciences and Health Technology, Tyrol, Austria, <sup>2</sup>Tyrolean Federal Institute for Integrated Care, Tirol Kliniken GmbH, Innsbruck, Austria, <sup>3</sup>Division for Digital Medicine and Telehealth, Private University for Health Sciences and Health Technology (UMIT Tirol), Hall, Austria, <sup>4</sup>Division for Digital Medicine and Telehealth, UMIT TIROL - Private University for Health Sciences and Health Technology, Hall (Tyrol), Austria, <sup>5</sup>Division for Digital Medicine and Telehealth, UMIT TIROL, Private University for Health Sciences and Health Technology, Tyrol, Austria, <sup>6</sup>(UMIT TIROL), Private University for Health Sciences and Health Technology, Tyrol, Austria, <sup>7</sup>Institute of Legal Medicine and Core Facility Metabolomics, Medical University of Innsbruck, Innsbruck, Austria, <sup>8</sup>Central Institute for Blood Transfusion and Immunology, Tirol Kliniken GmbH, Innsbruck, Austria, <sup>9</sup>Department of Internal Medicine I, Medical University of Innsbruck, Innsbruck, Austria., <sup>10</sup>Division for Digital Medicine and Telehealth, UMIT TIROL, Private University for Health Sciences and Health Technology, Hall (Tyrol), Austria and Tyrolean Federal Institute for Integrated Care, Tirol Kliniken GmbH, Innsbruck, Austria

**Background and Objective:** Infectious diseases as well as infectious disease control measures have a huge impact on healthcare, social life and economy. Therefore, measures have to be adopted in a very considerate manner. In order to support COVID-19 control management in the Austrian province Tyrol the Epidemiological Early Warning System (EWS) was implemented and is presented in this abstract.

**Methods:** The EWS of the Austrian province Tyrol is based on three pillars: (1) An agent-based simulation package named "survival" was developed. (2) Wastewater from all Tyrolean wastewater treatment plants is analyzed. (2) COVID-19 antibodies of healthy blood donors are determined.

**Results:** The Austrian province Tyrol implemented an EWS in order to adopt control measures, such as social distancing, quarantines, curfews or lockdowns based on an accurate model. The model integrates parameters including number of known infections, number of vaccinations, circulating virus variants to provide a 10-day forecast of hospitalization rates (standard and intensive care) for Tyrol and South Tyrol. Additionally, the model is parametrized using information regarding the wastewater virus load and blood donor antibodies. The overall accuracy was about 1.5% average error. However, EWS does not only simulate the dynamics of the COVID-19 pandemic on the federal state level, but also on the district and municipal level. Thus, disease control measures can be adopted exactly where needed instead of affecting the entire province.

**Conclusions:** The crisis team of the Austrian province of Tyrol uses the Tyrolean EWS, which is a very accurate model. It supports decision-makers with a solid information base regarding the dynamics of the pandemic. In future, the EWS can be used for various infectious diseases and thus be a basis for infectious disease monitoring.

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### Ten years of surveillance of Surgical Site Infections (SSIs) in Piedmont: trends and burden for hip prosthesis and colon surgery

Alessandro Cornio<sup>1</sup>, Costanza Vicentini<sup>1</sup>, Valerio Bordino<sup>1</sup>, Carla Zotti<sup>1</sup>

<sup>1</sup>Department of Public Health and Pediatric Sciences, University of Turin, Italy

Surveillance programs have proven effective in reducing rates of surgical site infections (SSIs). The aim of this study was to evaluate rates and trends of SSIs following hip arthroplasty (HPRO) and colon surgery procedures (COLO) in Piedmont, a region in North-Western Italy, from 2010 to 2019. Further, we aimed to assess the burden of SSIs in terms of Disability-Adjusted Life-Years (DALYs). A prospective cohort study was conducted among 42 hospitals participating in the surveillance system. Procedure-specific SSI rates were calculated and 10-year trend was assessed using chi-squared test for trends, using Epi InfoTM. Patients were stratified according to age, sex and IRI index according to life expectancy in order to calculate DALYs, using a modified version of the ECDC's BCoDE toolkit: disease models for both surgeries were altered to incorporate long-term disability associated with SSIs. 20356 HPRO and 11011 COLO procedures were monitored over 10 years, all of which were included in the analyses. HPRO and COLO cumulative SSIs rates were 1.5% and 8% respectively. Chi-squared test showed a significant trend: 2019 patients undergoing HPRO surgery is 17.7% less likely to contract SSIs than 2010 patients (OR: 0.823; p<0.001), whilst 2019 patients undergoing COLO surgery is 35.7% less likely to contract SSIs than 2010 patients (OR: 0.643; p<0.001). Regarding disease burden, a total of 955.3 (95%CI

837.7-1102.98) and 208.65 (95%CI 180.87-240.90) DALYs were calculated for SSIs following HPRO, whilst 76.58 (95%CI 67.15-90.71) and 38.62 (95% CI 33.09-45.36) DALYs for SSIs in COLO, in 2010 and 2019, respectively. The significant decreasing trends found in this study support of the effectiveness of surveillance networks in reducing SSI rates and improving quality of care. Despite the smaller SSI rate, the burden associated with SSIs following HPRO was higher, which is important to consider in light of the ageing population in Italy.

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### Mycobacterium chimaera surveillance: lessons learned over 5 years of samplings

Michele Nicoletti<sup>1</sup>, Giulia Tremolada<sup>1</sup>, Vincenzo Baldo<sup>1</sup>, Cristina Contessa<sup>2</sup>

<sup>1</sup>Università degli Studi di Padova, Italy, <sup>2</sup>Azienda Ospedale, Università di Padova, Italy

**Background:** Mycobacterium chimaera is a slow-growing non-tuberculous mycobacterium that is previously known to be able to colonize the heater-cooler units (HCUs). Over 120 human confirmed cases have been reported worldwide but the real magnitude seems to be critically underestimated

**Methods:** We provide the description and the results of a longitudinal surveillance for M. chimaera we adopted since the 6 th of December 2016 and its going on to nowadays on 35 HCUs of different brands. On these devices we provided the routine disinfection as recommended by the manufacturer and, when we found a contamination in the periodical samples, we performed the deep disinfection or we sent the HCU to the home factory to provide it, as required by the manufacturer. Results In the period 01/01/2017-23/05/2022 we performed 1191 samplings on 35 HCUs, of which 16 were the 3T of LivaNova company (type 1), 2 were HCU40 and 17 were HU35 both of Maquet (type 2). Overall, 118 positivity to M. chimaera (10.3%) were identified, specifically 83 on HCU of the type 1 (21.6%) and 35 on the type 2 (4.6%). Respectively for type 1 and 2, we found positive 41.4% and 2.9% of the tests performed in pre-disinfection samples and 15.9% and 6.3% in post disinfection.

**Conclusions:** We ask engineers to work on new solutions to produce a new generation of heater-cooler units to simplify the cleaning and disinfection procedures, to reduce the patient risks and to increase the efficiency of cryosurgery. We suggest identifying water-free technologies that can be sanitized with enzymatic detergent in order to reduce the amount of toxic components used in the routine and deep-disinfection procedures. In any case, the "zero risk" is an impossible achievement but a detailed bio-surveillance system must be adopted for a rapid identification of rare events.

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### Surgical site infections during and after the pandemic: a retrospective cohort study on outcomes after abdominal surgery in Italy

Heba Elhadidy<sup>1</sup>, Costanza Vicentini<sup>1</sup>, Giovanni Paladini<sup>1</sup>, Elettra Ugliano<sup>2</sup>, Alessandro Cornio<sup>1</sup>, Carla Zotti<sup>1</sup>

<sup>1</sup>Department of Public Health, University of Turin, Italy, <sup>2</sup>Department of Surgical Sciences, University of Turin, Italy

**Background and Objective:** COVID-19 pandemic led to major disruptions in surgical activity in 2020, with the exception of oncological and urgent procedures. Then, starting from 2021 there was a progressive return to routine. The Italian National Surgical Site Infection Surveillance (SNiCh) continued. Therefore, the aim of this study was to assess the impact of the pandemic on abdominal surgery outcomes in Piedmont, a region in northern Italy. **Methods:** Data on abdominal surgery, divided into oncological and non-oncological procedures, were collected from 42 hospitals participating in the regional surveillance network from 2018 to 2021. Predicted surgical site infection (SSI) rates for 2020 and 2021 were estimated on pre-pandemic (2018-2019) data and compared with the observed rates, using Mantel-Haenszel corrected chi-squared tests. The expected SSI rates were predicted on the basis of pre-pandemic data stratified by Infection Risk Index (IRI). To avoid competing risk bias, patients deceased within the 30-day follow-up period were excluded. Analyses were performed using Epi Info V7.2.

**Results:** In the pre-pandemic period 5268 procedures and 307 SSIs were recorded. In 2020 there were 1031 interventions and 44 SSIs, while in 2021 there were 1490 interventions and 112 SSIs. In 2020, the observed SSI rate for oncological procedures (6.07) was significantly lower (p<0.001) than the expected (7.33). However, in 2021 the observed SSI rate for non-oncological procedures (7.86) was significantly higher (p=0.03) than the expected (5.13). The other results did not reach statistical significance. **Conclusions:** The lower SSI rate for oncological procedures during the pandemic (2020) may highlight an increased attention to

infection prevention and control practices. On the other hand, it seems that the delay in the interventions affected the risk of SSI after the pandemic peak (2021), but only for procedures that have actually been delayed such as non-oncological ones.

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### Prevalence of healthcare-associated infections and antimicrobial use in Italian long-term care facilities: results from a national cross-sectional study (2022)

Antonino Russotto<sup>1</sup>, Costanza Vicentini<sup>1</sup>, Stefano Bazzolo<sup>2</sup>, Edoardo Rolfini<sup>1</sup>, Valentina Blengini<sup>1</sup>, Dario Gamba<sup>1</sup>, Antonella Agodi<sup>3</sup>, Martina Barchitta<sup>3</sup>, Stefania Bellio<sup>4</sup>, Elisa Fabbri<sup>5</sup>, Silvia Forni<sup>6</sup>, Enrico Ricchizzi<sup>5</sup>, Giancarlo Ripabelli<sup>7</sup>, Camilla Sticchi<sup>8</sup>, Fortunato D'Ancona<sup>9</sup>, Carla Zotti<sup>1</sup>

<sup>1</sup>Department of Public Health, University of Turin, Italy, <sup>2</sup>Department of Environment, Land and Infrastructure Engineering (DIATI), Politecnico of Turin, Italy, <sup>3</sup>Department of Medical and Surgical Sciences and Advanced Technologies "GF Ingrassia", University of Catania, Italy, <sup>4</sup>Azienda Zero, Veneto Region, Italy, <sup>5</sup>Agenzia sanitaria e sociale regionale Emilia-Romagna, Emilia-Romagna Region, Italy, <sup>6</sup>Agenzia Regionale di Sanità della Regione Toscana, Toscana Region, Italy, <sup>7</sup>Department of Medicine and Health Sciences Vincenzo Tiberio, University of Molise, Italy, <sup>8</sup>A.Li.Sa, Liguria Region, Italy, <sup>9</sup>Italian National Institute of Health, Ministry of Health, Italy  
Background and Objective: Healthcare-associated infections (HAIs) have a significant burden, particularly in long-term care facilities (LTCFs). Moreover, LTCFs were disproportionately affected by the COVID-19 pandemic. In preparation for the 2023 European Centre for Disease Prevention and Control (ECDC) "Point prevalence survey (PPS) of HAIs and antimicrobial use (AMU) in European long-term care facilities" (HALT), the Italian national coordinating team conducted a pilot PPS, with the Objective of establishing a regional surveillance network and assess the potential COVID-19 pandemic impact on HAIs.

Methods: A PPS was conducted between May-June 2022. The protocol of this study is an updated version of the ECDC HALT-3. Seven Italian regions participated voluntarily enrolling a minimum of two LTCFs with at least 50 residents each, using convenience sampling. Data were collected in a single day in each LTCF, at the LTCF, ward, and resident levels. Resident data were collected for each resident with a HAI and/or AMU on the survey day. HAI and AMU prevalence were calculated as the mean number of residents with at least one HAI and/or AMU divided by the total number of eligible residents. Spearman's correlational analysis was conducted between LTCF-level HAI and AMU prevalence.

Results: 15 LTCFs with 1025 residents were included in the survey. HAI prevalence was 2.54% (95% CI 1.66%-3.69%) considering all HAIs and 1.56% (95% CI 0.89%-2.52%) not considering SARS-CoV-2 infections. The most frequent HAI was COVID-19 (30.3%). AMU prevalence was 3.02% (95% CI 0.21%-4.27%). The most prescribed agent was Ceftriaxone (48.4%). A positive correlation was found between LTCF-level HAI and AMU prevalence (Spearman's  $\rho$  0.395,  $p$  0.0253).

Conclusions: A national surveillance network was established. HAI prevalence was around one-third compared to 2017 Italian data, suggesting infection control activities could have improved following COVID-19 pandemic. Results will be useful to inform the 2023 ECDC HALT survey.

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### Healthy Finland survey as the latest uptake for 50 years' of population health monitoring in Finland

Annamari Lundqvist<sup>1</sup>, Hanna Tolonen<sup>1</sup>, Healthy Group<sup>2</sup>

<sup>1</sup>Finnish Institute for Health and Welfare (THL), Finland, <sup>2</sup>National Institute for Health and Welfare (THL), Finland

Background and Objective: Up-to-date, representative, and high-quality health information is needed to support evidence-informed policy making and innovative research. In Finland, population-based health examination surveys (HESs) have been conducted in regular phase since early 1960's to obtain information on population health and health determinants. This information has been widely used for policy making, planning of prevention programmes and evaluation of the prevention programmes, as epidemiological Background: for clinical treatment guidelines of several diseases, and for research.

Methods: The latest HES called Healthy Finland is ongoing and will run until June 2023. Survey planning was started already in early 2021 with a multidisciplinary group including representatives from different stakeholders. The Finnish Institute for Health and Welfare (THL) had the responsibility of the coordination of the preparation phase as well as conducting the survey.

Results: Survey sample includes 66.000 randomly selected adults aged 18+ years

living in Finland. In the 1st phase, they all receive a questionnaire to be filled in. Questionnaire covers topics such as quality of life, health, use of health care services, lifestyles, background information, work ability and functional capacity, wellbeing, accidents, and sexual and reproductive health. In the 2nd phase, 10.000 of those selected to the survey will be invited to health examination including for example anthropometric measurements, blood pressure, spirometry test, collection of biological samples and for a sub-sample, a dental examination. Information from national registries (e.g. socioeconomic status, use of medications and diagnosis) will be linked to the data.

Conclusions: Information obtained from the Healthy Finland survey will be used for the evaluation of wellbeing service counties which are responsible for the organization of social and health care services in Finland. Survey will generate new information about health inequalities by providing information not only by age and sex but also by education and other socio-economic indicators.

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### Integrated surveillance of foodborne diseases: the organization of the Piemonte region (Italy)

Sofia Filippetti<sup>1</sup>, Silvia Bonetta<sup>2</sup>, Cristina Pignata<sup>1</sup>, Teresa Zaccaria<sup>3</sup>, Alessandro Bondi<sup>3</sup>, Silvia Marro<sup>4</sup>, Giuseppe Sattanino<sup>4</sup>, Bartolomeo Griglio<sup>5</sup>, Elisabetta Carraro<sup>1</sup>

<sup>1</sup>Department of Public Health and Pediatrics, University of Turin, Turin, Italy,

<sup>2</sup>Department of Life Sciences and Systems Biology, University of Turin, Turin, Italy, <sup>3</sup>Microbiology Unit, University Hospital Città della Salute e della Scienza, Turin, Italy, <sup>4</sup>Local Health Unit ASL TO5 - Ce.I.R.S.A., Turin, Italy,

<sup>5</sup>Prevention, Veterinary Public Health and Food Safety Department, Public Health & Welfare Directorate, Piedmont Region, Italy

Foodborne Diseases (FDs) are a complex and relevant problem for global Public Health. World Health Organization highlighted the importance of FDs surveillance as a crucial instrument to guarantee health and food safety. Against this background European Union made investigation and reporting of foodborne outbreaks mandatory with Directive 2003/99/EC, which was transposed in Italy by D.Lgs n.191/2006. The "Surveillance system of foodborne disease" of Piemonte Region, active since 2002, through the years has been integrated with a One Health perspective. Nowadays, this surveillance system is based on the integrated analysis of information periodically collected from several institutions: FDs cases or outbreaks notifications from Hospitals and Local Health Services; alerts from general practitioners and private citizens; Results of analyses and serotyping of food samples (by Experimental Zooprophyllactic Institute) and human biological specimens reported by the laboratory active surveillance. This surveillance system allows to monitor in Piemonte FDs' outbreaks and single cases, as well as the pathogens circulating in the population. As observed in Europe, the data collected in 20 years show that the causative agents more common in Piemonte are *Campylobacter* spp. and *Salmonella* spp., and the most frequent risk factor is the consumption of raw or not properly preserved food. The main critical concerns of this surveillance system included some management difficulties, sometimes the lack of detection timeliness and the under-notification of FDs by the epidemiologic surveillance highlighted by the laboratory active surveillance. The Surveillance system of FDs in Piemonte is an important tool for monitoring, evaluating and reporting this challenging issue. To solve critical aspects of this system and enhance its effectiveness, all the participant institutions are currently cooperating for implementation measures. Indeed, thanks to cross-sectorial collaboration, it is possible to have an all-embracing perspective, fundamental for the prevention and improvement of public health and useful for policy makers.

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### EASY-NET program: methods and preliminary results of an audit and feedback intervention in the emergency care for Acute Myocardial Infarction in the Lazio region, Italy

Anna Acampora<sup>1</sup>, Laura Angelici<sup>2</sup>, Carmen Angioletti<sup>1,3</sup>, Egidio Mattia<sup>4</sup>, Luigi Pinnarelli<sup>5</sup>, Paola Colais<sup>5</sup>, Marina Davoli<sup>2</sup>, Nera Agabiti<sup>2</sup>

<sup>1</sup>Department of Epidemiology, Regional Health Service of the Lazio Region, Rome, Italy, <sup>2</sup>Department of Epidemiology, Regional Health Service, Rome, Italy, <sup>3</sup>UOC Percorsi e Valutazione Outcome Clinici - Fondazione Policlinico Universitario A. Gemelli-IRCCS, Rome, Italy, <sup>4</sup>UOC Percorsi e Valutazione Outcome Clinici, Fondazione Policlinico Universitario A. Gemelli-IRCCS, Rome, Italy, <sup>5</sup>Department of Epidemiology, Regional Health Service - Lazio, Rome, Italy

Background and Objective: Within the EASY-NET Network Programme (NET-2016-02364191) Effectiveness of Audit and Feedback strategies to improve healthcare

practice and equity in various clinical and organisational settings, Work Package 1 (WP1-Lazio) compares the effectiveness between a more intensive A&F strategy and the periodic publication of indicators alone in improving the appropriateness and timeliness of emergency health interventions for acute myocardial infarction (AMI). This work describes the new A&F Methodology and presents the Results of the first feedback delivered.

**Methods:** The intervention involves sending periodic reports via e-mail to participating hospitals. The feedback includes a set of volume, process and outcome indicators calculated through the Health Information System of the Lazio Region. Indicators are calculated by facility and compared with regional mean, standard values and values calculated for hospitals with similar volumes of activity. Feedback recipients are invited to organize clinical and organizational audit meetings aimed to identify possible critical indicators and define, where necessary, improvement actions.

**Results:** The results presented are included in the first report (2021) delivered in September 2022. A total of 16 facilities of the Lazio region participate to the project for the AMI pathway evaluation. Twelve facilities present high volumes in all volume indicators, while 3 facilities present low volumes for each indicator presented. Concerning the quality indicators, 4 facilities do not present critical indicators or average Results, 3 facilities do not present critical indicators but average Results in at least one of the indicators, 6 facilities present for at least one of the indicators a critical value.

**Conclusions:** The first report highlighted some critical issues in some facilities on several indicators. During the clinical-organizational audit meetings, each facility will analyse these issues defining appropriate improvement actions. The outcome of these actions will be monitored through subsequent reporting to support the continuous care quality improvement process.

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### Point prevalence survey of healthcare associated infections in acute-care hospitals: a validation study in Italy, 2022

Roberta Bussolino<sup>1</sup>, Roberta Bussolino<sup>1</sup>, Heba Elhadidy<sup>1</sup>, Elisabeth Marino<sup>2</sup>, Paola Toselli<sup>2</sup>, Cesare Bolla<sup>2</sup>, Costanza Vicentini<sup>1</sup>, Carla Zotti<sup>1</sup>

<sup>1</sup>Department of Public Health and Pediatrics, University of Turin, Italy, <sup>2</sup>Unit of Infectious Diseases, ASO SS. Antonio e Biagio e Cesare Arrigo, Italy

**Background and Objective:** Italy has been participating since 2011 in European point prevalence surveys (PPS) of health-care associated infections (HAI) and antimicrobial use in acute-care hospitals, which are promoted by the European Centre for Disease Prevention and Control (ECDC) every five years. Growing evidence suggest the COVID-19 pandemic has increased awareness towards infectious diseases, and has led to improvements in infection prevention and control (IPC) practices. In this study, we investigated whether there was an improvement in terms of accuracy in recognizing HAIs comparing results of the current PPS (2022) with the previous PPS (2017) in Italy.

**Methods:** The third Italian PPS was conducted in November 2022, applying ECDC definitions for HAIs and using the PPS protocol v.6.1. A validation survey was conducted in a hospital part of the representative sample. The study involved 50 patients belonging to geriatric, oncology, and psychiatry wards. Data for the validation study were collected during the same day as the primary PPS by an external validation team not involved in primary data collection, which was performed by hospital staff.

**Results:** Both the primary and validation surveys identified the same 9 patients with at least an HAI, therefore sensitivity and specificity were 100%, which was an improvement compared to the previous PPS (sensitivity 80.6%, specificity 98.7%). HAI prevalence among included wards was 18% (95% confidence interval, CI 8.58-31.44). Excluding HAIs caused by SARS-CoV-2, a prevalence of 10% (95% CI 3.33-21.81) was measured.

**Conclusions:** Results of this study suggest that there has in fact been an improvement in HAI detection accuracy, which could be due to staff being more aware of HAIs. However, not considering SARS-CoV-2 infections, the prevalence of HAIs in included wards was higher than the mean prevalence measured in the previous PPS.

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### Digital platform for surveillance of COVID-19 in primary health care services in Brazil

Inês Dourado<sup>1</sup>, Carlos Santos<sup>2,3</sup>, Fabiane Soares<sup>1</sup>, Valdiléa Veloso<sup>4,5</sup>, Nathalia Suzart<sup>1</sup>, Osiyallê Rodrigues<sup>1</sup>, Suelen Seixas<sup>1</sup>, Thais Aranha-Rossi<sup>6</sup>, Laio Magno<sup>6</sup>

<sup>1</sup>Instituto de Saúde Coletiva, Universidade Federal da Bahia, Brazil, <sup>2</sup>Instituto

de Saúde Coletiva, Brazil, <sup>3</sup>Universidade Federal da Bahia, Brazil, <sup>4</sup>Fiocruz, <sup>5</sup>Instituto Nacional de Infectologia, Brazil, <sup>6</sup>Departamento de Ciências da Vida, Universidade do Estado da Bahia, Brazil

**Background and Objective:** To describe a digital platform to support the epidemiological surveillance of COVID-19 (C19) in primary health care (PHC) services, in two large Brazilian capitals.

**Methods:** The study "Expansion of testing, quarantine, e-health and telemonitoring strategies to fight against the C19 pandemic in Brazil (TQT-C19 Study)", developed in the 1st semester of 2022 a digital platform based on epidemiological surveillance actions, normative from international organizations and Brazilian organizations, to be incorporated into the Brazilian National Health System. The design of the platforms scope and tests were carried out with the participation of researchers, health professionals, managers, and the information technology team.

**Results:** The digital platform has been used by PHC clients, health professionals, and managers of health units and the central level to support C19 epidemiological surveillance in the PHC territory. The platform provides information management and access levels according to the users registered profile. This tool was created with a global model and can be used by other PHC services across the country, as well as for other diseases such as Zika, influenza, dengue, monkeypox, etc. It is divided into modules: a panel of indicators for epidemiological surveillance and real-time mapping of the situation in the territory; electronic medical record with test results, telemonitoring, and contact tracing; communication, providing reliable information; and logistics for controlling the stock and receipt of samples.

**Conclusions:** The development of the digital platform is focused on the testing needs of C19 in the PHC, jointly defined by the researchers and professionals from the municipal health departments. In this way, the TQT-C19 platform could be another instrument in the response of C19 in PHC services, as well as in health surveillance and management. With adaptations of other protocols and the development of specific modules, the system can be a legacy for other diseases.

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### Social support and medication compliance among myasthenia gravis patients in China: mediating role of mental health and self-efficacy

Jiazhou Yu<sup>1</sup>, Huanyu Zhang<sup>2</sup>, Zhilan Fang<sup>3</sup>, Richard Xu<sup>3</sup>, Liling Zhu<sup>4</sup>, Dong Dong<sup>4</sup>

<sup>1</sup>The Chinese University of Hong Kong, Hong Kong, China, <sup>2</sup>Shenzhen Research Institute, The Chinese University of Hong Kong, China, <sup>3</sup>The Hong Kong Polytechnic University, Hong Kong, <sup>4</sup>The Chinese University of Hong Kong, Hong Kong

**Background and Objectives:** Myasthenia gravis (MG), a rare chronic neuromuscular disorder, is characterized by progressive physical decline and requires long-term pharmacological treatment. Due to the decline of physical and social abilities, MG patients are in great need of social support, including tangible and emotional support. This study aims to examine the association between social support and medication compliance and the possible mediating effects of mental distress and self-efficacy among MG patients. **Methods:** A cross-sectional analysis of a nationwide MG registry was conducted on 865 patients under oral medication treatment in China between June and July 2022. Validated scales were used to measure the respondent's mental distress (Four-item Patient Health Questionnaire), social support (Modified Medical Outcomes Study Social Support Scale), self-efficacy for medication use (Self-efficacy for Appropriate Medication Use Scale), and medication compliance (Morisky Medication Adherence Scale, MMAS). The association between social support and medication compliance and possible mediating effects of mental health and self-efficacy were tested by structural equation model (SEM), with significant demographic and disease-related factors adjusted.

**Results:** The respondents showed a very low level of medication compliance (71.2% poor compliance; 1.4% high compliance; mean MMAS=4.65). SEM showed that the association between social support and medication compliance was fully mediated by two indirect paths, including through self-efficacy ( $p<0.05$ , proportion mediated=63.8%) and through mental distress and then self-efficacy ( $p<0.05$ , proportion mediated=6.7%). Self-efficacy may be an essential variable in explaining the relationship between social support and medication compliance. Patients with higher levels of social support may demonstrate better mental health and higher self-efficacy for medication use, which may be a driver of higher medication compliance. **Conclusions:** It is imperative to improve medication compliance among MG patients. In addition to meeting the need of social support, assessment of and interventions on self-efficacy for medication use and mental health may facilitate improvement in medication compliance.

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### Change in quality of life in adults with late-onset Pompe disease receiving under-dose of enzyme replacement therapy in a nationwide registry: a retrospective matched cohort study from China

Huanyu Zhang<sup>1</sup>, Shanquan Chen<sup>2</sup>, Richard Xu<sup>3</sup>, Jiazhou Yu<sup>4</sup>, Dong Dong<sup>4</sup>  
<sup>1</sup>Shenzhen Research Institute, The Chinese University of Hong Kong, China, <sup>2</sup>London School of Hygiene and Tropical Medicine, United Kingdom, <sup>3</sup>The Hong Kong Polytechnic University, Hong Kong, China, <sup>4</sup>The Chinese University of Hong Kong, Hong Kong, China

**Background & objective** Pompe disease is a rare inherited neuromuscular disorder. Due to the high cost of enzyme replacement therapy (ERT), most of adults with late-onset Pompe disease (LOPD) who received ERT used the medication with insufficient doses in China. This study aimed to compare the change in quality of life (QoL) between adults with LOPD receiving under-dose ERT and no ERT.

**Methods** A retrospective matched cohort study was conducted among adult patients with LOPD in a nationwide Pompe registry in China. Patients who were not using ERT at baseline and before were included. The case group were those who received under-dose ERT during the 14-month follow-up; the control group were those who received general care. Under-dose ERT was judged by the ratio of actual vitals patients used divided by the indicated vitals patients should use (<80%). Case and control patients were matched with a ratio of 1:2 based on age, sex, dependence on devices, and geographic location. QoL was assessed by the SF-12 and EQ-5D-5L.

**Results** Eleven cases with under-dose ERT and 22 controls without ERT were included. In paired sample analyses, patients with under-dose ERT had a significant improvement in an overall measure of health status, i.e. EQ-5D VAS (38.7 vs. 62.8,  $p=0.018$ ). Using the changes of QoL scores between baseline and follow-up as outcomes, the multiple linear regression analyses indicated that under-dose ERT was not significantly associated with change in SF-12 physical or mental component score, and EQ-5D index score compared with the control group ( $p>0.05$ ), while it was positively associated with change in EQ-5D VAS ( $\beta=20.55$ ,  $p=0.020$ ).

**Conclusion** Under-dose ERT significantly improved the overall health state among users, however, this improvement was not captured by the sub-dimension measure on physical or mental QoL. A Pompe disease-specific QoL tool is needed to better monitor change in QoL.

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### Assessment of the regional healthcare services' resilience during the COVID-19 pandemic: the Italian model

Marica Iommi<sup>1</sup>, Federico Rea<sup>2</sup>, Flavia Carle<sup>3,4</sup>, Giovanni Corrao<sup>2</sup>, Alessandra Allotta<sup>5,6</sup>, Salvatore Scondotto<sup>5,6</sup>, Adele Lallo<sup>7</sup>, Mirko Martino<sup>7</sup>, Marco Pompili<sup>8</sup>, Simona Carbone<sup>9</sup>, Cristina Giordani<sup>9</sup>

<sup>1</sup>Center of Epidemiology, Biostatistics and Medical Information Technology, Università Politecnica delle Marche, Italy, <sup>2</sup>Department of Statistics and Quantitative Methods, University of Milano-Bicocca, Italy, <sup>3</sup>Center of Epidemiology, Biostatistics and Medical Information Technology, Italy, <sup>4</sup>Department of Biomedical Sciences and Public Health, Università Politecnica delle Marche, Italy, <sup>5</sup>Department of Health Activities and Epidemiological Observatory, Italy, <sup>6</sup>Regional Health Authority, Sicily Region, Italy, <sup>7</sup>Department of Epidemiology, Lazio Regional Health Service, Italy, <sup>8</sup>Regional Health Agency of Marche, Italy, <sup>9</sup>Department of Health Planning, Italian Health Ministry, Italy

**Background and Objective:** The Italian Ministry of Health monitors the regional healthcare provided to citizens through annual indicators. The COVID-19 pandemic forced healthcare services to change to manage SARS-CoV-2 infections. A "dedicated system" is needed to monitor the healthcare provided by regions in 2020. The aim of the study is to experiment the "dedicated system" in three regions (R1, R2, R3).

**Methods:** Two process indicators were evaluated: PDTA-06.1 (% of new women operated for breast cancer with a mammography within 60 days prior to surgery), and PDTA-AMI (% of hospitalized subjects with an Acute Myocardial Infarction-STEMI diagnosis treated with PTCA within 2 days). For both indicators, the 2020 and 2017-2019 cohorts were identified through healthcare utilization databases and matched using propensity score. Four COVID-19 periods were compared: pre-pandemic (P1: January 1-February 19), first wave (P2: February 20-May 3), restrictions easing (P3: May 4-September 30), second wave (P4: October 1-December 31). The effect of the cohort (2020 vs. 2017-2020), periods (P1 vs. P2, P3, P4), and their interaction were estimated using multiple Cox (PDTA-

06.1) and logistic (PDTA-AMI) models. Hazard ratios (HR) and 95% Confidence Interval (95%CI) were reported. Results PDTA-06.1: The interaction term shows that in 2020 the timeliness of breast cancer surgery decreases as P2 exposure time increases (R1: HR=0.67, 95% CI 0.58-0.77), while it increases as P3 (R1: HR=1.52, 95%CI 1.36-1.70; R2: HR=1.76, 95%CI 1.18-2.64) and P4 exposure time (R2: HR=1.69, 95%CI 1.04-2.75) increases. PDTA-AMI: The probability of timely receiving PTCA treatment during 2020 periods did not change in any region.

**Conclusions:** The reduction in timeliness observed during the first wave was subsequently regained (PDTA-06.1), demonstrating the health service's resilience. The acute treatment (PDTA-AMI) was ensured as in previous years. The "dedicated system" is a useful tool to analyse the impact of the pandemic on healthcare service.

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### Impacts to health equity from changes in ontario, Canada's regulation of alcohol, cannabis, and vaping product sales

Jason Gilliland<sup>1</sup>, Alexander Wray<sup>1</sup>, Shiran Zhong<sup>1</sup>, Gina Martin<sup>2</sup>, Jamie Seabrook<sup>3</sup>

<sup>1</sup>Western University Canada, <sup>2</sup>Athabasca University Canada, <sup>3</sup>Brescia University College Canada

**Background:** Changing government regulations in Ontario, Canada over the past two years have altered the accessibility to controlled substances like alcohol, cannabis, and vape liquids. In January 2020, the province banned exterior vaping-related advertising from all retailers, causing some retailers to discontinue their license. In March 2020, the province made changes to liquor license regulations allowing restaurants to sell sealed beer, wine, and mixed spirits for takeout and delivery. Additionally, over the past two years the number of licensed cannabis retail outlets has exponentially increased in the province. What are the health-equity implications from these changes to the retail landscape in accessing controlled substances?

**Methods:** Alcohol, cannabis, and vape retailers were mapped from January 2020 to January 2022, and changes were evaluated using a spatial accessibility model in a geographic information system. This change is evaluated at the dissemination area scale based on the sociodemographic characteristics of these areas, with a health equity lens.

**Results:** At the dissemination area scale, access to alcohol and cannabis has increased, while access to vape products has decreased. Socio-demographic characteristics such as visible minority status, household income, and education level of the most vulnerable dissemination areas provide insights into health equity implications from these changes.

**Conclusion:** The changes observed in accessibility to alcohol, cannabis, and vape retailers indicate a broad societal shift in access to controlled substances. Comprehensive representative population-level survey data is needed to evaluate if consumption patterns and related health outcomes have changed in relation to the observed changes in spatial accessibility to these substances. These changes are an emerging policy, practice, and research issue that requires more monitoring to inform potential interventions.

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### Elective surgery in the time of COVID-19: a lesson learnt

Marzia Marcelli<sup>1</sup>, Massimiliano Angelucci<sup>2</sup>, Luca Provvidenti<sup>2</sup>, Giacinto Di Gianfilippo<sup>2</sup>, Alessandra Ferretti<sup>2</sup>, Antonella Morgante<sup>2</sup>, Marinella D'Innocenzo<sup>2</sup>, Anna Petti<sup>2</sup>, Assunta De Luca<sup>2</sup>

<sup>1</sup>ASL Rieti / Università degli studi dell'Aquila (scuola di specializzazione in Igiene e Medicina Preventiva), Italy, <sup>2</sup>ASL Rieti, Italy

**Background and Objective:** The COVID-19 pandemic has placed a significant strain on the Italian healthcare system, in terms of backlogs and deferred elective surgery. The Rieti Hospital (Italy) intends to report how the use of Health Technology Assessments helped to address the problem.

**Methods:** On the basis of analysis conducted, a possibility emerged of placing elective surgeries with the highest priority classes (A and B) and skin-to-skin time < 60 minutes in Emergency Operating Room (EOR), occupying up to a maximum of 50% of the available time.

The executable procedures identified were:

Urology: trans-urethral bladder resection, trans-urethral prostatic resection, urethral stent, nephrostomy; Vascular surgery: carotid stent; Breast Surgery: quadrantectomy, biopsies; General Surgery: inguinal and umbilical hernioplasty, cholecystectomies; Orthopaedics: removal of means of synthesis; Otolaryngology: micro-laryngoscopy, turbinoplasty, septoplasty.

The interventions identified were carried out exclusively by professionals selected

on the basis of their performances in 2018 and 2019.

In case of concomitant urgency, the activation of the second EOR was scheduled, in order to guarantee urgent surgical treatments in the required time.

Results: Despite a reduction in the hours of availability of the EORs (from 144 hours in 2019 to 72 hours in 2020 and 96 hours in 2021), the number of surgeries switched from 4811 in 2019 to 3879 in 2020 and 4342 in 2021, thus increasing the index obtained by comparing the number of interventions on the hours of availability of the EOR.

Conclusion: The rational use of the EOR contained the reduction of interventions determined by the trend of the SARS-CoV-2 pandemic, guaranteeing the execution of class A and B interventions within the times required by the legislation.

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### Impact of a benchmarking and feedback intervention on surgical site infections following hip arthroplasty and colon surgery procedures: an interrupted time series analysis

Federico Cussotto<sup>1</sup>, Alessandro Cornio<sup>1</sup>, Heba Elhadidy<sup>1</sup>, Giovanni Paladini<sup>1</sup>, Costanza Vicentini<sup>1</sup>, Carla Zotti<sup>1</sup>

<sup>1</sup>Department of Public Health and Pediatrics University of Turin "Via Santena 5 bis 10126 Torino" Italy

Background and Objective: Surgical site infections (SSIs) are monitored in Piedmont, a Northern Italian region, through a surveillance system based on a European Centre for Disease Prevention and Control protocol. A benchmarking and feedback intervention was implemented in 2019: each participating hospital received a yearly report summarizing local data in comparison to the regional benchmark, which was based on cumulative 5-year data, stratified by procedure type. Our aim was to evaluate the effect of the intervention on SSI rates.

Methods: We included data collected from 42 hospitals on procedures monitored from 2017 to 2021, classified according to National Healthcare Safety Network (NHSN) categories. The two most frequently monitored categories were considered: colon surgery (COLO) and hip arthroplasty (HPRO). Procedures were stratified into 2 groups by their Infection Risk Index (IRI, calculated according to NHSN methodology). Monthly SSI ratios were calculated, by pooling data according to procedure month. Segmented regression of an interrupted time series was modeled to assess the intervention's impact. Significance level was set at  $p < 0.05$ .

Results: We analysed 3962 low-IRI COLO procedures (2751 preintervention, 1211 post), 1995 high-IRI COLO procedures (1413 pre, 582 post) and 12686 low-IRI HPRO procedures (8081 pre, 4605 post); insufficient data was available in the high-IRI HPRO group due to the low number of cases. In all groups we identified a downward level change at the breakpoint and a subsequent upward change in trend; no result reached statistical significance. The largest effects were detected in the high-IRI COLO group: -11% in level ( $p = 0.094$ ,  $SE = 6.4\%$ ) and +0.29%/month in trend ( $p = 0.054$ ,  $SE = 0.15\%/month$ ).

Conclusions: Our analysis suggests that the intervention could be effective in decreasing SSI rates, particularly in the high-IRI COLO group, however further efforts should be targeted towards maintaining results. In particular, further attention should be aimed towards ensuring feedback reaches surgical and nursing staff.

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### Acute respiratory virus emergency department admissions in a tertiary care hospital in Central Italy and the relative impact on bed occupancy, January 2017-May 2022

Francesca Di Serafino<sup>1</sup>, Nunzio Zotti<sup>1</sup>, Luca Carmisciano<sup>2</sup>, Elena Lucaccini<sup>3</sup>, Giulia Gemignani<sup>3</sup>, Francesca Foltran<sup>3</sup>, Matteo Filippi<sup>3</sup>, Angelo Baggiani<sup>1</sup>, Andrea Porretta<sup>1</sup>, Laura Baglietto<sup>2</sup>, Michele Cristofano<sup>3</sup>, Caterina Rizzo<sup>1</sup>

<sup>1</sup>Department of Translational Research and New Technologies in Medicine and Surgery, University of Pisa, Pisa, Italy, <sup>2</sup>Department of Clinical and Experimental Medicine, University of Pisa, Pisa, Italy, <sup>3</sup>Azienda Ospedaliero-Universitaria Pisana Italy

Background and Objective: Acute Respiratory Infections (ARIs) have a relevant impact on public health in terms of prevalence and costs associated with the diseases. This concern highlighted the need to adopt accurate surveillance systems to respond to new emergencies and meet the demand for access to care. The objective of our work is to set up, at the Azienda Ospedaliero-Universitaria Pisana (AOUP), an automated syndromic surveillance for ARI.

Methods: The trend of the AOUP Emergency Department (ED) accesses from January 2017 to May 2022 was analyzed, using ICD9-CM disease codes that define syndromes associated with ARI (except SARS-CoV-2 infection codes). The data

obtained were analysed by week and by 6 age groups, as well as by outcome type, with a focus on inpatient ward admissions to define the impact on bed occupancy. Results: During the period, ARI admissions were 33,101 (annual average 5,520), resulting in 7,426 admissions (22.8%, annual average 1,163). A seasonal pattern is observed between week 42 of each year and the week 17 of the following year, that represent the winter season period. The reduction in ED accesses from week 10-2020 (from a weekly average of 144.3 to 78.2) is due to the and the public health measures implemented for the emergence of the COVID19 pandemic. Nevertheless, the average weekly admission rate was 30.8%, compared with 21.7% in 2017-2019. Analysis by age group showed a peak of accesses in the last weeks of 2021 for the <1 and 1-4 years old age group considered.

CONCLUSIONS: Data on ARI admissions provide useful information to direct health policies to identify indicators of next epidemic waves. By this way, we can act early in terms of emergency preparedness and response, preventing overloading of health facilities and ensuring the most appropriate and targeted access to care for the entire population.

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### Pilot study to evaluate the impact of respiratory syncytial virus in the community, in children under 5 and adults over 65

Beatrice Casini<sup>1</sup>, Tommaso Cosci<sup>2</sup>, Sara Bracaloni, Benedetta Tuvo<sup>2</sup>, Daniela Loconsole<sup>3</sup>, Maria Chironna<sup>3</sup>, Elena Pariani<sup>4</sup>, Laura Pellegrinelli<sup>4</sup>, Donatella Panatto<sup>5</sup>, Giancarlo Icardi<sup>5</sup>, Elisabetta Pandolfi<sup>6</sup>, Ileana Croci<sup>6</sup>, Mauro Pistello<sup>7</sup>, Alessandro Dini<sup>8</sup>, Caterina Rizzo<sup>7</sup>

<sup>1</sup>Department of Translational Research, N.T.M.S., University of Pisa Department of Translational Research, N.T.M.S., University of Pisa Via San Zeno, n. 37-39, 56127 Pisa Italy, <sup>2</sup>Department of Translational Research, N.T.M.S., University of Pisa Via San Zeno, n. 37-39, 56127 Pisa Italy, <sup>3</sup>Interdisciplinary Department of Medicine, University of Bari Italy, <sup>4</sup>Department of Biomedical Sciences for Health, University of Milan Italy, <sup>5</sup>Department of Health Sciences, University of Genoa Italy, <sup>6</sup>Bambino Gesù Children's Hospital, Rome Italy, <sup>7</sup>Department of Translational Research, N.T.M.S., University of Pisa Italy, <sup>8</sup>Azienda USL Toscana Nord Ovest Italy

Background: Respiratory syncytial virus (RSV) is the main cause of hospitalization for acute respiratory infection (ARI; WHO case definition) in children under 5 years and the third viral cause of hospital admission in over 65.

The main objective of this study is to evaluate the burden of RSV-related disease in the primary care setting, to support future prevention strategies. Secondary objectives are 1) to describe the epidemiological trend of ARIs, 2) to identify the predictive parameters of the clinical presentation severity, complications, socio-economic and healthcare impact.

Methods: As part of the RSVComNet project, in 2019/20 and 2021/22 winter seasons, in Lazio, Puglia, Liguria and Lombardia regions (representing 40% of the Italian population), children under 5 years with ARI were enrolled and subjected to a nasopharyngeal swab for the differential diagnosis of the main respiratory infectious agents. Parents of RSV-positive children completed a 14-day and 30-day follow-up questionnaire. In 2022/23, Tuscany will also participate in the study, also enrolling adults over 65.

RESULTS: In 2019/20 and 2021/22, 493 children were diagnosed with ARI and 187 (37.9%) were positive for RSV. The median disease duration was 9.5 days (IQR 7-14), with a median of 1 extra visit by their pediatrician (IQR: 1-2). 12 children (6.6%) were hospitalized (10 <1 years old) with a median stay of 5.5 days (IQR: 3-7). 176/183 (96.2%) received a drug prescription and 74 (42.1%) an antibiotic. RSV type B and the region of residence were significant predictors for increased healthcare utilization. Children with dyspnea had a significantly higher risk (30%) of a longer duration of illness. The 2022/23 results will be available in May 2023. CONCLUSIONS: The study highlights the importance of monitoring ARI cases in primary care, to implement prevention strategies and allow the reduction of the disease burden at a primary care and hospital level.

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### Food price trends during COVID-19 pandemic in Brazil

Giovanna Andrade<sup>1</sup>, Thais Caldeira<sup>2</sup>, Laís Amaral Mais<sup>3</sup>, Ana Martins<sup>1</sup>, Rafael Claro<sup>2</sup>

<sup>1</sup>Center for Epidemiological Research in Nutrition and Health, University of São Paulo (USP), Brazil, <sup>2</sup>Surveillance and Monitoring in Nutrition and Health Laboratory, Nutrition Department, Federal University of Minas Gerais (UFMG), Brazil, <sup>3</sup>Brazilian Institute for Consumer Defense (Idec), Brazil

The present study aims to analyze the trends in food price in Brazil in the recent past, with an emphasis on the period of the COVID-19 pandemic (2020 and March

2022) and to project price scenarios until 2025. To analyze trends in food price data from the Household Budget Survey and from the National System of Consumer Price Indexes were used to create a novel data set containing monthly prices (R\$/kg) for the foods and beverages most consumed in the country between January 2018 and March 2022. The 95 foods or beverages items included in the present study were divided according to the NOVA food classification into 4 groups: Unprocessed or minimally processed foods, Processed culinary ingredients, Processed foods, and Ultra-processed food. The mean price of each group and subgroup were estimated for each year of study and for the entire period. The monthly price of each group was then plotted to analyze changes in prices for the period from 2018 to 2022. Fractional polynomial models were used to synthesize price changes up to 2025. Results of the present study show that in Brazil unprocessed or minimally processed foods and processed culinary ingredients were less expensive than processed and ultra-processed foods. However, the analyses suggest the reversal of this price pattern. This change in the price trends initially predicted for Brazil seems to reflect the impact of the COVID-19 pandemic on the global economy. These results are worrying because the increase in the price of health foods exacerbates the food insecurity in Brazil. Additionally, this trend encourages even further the replacement of traditional meals for the consumption of unhealthy foods, increasing a health risk to the population.

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### Feasibility and validity of a semi-automated system for the surveillance of surgical site infections in an Italian acute healthcare setting

Alessandro Catalini<sup>1,2</sup>, Alberto Masiero<sup>1,2</sup>, Giorgia Acquaviva<sup>1,2</sup>, Vincenzo Montagna<sup>1,2</sup>, Francesca Diotallevi<sup>1,2</sup>, Pamela Barbadoro<sup>1,2</sup>

<sup>1</sup>Università Politecnica delle Marche, Ancona, Italy, <sup>2</sup>Department of Biomedical Sciences and Public Health, Università Politecnica delle Marche, Ancona, Italy

**Background and Objective:** Surveillance of surgical site infections (SSIs) is an essential component of infection prevention and control activities. The standard method is manual review of medical records, although time-consuming and requiring relevant resources. Technological progress allows the use of standardized, semi-automated systems. The purpose of this study is to evaluate validity and feasibility of a semi-automated surveillance for the detection of SSIs in an acute hospital setting and to quantify the workload reduction.

**Methods:** To assess SSIs probability, an algorithm based on surgical, microbiological and discharge datasets was designed to identify low-risk procedures (LRP) and high-risk procedures (HRP).

Its validity was tested on 1,138 surgical procedures performed in the University Hospital of Ancona in pre-COVID period, between October 1st and December 31st, 2019 and already manually reviewed.

We compared semi-automated algorithm performance to the manual routine surveillance by assessing sensitivity, specificity, positive and negative predictive values with 95% confidence intervals (CI). Since the algorithm requires that LRP are not manually reviewed, workload reduction was calculated as the percentage of LRP on the total number of procedures.

Stata 15 was used for data analysis.

**Results:** Among 81 HRP, 7 had already been identified as SSIs applying the manual method. Among the 1,057 LRP, only one had been identified as SSI. The sensitivity of the semi-automated method was 87.5% (CI 47.3-99.7); specificity was 93.5% (CI 91.8-94.8). Positive and negative predictive values were respectively 8.64% (CI 3.5-17) and 99.9% (CI 99.5-99.9). Workload reduction was 92.9% (CI 91.4-94.4).

**Conclusion:** These results are comparable to those of other studies evaluating the performance of algorithms for semi-automated surveillance. Given the workload reduction, our semi-automated surveillance turned out to be feasible in our setting. Validity of our method could be strengthened by applying it to other hospitals and broadly to the surveillance of other healthcare associated infections.

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### Frequency of provincial custodial involvement and its relationship with illicit drug poisoning events, mental illness and substance use disorder diagnoses in British Columbia, Canada

Roshni Desai<sup>1</sup>, Amanda Slaunwhite<sup>1</sup>, Kevin Hu<sup>2</sup>, Chloe Xavier<sup>1</sup>, Nelson Luk<sup>2</sup>, Pamela Young<sup>3</sup>, Glenn Young<sup>3</sup>, Chas Coutlee<sup>2</sup>, Patricka Keating<sup>2</sup>, Marnie Scow<sup>2</sup>, Mo Korchinski<sup>3</sup>, Heather Palis<sup>2</sup>

<sup>1</sup>BC Centre for Disease Control, Canada, <sup>2</sup>University of British Columbia,

<sup>3</sup>Unlocking the Gates Services Society

**Background:** The ongoing unregulated drug poisoning (overdose) public health

emergency in North America is the second leading cause of years of life lost in British Columbia (BC), Canada. There is growing interest in the intersections of overdose and the criminal legal system. The purpose of this analysis was to describe the frequency and composition of charges for people who have and have not had an illicit drug poisoning event.

**Methods:** Population-based health and corrections data were retrieved from a 20% random population sample of BC residents (N=878,246), and from people with healthcare records for drug poisoning (N=33,882). Charging data represented persons who spent at least one day in custody with a release date between January 1, 2016 - December 31, 2020. The total number of charges and the most common charges (i.e. drug-related, crimes against person, traffic, property, and other) were reported among people with 10+ charges in a calendar year, by year and overall.

**Results:** People with 10+ charges in a calendar year make up a very small proportion of the Reference Sample (<0.01%) (N=1044) and Overdose Cohort (<5%) (n=1652). Drug-related charges were uncommon. Charges for crimes against person were similar in the Overdose Cohort and Reference Sample, 17% and 20% of all charges, respectively. Property-related charges, which likely reflect survival crime, were the most common in both groups; however, the Overdose Cohort (52%) had a higher frequency than the Reference Sample (38%).

**Conclusions:** Few people who had an illicit drug poisoning event have been charged with an offense and fewer were charged 10+ times in a calendar year. In the context of growing media and public concern about public safety, efforts must focus on increasing access to social supports and reducing stigma for people with living experience of substance use, incarceration, and criminalization.

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### Assessment the capacity of whatman filter papers as support for storing stools for molecular diagnostic of soil-transmitted helminth infections

Cyrille Kamdem Nguemngang<sup>1</sup>, Pythagore Fogue Soubgwi<sup>2</sup>, Auvaker Tiofack Zebaze<sup>1</sup>, Estelle Mewamba Mezajou<sup>1</sup>, Edmond Tekeu Mengoue<sup>2</sup>, Hilaire Womeni<sup>3</sup>, Gustave Simo<sup>1</sup>

<sup>1</sup>University of Dschang, Molecular Parasitology and Entomology Unit, Department of Biochemistry, Faculty of Science, University of Dschang, PO Box 67, Dschang, Cameroon, <sup>2</sup>University of Dschang, <sup>3</sup>University of Dschang, "Unité de Recherche de Biochimie, des plantes Médicinales, des Sciences Alimentaires et Nutrition", University of Dschang, Dschang, Cameroon

**Background:** Storage of stool samples for molecular detection of soil-transmitted helminth (STH) species remains a challenge for the molecular diagnostic of STH infections. This study was designed to assess the capacity of whatman filter papers for the storage of stool samples for molecular detection of STH species.

**Methods:** Stool samples from school-aged children with and without eggs of soil-transmitted helminths as results of Kato-Katz were used. From each sample, 10, 20, 40 and 80 mg of stool were spread on 6 types of filter paper that were stored at room temperature for one to ten weeks. DNA was extracted from stored stool using a cetyltrimethylammonium bromide-based method. The amount of stool and appropriate filter paper to use for the storage of stool sample was determined by amplifying specific DNA fragment of *Ascaris lumbricoides*. The capacity of filter paper for short and long-term storage of stool was assessed by amplifying specific DNA fragment of STH.

**Results:** Amplification rates were significantly higher for 10 and 20 mg of stools compared to 40 and 80 mg. the whatman filter paper grade 2 yielded the highest amplification rate of 100%. For either *A. lumbricoides* or *Trichuris trichiura* or hookworm, the amplification rates of stored stools on this whatman filter paper were 100%. DNA fragments of *A. lumbricoides* and *T. trichiura* were detected in 5 (12.5%) and 9 (22.5%) stools without soil-transmitted helminth egg. From the first to 8th weeks, the amplification rates of different soil-transmitted helminth species remained constant at 100%. It decreased to 86.7% after 10 weeks of storage.

**Conclusions:** This study highlighted the capacity of whatman filter papers for long-term storage of stools for molecular diagnostic of STH. Storage of stool samples on filter paper is of great interest for the monitoring of STH control programs and for the post-elimination surveillance.

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### Improving public health surveillance systems for acute post-streptococcal glomerulonephritis in Far North Queensland, Australia

Letitia Graham<sup>1</sup>, Johanna Neville<sup>1</sup>, Ann Richards<sup>1</sup>, Valmay Fisher<sup>1</sup>, Caroline Taunton<sup>1</sup>, Allison Hemenstall<sup>1</sup>

**<sup>1</sup>Torres and Cape Hospital and Health Service, Australia**

**Background and Objective:** Acute post-streptococcal glomerulonephritis (APSGN) is an immune-mediated inflammatory disease of the kidneys that occurs approximately three weeks after a skin or throat infection with Group A Streptococcus. In Australia it is predominately a disease of socio-economic disadvantage with high rates in First Nations children. This disease is not currently notifiable within the Australian state of Queensland making it challenging to ensure an appropriate public health response to cases, identify outbreaks and monitor epidemiological trends. The aim of this abstract is to describe the results of a locally implemented ASPGN surveillance system.

**Methods:** In 2022, public health surveillance of APSGN in the Torres and Cape was augmented by a digital health alert system to which automatically notifies the public health team of suspected cases. APSGN cases in the one year following implementation were compared to annual case estimates from a retrospective, de-identified internal audit of electronic medical records between 2005 and 2021. Incidence rates were calculated and stratified by case definition (confirmed or probable cases) and location.

**Results:** Between 2005 and 2021 there were 172 reported APSGN cases across the Torres and Cape region (141 confirmed and 31 probable), suggested a mean of 10.1 cases per year. There have been seven outbreaks during the audit period. There were 15 cases identified across the region during the one-year following implementation of the APSGN digital health alert system (8 confirmed and 7 probable), with no outbreaks declared.

**Conclusion:** The extent to which these data suggest an increase in APSGN incidence across the region or an increase in case ascertainment is not clear. Although this simple surveillance system has improved the local public health response, mandating notification of APSGN under Queensland public health legislation will help raise the profile of this disease of disadvantage and stimulate better public health policy.

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### **Arboviruses and leptospirosis among non-malarial outpatients with acute febrile illness in areas affected by Cyclones Idai and Kenneth in Mozambique**

Oswaldo Inlamea<sup>1</sup>

<sup>1</sup>Instituto Nacional de Saúde - Mozambique, Instituto Nacional de Saúde, EN1, Bairro da Vila, Marracuene, Mozambique

The floods associated with the landfall of cyclones Idai and Kenneth in Mozambique between March and April 2019 had a major impact on the country's public health, and placed the affected population at risk for vector- and rodent-borne diseases. Aiming to improve the diagnostic capacity, yield information to guide public health responses, and assess the potential short-term effects of cyclones Idai and Kenneth on arboviruses and leptospirosis, we established a clinical and laboratory surveillance for non-malarial acute febrile illness in six health units located in different districts within the two provinces most affected by the cyclones. Patients were tested by qRT-PCR for dengue, Zika, and chikungunya viruses and by ELISA to detect nonstructural DENV protein 1 (NS1) and DENV, ZIKV, CHIKV, and Leptospira IgM antibodies. From April to September 2019, we enrolled 305 patients aged  $\geq 15$  years, of which 58.4% were women and the median age was 30 years. All patients were qRT-PCR negative for arboviruses. Three (1.0%) patients were positive by DENV NS1 ELISA, and one of them also had positive IgM against DENV and CHIKV. In addition, specific IgM antibodies against DENV, ZIKV, CHIKV, or Leptospira were found in the serum of 104 (34.1%) patients. Of them, 73 (23.9%) had evidence of a recent single infection, 19 (6.2%) had evidence of a recent infection by more than one arbovirus, and 12 (3.9%) had a dual recent infection by an arbovirus and Leptospira. Our results indicate that vector- and rodent-borne disease transmission occurred in all districts in the wake of cyclones Idai and Kenneth, including some regions of the country where cases had not been previously detected. Although the absence of baseline long-term surveillance data hampered assessing the impact of cyclones Idai and Kenneth on vector- and rodent-borne transmission, the investigation provided useful information for post-cyclone emergency response purposes.

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### **An equity-focused health impact assessment of the COVID-19 pandemic and associated response**

Fiona Haigh<sup>1</sup>, Esther Alloun<sup>2</sup>, Christopher Standen<sup>1</sup>, Miriam Olliek<sup>3</sup>, Marilyn Wise<sup>1</sup>

<sup>1</sup>University of New South Wales and Sydney Local Health District, Australia,

<sup>2</sup>University of New South Wales, Australia, <sup>3</sup>Sydney Local Health District,

**Australia**

**Background:** A local health district in Sydney, Australia undertook a concurrent, equity-focused health impact assessment (EFHIA) of the potential health equity impacts resulting from COVID-19 and associated responses. The EFHIA took as its starting point, the time at which the first evidence emerged that the COVID-19 virus had reached Australia, and focused on the health and health equity impacts of the virus and of the government and health responses (in particular) over the following two years.

**Methods:** Following standard HIA steps, the EFHIA focused on three areas: risks and consequences of COVID-19 infection, changes to health services and changes to work.

**Data collection involved:** developing a community profile; using local data analysing how the risks and consequences of COVID-19 infection varied across population groups within the area; 18 semi-structured interviews; five focus groups with a mix of health professionals and service users; five literature reviews; six evidence briefs/checks; and a grey literature and policy review. We triangulated, synthesised and critically assessed the evidence to describe health equity impacts. Impacts were characterised according to direction of impact, likelihood, severity, level, and timeframes of impact. Findings were reviewed and validated by topic specialists, participants and steering group, as well as experts on HIA and health equity.

**Results:** The EFHIA identified multiple health and health equity impacts arising from the pandemic and associated responses. This EFHIA report concludes with 22 equity-focussed recommendations directed at what worked well, what the health district needs to do more of and what to do differently to support health equity within the health district and more widely.

**Conclusion:** This case study demonstrates how utilising a concurrent HIA approach using evidence and data as it emerged to predict future health equity consequences can inform response and planning processes.

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### **Informing suicide prevention strategies through completed coronial files: an Irish example**

Katerina Kavalidou<sup>1</sup>, Anita Munnelly<sup>2</sup>, Gemma Cox<sup>3</sup>

<sup>1</sup>National Office for Suicide Prevention HSE and UCC "National Suicide Research Foundation WHO Collaborating Centre for Surveillance and Research in Suicide Prevention 4.28 Western Gateway Building University College Cork Cork, Ireland", <sup>2</sup>National Office for Suicide Prevention, <sup>3</sup>National Office for Suicide Prevention HSE Stewart's Hospital, Mill Lane, Palmerstown, Dublin 20 Ireland

**Background:** In Ireland, the assessment of whether a death is a suicide is determined by a coroner's inquest; it is based on legal guidance surrounding the weight of evidence that a person intended to take their life 'beyond reasonable doubt'. However, 'undetermined' deaths as well as deaths by intentional self-harm, viewed through the established methodology 'on the balance of probabilities' may help to minimise the underreporting of suicide. Thus, the Irish Probable Suicide Death Study (IPSDS), based on the balance of probabilities methodology, was developed. This is a collaborative project involving the HSE National Office for Suicide Prevention (NOSP), Irish coroners and the Health Research Board (HRB; a statutory agency under the aegis of the Department of Health).

**Objective:** To present: a) how to use death-investigation and administrative data collected as part of the coronial process, and b) the differences between those who received a suicide verdict by coroners in Ireland and those who did not.

**Methods:** Flow chart presentation of the development and process of the IPSDS methodology and backward multivariate logistic regression to identify the factors which distinguish between suicide and non-suicide coronial verdicts, were used. The probability for stepwise removal was set at 0.01 and odds ratio with 95% confidence intervals CIs are presented,

**Results:** The IPSDS presents information of 2,349 deaths by probable suicide for a four-year period from 2015 to 2018. The factors which distinguished between receiving a suicide verdict and a non-suicide verdict, were mainly: leaving a suicide note and lethality of the suicide method (hanging and shooting).

**Conclusions:** Reviewing Completed coronial files through a wider lens has considerable potential to enhance our understanding of deaths by probable suicide and support the development of effective suicide prevention interventions for the most vulnerable populations.

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### **Factors associated with tuberculosis preventive treatment incompleteness: a retrospective Cohort.**

Maciel Ethel<sup>1</sup>, Jose Silva<sup>2</sup>, João Cola<sup>3</sup>, Thiago Prado<sup>4</sup>, Kleydson Alves<sup>5</sup>, Anete

Trajman<sup>6</sup>, Jonathan Golub<sup>7</sup>, Richard Chaisson<sup>7</sup>, Ethel Maciel<sup>1</sup>

<sup>1</sup>Universidade Federal do Espírito Santo, Post-graduate Program in Saúde Coletiva Brazil, <sup>2</sup>Federal University of Rio de Janeiro, Brazil, <sup>3</sup>Universidade Federal Do Espírito Santo Brazil, <sup>4</sup>Universidade Federal do Espírito Santo Brazil, <sup>5</sup>Pan American Health Organization - Brazil Brazil, <sup>6</sup>Universidade Federal do Rio de Janeiro Brazil, <sup>7</sup>Johns Hopkins University United States

**Background:** Among Brazilian initiatives to scale up preventive treatment of tuberculosis (TPT) are the adoption of the 3HP regimen in 2021 and the implementation in 2018 of the TPT surveillance information system. Since then, among 76,000 TPT were notified, 63% completed. Recommended regimens in this period were 6H, 9H and 4R. The objective was to analyze the factors associated with TPT non-completion.

**Methods:** We analyzed the cohort of TPT notifications from 2018 to 2020. Individuals with current or past TB disease, deaths and transferred to another country were excluded. Robust variance Poisson regression model was used to verify the association of TPT non-completion with sociodemographic, clinical and epidemiological variables. Results of the multivariate analysis were interpreted as relative risk (RR) with a 95% confidence interval (95%CI).

**Results:** Out of 39,973 TPT notified in the study period, 8,534 (21.5%) were non-completed, of which 7,858 (92.08%) were loss to follow up. Age 15-60 (RR=1.27, 1.20-1.35), TPT with isoniazid (RR=1.40, 1.19-1.64) and black/mixed race (RR=1.17, 1.09-1.25) were associated with a higher risk of non68 completion. 69

**Conclusion:** Individuals in social and financial vulnerability such as 70 black/pardo race and young adults and longer TPT regimens are more likely to TPT incompletion.

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### Burden of road traffic crashes in the middle east and north africa: an ecological study

Karima Chaabna<sup>1</sup>, Sathyanarayanan Doraiswamy<sup>1</sup>, Ravinder Mamtani<sup>1</sup>, Sohaila Cheema<sup>1</sup>

<sup>1</sup>Institute for Population Health, Weill Cornell Medicine - Qatar

**Background and objective:** Road traffic injuries (RTIs) and deaths constitute a serious preventable global public health problem. Our objective is to analyze time trends of age-standardized mortality rates and disability-adjusted life years (DALYs) due to RTIs in 23 Middle East and North Africa (MENA) countries; and to assess the correlation between countries' implementation of best practices for road safety recommended by the World Health Organization, their income-level, and RTI burden.

**Methods:** Time trend analysis over 17 years (2000–2016) was conducted using Joinpoint regression. An overall score was computed for each country to assess the implementation of best practices for road safety.

**Results:** Mortality significantly decreased ( $p$ -values<0.05) in Qatar, Oman, Kuwait, Morocco, Iran, Lebanon, Tunisia, and Jordan. In most MENA countries, DALYs increased; however, they significantly decreased in Iran. Overall, the computed score varied widely among the MENA countries. In 2016, no correlation was identified between the computed overall score and mortality and DALYs. Furthermore, the country-income level was not associated with RTI mortality or the computed overall score.

**Conclusion:** Countries in the MENA region are at varying levels of success in reducing the burden of RTIs. During this Decade of Action for Road Safety 2021–2030, MENA countries can achieve optimal road safety by implementing road safety measures that are customized for the local context such as law enforcement and public education. Other focus areas for improving road safety in the region are building capacity in sustainable safety management and leadership, improving vehicle standards, and addressing gaps in areas such as child restraint use.

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### Difficulties in accessing health services and the avoidance of medical care during covid-19 pandemic: The experience on italian the elderly population

Benedetta Contoli<sup>1</sup>, Valentina Minardi<sup>1</sup>, Maria Masocco<sup>1</sup>, Valentina Possenti<sup>1</sup>, Rosaria Gallo<sup>2</sup>

<sup>1</sup>National Institute of health, Rome Italy, <sup>2</sup>Primary Healthcare Unit, Health District 9, Local Health Unit Roma 2, 00159 Rome, Italy

**Background and objective:** Aging represents a relevant issue in Italy and it is strongly associated with the growth of noncommunicable diseases. Data from PASSI d'Argento (PdA) 2016-2021, an ongoing national surveillance system of Italian aged 65+, are used to detect the association between accessing health

services and the WHO 25x25 strategies' risk factors (at-risk alcohol consumption, sedentary behavior, current tobacco use, raised blood pressure, diabetes and obesity) with three health outcomes, hospitalization and comorbidity. The effect of COVID-19 emergency on accessing to health services were analyzed.

**Methods:** Among the several health-related aspects, access to basic healthcare services and the avoidance to medical care during pandemic are investigated by PdA using a sample randomly selected from the local health unit (LHU) list of beneficiaries of health services, stratified by sex and age. The association between outcomes and behavioral risk factor is presented in terms of the adjusted prevalence ratio (aPR).

**Results:** Elderly hospitalized at least once for 2+ days in the last year had greater risk to have difficulties in accessing health services, whereas the model included health conditions such as obesity (aPR = 1.95 95% CI 1.75-2.17), smoking (aPR = 1.95 95% CI 1.76-2.16), alcohol use (aPR = 1.93 95% CI 1.73-2.14), hypertension (aPR = 1.92 95% CI 1.73-2.13) and diabetes (aPR = 1.91 95% CI 1.73-2.12). During pandemic 40% of elderly have foregone a medical care. Being female (aPR 1.31 95% CI 1.04-1.67), having a high level of education (aPR 1.35 95% CI 1.02-1.79), and many economic difficulties (aPR 2.64 95% CI 1.74-4.02) were associated with higher avoidance due to service disruption.

**Conclusion:** Living environment barriers which prevent access to care among elderly and delay of care during the pandemic may impact morbidity and health outcomes in the long term which are important to monitor with PdA surveillance system

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### Associations between not performing in the recommended timeframe cervical, breast and colorectal cancer screening and socioeconomic characteristics and behavioural risk factors: data from the italian passi nationwide surveillance

Daniela Marotta<sup>1</sup>, Valentina Minardi<sup>2</sup>, Giuliano Carrozzi<sup>3</sup>, Letizia Sampaolo<sup>4</sup>, Massimo Trinito<sup>5</sup>, Benedetta Contoli<sup>2</sup>, Valentina Possenti<sup>2</sup>, Maria Masocco<sup>2</sup>, Valentina Pettinicchio<sup>5</sup>

<sup>1</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome, Rome, Italy, <sup>2</sup>National Centre for Disease Prevention and Health Promotion, Istituto Superiore di Sanità, Rome, Italy, <sup>3</sup>Epidemiology Unit, AUSL of Modena, Modena, Italy, <sup>4</sup>Epidemiology Unit, AUSL of Modena, Strada Martiniana, 21, 41126 Modena, Italy, <sup>5</sup>Prevention Department, Asl Roma 2, Italy, Italy

Prevention and health promotion are strictly linked to the health literacy of population and to the theme of equity and social determinants. The aim of this study is to assess the associations between socioeconomic determinants and behavioural risk factors and cervical, breast and colorectal cancer screening non-execution.

A representative sample of the adult population residing in Italy was interviewed by the PASSI surveillance (19,774 women aged 50-69 years, 38,138 women aged 25-64 years and 34,593 people aged 50-69 years about breast, cervical and colorectal cancer screening respectively) in 2017-2019. The associations between non-execution of cancer screening in the recommended timeframe and socioeconomic characteristics were estimated using logistic regression models. Prevalence of not performing screening tests within the timeframe was calculated according to the presence/absence of behavioural risk factors. All percentages report 95% confidence intervals (95% IC).

Screening non-execution was 24.9% (24.2-25.7 95% IC), 20.1% (19.6-20.6 95% IC), and 52.3% (51.7-52.9 95% IC) for breast, cervical and colorectal cancer, respectively. In the three regression models, those who had the lowest educational level, many economic difficulties, foreign citizenship and those who lived in the southern Italy were significantly associated with no performing screening tests in the recommended timeframe. For all cancer screening, among those who had never performed a test, less than 10% had high-risk drinking behaviour, more than 20% was smokers and almost 50% had insufficient physical activity.

In conclusion, not performing screening tests within the timeframe is associated with unfavourable socioeconomic characteristics and unhealthy behaviours that are also risk factors for breast and colorectal cancer incidence. Our data agree with previous long-standing findings, showing that more interventions have to be done in order to improve health promotion and to construct a stronger culture of prevention including the development of a comprehensive and global approach.

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### Antibiotic use in surgical wards: how long does prophylaxis last?

Corinna Fortunato<sup>1</sup>, Davide Rinaldini<sup>1</sup>, Giulia Paolorossi<sup>1</sup>, Jacopo Dolcini<sup>1</sup>,

Pamela Barbadoro<sup>1</sup>

<sup>1</sup>Department of Biomedical Science and Public Health, Università Politecnica delle Marche, Ancona, Italy

**Background and objective:** Antibiotic resistance has been identified by the European Center for Disease Prevention and Control (ECDC) as a public health emergency and by the World Health Organization in 2019 as one of the ten threats to global health. The aim of our research was to assess the use of antibiotics in surgical wards.

**Methods:** The study was conducted in November 2022 in the Azienda Ospedaliera Universitaria delle Marche, according to the protocol proposed by the ECDC (PPS3). All patients admitted to the wards at or before 8 a.m. and not discharged at the time of the survey have been included. For the surgical area all following departments have been included: Cardiac Surgery, Neurosurgery, Otorhinolaryngology, Breast Surgery, Transplant Surgery, Maxillofacial Surgery, Hand Surgery, Thoracic Surgery, Plastic Surgery, Vascular Surgery, General and Emergency Surgery, Orthopedics, Urology, Gynecology and Pediatric Surgery.

**Results:** Of the 239 patients included, 53.6% were females and 46.4% males. The 60.7% (N=145) of the total, had already undergone invasive surgery and 45.2% (N=108) were taking antibiotics. The most commonly used antibiotics were cefazolin (25.4%, N=34), amoxicillin/clavulanic acid (13.4%, N=18) and piperacillin/tazobactam (11.9%, N=16). Among the patients on antibiotic therapy, 22.2% (N=24) were being treated for a hospital acquired infection, 11.1% (N=12) for a community infection, 11.1% (N=12) for medical prophylaxis and 55.6% (N=60) for surgical prophylaxis; in 58.3% (N=35) of these patients, prophylaxis had been prolonged for more than one day.

**Conclusions:** Overall, the significant use of antibiotics is consistent, as 45.2% (N=108) of patients were taking at least one antibiotic at the time of the survey. Although surgical prophylaxis depends on the type of surgery, given the high percentage of prophylaxis lasting for more than one day, we can conclude that further development is necessary to implement additional strategies to promote surgical antibiotic stewardship at hospitals.

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### Developing a core outcome set for patient safety in perioperative care (SAFEST project)

Ana Nunes<sup>1</sup>, Andreia Leite<sup>2</sup>, José Teixeira<sup>3</sup>, Margarida Paixão<sup>3</sup>, Willemijn Schäfer<sup>4</sup>, Claudia Valli<sup>5</sup>, Ismael Martinez-Nicolas<sup>6</sup>, Daniel Abelenda<sup>7</sup>, Daniel Arnal-Velasco<sup>8</sup>, Anita Heideveld-Chevalking<sup>9</sup>, Yvette Emond<sup>10</sup>, Kaja Pölluste<sup>11</sup>, Carola Orrego<sup>5</sup>, Paulo Sousa<sup>12</sup>

<sup>1</sup>NOVA National School of Public Health, NOVA University Lisbon NOVA National School of Public Health, NOVA University Lisbon, Lisbon, Portugal.,

<sup>2</sup>NOVA National School of Public Health, NOVA University Lisbon., <sup>3</sup>NOVA National School of Public Health, NOVA University Lisbon NOVA National School of Public Health, NOVA University Lisbon, Lisbon, Portugal,

<sup>4</sup>Netherlands Institute for Health Services Research (Nivel), <sup>5</sup>Avedis Donabedian Research Institute Avedis Donabedian Universitat Autònoma de Barcelona Institute, Barcelona, Spain. Spain, <sup>6</sup>Sistema Español de

Notificación en Seguridad en Anestesia y Reanimación (SENSAR) SENSAR, Hospital Universitario Fundación Alcorcon, Madrid, Spain. National Institute of Public Health, Cuernavaca, Mexico. Catholic University of Murcia (UCAM), Guadalupe, Murcia, Spain., <sup>7</sup>Avedis Donabedian Research Institute Avedis Donabedian Universitat Autònoma de Barcelona Institute, Barcelona, Spain; University Pompeu Fabra, Barcelona, Spain. Spain, <sup>8</sup>Anaesthesia and Reanimation Unit, Hospital Universitario Fundación Alcorcon. Sistema Español de Notificación en Seguridad en Anestesia y Reanimación

(SENSAR) SENSAR, Hospital Universitario Fundación Alcorcon, Madrid, Spain. Spain, <sup>9</sup>Department of Operating Theatres, Radboud University Medical Center Netherlands, <sup>10</sup>Scientific Center for Quality of Healthcare (IQ healthcare), Radboud Institute for Health Sciences, Radboud University Medical Center Netherlands, <sup>11</sup>Institute of Clinical Medicine of the University of Tartu Estonia, <sup>12</sup>NOVA National School of Public Health, NOVA University Lisbon NOVA National School of Public Health, Public Health Research Centre, CISP, NOVA University Lisbon, Lisbon, Portugal.

**Background and objective:** Eight to 12% of patients admitted to hospitals in the European Union (EU) experience adverse events. Surgical-related adverse effects are among the most common in-hospital adverse events, with most surgical errors occurring outside the operating room. Although no set of outcomes has yet been defined for a comprehensive analysis of this phenomenon, it is crucial to standardise a minimum set of outcomes, a Core Outcome Set (COS), to allow for benchmarking across EU countries. This study aims to develop a relevant and feasible COS for patient safety in perioperative care, including patient-relevant

data.

**Methods:** We will follow a multimethod approach based on COS-STAD recommendations. First, an initial list of outcomes (ILO) will be developed by conducting an umbrella review of outcomes on patient safety in perioperative care in surgical adult patients. Next, this umbrella review will be complemented by outcomes identified in a systematic review of Clinical Practice Guidelines and an umbrella review of non-clinical interventions to improve perioperative patient safety. Then, the ILO will be prioritised by healthcare professionals and patient representatives according to the importance and feasibility of each outcome in a two-round eDelphi process by April 2023. The final list of outcomes (FLO) will be defined in a consensus conference by the same stakeholders.

**Results:** As this study is still undergoing, the results are not yet available. The FLO will be presented in a summary of findings table, containing, for each of the up to 50 prioritised outcomes, the outcome name, definition, and domain.

**Conclusion:** This COS will contribute to improving the monitoring and evaluation of patient safety practices in perioperative care and, thus, the quality of care and healthcare decision-making. Additionally, this COS will help standardise outcome reporting in perioperative patient safety and facilitate the comparison of data across studies.

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### Alert Microorganisms Procedure: Surveillance, Monitoring And Prevention Of Health Care Associated Infections

Riccardo Giorgio<sup>1</sup>, Matilde Perillo<sup>2</sup>, Biagio Santella<sup>3</sup>, Grazia Cioffi<sup>3</sup>, Francesco

De Caro<sup>4</sup>, Gianluigi Franci<sup>1</sup>, Anna De Chiara<sup>1</sup>, Domenico Fornino<sup>1</sup>, Luigi Fortino<sup>1</sup>, Claudio Giordano<sup>1</sup>, Elisa Palombo<sup>1</sup>, Domenico Pecora<sup>1</sup>, Emanuela Santoro<sup>1</sup>, Giuliana Tremiteira<sup>3</sup>, Mario Capunzo<sup>4</sup>, Giovanni Boccia<sup>4</sup>

<sup>1</sup>Department of Medicine, Surgery and Dentistry "Scuola Medica Salernitana", University of Salerno, 84081 Baronissi, Italy, <sup>2</sup>Department of Medicine, Surgery and Dentistry "Scuola Medica Salernitana", University of Salerno, 84081 Baronissi, Italy, <sup>3</sup>A.O.U. San Giovanni di Dio e Ruggi D'Aragona, Largo Città di Ippocrate, 84131 Salerno, Italy, <sup>4</sup>Department of Medicine, Surgery and Dentistry "Scuola Medica Salernitana", University of Salerno, 84081 Baronissi, Italy; A.O.U. San Giovanni di Dio e Ruggi D'Aragona, Largo Città di Ippocrate, 84131 Salerno, Italy

**Background and objective:** Health care-associated infections (HCAIs) are infections developed in a hospital or other health care facility, that first appear 48 hours or more after hospital admission, or within 30 days after having received health care. It's estimated that among all hospitalized patients, about 7% for high-income countries and about 15% for low-middle income countries contract a HCAI. Among the main causes of HCAIs there are the so-called Alert Microorganisms, intended as different species with a high probability of diffusion in hospital settings, often combined with a problematic therapeutic approach or antibiotic resistance. The objective of our study was to describe the protocol applied in the setting of AOU "San Giovanni di Dio e Ruggi D'Aragona" of Salerno in order to evaluate its efficiency in reducing cases of infections.

**Methods:** Protocol "Alert Microorganisms Procedure: Surveillance, Monitoring And Prevention Of Health Care Associated Infections", applied in AOU "San Giovanni di Dio e Ruggi D'Aragona" of Salerno; Alert Microorganisms detection form, filled by the doctor and/or the head nurse of the interested Department; HCAI Surveillance evaluation form, filled by the HCAI-supervising doctor, in order to evaluate the progression and/or new cases of contamination/infection.

**Results:** Gram-negative and fungi were the most common identified pathogens. Patients have been isolated in a single room and treated with personal-use devices and specific therapy. When single room was not available, patients' bed were placed 1,5m away from other patients, even with screens or dividers

**Conclusion:** The Surveillance of Alert Microorganisms allowed us to define protocols to manage and monitor HCAIs and identify areas that need to be improved. The continuous and correct application of the protocol may lead in the future to a significant reduction of the risk for patients to contract HCAIs

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### The association between smoking and the development of diabetes type 2 - results from the Germany burden of disease study

Elena von der Lippe<sup>1</sup>, Dietrich Plass<sup>2</sup>, Michael Porst<sup>1</sup>, Annelene Wengler<sup>1</sup>, Janko Leddin<sup>3</sup>, Aline Anton<sup>1</sup>, Alexander Rommel<sup>1</sup>

<sup>1</sup>Robert Koch Institute Germany, <sup>2</sup>Germany Environment Agency, <sup>3</sup>Koch Institute

**Introduction:** To better plan public health interventions, information on which

risk factors contribute most to the burden of disease is needed. The prevalence of diabetes type 2 (DT2) in Germany increased in the last years and causes a substantial disease burden. The aim of the study is to quantify the association between a set of risk factors (smoking, high body-mass index (BMI), diet low in fruits, risk alcohol consumption, high fasting plasma glucose and ambient particulate matter pollution) and the burden of DT2 in the German population.

**Methods:** To determine the risk-associated share of each risk factor on the burden of DT2, the population attributable fraction (PAF) is estimated using information on the relative risks and the distribution of the exposed population. The PAF is then applied to the total disease burden of DT2 to quantify the proportion of the DT2 burden that can be attributed to each single risk factor. To account for possible interactions of risk factors, a combined PAF for all risk factors is calculated using the multiplicative adjustment.

**Results:** The preliminary results show that more than 50 % of the burden due to DT2 is attributable to avoidable risk factors. In the younger age groups this share is higher and in the older population significantly lower. The highest share of the attributable burden is assigned to high BMI, followed by high fasting plasma glucose and smoking. The affect of risk alcohol consumption shows somewhat controversial picture.

**Conclusion:** The results reveal that a substantially high share of the burden due to DT2 is caused by modifiable risk factors. Appropriate interventions are needed aiming at reducing the high BMI, smoking and high fasting plasma glucose in the population. Improving the air pollution and the diet habits of people would be positively reflected in the burden due to DT2.

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### Assessment of sars cov-2 genomic surveillance in Tunisia, January 2021 to february 2022

Arwa Neffati<sup>1</sup>, Mouna Safer<sup>1</sup>, Hajer Letaief<sup>2</sup>, Aicha Hechaichi<sup>1</sup>, Sonia Dhaouadi<sup>1</sup>, Nissaf Alaya<sup>2</sup>

<sup>1</sup>National observatory of new and emerging diseases Tunisia, <sup>2</sup>National observatory of new and emerging diseases

**Background:** Tunisia SARS-CoV-2 genomic surveillance strategy (SARS-CoV-2 GSS) is based on two approaches: randomized sampling and targeted sampling focusing on specific subsets of cases associated with public health risks.

**Objective:** To evaluate the implementation of the SARS-CoV-2 GSS in accordance with the national recommendations and guidelines.

**Methodology:** We initially performed a descriptive study to describe the components and operation of the strategy and to analyze data transmitted to the National observatory of new and emerging diseases from January 2021 to February 2022. An internal audit assessing the compliance to the national recommendations and guidelines was conducted covering 12 requirements related to sampling, data collection and analysis, notification, usefulness and ethical considerations.

**Results:** Among a total of 4819 samples only 4278 (88,8%) were sequenced with 3648 (80,92%) were classified VOC : Alpha 40,24%, Beta 0,24 %, Gamma 0,03%, Delta 45,26%, and Omicron 14,19%. The Alpha variant was already dominant from the ISO week 3-2021 to ISO week 25-2021. The Delta variant was predominant from the ISO week 26-2021 to the ISO week 2-2022 and the Omicron from the ISO week 3-2022 to the ISO week 6-2022. The levels of compliance were considered as 'not met' for 7 components; as 'partially met' for 4, and 'fully met' for one. The usefulness of the result of genomic surveillance is considered very low since the results are communicated after three weeks from the date of the sample.

**Conclusion:** Although the SARS-CoV-2 GSS in Tunisia has a relative advantage to draw up the profile and the dates of circulation of VOCs, the strategy suffers from several limitations related to the low level of compliance and delay to identify VOCs. This evaluation offered a trigger to revise the current strategy and enhance national capacities for early detection and rapid response to new VOCs.

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### Monkeypox's management in the lombardy region: data analysis and preparedness for future outbreaks

Sudwaric Sharma<sup>1</sup>, Riccardo Vecchio<sup>2</sup>, Sara Piccinelli<sup>1</sup>, Giovanni Cicconi<sup>1</sup>, Roberta Lattanzio<sup>1</sup>, Chiara Marrocu<sup>1</sup>, Gaia Ferraguzzi<sup>1</sup>, Federica Attanasi<sup>3</sup>, Michela Viscardi<sup>3</sup>, Silvana Castaldi<sup>1</sup>, Catia Borriello<sup>3</sup>, Danilo Cereda<sup>3</sup>

<sup>1</sup>Department of Biomedical Sciences for Health, University of Milan Italy,

<sup>2</sup>Department of Public Health, Experimental and Forensic Medicine, University of Pavia, <sup>3</sup>DG Welfare, Lombardy Region Italy

**Background and objective:** Monkeypox (MX) is a zoonotic emerging disease caused by the Monkeypox virus (MPXV). Cases of MPX have been reported in several states including Italy, mainly among men having sex with men (MSM).

Lombardy Region has immediately introduced a surveillance program to describe the outbreak's epidemiology and support control measures. This study aims to analyze what happened in order to manage the next season at best.

**Methods:** The surveillance system comes into effect from physician reporting based on typical symptoms and suggestive history. This leads to a blood sample test managed by the two regional reference centers. In case of positivity, the quarantine of the patient and his close contacts is arranged. Depending on the clinical severity, the patient can be treated at home or hospitalized. Smallpox vaccine can be considered for the transgender and GBMSM population (gay, bisexual, and MSM).

**Results:** As of 05/12/2022, the confirmed cases are 386: 381 males and 5 females, average age 38 years. 95 cases are caused by a foreign infection and 265 cases are reported by Milan's local health authority. The symptom picture shows that: - 360 patients have rash; - 215 patients have hyperpyrexia; - 168 patients have lymphadenopathy. Time trend and epidemiological link highlight that peak periods correspond to two major event: Maspalomas and Milan's 2022 gay pride.

**Conclusion:** Data analysis shows that the disease is linked to some risky behavior. It will be necessary to take action by informing communities at risk (GBMSM and transgender) and by ensuring the regional healthcare system's readiness. Lastly, an adequate vaccine campaign will have to be organized in advance for the concerned population.

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### Spain's compliance with the dublin declaration on partnership to fight hiv/aids

Rafael Gómez-Coronado<sup>1</sup>, Oriana Ramírez<sup>2</sup>

<sup>1</sup>San Carlos Clinic Hospital Calle del Prof Martín Lagos, S/N, 28040 Madrid Spain, <sup>2</sup>Ministry of Health

**Background and objectives:** HIV/AIDS remains a major public health problem. The Dublin Declaration on the Partnership to Fight HIV/AIDS in Europe and Central Asia and its annual questionnaire monitor the progress of the epidemic. The primary objective is to analyse to what extent Spain complies with the declaration from 2009 to 2022. The secondary objectives are: \* describe how the information demanded has changed; \* assess the completeness and quality of Spain's submission; \* describe trends in the HIV epidemiology, prevention and treatment strategies; \* describe Spain's compliance with the UNAIDS Global Goals.

**Methods:** Secondary data from the questionnaire was used. This data was grouped into 6 categories with a total of 19 indicators. These were the: \* number and type of response indicators; \* completion rate by year, category and key population; \* calculation methodology used: a descriptive analysis, longitudinal analysis and/or a mixed methods analysis was carried out per indicator, whichever fit the data. \* Continuum of care for people living with HIV (PLHIV) in Spain compared to UNAIDS targets.

**Results:** The information required has become increasingly complex and quantitative, requiring more sophisticated information systems. Consequently, the completion rate declined throughout the period 2009-2018, especially when more quantitative questions were introduced. Recently, completion rate has recovered as new information systems have been implemented. The COVID-19 pandemic had an impact on HIV services, resources and monitoring. The current system provides limited information about stigmatized key populations such as sex workers, migrants and transgender people. Improvement is needed in the implementation of PrEP as well as in continuum of care results for some key populations.

**Conclusion:** Spain is committed to monitoring the DD and the global HIV Goals, but there is still a long way to go.

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### Comparing estimates of intimate-partner violence against women across different data sources in Brazil

Caroline Stein<sup>1</sup>, Caroline Stein<sup>1</sup>, Carolina Coll<sup>2</sup>, Jack Cagney<sup>1</sup>, Cory Spencer<sup>1</sup>, Emmanuela Gakidou<sup>1</sup>

<sup>1</sup>Institute for health metrics and evaluation/university of washington population Health Building/Hans Rosling Center 3980 15th Ave. NE, Seattle, WA 98195 USA UW Campus Box #351615 United States, <sup>2</sup>Center for Epidemiological Research/Universidade Federal de Pelotas | UFPEL Center for Epidemiological Research Rua Marechal Deodoro, 1160 - 3° Piso Bairro Centro - Pelotas, RS Cep: 96020-220 - Caixa Postal 464 Tel/fax +55 (53) 3284 - 1300 Brazil

**Background and objective:** Intimate partner violence (ipv) is a global public health problem. Initial work suggests that ipv prevalence estimates vary by the type of

data used. This study aims to evaluate and compare ipv estimates from three national data sources in Brazil.

**Methods:** We compare estimates of ipv for 2019 from three data sources (violence and accident surveillance system-viva/sinan, national health survey-pns, and data senado research-dsr). We explored the similarities and differences among data sources. Then we estimated the proportion of total cases and prevalence by age group (16-29, 30-39, 40-49, 50-59, and 60+) and type of violence (physical, psychological, sexual) in the last 12 months.

**Results:** The data show the largest differences for the 16-29 age group: for physical ipv, viva/sinan had 43% proportion of total cases, and dsr and pns had 35% and 33%, respectively. For psychological ipv, 38% of total cases were in the 16-29 age group for viva/sinan, 27% for pns, and 32% for dsr. Other age groups were more similar across data sources, and the pattern for sexual ipv differed mainly for 30-39 year olds. Population prevalence estimates varied across all data sources. Physical ipv prevalence was higher in the 16-29 age group, ranging from 4% in the pns to 11% in dsr. Psychological ipv also showed large prevalence differences between pns (9%) and dsr (29%) for the 16-29 age group. Ipv prevalence estimates from viva/sinan were lowest across all age groups.

**Conclusion:** Comparing three national data sources showed differences in reporting ipv. This could be due to differences in questionnaires, privacy during the interview, stigma and safety concerns associated with reporting experiences of violence. Understanding the differences across types of data sources and survey instruments is critical to improving the measurement of ipv in Brazil and around the world.

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### Data completeness of medical records of patients with Hypertension and Diabetes in primary health care centers, Nabeul, Tunisia 2019

Hejer Letaief<sup>1</sup>, Fatma Ben Youssef<sup>1</sup>, Mouna Safer<sup>1</sup>, Sonia Dhaouadi<sup>1</sup>, Aicha Hechaichi<sup>1</sup>, Emna Mziou<sup>1</sup>, Sondes Derouiche<sup>1</sup>, Souha Bougategf<sup>1</sup>, Leila Bouabid<sup>1</sup>, Nissaf Bouafif ép Ben Alaya<sup>2</sup>

<sup>1</sup>National observatory of new and emerging diseases, Tunisia, <sup>2</sup>T-Field epidemiology training program, Tunisia

The National program for chronic disease started in Tunisia in 1993. It aimed to ensure an effective and standardized management of these chronic diseases, in primary health care centers, based on standardized guidelines and structured medical records.

**Aim:** To assess the data completeness of the structured medical records of hypertension and diabetes patients in primary health care centers of the governorate of Nabeul (Tunisia)

**Methodology:** Our evaluative study enrolled medical records of chronic disease patients, followed for at least one year in the primary care centers of the governorate of Nabeul. The data of the 10 items regarding the first medical visit were assessed: patient identification, disease classification; personnel medical history, family medical history, disease history, signs and symptoms, initial physical examination, Cardiovascular risk evaluation, dietary and nutritional behavior, and the final medical **Conclusions:** The completeness of data was measured considering if a patients' record contains all desired types of data in the different items. In each primary health care center, 15 records have been assessed.

**Results:** In total, 23 primary health care centers have been enrolled and 345 medical records have been assessed. Data for patient's identification (name, surname, gender) was available in 92.2% of medical records. Availability of data for disease classification was 81.8%, personnel medical history 66.5%, Family medical history 63.3%, Signs and symptoms 41.3%, Initial Physical examination 52.6%. Data regarding Cardio-vascular risk evaluation and the **Conclusions:** of the initial medical visit were missing respectively for 78.4% and 63% of medical records.

**Conclusions:** We found that the completeness of data in medical records was not satisfying. Assessment of the data quality is important not only for the patients but also for researchers and policymakers. Thus, sensibilization, medical record simplification and an evaluation of the national program is important at this step.

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### Instruments for surveillance and monitoring physical activity among the Brazilian population: a scoping review

Valter Filho<sup>1</sup>, Rafael Costa<sup>2</sup>, Marcus Lopes<sup>3</sup>, Bruno Oliveira<sup>3</sup>, Lúis Malheiros<sup>3</sup>, Gabrielli Mello<sup>2</sup>, Kelly Silva<sup>2</sup>

<sup>1</sup>Ceará State University, Brazil, <sup>2</sup>Research Center for Physical Activity and Health, Department of Physical Education, Federal University of Santa

Catarina, Brazil, <sup>3</sup>Department of Physical Education, Research Center for Physical Activity and Health, Federal University of Santa Catarina, Brazil

**Background and Objective:** Understanding which and how instruments have been used to measure physical activity (PA) in different population groups (i.e., children, adolescents, adults, and older adults) in Brazil is a preliminary step for an effective national monitoring system. This review aimed to map the instruments of PA applied to the Brazilian population. **Methods:** A scoping review was conducted in July 2020 in six databases (Web of Science, MEDLINE/PubMed, LILACS, PsycInfo, Scopus, and SPORTDiscus). The selection criteria were: original articles published up to 2020 in English, Portuguese, or Spanish languages; studies that included data from the general Brazilian population using PA questionnaires. Extracted information included methodological aspects, validation, and feasibility of the instruments. Independent peers performed all processes. Data were summarized according to age group (children: <12 years-old; adolescents: 13–17 years-old; adults: 18–64 years-old; and older adults: 65+ years-old).

**Results:** A total of 9,177 were identified, and 765 articles met the inclusion criteria. They represented 390 different studies. A total of 17 (4.3%) studies were nationwide surveys, and 47 (12%) studies included users from the national healthcare system. Thirty-eight distinct instruments were identified. The "PA Questionnaire (PAQ-C/A)" was the most frequent in children (9/33), while the "International PA Questionnaire (IPAQ)" was the most frequent in adolescents (26/81), adults (152/189), and older adults (59/85). Information on reliability and validity varied largely according to the instrument and age group. **Conclusions:** This review showed that a large number of distinct instruments on PA have been used in the Brazilian population, and a small part of the PA instruments has been used in the national health system. This evidence supports a call for the development and validation of instruments on PA behavior in different age groups as part of the Brazilian health system.

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### Detection of bacillus anthracis rods in animal and human specimens, Uganda 2015-2020

Michael Omodo<sup>1</sup>, Jaume Gardella<sup>2</sup>, Michael Omodo<sup>1</sup>, Musa Ssekamate<sup>3</sup>, Jean Gonzalez<sup>4</sup>

<sup>1</sup>Disease control and Environmental Sciences, Department of disease control & Environmental sciences, "Kajjansi, Wakiso District, Entebbe road", Uganda, <sup>2</sup>Department of Animal Health and Anatomy, Faculty of Veterinary Medicine, Universitat Autònoma de Barcelona, 08193 Bellaterra, Spain, <sup>3</sup>Department of Animal Health & Anatomy, Barcelona Spain, Spain, <sup>4</sup>National One Health Platform, <sup>4</sup>Center of Excellence for Emerging & Zoonotic Animal Disease, CEEZAD, Kansas State University, Georgetown University, Kansas, USA, Public Health, USA, US Minor Outlying Isles

**Background and Objective:** Anthrax, caused by *Bacillus anthracis*, is a widespread zoonotic disease affecting humans and mammals. It is endemic in Uganda and has claimed huge losses of cattle and wildlife. The disease remains an endemic public, animal health, and economic threat. This study aimed to identify positive samples during the 2015-2020 Uganda anthrax outbreaks.

**Materials and Methods:** Following the anthrax outbreaks, sixteen (16) districts submitted biological specimens to the NADDEC laboratory for human and animal diagnosis. One hundred nineteen (119) specimens were submitted, including human and animal samples (Fig 1 and 2). The rapid Active Anthrax Detect (AAD) kit was used for detecting *Bacillus anthracis* capsular polypeptide (polyglutamic acid). (Fig 3), gram staining method (Fig. 4) using the M'Fadyean test under BSL2 conditions with the microscopic examination (x100 + oil immersion). Human samples were from Kiruhura District (fig. 5).

Fig 1 and 2. Sample collection from displayed cattle skin and smoked meat

Fig 3 and 4: Active anthrax detect test result and gram stain showing numerous bacilli rods

Fig. 5: Human lesions linked to cutaneous anthrax

**Results:** Gram-positive square-ended rods with spores were detected (Fig 4). 70.5% of Human and animal tissues tested positive for anthrax (Table 1). Anthrax cases were localized in 13 of the 16 districts sampled (Fig 6). Our results show the current risk to human, domestic and wild animal populations that exist in the endemic areas.

Table 1 and Figure 6: Distribution of anthrax cases by district

**Conclusion:** Anthrax is still poorly managed due to numerous factors, including poor carcass disposal and biosecurity measures and the lack of a national anthrax control strategy. Further studies are required in the human and veterinary medicine (One Health) approach to understanding the transmission dynamics in the different risk environments to prevent and control the risk.

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### Assessment of cetyltrimethylammonium bromide-based method for the extraction of soil-transmitted helminths DNAs from stools for molecular diagnostic of soil-transmitted helminth infections

Cyrille Kamdem Nguemang<sup>1</sup>, Pythagore Fogue Soubgwi<sup>1</sup>, Auvaker Tiofack Zebaze<sup>2</sup>, Estelle Mewamba Mezajou<sup>1</sup>, Hilaire Womeni<sup>2</sup>, Mathurin Koffi<sup>3</sup>, Gustave Simo<sup>1</sup>

<sup>1</sup>University of Dschang, Molecular Parasitology and Entomology Unit, Department of Biochemistry, Faculty of Science, University of Dschang, PO. Box 67, Dschang, West Region, Cameroon, <sup>2</sup>University of Dschang, <sup>3</sup>University of Daloa, "Unité de Recherche en Génétique et Epidémiologie Moléculaire" Jean Lorougnon Guédé University, Daloa, "Region du Hautassandra", Ivory Coast, Ivory Coast (Cote D'Ivoire)

**Background and Objective:** Although several protocols have been developed to extract DNA for the diagnostic of soil-transmitted helminths (STHs), amplifying these extracts remains a challenge due to DNA polymerase inhibitors. This study aimed to determine stool mass, the type of DNA polymerase and assess a DNA extraction method for efficient molecular detection of STHs.

**Methods:** Stool samples were collected from school-aged children and Kato-Katz enabled to search for STH infections. DNA was extracted from 10, 20, 40 and 80 mg of stool using cetyltrimethylammonium bromide (CTAB)-based method. The amount of stool for STH diagnostic was determined by amplifying specific DNA fragments of *Ascaris lumbricoides*. Performance of three DNA polymerases as well as CTAB-based method were assessed by amplifying specific fragments of different STH species. The cost linked to each DNA extraction was estimated.

**Results:** DNA extracts from 97.9% of stools harbouring STH eggs revealed the presence of at least one STH species. The number of amplified DNA extracts from 10 and 20mg of stool was significantly higher than those of 40 and 80 mg. The "Q5 high fidelity DNA polymerase", the "One taq DNA polymerase" and "Standard DNA polymerase" amplified respectively 97.9%, 54.6% and 34.8% of infected stools. Whatever the STH species, the "Q5 high fidelity DNA polymerase" amplified significantly more stool samples than other polymerases. Single PCR confirmed co-infections of *A. lumbricoides* with either *T. trichiura* or *Necator americanus*. Amongst hookworm infections, 10 and 13 were respectively due to *N. americanus* and *Ancylostoma duodenale*. CTAB-based method (\$1.45) appeared less expensive than commercial kit.

**Conclusion:** The CTAB-based method appears cheap and reliable to extract from 10 or 20 mg of stool samples, the DNA from STHs' eggs. Its combination with the "Q5 high fidelity DNA polymerase" highlighted its ability for the molecular detection of different STH species in stool samples.

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### Early identification of Clostridium Difficile patients in the Emergency Department: Observational study in acute care hospital in Sicily

Chiara Di benedetto<sup>1</sup>, Vito Cavallaro<sup>2</sup>, Adriana D'emilio<sup>2</sup>, Sebastiano De maria la rosa<sup>2</sup>

<sup>1</sup>Resident physician university of catania hygiene and medicine preventive - arnas garibaldi, Italy, <sup>2</sup>Hospital arnas garibaldi, Italy

**Background and Objective:** Clostridioides Difficile Infection (CDI) is one of the most important healthcare-associated infections (HCAI) in industrialised countries, where *C. difficile* is the leading cause of diarrhoea in hospital settings. In the last few years, there has been an increase in the number of CDI cases and in the severity of these infections and the associated mortality, especially in elderly patients, with a consequent increase in the length of hospital stay and in direct and indirect healthcare costs.

The aim of our study is to analyse the impact of early identification of Clostridioides difficile (CDI) in reducing healthcare-associated infections in different in-patient units during 2019 – 2022.

**Methods:** We revised all the requests received by "The Hospital Garibaldi Centro" - Clinical Pathology - from all operating units from January 2019 to November 2022, which refers to CDI.

First, specimens were screened by a rapid chromatographic immunoassay for *C. difficile* glutamate dehydrogenase antigen (GDH) + Toxin A + Toxin B. Second, GDH- positive and toxin-negative specimens were subjected to real-time multiplex PCR assay.

**Results:** 199 CDI cases were identified out of 937 (21%). 54% were identified in the emergency unit, 18% in critical care medicine, 9% in internal medicine, 21% was identified in other operative units (Orthopaedics, Neurology, Neurosurgery, Pneumology, Cardiology, General Surgery, Intensive Care Units). The male/female

ratio was 1:1; 55% were adults over 80 years, 24 % were in the ages 70 to 80 years, 13 % were in the ages 60 to 70 years, and the remaining 8 % were patients under 60 years.

**Conclusion:** The early identification of CDI in the emergency unit, following the implementation of the procedures drawn up by Hospital, made it possible to take the appropriate control measures and immediate action to limit its spread in the operative units.

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### A point prevalence survey on healthcare-associated infections in an acute care hospital in central Italy: preliminary results

Manuela Tamburro<sup>1</sup>, Roberta De Dona<sup>2</sup>, Antonio D'Amico<sup>3</sup>, Vittorio Viccione<sup>3</sup>, Nicandro Samprati<sup>2</sup>, Arturo Santagata<sup>3</sup>, Carmen Adesso<sup>3</sup>, Michela Di Palma<sup>3</sup>, Anna Natale<sup>3</sup>, Sonja Manocchio<sup>3</sup>, Maria Pilla<sup>3</sup>, Andrea Pompei<sup>3</sup>, Erika Scattareggia<sup>3</sup>, Angelo Salzo<sup>4</sup>, Giancarlo Ripabelli<sup>5</sup>

<sup>1</sup>University of Molise Department of Medicine and Health Sciences "Vincenzo Tiberio", University of Molise, Italy, <sup>2</sup>University of Molise, <sup>3</sup>University of Molise School of Specialization in Hygiene and Preventive Medicine, University of Molise, Italy, <sup>4</sup>Regional Health Agency of Molise region, Italy Regional Health Agency of Molise region, Italy, <sup>5</sup>University of Molise, Italy; Regional Health Agency of Molise region, Italy Department of Medicine and Health Sciences "Vincenzo Tiberio", University of Molise, Italy School of Specialization in Hygiene and Preventive Medicine, University of Molise, Italy Regional Health Agency of Molise region, Italy

**Background and objective:** Healthcare-associated infections (HAIs) represent the most frequent adverse event in the hospital setting. As part of a surveillance study promoted by the European Centre for Disease Control and Prevention, a survey was carried out to estimate HAIs prevalence in an acute care hospital in central Italy.

**Methods:** The investigation was carried out in November 2022 through the anonymous consultation of clinical records, using a standardized protocol to collect data on patients, wards, HAIs, and antibiotic therapy.

**Results:** A total of 164 patients (51.2% males; aged 0-94 years) hospitalized in 17 different wards were included, and 57.3% were in medical wards. At time of the survey, 10.4% (n=17) patients had at least one HAI (53% female; mean age 68.4 years), and 94% were hospitalized in medical wards. 64.7% of infections were linked to inpatient hospital, 23.5% to a long-term care facility and 11.8% to another hospital. According to McCabe score, HAIs patients were mostly (47.1%) classified as with non-fatal disease, while 23.5% and 29.4% with fatal and rapidly fatal disease, respectively. 82.4% of HAIs patients had at least one device (central venous and bladder catheter, tracheal cannula), and 21.4% and 14.3% carried two and three devices, respectively. Furthermore, 82.4% were treated with at least one antibiotic, with two and three antibiotics used simultaneously in 21.4% and 14.3%. A microbiological isolation with antibiogram was present only in 41.2%.

**Conclusion:** HAIs prevalence was higher than 8.2% estimated for Italian hospitals in 2016-2017 survey and 7.5% assessed in the same hospital in 2019. A significant role for HAIs onset was associated with invasive devices, ward specialty, and severity of clinical conditions. These findings underline the need to strengthen programs for HAIs control through the definition of standardized protocols and availability of specialized team, also in terms of human resources and skills.

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### Oral Adverse Events of COVID-19 Vaccines in Europe: Analysis of EudraVigilance Database

Abanoub Riad<sup>1</sup>, Sameh Attia<sup>2</sup>, Arkadiusz Dziedzic<sup>3</sup>, Hans-Peter Howaldt<sup>2</sup>

<sup>1</sup>Masaryk University Czech Republic, <sup>2</sup>Justus-Liebig-University Germany, <sup>3</sup>Dziedzic Poland

**Background:** The recent reports of oral adverse events (AEs) following COVID-19 vaccination warrant further investigation into their prevalence, severity and aetiology. This study was conducted to synthesise the first-ever population-level evidence about oral SEs of COVID-19 vaccines in Europe.

**Methods:** The European Union Drug Regulating Authorities Pharmacovigilance (EudraVigilance) database was accessed in August 2022 to extract summary data of all potential oral AEs reported after COVID-19 vaccination. The data were reported descriptively and cross-tabulated to facilitate sub-group analysis per vaccine type, sex, and age group.

**Results:** Dysgeusia was the most commonly reported oral AE (0.381 cases per each 100 received reports), followed by oral paraesthesia (0.315%), ageusia (0.296%), lip swelling (0.243%), dry mouth (0.215%), oral hypoaesthesia (0.210%), swollen tongue (0.207%) and taste disorder (0.173%). Females had significantly

(Sig. < 0.001) a higher prevalence of all most common (top twenty) oral AEs, except for salivary hypersecretion, which was equally prevalent among females and males.

Conclusion: The present study revealed a low prevalence of oral AEs, with taste-related, other sensory and anaphylactic AEs being the most common AEs in Europe, similar to what was found earlier among the US population. Future studies should explore the potential risk factors of oral sensory and anaphylactic AEs to verify whether they are causally linked to COVID-19 vaccines.

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### Wastewater surveillance of sars-cov-2 variants in Italy: a powerful tool for tracking the spread of sars-cov-2 variants/subvariants in the population

Giuseppina Rosa<sup>1</sup>, David Brandtner<sup>2</sup>, Giusy Ferraro<sup>1</sup>, Elisabetta Suffredini<sup>3</sup>, Carolina Veneri<sup>1</sup>, Pamela Mancini<sup>4</sup>, Marcello Iaconelli<sup>1</sup>, Luca Lucentini<sup>1</sup>

<sup>1</sup>Istituto Superiore di Sanità Department of Environment and Health, Istituto Superiore di Sanità, Rome, Italy Viale Regina Elena 299, Rome, Italy, <sup>2</sup>Italy,

<sup>3</sup>Istituto Superiore di Sanità Department of Food Safety, Nutrition and Veterinary public health, Istituto Superiore di Sanità, Rome, Italy Viale Regina Elena 299, Rome, Italy, <sup>4</sup>Istituto Superior di Sanità Department of Environment and Health, Istituto Superiore di Sanità, Rome, Italy Viale Regina Elena 299, Rome, Italy

Background and objective: Three SARS-CoV-2 Variants of Concern (VoCs) are circulating in the European Union/European Economic Area (EU/EEA) countries as of December 2022: Omicron BA.2, BA.4, and BA.5. ECDC also currently recognizes three Variants of Interest (VOIs): Omicron BA.2.75, BQ.1, and XBB.1. This work analyses the occurrence and spread of VoCs and Vols in Italy in October and November 2022, by monitoring untreated wastewater.

Methods: During October and November 2022, 332 wastewater samples were collected from 167 Wastewater Treatment Plants throughout Italy. Variant characterization was performed by amplifying a ~1600 bp fragment of the spike protein, followed by Sanger (individual samples) and long-read nanopore sequencing (pooled samples by Regions/Autonomous Provinces).

Results: In October 2022, mutations characteristic of Omicron BA.4/BA.5 were detected in the vast majority of the samples. Amino acid substitutions characteristic of sub-lineages BQ.1 (K444T and N460K) or BQ.1.1 (BQ.1 + R346T) were detected for the first time in wastewater in four Regions/A.P. despite the low prevalence documented in clinical cases at the time of sampling. In November 2022, the positivity rate for BQ.1/BQ.1.1 almost quadrupled, and the number of Regions/A.P. positive for the new Omicron subvariant tripled compared to October. Moreover, in November there was the detection of two other Vols never observed before in sewage in Italy: BA.2.75 and XBB.1 (the latter found in a Region where no clinical cases associated with this variant had been documented).

Conclusions: Results suggest that BQ.1/BQ.1.1 is becoming dominant in late 2022, as predicted by the ECDC, and other minor subvariants are emerging, confirming environmental surveillance as a powerful tool for tracking the spread of SARS-CoV-2 variants/subvariants in the population.

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### Seroprevalence of SARS-CoV-2 specific antibodies in Portugal May 2020 - June 2022: results of four serial seroepidemiological surveys

Marta Barreto<sup>1</sup>, Irina Kislaya<sup>2</sup>, Paulo Gonçalves<sup>3</sup>, Camila Henriques<sup>3</sup>, Ana Torres<sup>3</sup>, Rita Matos<sup>3</sup>, Vânia Gaio<sup>3</sup>, Rita de Sousa<sup>3</sup>, Raquel Guiomar<sup>3</sup>, Ana Rodrigues<sup>3</sup>

<sup>1</sup>Instituto Nacional de Saúde Doutor Ricardo Jorge Instituto Nacional de Saúde Doutor Ricardo Jorge, Av. Padre Cruz Portugal, <sup>2</sup>Instituto Nacional de Saúde Doutor Ricardo Jorge Instituto Nacional de Saúde Doutor Ricardo Jorge Instituto Nacional de Saúde Doutor Ricardo Jorge, Av. Padre Cruz Portugal, <sup>3</sup>Instituto Nacional de Saúde Doutor Ricardo Jorge, Av. Padre Cruz Portugal

Background and objective: Seroepidemiological surveys on SARS-CoV-2 are important to establish trends in population-level immunity. From May 2020 through June 2022, the National Health Institute Doutor Ricardo Jorge implemented four serial studies aimed to estimate post-infection and post-vaccination seroprevalence in Portugal.

Methods: Overall, surveys covered 19134 Portuguese residents aged 1 or more years old. In each survey, reminiscent blood samples were collected through nationwide network of 43 clinical pathology laboratories and 36 public hospitals to determine SARS-CoV-2 IgG antibody titers. Following vaccination campaign,

presence of IgG against nucleocapsid protein (anti-N), was used as a proxy of post-infection seroprevalence in vaccinated.

Results: Total SARS-CoV-2 seroprevalence varied between 2.9% [95CI: 2.0-4.2] (1st survey, May 21-July 8, 2020) and 95.8% [95CI:95.0-96.4] (4th survey, April 27-June 8, 2022). In the 3rd survey (September 28-November 19, 2021) the post-vaccination seroprevalence was higher than the post-infection 86.3% [95CI:85.1-87.5] vs. 7.5% [95CI:6.6-8.5]. Following the Omicron wave (4th survey), the post-infection seroprevalence increased to 27.3% [95CI:25.5-29.1] for overall population, and to 71.2% [95CI:64.4-77.2] for children aged less than 5 years old, not eligible for COVID-19 vaccination.

Conclusion

Observed trends in seroprevalence were in line with the evolution of the COVID-19 epidemic and vaccination coverage in Portugal, as well as with the results of studies on vaccine effectiveness, demonstrating the importance of seroepidemiological studies for decision making. Implemented infrastructure and acquired experience can be capitalized for the development of seroepidemiological studies in case of future public health emergencies in Portugal.

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### Prevalence study on healthcare-related infections and the use of antibiotics in humanitas mater domini

Céline Paudice<sup>1</sup>, Simona Sancini<sup>2</sup>, Davide Ghioldi<sup>3</sup>, Anna Odone<sup>1</sup>

<sup>1</sup>University of Pavia Department of Public Health, Experimental and Forensic Medicine, University of Pavia, Pavia, Italy, <sup>2</sup>Humanitas Mater Domini Hospital clinical institute Mater Domini Castellanza Italy, <sup>3</sup>Humanitas Mater Domini Hospital Italy

Introduction: A prevalence study of healthcare-associated infections (HAIs) and antibiotic use was conducted at Humanitas Mater Domini Clinical Institute on 04/26/2022. The study can be used as a monitoring's tool for both antibiotics' use and prevention and control of HAIs.

Materials

The study, used "Patient Questionnaire-Sheet A. EUROPEAN PREVALENCE STUDY ON ICA AND ANTIBIOTIC USE IN ACUTE HOSPITALS" by European Center for Disease Prevention and Control (ECDC). Patients present in all departments at or before 8 a.m. and not discharged at the time of the survey were recruited and patients in day hospital and day-surgery, patients seen as outpatients, and patients in the emergency department present for less than 24 hours were excluded. We collected Data on risk factors for each eligible patient, care-related infections and antibiotic use.

Results: The study involved 103 Patients of whom 58(56%) were eligible. The Distribution was: 65% medical area, 27.5% surgical, 7.5% intensive care. 98% of patients had a peripheral vascular catheter; 52% a urinary catheter; 3% a central venous catheter; 2% of patients intubated. 26% of the sample had an infection (respiratory 45%, urinary 33% bacteremia 22%); responsible pathogens: Pseudomonas aeruginosa 42%. Escherichia coli 33%, Klebsiella pneumoniae 16.6%.

62% of patients was undergoing an antibiotic therapy (prophylactic use 64%, therapeutic 26%, indeterminate 10%). More frequently prescribed Antibiotics: Cefazolin 60%, Ceftriaxone 20%, Piperacillin 7.5%, Meropenem 3%, Vaborem 0.3%, Linezolid 0.2%, Metrodinazole 9%.

Conclusions: The data collected allowed the identification of problems and priorities for intervention, to promote and strengthen skills, provide new recommendations and strategies for the management of HAIs, and to increase the focus on antibiotics' use to meet the criteria of cost-benefit, optimization of therapies, and eradicate the antibiotics' resistance.

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### The relationship between increased hospital length of stay and accessibility to care settings with lower levels of complexity in Italy

Ilenia Piras<sup>1</sup>, Andrea Piana<sup>2</sup>, Roberto Santoru<sup>3</sup>, Giovanna Deiana<sup>4</sup>, Dolores Soddu<sup>3</sup>, Antonio Azara<sup>5</sup>

<sup>1</sup>Emergency Department SS. Trinità Hospital, ASL Cagliari Italy, <sup>2</sup>Department of Medicine, Surgery and Pharmacy, University of Sassari Italy, <sup>3</sup>University Hospital Company of Sassari (AOU Sassari) Italy, <sup>4</sup>PhD School in Biomedical Sciences (Public Health), University of Sassari Italy, <sup>5</sup>Paolo Castiglia

Background and objective: Hospital length of stay could be increased (outlier) where alternative beds that facilitate care at discharge from the acute care unit are lacking. This study aims to evaluate the potential relationship between hospital outlier and the accessibility to less complex care settings.

**Methods:** A correlational study was conducted on ordinary hospital admissions in the year 2019 (using the Ministry of Health's Hospital Discharge Records Report) and hospital post-acute (long-term care and rehabilitation) and territorial (residential, semi-residential and rehabilitation) beds in Italy. In respect to the national average outlier, the twenty Italian regions were classified into two groups: with higher and with lower percentages of outliers.

**Results:** Out of a total of 6.020.466 ordinary hospitalizations in Italy, the average outlier was 3.9%, with a range among regions between 2.7% and 4.7%. The national average of territorial beds per inhabitant was 0.60% (range 0.15%-0.99%). The relationships between outlier and territorial beds are always opposite between the two groups and mainly weak, except for semi-residential beds in the group with lower outlier rates where it is moderate (Pearson's  $r = -0.583$ ; Spearman's  $Rho = -0.766$ ,  $p = 0.027$ ).

The national average of post-acute hospital beds was 0.06% (range 0.02%-0.10%). Correlations between outliers and post-acute hospital beds are always direct in the groups, except for long-term care hospital beds in the group with higher outlier rates (Pearson's  $r = -0.306$ ). The strongest relationship is between outlier and hospital rehabilitation beds in the group with lower outlier percentages (Pearson's  $r = -0.720$ ,  $p = 0.044$ ).

**Conclusion:** These data show that the decrease in outlier correlates with the increase in territorial semi-residential beds and hospital rehabilitation beds, while the increase in outlier correlates with the decrease in hospital long-term care beds. Considering the inhomogeneous distribution of less complex care settings in Italy, further investigations are needed, especially on the deficient regions.

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### **Agroecology versus agribusiness: An experience of popular health surveillance against the impacts of agribusiness in a region of Brazil**

Ana Teixeira<sup>1</sup>, Fernando Carneiro<sup>2</sup>, Saulo Diógenes<sup>3</sup>, Flora da Silva<sup>1</sup>, Aline Maia<sup>4</sup>, Reginaldo de Araújo<sup>5</sup>, Vanira Pessoa<sup>1</sup>

<sup>1</sup>Fundação Oswaldo Cruz Ceará Brazil, <sup>2</sup>Fundação Oswaldo Cruz Ceará,

<sup>3</sup>Universidade Federal do Ceará Brazil, <sup>4</sup>Cármitas Diocesana de Limoeiro do Norte, <sup>5</sup>Movimento 21 Brazil

**Background and objective:** Brazil is one of the largest consumers of pesticides in the world due to the advance of agribusiness in its territory, causing numerous socio-environmental impacts and damage to health, not just human health. This research aims to describe the Popular Surveillance indicators referring to the impacts caused by agribusiness on the agroecological productive backyards of the farming families of Chapada do Apodi, Tabuleiro do Norte, Ceará, Northeast Brazil.

**Methods:** These families develop the experience "Community that Sustains Agriculture – My Backyard in your Basket", which was registered in the action research "Popular Surveillance of Health, Environment and Work: communities, the Unified Health System and researchers in the defense of the lives of vulnerable populations through a "Participatory"". The action research field activity took place on June 6 and 7, 2022. On the first day, a journey was made through the territory to get to know the families, their agroecological backyards and their social technologies for coexistence with the semi-arid region. On the second day, the communities analyzed the experience of popular surveillance, based on guiding questions in a workshop. **RESULTS:** Families identified as popular surveillance indicators related to the impacts of agribusiness: the death of bees by poison, speed of installation of enterprises, enclosure of areas used for beekeeping and rearing of loose animals, migration of labor from outside the territory, use of drones by agribusiness, strong odor of pesticides and other inputs used by agribusiness, deterritorialized families, large scale deforestation with chains and tractors, accentuation of lack of water.

**Conclusion:** The protagonism of families is observed in the construction of the experience of popular surveillance regarding the generation of data on the impacts of agribusiness through participatory monitoring with the use of accessible technologies.

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### **Analysis of violence reports in the town of nova iguaçu/state of Rio de Janeiro/Brazil, from 2014 to 2020.**

Tatiane Macedo<sup>1</sup>, Cosme Silva<sup>2</sup>, Liana Pinto<sup>3</sup>, Marcos Anjos<sup>4</sup>

<sup>1</sup>National School of Public Health-Oswaldo Cruz Brazil National School of Public Health-Oswaldo Cruz Foundation Brazil, <sup>2</sup>National School of Public Health-Oswaldo Cruz Foundation, <sup>3</sup>National School of Public Health-Oswaldo Cruz Foundation Brazil, <sup>4</sup>National Institute of Cancer Brazil

**Purpose:** To describe the epidemiological profile of cases of violence reported in the town of Nova Iguaçu "RJ/Brazil, from 2014 to 2020

**Methodology:** This is a cross-sectional, descriptive, population-based research, on violence records entered in SINAN (national system of disease reports), in the town of nova iguaçu. We collected secondary data and made the exploratory analysis of the social-demographic characteristics of the reported cases (gender, race/skin color, education, age, marital status) and the characteristics of violence (nature, means of assault, and relationship with the assaulter). We used statistical software R to analyze the data.

**Results:** The total number of violence reports in the town of Nova Iguaçu was 39,587, in the period from 2014 to 2020. These were more prevalent in the age range of 0-9 (29.5%), then 20-29 (19.2%), and 10-19 (14.8%); in males (57.4%); in brown (56.6%) and black (6.2%) races. Variables education and marital status were completed with "Not applicable", since they are more prevalent in children under 7 years old. In relation to their nature, the field others prevailed (36.6%), followed by neglect (33.5%). As for the means of assault used, the most prevalent were others (60.8%), followed by body force (32.2%). In relation to the bond with the assaulter, mother and stepmother were the most prevalent (74.7%), followed by father and stepfather (39.6%).

**Conclusions:** The town of Nova Iguaçu, located only 35 km from the city of Rio de Janeiro, has a low-income population, where children and adolescents are abused and neglected by their parents. The challenge of reducing all types of violence; in addition to protecting all children and adolescents against abuse, exploitation, and other forms, in accordance with Section 16 of the Sustainable Development Goal, involves overcoming social inequalities, articulation by the government branches, and engagement of the civil society.

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### **Household survey as a tool for detecting the determinants of health: de facto census survey in rural settlements of shamakhi region, azerbaijan**

Halil Durak<sup>1</sup>, Keyser Vatansever<sup>2</sup>, Mehmet Akman<sup>1</sup>, Hande Harmanci<sup>1</sup>, Eray Öntaş<sup>3</sup>, Sekine Azizli<sup>4</sup>

<sup>1</sup>WHO Azerbaijan Country Office Azerbaijan, <sup>2</sup>WHO country office Azerbaijan,

<sup>3</sup>WHO Azerbaijan Country Office, <sup>4</sup>The Administration of the Regional Medical Divisions Azerbaijan

**Background and objective:** Traditional electronic health records generally lack information on determinants of health, which is crucial for operationalizing the PHC system effectively. This study aimed to determine the demographic and housing characteristics of the rural population of Shamakhi, a mountainous region of Azerbaijan, where the WHO country office has implemented a PHC demonstration project.

**Methods:** A de facto census survey was carried out in 58 villages and 4 towns using a survey tool including demographic and housing characteristics. No sample selection was made and all residential dwellings were visited.

**Results:** According to the 2022 Azerbaijan Population Report, the registered population of Shamakhi is 108100 [rural population= 57300 (63,0%)]. The population calculated from the survey is 26854 [12630 (47,74%) females, 13826 (52,26%) males]. The age dependency ratio is 48% (34% young age, 15% old age dependency). The gender parity index for the 15-24 age literacy rate is 1.0, while higher education attainment of 25-64 ages is 4,5% (2,9% for women, 5,9% for men). The unemployment rate for 15-64 ages is 9,75%, which is higher than Azerbaijanians total (6,0%). Although Mandatory Health Insurance covers all citizens, 33,8% of the rural population is uninsured. In Shamakhi, safe drinking water is accessible at home in 19 villages and closed tanks are utilized for sewage disposal in 30 villages.

**Conclusion:** The difference between the official reports and the census is attributed to a lack of mandatory notification of address changes. The sharp decline in the 0-4 age population and a sharp increase in >80 ages indicate problems in birth and death registrations. These emphasize a demographic and health surveillance system need within PHC. Study results conjured up that PHC services are not only about patient care. Health promotion and disease prevention strategies including health education and intersectoral collaboration are of priorities in Shamakhi.

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### **Popular surveillance of pesticides**

Fernando Carneiro<sup>1</sup>, Michele Meneses<sup>2</sup>, da Diógenes<sup>3</sup>, Luiz Rons<sup>4</sup>, Reginaldo de Araújo<sup>5</sup>, Aline de Sousa Maia<sup>6</sup>, José de Almeida<sup>7</sup>, Vanira Pessoa<sup>8</sup>

<sup>1</sup>Fundação Oswaldo Cruz Ceará Brazil, <sup>2</sup>Federal University of Rio Grande do Sul Ana Cláudia de Araújo Teixeira Oswaldo Cruz Ceará Foundation Brazil

Saulo,<sup>3</sup>Federal University of Ceara Brazil, <sup>4</sup>Caúla Silva Secretariat of the Environment of Cascavel - CE Flora Viana Elizeu da Silva Oswaldo Cruz Ceará Foundation Brazil, <sup>5</sup> Movement Brazil, <sup>6</sup>Limoeiro do Norte Diocesan Cráitas Brazil, <sup>7</sup>Movement of Landless Rural Workers Brazil, <sup>8</sup>Oswaldo Cruz Ceará Foundation Bouvet Island

Background and objective: Brazil became one of the largest consumers of pesticides in the world at the beginning of the 21st century. The production model based on the Green Revolution has as one of its highlights the abusive use of pesticides with severe impacts on human health and ecosystems. This study presents results of research on Popular Surveillance of pesticides in three regions of Brazil: South, Midwest and Northeast.

Methods: It is an action research based on Paulo Freires ideas and Ecology of Knowledge by Boaventura Santos. The research was carried out in 2022 in the states of Rio Grande do Sul, Mato Grosso and Ceará, in territories with vulnerable populations such as peasants and quilombolas. The territories were visited by the team of researchers and workshops were held to analyze the problems of each location and collectively produce action plans for each territory.

Results: The communities identified some qualitative indicators of Popular Surveillance, highlighting the following indicators of threat to life: the death of bees, groundwater with the odor of pesticides, animals with congenital malformations, plant mortality and families sprayed with pesticides from airplanes. On the other hand, life promotion indicators were identified such as agroecological productive backyards, organic production areas and collective organizations for monitoring the territory.

Conclusion: The Popular Surveillance of Pesticides is marked by popular protagonism in the defense of life and its development can contribute to the strengthening of institutional surveillance.

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### Excess mortality associated with voc-specific covid-19, flu and extreme temperatures: A comprehensive time-series analysis approach to estimate attributable mortality during the covid-19 pandemic in Portugal

Susana Silva<sup>1</sup>, Álvar Silva<sup>2</sup>, Ana Torres<sup>3</sup>, Baltazar Nunes<sup>4</sup>, Carlos Dias<sup>5</sup>, Jens Nielson<sup>6</sup>, Ana Rodrigues<sup>3</sup>

<sup>1</sup>Instituto Nacional de Saude Dr Ricardo Jorge Departamento de Epidemiologia; Avenida Padre Cruz Portugal, <sup>2</sup>Instituto Português do Mar e da Atmosfera, <sup>3</sup>Instituto Nacional de Saude Dr Ricardo Jorge Portugal, <sup>4</sup>a.rita.torres@insa.min-saude.pt Portugal, <sup>5</sup>Instituto Nacional de Saude Dr Ricardo Jorge, <sup>6</sup>Statens Serum Institut Portugal

Background and objective: First COVID-19 case was detected in Portugal on March 2020. More than 25,000 COVID-19 deaths have been reported, but it may not reflect the burden of the pandemic, especially, when competing factors occur simultaneously. We aimed to estimate all-cause mortality attributable to COVID-19 by SARS-CoV2 variant of concern, influenza and extreme temperatures (ET) during pandemic period in Portugal.

Methods: To estimate mortality attributable to COVID-19, influenza and extreme temperatures, we used an adaptation of the FLUMOMO model. Considering the weekly number of all-cause deaths as the dependent variable, an additive Poisson regression model adjusted for overdispersion, trend and seasonality, was fitted with Influenza activity (Goldstein index), new COVID-19 hospitalizations adjusted for concern variants (Pre-Delta; Delta; Omicron BA 1 and 2; and Omicron BA 4 and 5), and ET as independent variables. We estimated the mortality attributable fraction of each independent variable between 2020-W10 and 2022-W38. We performed the analysis for all population and age groups.

Results: We estimated 43,766 deaths above the expected, 36,810 attributable to COVID-19, 544 to influenza and 6412 to ET. 60%, 15%, 11% and 15% of COVID-19 attributable mortality was due to, respectively, Pre-Delta, Delta, Omicron BA 1 and 2, and Omicron BA 4 and 5 variants.

The mortality estimated as attributable to COVID-19 is higher than the reported officially as COVID-19 specific mortality, which was expected because we estimate mortality directly and indirectly attributable to COVID. The highest mortality attributable to COVID-19 was estimated in the age group  $\geq 80$  years. These results are provisional.

Conclusion: This analytical approach allows a detailed assessment of the impact of the COVID-19 pandemic, direct and indirect factors, adjusting it for competing risks for excess deaths like influenza and ET. We were able to estimate the fraction of mortality attributable to SARS-CoV2 variant of concern.

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### New incidence of lung cancer in Hanoi in the period 2015 - 2019

Pham Van<sup>1</sup>

<sup>1</sup>Institute of Preventive Medicine and Public Health, Viet Nam

Objectives: This study on the epidemiology of lung cancer in Hanoi from 2015 to 2019 offered crucial details on the situation of the disease and epidemiological characteristics of lung cancer. Methods: Data was collected retrospectively in a descriptive study with analysis.

Results: In Hanoi, 7389 new cases of lung cancer were diagnosed between 2015 and 2019. The highest age group was 60-69 years old, accounting for 36.2% of the population; the crude incidence rate was 20.3/100000; the age-standardized incidence rate was 19.6/100000 (with 31.6/100000 for men and 9.7/100000 for women); and the age-standardized incidence rate in the inner city is lower (13.7/100000) than that in the suburban area (19.4/100000). Conclusions: Lung cancer was still a public health issue that required special attention. Effective tobacco control initiatives, early detection screening, and improved treatment quality were the top priorities for reducing the negative effects of lung cancer in the community. Keywords: Incidence rate, lung cancer, Hanoi

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### The future of health impact assessment- setting the Research Agenda

Fiona Haigh<sup>1,2</sup>, Margaret Douglas<sup>3</sup>, Odile Mekel<sup>4</sup>, Liz Green<sup>5</sup>, Katie Hiron<sup>6</sup>

<sup>1</sup>University of New South Wales, Australia, <sup>2</sup>Sydney Local Health District, Australia, <sup>3</sup>Public Health Scotland and University of Glasgow, <sup>4</sup>NRW Centre for Health, Germany, <sup>5</sup>Wales Health Impact Assessment Support Unit (WHIASU), Public Health Wales (PHW), United Kingdom, <sup>6</sup>RPS, United Kingdom

Health Impact Assessment (HIA) is a key approach to achieve Health in All Policies, by identifying impacts on health and equity and recommending changes to address these impacts. Since the Gothenburg Consensus Statement in 1999, HIA has been applied to policies, plans and projects in multiple sectors and settings across the world and researchers have demonstrated its effectiveness in influencing policies. However, its use is still variable globally with few jurisdictions using HIA systematically to maximise the potential of all policies and plans to improve health and legislation is generally aligned to environmental health impact assessment rather than the social determinants of health and equity. The COVID-19 pandemic has raised the importance of social determinants of health, as many indirect health effects arose from pandemic effects on social and environmental pathways. HIAs of pandemic responses have demonstrated its potential to identify and help address these impacts. The climate emergency will bring even more wide-ranging health impacts that need to be addressed in an integrated way, which HIA could support. Recovery and renewal from the pandemic presents a window of opportunity for public health and other sectors to consider what is needed to support the future evolution and development of HIA in different contexts. This workshop involving international HIA experts and leaders will draw on the findings of an international survey of 160 HIA practitioners views on the current opportunities for HIA; differing practice and perspectives on HIA; potential methodological innovation; and research gaps and needs in the field. The workshop will build on the survey Findings to develop a HIA research agenda for the next decade. Specific Aims/Objectives and Component Parts: The aim of the workshop is to develop a research agenda that we will share and publish. The workshop will include: 1. Presentation of findings of an international HIA survey, 2. Small group discussion with workshop participants to: 1) Discuss areas of research and gaps to address in the field of HIA over the next ten years, 2) Formulate these as specific research questions, 3) Identify mechanisms to build HIA research capacity, 4) Prioritisation of research questions identified by small groups, 5) Interactive panel with HIA experts/leaders to reflect and discuss next steps in how we can build and support a HIA research agenda. The key questions that the workshop will address: 1. What is the most important research needed in the field of HIA in the next ten years? 2. What are the most important unresolved research questions in HIA? 3. How can we build and support HIA research and capacity?

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### Public health surveillance: lessons from the pandemic

Stefano Tancredi<sup>1</sup>, Tatjana Makovski<sup>2</sup>, Dritan Bejko<sup>3</sup>, Jason Gilliland<sup>4</sup>, Arnaud Chiolerio<sup>1</sup>, Saverio Stranges<sup>4</sup>

<sup>1</sup>University of Fribourg Switzerland, <sup>2</sup>French National Public Health Agency, France, <sup>3</sup>Luxembourg Health Directorate, Luxembourg, <sup>4</sup>Western University Canada

**Background:** What have we learned about surveillance during the pandemic? Surveillance systems drive policymakers' decisions, but it is not easy to transform data into useful information. Multiple surveillance methods are needed, and clear definitions of what is being monitored are fundamental.

#### Objectives and Key Questions

The objective of this workshop is to strengthen the culture of surveillance and discuss the strengths and weaknesses of various COVID-19 surveillance strategies. Key questions will be: 1) which information is needed for decision-making? 2) how can we monitor the pandemic and its impact? 3) how should we adapt the system at different stages of the pandemic?

**Overview:** We will have a short introduction and 4 case studies (each 10 min) followed by an active discussion.

**Introduction (Chiolero and Stranges):** Multiple challenges hampered COVID-19 surveillance (lack of common standards, different diagnostic strategies, infodemia). The pandemic has highlighted the advantages and disadvantages of different surveillance strategies and the importance of having a multilayer and highly adaptive health information system.

**Case study 1: Seroprevalence studies for the surveillance of COVID-19: Corona Immunitas (Tancredi)**

Population-based seroepidemiological studies are needed to understand SARS-CoV-2 spread. We will present the methods and results of Corona Immunitas, a Swiss national research project consisting of repeated population-based serological studies conducted with a common methodology. The project included a Digital Follow-Up eCohort to monitor health status changes, adherence to preventive measures, and the social impact of the pandemic.

**Case study 2: Challenges in the definition of long COVID or Post-COVID-19 condition (Makovski)**

We will present an operationalization of the WHO definition of the post-COVID-19 condition on a sample of the general adult population in France. We will describe the prevalence of each symptom at different time points after the infection and their correlation, and compare characteristics of post-COVID-19 condition subjects (as selected by WHO definition) with those not selected but who perceived experiencing Long COVID.

**Case study 3: Electronic health records to assess vaccine effectiveness (Bejko)**

Linked routinely collected electronic health records at the national level can help evaluate vaccine effectiveness. Using data from laboratory confirmed SARS-CoV-2 PCR tests linked with vaccination data and SARS-CoV-2 hospitalisations and deaths, we investigated severe outcomes (hospitalisation, death) in relation to variants, vaccination status, and prior infection and evaluated the effectiveness of a fourth bivalent Omicron-containing booster dose and natural immunity due to prior infection against laboratory confirmed SARS-CoV-2 infection.

**Case study 4: A geospatial surveillance portal to monitor COVID-19 transmission (Gilliland and Stranges)**

Based on a geospatial portal for real-time surveillance of COVID-19 transmission and detection of disease clusters, we demonstrated the use of emerging hot spot analysis techniques to map and analyze spatiotemporal changes in COVID-19 transmission in Middlesex County, Ontario, between July 2020 and January 2021. The project demonstrated that geospatial surveillance portals are valuable tools for helping public health decision makers to identify and respond to disease outbreaks.

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### Challenges in the surveillance of chronic diseases in an era of big data

Arnaud Chiolero<sup>1</sup>, Cornelia Wagner<sup>1</sup>, Stefano Tancredi<sup>1</sup>, Piotr Wilk<sup>2</sup>

<sup>1</sup>Population Health Laboratory (#PopHealthLab), University of Fribourg, Switzerland, <sup>2</sup>Department of Epidemiology and Biostatistics in the Schulich School of Medicine & Dentistry, Western University, Canada

**Background:** Management and prevention of chronic diseases require high-quality surveillance. In an era of big data and infodemia, several challenges hamper efficient surveillance, such as the definition and measurement of chronic diseases and how to best use data that are not designed primarily for surveillance. Using three cases studies, we propose a workshop to discuss current challenges in the surveillance of chronic diseases.

#### Objectives and key questions

Our objective is to discuss current challenges in the surveillance of chronic diseases. Specifically, the workshop will address these key questions: 1) how to define chronic conditions? 2) how to prevent surveillance bias?

#### Brief overview

We will have one short (10 min) introduction and 3 case studies (each 10 min) presentations followed by an active discussion session (20 min):

**Introduction (Arnaud Chiolero and Cornelia Wagner)**

Public health surveillance is the ongoing collection and analysis of health-related data, followed by the timely dissemination of information useful for decision. In an era of big data and infodemia, it might appear easy to conduct the surveillance of chronic diseases. However, multiple challenges hamper efficient surveillance, notably related to changing definitions and diagnostic methods of chronic diseases and to the quality of data from multiple sources not designed primarily for surveillance.

**Case Study 1: Defining Multimorbidity in High-Income Countries (Piotr Wilk and Saverio Strano)**

In 2012, the Public Health Agency of Canada defined multimorbidity as having two or more of ten common chronic diseases, selected based on their duration, high prevalence, significant societal or economic impact, and amenability to primary prevention. In 2017, multimorbidity was defined as the co-occurrence of a least two of five groups of chronic diseases (cancer, diabetes, cardiovascular disease, chronic respiratory disease, mental illnesses). We will discuss the implications of the two definitions of multimorbidity on prevalence estimates and geographic distribution across Canada.

**Case Study 2: Self-Reported data for the Surveillance of Chronic Diseases (Arnaud Chiolero)**

Self reported data are commonly used for population health monitoring. Using data of a large school-based study and through a literature review, we will discuss strength and limitation of self-reported data for the surveillance of overweight. We will extend the discussion toward the pros and cons of surveillance of other chronic conditions based on self-reported data.

**Case Study 3: Surveillance Bias of Cancer – when Appearances are Misleading (Stefano Tancredi)**

Surveillance bias occurs when differences in the frequency of a condition are due to variations in the modalities of detection rather than to changes in the actual risk of the condition. This is of growing concern because surveillance activity is more and more often based on data not designed primarily for surveillance, notably from healthcare providers. We will show the impact of this bias on cancer surveillance.

**Discussion (Cornelia Wagner and Arnaud Chiolero)**

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### Impact of the COVID-19 vaccination on the trend of COVID-19 in Ireland: a joinpoint regression analysis

Tochukwu Igboanugo<sup>1</sup>

<sup>1</sup>University College Cork, Ireland

**Background:** Public health interventions are organised efforts made to improve health at a population level. Vaccine impact can be assessed by comparing the trends in a targeted disease before and after the introduction of the vaccine. The study aimed to analyse the trend in incidence and mortality of COVID-19 in Ireland from March 2020 to February 2022. **Methods:** The age-standardized COVID-19 incidence and mortality rates in Ireland were calculated by direct standardization using the European Union standard population. Monthly percentage change (MPC) and the corresponding 95% confidence interval (CI) was computed for the trends using the joinpoint regression analysis. The data was obtained from the Central Statistics Office and Health Protection and Surveillance Centre, Ireland.

**Results:** The COVID-19 incident rate sustained an upward trend two years post-pandemic. The incidence rate increased by 1.5 % per month ( $p < 0.05$ ) for both the male and female populations. The mortality rate showed a rise and fall trend. Among the female, deaths from COVID-19 fell in the periods of March 2020 to July 2020 (MPC = -43.6%; 95% CI, -77.6 – 42.0);  $p = 0.197$ ), January 2021 to June 2021 (MPC = -54.7%; 95% CI, -81.5 – 11.0;  $p = 0.077$ ) and December 2021 to February 2022 (MPC = -1.4%; 95% CI, -98.1 – 4487.1;  $p = 0.994$ ). For the males, COVID-19 deaths decreased in the periods of March 2020 to August 2020 (MPC = 33.3%; 95% CI, -72.5 – 62.0%;  $p = 0.333$ ), February 2021 to June 2021 (MPC = -70.0%; 95% CI, -94.7 – 71.6;  $p = 0.155$ ) and December 2021 to February 2022 (MPC = -0.4%; 95% CI, -77.4 – 339.0;  $p = 0.996$ ). **Conclusions:** The finding suggests that COVID-19 vaccination has no impact on the transmission of SARS-CoV-2. The impact of the vaccines in preventing deaths from COVID-19 requires further research.

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### Development of a road map to scale up the uptake and utilization of Influenza vaccine in 22 countries of Eastern Mediterranean Region

Abbar Chughtai<sup>1</sup>

<sup>1</sup>University of New South Wales Sydney, Sydney, Australia

**Background:** Eastern Mediterranean Region (EMR) of WHO comprises of 22 countries and many of them are experiencing humanitarian emergencies and disasters. The aim of this project was to develop a road map to support countries in EMR in developing and implementing seasonal influenza vaccination policy, strengthen influenza vaccination delivery program and address vaccine hesitancy. **Methods:** The road map was developed through consultative meetings with countries' focal points, review of relevant literature and policy documents and analysis of WHO/UNICEF Joint Reporting Form on immunization ((JRF 2015-2020) data. Countries were categorised into three groups, based on the existence of influenza vaccination policy and national regulatory authority, availability of influenza vaccine, socio-economic status and number of influenza vaccine doses distributed.

**Results:** The goal for next 5 years (2022-26) is to increase access to and use of utilization of seasonal influenza vaccine in EMR to reduce influenza-associated morbidity and mortality among priority groups for vaccination. Countries in the EMR are at different stages of implementation of the influenza vaccination program, so activities are planned under four strategic priority areas based on current situations in countries. Some countries were recommended to establish a new seasonal influenza vaccination programme and ensure the availability of vaccines, while other countries need to reduce vaccine hesitancy and enhance current seasonal influenza vaccination coverage, particularly in all high-risk groups. Countries are also encouraged to leverage COVID-19 adult vaccination programs to improve seasonal influenza vaccine uptake.

**Conclusions:** The road map proposes activities that should be adopted in the local context to develop/ update national policies and programs. Countries should learn from COVID-19 vaccination programs, and this may be an opportunity to strengthen adult immunization programme for influenza. The roadmap will not only increase seasonal influenza coverage in EMR but will also help in delivering a pandemic influenza vaccine when needed.

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### Human Papillomavirus vaccination delivery systems within National and Regional Immunization Programs: a systematic literature review

Meheret Shumet<sup>1</sup>, Marisa Felsher<sup>1</sup>, Cristinel Velicu<sup>2</sup>

<sup>1</sup>MSD, United States, <sup>2</sup>MSD (Merck, Sharp and Dohme), United States

**Introduction:** Human Papillomavirus (HPV) causes 4.5% of all new cancer cases. Efficient HPV vaccination programs are crucial to reduce the global burden of cancer. As of June 2020, 107/194 World Health Organization (WHO) Member States have introduced HPV vaccination, one-third of which are gender neutral whereby girls and boys receive vaccination. Globally, only 15% of girls and 4% of boys in the target age for HPV vaccination receive the full course. The Objective of this systematic literature review was to describe HPV delivery strategies within national and regional immunization programs in low- middle- and high-income countries to identify strategies to increase HPV vaccination coverage globally. **Methods:** We systematically reviewed studies within MEDLINE and EMBASE published between 2012-2022. Studies were included if they described immunization programs in which HPV had been included for >6 months. Key outcomes of interest were strategies utilized in the implementation of HPV delivery programs (e.g., vaccine delivery location, community awareness campaigns). Of the 2549 articles retrieved, 168 met inclusion criteria and were included for final synthesis.

**Results:** Most (n=78) articles were from North America, 31 from Europe and Central Asia, 15 from East Asia and Pacific, 8 from Africa, 5 from Latin America and Caribbean, 2 from South Asia, and 29 included multiple regions. While most articles (n=121) focused on high-income countries, 19 focused on low- or middle-income countries and 28 spanned multiple income levels. The most frequently described strategies that had a positive impact on HPV vaccine coverage included selecting optimal delivery locations for the local context, such as school-based programs (n=51), multi-sectoral collaboration (n=47), community-awareness campaigns (n=42), systematic vaccine invitations and reminders (n=37), immunization information systems (n=26) and vaccine provider education and training (n=11).

**Conclusions:** This review identified cross-cutting strategies across diverse countries that may improve HPV vaccine coverage.

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### Cape Verdean immigrant parents report very low knowledge of HPV: an urgent call for culturally grounded and sensitive education to reduce HPV-associated cancers and disparities

Ana Lindsay<sup>1</sup>

<sup>1</sup>Manning College of Nursing and Health Sciences, University of Massachusetts, Boston, United States

Racial/ethnic minoritized and immigrant parents have lower knowledge of human papillomavirus (HPV) and its cancer-related health consequences than Whites and United States (US)-born parents. Black women are disproportionately affected by HPV-associated morbidity and mortality, with the second-highest cervical cancer incidence rate compared to non-Hispanic Whites, and the highest cancer mortality rate. There is a lack of data for African ethnic minority subgroups in the US such as Cape Verdeans (CV). This exploratory cross-sectional study assessed HPV and HPV-associated cancer knowledge among CV parents of adolescents (11-17 years) in the US. A total of 109 parents, representing 109 unique families participated. About two-thirds were mothers (67%; n = 73); nearly all parents were foreign-born (96.3%, n=105) and the majority (86.2%, n=94) reported CV Creole as the primary language spoken at home. The mean HPV knowledge score was 3.5 out of 17 (SD = 3.9). Overall, mothers displayed higher knowledge of HPV transmission and cancer-related morbidity and mortality (4.4; SD = 4.1 vs. 1.7; SD = 2.8; P = 0.0001) than fathers. The knowledge item answered correctly by most parents (41.3%) was that HPV is a sexually transmitted disease. The link between genital HPV infection and cervical cancer was low with only 22% of parents correctly answering that HPV can cause cervical cancer. Though mothers were more likely than fathers (28.8%; n = 21 vs. 8.3%, n = 3; p = 0.02) to correctly identify the link between HPV and cervical cancer, it is noteworthy that less than 29% of mothers answered this knowledge item correctly. Moreover, knowledge that in women HPV can be detected by a Pap test (Pap smear) was quite low, with only 31.5% of mothers answering this item correctly. Findings highlight an urgent need for culturally grounded and sensitive HPV education program for Cape Verdeans in the US.

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### Children and young people's understanding of vaccines in the United Kingdom

Fernanda Perez<sup>1</sup>, Philip Satherley<sup>1</sup>, Jyotsna Vohra<sup>1</sup>, William Roberts<sup>1</sup>

<sup>1</sup>Royal Society for Public Health, United Kingdom

**Background and Objective:** Previous research about children and young people's (CYP) perceptions of vaccines either involve only parents or a small sample of children. Given the lack of data on their understanding of vaccines, the Royal Society for Public Health (RSPH) surveyed CYP aged 12-15 years living in the United Kingdom (UK) about their awareness of what vaccinations are and how they work, views on who the decision maker should be and understanding of different vaccines including HPV and COVID-19. **Methods:** An online survey was distributed to CYP (N=1584, sample representative of the UK population) in October 2022. Data was analysed using standard descriptive statistics and independent samples t-test.

**Results:** Most CYP think vaccines are important for their health, trust them and know what they do, however less than 60% know there is a vaccine for HPV and Meningitis and 1 in 5 do not know that there is a vaccine for Polio. Around half the CYP did not know which vaccines are available for them and many of those who have already been offered an HPV vaccine do not know this vaccine is available. Awareness and trust vary according to CYP ethnicity, with the main concerns being side effects, safety and pain. **Conclusions:** Despite trusting and knowing what vaccines are, some CYP do not know which diseases have available vaccines or which they are entitled to have in the UK. Their lack of awareness could impact uptake now and in the future, therefore more must be done to raise awareness and understanding in this group, especially with the re-emergence of diseases such as measles and polio. More research is also needed to understand why CYP from Black, Asian and mixed background have lower levels of awareness and trust of vaccines than their white peers.

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### Immune responses to the adjuvanted recombinant zoster vaccine in immunocompromised patients

Alessandra Bruno<sup>1</sup>, Luca Riggio<sup>2</sup>, Francesco Vitale<sup>3</sup>, Vincenzo Restivo<sup>4</sup>, Rosalia Caldarella<sup>5</sup>

<sup>1</sup>Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties (PROMISE), University of Palermo, Palermo, Italy,

<sup>2</sup>Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties, University of Palermo, Palermo, Italy, <sup>3</sup>PROMISE, Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties, School of Specialty in Public Health, Hygiene and

Preventive Medicine, University of Palermo, Italy, <sup>4</sup>School of Specialty in Public Health, Hygiene and Preventive Medicine, University of Palermo, <sup>5</sup>U.O.C. Clinical Analysis CORLEAB, AOU Paolo Giaccone, Palermo, Italy

**Background and Objectives:** Immunocompromised patients, who are at excess risk for herpes zoster compared to the general population, can have a lower response to vaccinations. The aim of this observational single-centre prospective study is to evaluate the immunogenicity and safety of the recombinant zoster vaccine (RZV) in adults with acquired immunodeficiency, including a subgroup of patients with Non-Hodgkin B-cell Lymphoma (NHBL) and Chronic Lymphocytic Leukaemia (CLL), who tend to develop a lower immune response. **Methods:** In this study, conducted at the University Hospital of Palermo, a heterogeneous population of 72 patients aged 18 years and older was enrolled. We assessed the vaccination-induced VZV anti-glycoprotein E production testing patients' blood serum pre-vaccination (T0), at month 1 (T1), one month after the second dose (T2), and at month 6 (T3). Participants were stratified according to underlying diseases and immunosuppression status: healthy controls (n=2), patients with NHBL and CLL (n=8), other immunocompromised patients (n=53), and patients with degenerative conditions (n=9).

**Results:** The median age of the participants is 61 years (IQR 47-69) and the majority is female (57%); 15 of them (20%) were recruited at the time of the second dose. There was a statistically significant difference between time points in all participants, as determined by one-way ANOVA ( $p < 0.001$ ) and in the immunocompromised group ( $p < 0.001$ ). A Tukey post-hoc test revealed that antibodies response at T1 and T2 was significantly higher in comparison to baseline in all participants (T1 vs T0 and T2 vs T0;  $p < 0.001$ ) and in the immunocompromised group (T1 vs T0 and T2 vs T0;  $p < 0.001$ ). **Conclusions:** A complete RZV vaccination cycle significantly increased VZV gE-specific immunity in a group of patients with a wide variety of immunocompromising conditions, including those with NHBL and CLL.

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### Early Results on safety of monkeypox vaccine using active surveillance, a bicentric study in Italy

Marco Montalti<sup>1</sup>, Zeno Valerio<sup>1</sup>, Elena Bovolenta<sup>2</sup>, Chiara Reali<sup>3</sup>, Federica Castellazzi<sup>3</sup>, Davide Resi<sup>2</sup>, Davide Gori<sup>4</sup>

<sup>1</sup>School of Hygiene and Preventive Medicine, University of Bologna, Italy,

<sup>2</sup>Department of Public Health, Bologna Local Health Authority, Italy,

<sup>3</sup>Department of Public Health, Romagna Local Health Authority, Italy,

<sup>4</sup>University of Bologna, Italy

**Background:** In August 2022, the vaccination campaign to counter the spread of monkeypox, defined by the WHO as a public health emergency, began in Italy, identifying laboratory personnel, and MSM with specific risk criteria as priority targets. In primary vaccinations, two doses of vaccine were administered intradermally while for booster vaccination, only one dose was administered. Our aim was to describe the adverse events following immunization (AEFIs) with this vaccine (MPXV) through participant-based active surveillance. **Methods:** From October 2022, the study was conducted in two Italian towns (Bologna and Forlì) population aged over 18 who received MPXV. E-questionnaire (Q1) dissemination occurred through QR-codes during the second vaccine dose appointment (or by e-mail one month after the booster dose). Participants will also be administered online questionnaires by e-mail at different points in time after the second dose: one month (Q2), and three months (Q3). A descriptive analysis was conducted to quantify AEFI incidence, stratifying Results by type and severity of symptoms. **Results:** Overall, 148 vaccine recipients were recruited in the first two months. Mean age was  $36.2 \pm 8.6$  years. After the first dose, systemic reactions were reported by 32.8% of the participants (mostly asthenia), while local site reactions were reported by 97,1%. The most common local AEFIs were redness, swelling, and itching at the injection site. Grade 3 or 4 AEFIs were reported - for local AEFIs only - by 16.8% of the participants. Recipients of subcutaneous vaccines (n=12) reported fewer and lower-grade local AEFIs. **Conclusions:** Our preliminary results suggest that MPXV has a high tolerability profile in terms of short-term common systemic AEFIs. The study will help collect data about the persistence of the frequent local AEFIs following intradermal administration.

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### Attitudes towards vaccinations in Italian cohort of IBD patients

Luciano D'Azzo<sup>1</sup>, Andrea Constantino<sup>2</sup>, Marco Michelon<sup>3</sup>, Maurizio Vecchi<sup>3</sup>, Flavio Caprioli<sup>3</sup>, Salvo Leone<sup>4</sup>, Miriam Belluzzo<sup>5</sup>, Alessandro Carubia<sup>5</sup>, Tania Vitelli<sup>5</sup>, Luigi Zagra<sup>5</sup>, Francesco Balsamo<sup>5</sup>, Martina Sciortino<sup>5</sup>, Nicole Bonaccorso<sup>5</sup>, Angelo Fertitta<sup>5</sup>, Francesco Vitale<sup>5</sup>, Claudio Constantino<sup>5</sup>

<sup>1</sup>Scuola di Specializzazione in Igiene e Medicina Preventiva, Dipartimento PROMISE, Università degli Studi di Palermo, Italy, <sup>2</sup>Department of Pathophysiology and Transplantation University of Milan, Italy, <sup>3</sup>Department of Pathophysiology and Transplantation, University of Milan, Italy, <sup>4</sup>AMICI ETS, Italy, <sup>5</sup>Department of Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties, G. D'Alessandro University of Palermo, Italy

**Background and Objectives:** Patients affected by inflammatory bowel diseases (IBD) often require immunosuppressive treatments which may increase the risk of opportunistic infections. Several guidelines suggest to investigate patients' vaccination status before starting any treatment and perform vaccinations against vaccine preventable diseases (VPDs). Nevertheless, vaccination rates in IBD patients are not suboptimal and may also be lower than those in general population. Aim of the study was to investigate vaccination coverage against VPDs and its possible determinants among a cohort of IBD patients. **Methods:** An anonymous validated questionnaire was sent by the Italian IBD patients' association "AMICI-ETS" to their members through mailing lists and social media. Patients were asked to report their vaccination status and their attitude towards vaccinations between favorable, opposing, or uncaring. The factors influencing attitude towards vaccinations were examined calculating crude and adjusted odds-ratios (AdjORs) with 95% confidence-intervals (CIs).

**Results:** The questionnaire was sent to 4039 patients with a response rate of 25.3% (n=1252). Socio-demographic and clinical characteristics. Overall, 79% have referred to be vaccinated against most of VPDs while 252 (20.7%) did not remember any previous vaccination. 1152 of respondents (88.8%) stated a positive attitude towards vaccines, while the rest were uncaring or against vaccinations (7.3% and 3.9% respectively). The determinant influencing the positive attitude towards vaccinations was the belief of possible return of VPDs with decline of vaccination coverage rates (AdjOR 5.67, 95% CI 3.45-9.30, p-value < 0.001). **Conclusions:** Despite the high percentage of patients showing a positive attitude towards vaccinations which was mainly influenced by the greater awareness of VPDs with the decline of vaccination rates, study confirmed a low vaccination rate among IBD population. This may suggest a central role of physicians in prescribing vaccinations since most patients have a positive attitude, even developing vaccination campaigns to increase vaccinations' rates in IBD patients.

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### Efficacy and safety of quadrivalent conjugate meningococcal vaccines: a systematic review and meta-analysis

Andrea Conti<sup>1</sup>, Gaia Broglia<sup>1</sup>, Chiara Sacchi<sup>1</sup>, Fabrizia Risi<sup>1</sup>, Francesco Barone-Adesi<sup>1</sup>, Massimiliano Panella<sup>1</sup>

<sup>1</sup>Department of Translational Medicine, Università del Piemonte Orientale, Italy

**Background and Objective:** Over the last decades, different antimeningococcal quadrivalent (MenACWY) vaccines have been developed as different formulations (diphtheria toxoid conjugate, MenACWY-D; tetanus toxoid conjugate, MenACWY-TT; CRM197 protein conjugate, MenACWY-CRM). However, their availability varies worldwide, both in terms of authorized formulations and of inclusion in vaccination schedules. Furthermore, several countries include only the monovalent meningococcal C (MenC) vaccine in their immunization programmes. Finally, there is currently no updated systematic review that directly compares the MenACWY formulations. Thus, we systematically summarized the evidence on efficacy and safety of MenACWY vaccines. **Methods:** Four parallel, independent systematic literature searches were carried out to identify randomized controlled trials performed comparing the above-mentioned vaccines. Serum bactericidal activity and the proportion of adverse events were considered as outcome for efficacy and for safety, respectively. When possible, a random effect meta-analysis was performed, and Results were reported as risk ratios.

**Results:** A total of 16 studies have been included. In terms of efficacy, MenACWY-TT outperformed MenACWY-D (risk ratio (RR): 1.12; 95% confidence interval (CI): 1.06- 1.19) and MenACWY-CRM (RR: 1.12; 95% CI: 1.05-1.19) for A, W-135, and Y serogroups, while no significant difference was found for serogroup C. Furthermore, we did not find significant differences in efficacy between MenC and MenACWY-TT. Regarding the safety, we were able to perform a quantitative analysis only between MenACWY-TT and MenC, finding no significant differences in the occurrence of adverse events. Similarly, among the different MenACWY formulations no relevant differences were identified.

**Conclusions:** MenACWY-TT was found more effective than the other formulations, and its efficacy against serogroup C was comparable to the MenC. Safety profiles were similar among all the investigated vaccines. These findings suggest that MenACWY-TT could be preferable to other formulations to improve current

vaccination programs and to better develop future immunization policies.

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### Barriers and strength factors of adult immunization plans in seven countries of the European Region

Gaia Lombardi<sup>1</sup>, Serena Tumelero<sup>2</sup>, Teresa Lanza<sup>3</sup>, Andrea Paladini<sup>1</sup>, Carolina Castagna<sup>1</sup>, Chiara Cadeddu<sup>4</sup>

<sup>1</sup>Section of Hygiene, Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>2</sup>Aix-Marseille Université, Marseille, France, <sup>3</sup>Università Cattolica del Sacro Cuore, Italy, <sup>4</sup>Section of Hygiene, Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Rome

**Background and Objective:** Adult vaccinations are a core pillar of any preventive health strategy. Nevertheless, adults have far fewer vaccinations recommended in the schedule with respect to other age groups, as well as reduced funding, few registries for tracking and recall and fewer incentives. In the European context, the adult vaccination plans are not homogeneous and an increasing number of countries show very different vaccination coverage rates. Starting from these premises, the present systematic review analyzes existing strategies and policies used for adult vaccination of seven countries of the European region, emphasizing weaknesses and strengths of immunization schedules.

**Methods:** Selected countries were Germany, France, UK, Italy and Spain plus Sweden, as an example of a country implementing recognized best practices for vaccination, and Romania, for its difficulties due to widespread vaccine hesitancy. Three main scientific databases (PubMed, Scopus and web of science) were queried and the PRISMA guidelines were followed. Studies assessing weaknesses or strengths factors, facilitators and barriers related to the adult vaccination plans were considered eligible. Quality assessment of included studies was also conducted.

**Results:** We included ten studies with a medium/high score at the quality assessment. Main barriers and strength factors for vaccination can be divided into the following categories: financial aspects (e.g. If the vaccine has a funding mechanism); administrative/practical factors (e.g. Complex booking systems); geographical factors (e.g. Geographical proximity, places of vaccination); factors related to healthcare professionals (e.g. Availability of trained staff); factors related to vaccine supply.

**Conclusions:** Substantial improvement in adult vaccination uptake is urgently necessary in order to decrease the burden of infectious disease on healthcare systems. In order to achieve this goal, vaccination strategies and policies should leverage on the existing facilitators of immunization plans and try to remove local barriers to vaccine uptake.

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### Analyzing COVID-19 vaccine hesitancy among Nepalese people: a cross-sectional study at National level

Ghanshyam Bhatta<sup>1</sup>, Sujit Sah<sup>2</sup>, Tom Pignon<sup>3</sup>, Suman Rawal<sup>4</sup>, Josue Orellana<sup>5</sup>, Bibek Lal<sup>6</sup>, Sagar Dahal<sup>6</sup>, Ramesh Adhikari<sup>7</sup>

<sup>1</sup>Adventist Development and Relief Agency (ADRA) Nepal, <sup>2</sup>Adventist Development and Relief Agency (ADRA), Sanepa, Lalitpur, Nepal, <sup>3</sup>Adventist Development and Relief Agency (ADRA), Sanepa, Nepal, <sup>4</sup>Adventist Development and Relief Agency (ADRA), Lalitpur, Nepal, <sup>5</sup>Adventist Development and Relief Agency (ADRA) International, United States, <sup>6</sup>Family Welfare Division, DoHS, Ministry of Health and Population, Kathmandu Nepal, <sup>7</sup>Center for Research on Education, Health and Social Science (CREHSS), Kathmandu Nepal

**Background:** The coronavirus disease 2019 (COVID-19) pandemic has caused massive disruption affecting the lives of billions of people worldwide. Vaccine hesitancy remains a barrier in the fight against COVID-19. The main objective was to assess COVID-19 vaccine hesitancy rate and its associated factors among the Nepalese people.

**Methods:** A cross-sectional study design was used to collect quantitative data from all seven provinces. A total of 728 community people aged  $\geq 18$  years were surveyed to gather information. Bivariate and multivariate analyses were performed.

**Results:** More than half of respondents (56%) were females whereas 34% belonged to age group 25-34 years. More than half of respondents (52%) lost their family income due to COVID-19. Overall, a fifth of the Nepalese people (19.6%) have COVID-19 vaccine hesitancy. The main reasons were fear of side effects (62%) and doubt on vaccine efficacy (50%). Bivariate analysis showed a significant association of vaccine hesitancy with province, age group, religion, ethnicity, level

of education and source of family income. Furthermore, multivariate analysis shows that respondents from province 2 were about three times (aOR=2.9, 95% CI=1.2-6.9) more likely to show vaccine hesitancy than respondents from province 1. Likewise, respondents who were Muslim were eight times (aOR=7.9, 95% CI=1.28-48), and respondents who were from a marginalized ethnic group were three times (aOR=2.5, 95% CI=1.3-5) more likely to show hesitancy. Those respondents who had completed basic education (aOR=0.3, 95% CI=0.16-0.59) and secondary (aOR=0.36, 95% CI=0.17-0.8) and above were less likely to show vaccine hesitancy than those who were illiterate.

**Conclusions:** The prevalence of COVID-19 vaccine hesitancy was high in Nepal. This hesitancy is driven by the peoples attitude towards the health system and vaccine. There is a need to increase the advocacy and awareness of the COVID-19 vaccine to eliminate the hesitancy and increase the vaccine acceptance rate.

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### Immunize BC's informed choice program

Lily Crist<sup>1</sup>, Craig Thompson<sup>2</sup>

<sup>1</sup>Public Health Association of British Columbia, Canada, <sup>2</sup>Public Health Association of British Columbia, Victoria, Canada

On July 1, 2019 the BC ministry of health enacted a mandatory vaccination status reporting regulation (VSRR) under the public health act. Under the regulation, every student (excluding those attending schools in indigenous communities) from kindergarten to grade 12 attending public and independent schools, including those home schooled, are expected to have a completed immunization record in the provincial immunization registry. A secondary goal is to provide evidence-based information regarding the importance of immunization and the risks associated when choosing not to immunize. The public health association of BC (PHABC) was given the task to develop an evidence-based immunization education module. The module is intended for parents of children whose records have not been submitted/incomplete. The PHABC conducted an environmental scan to evaluate how other provinces and countries were managing vaccine-hesitant parents. The PHABC found most approaches limited to print materials. In cases where active measures were in place, the approach was ineffective. Under circumstances where a course was required to complete, participants were polarised further. We analyzed what the target audience believed. We concluded a one-size-fits-all approach was not effective because of the variety of reasons for vaccine hesitancy. We were able to summarize these into eight categories. We chose a different approach. The PHABC did not want to trivialize the concerns of vaccine-hesitant parents. We created a 'safe place' where parents could explore questions/answers that challenged their beliefs. Our approach took a straightforward and compassionate style adapted to their specific perspective. Our goal is to motivate hesitant parents, gently, to reflect on the sources of their information so they might move from vaccine-hesitancy towards immunization. We believe it is by establishing trust and respect that we can advance towards parents making an informed decision in the right direction.

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### Characteristics of effective educational interventions targeting healthcare workers to improve advising about vaccinations for older adults: a systematic review

Manuela Wennekes<sup>1</sup>, Tímea Almási<sup>2</sup>, Renske Eilers<sup>3</sup>, Fruzsina Mezei<sup>2</sup>, Zsuzsanna Petykó<sup>2</sup>, Aura Timen<sup>4</sup>, Zoltán Vokó<sup>2</sup>

<sup>1</sup>National Institute of Public Health and the Environment (RIVM), Netherlands, <sup>2</sup>Syreon Research Institute, Budapest, Hungary, <sup>3</sup>National Coordination Centre for Communicable Disease Control, National Institute of Public Health and the Environment (RIVM), Bilthoven, The Netherlands, <sup>4</sup>Department of Primary and Community Care, Radboud University Medical Center, Nijmegen, The Netherlands

**Background and Objective:** Healthcare workers (HCW) play an important role in vaccine acceptance of older adults (OA). A systematic review was conducted to identify effective educational interventions targeting HCW to improve advising on vaccinations.

**Methods:** Medline, Scopus, Cochrane library and grey literature were searched for comparative studies on educational interventions targeting HCWs' advising on vaccines for OA. No restrictions were applied to language and publication year. Where possible, a sub-analysis on publication year was conducted. In total 48 studies were included. The quality of the included studies was assessed with the RoB 2 for RCTs and the GRADE checklist for non-randomized studies. Study outcomes were categorized according to the Kirkpatrick model for effectiveness, consisting of four levels: reaction, learning, behaviour, and results (Kirkpatrick,

1996).

Results: 17 Of the 27 RCTs and seven of the 21 non-randomized studies were at low to medium risk for bias, respectively. Most studies included reminder systems signalling patients due for vaccination. Other interventions were seminars, academic detailing and peer-comparison feedback. In the four articles reporting on the reaction-level, most HCWs were positive about the intervention. Moreover, two of five articles reporting on the learning-level, found positive changes in attitude or knowledge due to the intervention. Of fourteen studies reporting on the behaviour-level, those published after the year 2000 testing tailored reminders vs. usual care were most effective in increasing vaccination offering by HCWs. Of 34 studies reporting on the Results-level, those published prior to 2000 testing tailored reminders vs. usual care were most effective in increasing vaccination rates, followed by multicomponent interventions. Classic education only (e.g., lectures) was often ineffective, compared to other interventions.

Conclusions: Tailored reminders are effective in supporting HCWs to suggest vaccines to OA, while classic education seems ineffective. Multicomponent interventions often combined classic educational methods with reminders and proved also effective.

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### The use of test-negative case-control studies to determine the effectiveness of influenza vaccination in pregnancy: results from a systematic review and meta-analysis

Pietro Ferrara<sup>1</sup>, Lorenzo Losa<sup>1</sup>, Lorenzo Mantovani<sup>1</sup>

<sup>1</sup>Center for Public Health Research, University of Milan-Bicocca, Monza, Italy

Background and Objective: Real-world evidence (RWE) is essential for estimating influenza vaccine effectiveness (IVE) in wide-ranging high-risk groups by time, place and epidemic strain. Among high-risk groups, pregnant women are at increased risk for influenza-associated morbidity, hospitalization and mortality, and their vaccination is a highest public health priority. However, monitoring IVE among pregnant women remains challenging in nonrandomized studies. Since data from test-negative case-control designs (TND) are widely used for assessing IVE, this literature synthesis aims at synthesizing the existing evidence about their use in pregnant populations.

Methods: A structured literature search was conducted on PubMed/Medline, Scopus and grey literature through November 2022, following PRISMA guidelines. IVE – calculated as  $1 - \text{odds ratio} \times 100\%$  – was pooled through meta-analysis. Risk of bias was assessed using the ROBINS-I tool.

Results: Nine studies conducted during the 2019/10–2017/18 influenza seasons were included, of which three were specifically designed to investigate IVE during pregnancy and were pooled in the meta-analysis. The pooled estimate of IVE from TND studies was 60% (95% confidence interval 45–75; I<sup>2</sup> = 64%) against medically-attended laboratory-confirmed influenza illness. The remaining six reports included 'pregnancy' in surveillance-based studies, and found that it was negatively associated with vaccination uptake and positively with hospitalization with confirmed influenza. Overall, studies were considered at low/moderate risk of bias using the ROBINS-I tool.

Conclusions: Pooling data from RWE to estimate IVE against severe outcomes in pregnant women is crucial to inform vaccination policy. While TND offers notable advantages in estimating IVE – such as minimizing outcome misclassification of the disease –, novel well-conducted TND are needed to provide reliable estimates of IVE according to influenza subtype and vaccine type. Finally, surveillance systems that incorporated TND should expand data collection to better account for pregnancy.

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### Understanding the barriers to HPV vaccine uptake: an exploration of the Canadian landscape on HPV immunization programming opportunities

Cordell Neudorf<sup>1</sup>, Thilina Bandara<sup>2</sup>, Mika Rathwell<sup>1</sup>, Jaspreet Saini<sup>3</sup>

<sup>1</sup>Urban Public Health Network, University of Saskatchewan, Ottawa, Canada,

<sup>2</sup>School of Public Health, University of Saskatchewan, Saskatchewan,

Canada, <sup>3</sup>Canadian Partnership Against Cancer, Canada

Background and Objectives: The Canadian partnership against cancer has provided funding to the urban public health network to assess the landscape of HPV immunization coverage, barriers, and opportunities at a sub-jurisdictional level, in order to achieve the target of 90% HPV immunization to support the work of the action plan to eliminate cervical cancer in Canada by 2040. This work has involved engaging local public health organizations across Canada to uncover high-resolution quality improvement targets of investment for underimmunized

populations.

Methods: This project uses a mixed-method design to understand barriers and facilitators to increasing HPV immunization uptake at a sub-provincial level. Stakeholders were engaged from across Canada and analysts were placed in four local public health units, to extract sub-provincial level HPV programming insights. HPV immunization data was collected at a sub-provincial level, and in some cases, down to a postal code or school level. Coverage rates were then linked to socio-demographic indicators where possible to identify pockets of under-immunization. To further determine barriers and facilitators, surveys, focus groups, and interviews took place with caregivers and providers.

Results: Preliminary results indicate the availability of HPV immunization data is highly variable across Canada, as is HPV immunization programming. Barriers to immunization have been identified at both individual (e.g. Lack of healthcare provider recommendation, misinformation) and systems-level (e.g. Absence of a national immunization registry) in participating regions to varying degrees.

Conclusions: Understanding how barriers and facilitators impact HPV immunization uptake at a local level is critical to implementing innovative policies and programming. Findings will be reported by region and/or subgroup, as well as aggregated nationally to inform recommendations made to CPAC on ways to address inequities in access and uptake.

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### Vaccination coverage in diabetic patients in the Lombardy region

Catia Borriello<sup>1</sup>, Danilo Cereda<sup>1</sup>, Sara Piccinelli<sup>2</sup>, Giovanni Cicconi<sup>2</sup>, Roberta Lattanzio<sup>2</sup>, Chiara Marrocu<sup>2</sup>, Sudwaric Sharma<sup>2</sup>, Riccardo Vecchio<sup>3</sup>

<sup>1</sup>Directorate General Welfare Region Lombardy, Milano, Italy, <sup>2</sup>Department

of Biomedical Sciences for Health, University of Milano Statale, Italy,

<sup>3</sup>Department of Public Health, Experimental and Forensic Medicine, University of Pavia, Italy

Background and Objective: Diabetes mellitus is associated with an increased incidence of infections and a greater severity and frequency of related complications. In particular, the risk of hospitalization and death from infectious causes in this category of patients is double compared to euglycemic subjects.

The vaccinations provided for by the National Vaccine Prevention Plan and recommended by the Italian Diabetes companies are the anti-flu, the anti-pneumococcal, the new recombinant anti-zoster, the anti-diphtheria, tetanus, and pertussis and the anti-SARS-COV2 vaccine. The goal of this work is determining the vaccination coverage for the main recommended vaccinations and for COVID-19 in the Lombard diabetic population. Methods: A chi-square test has been used to assess: whether the presence of diabetes influenced the choice to get vaccinated or not; the test was used to verify if the observed frequencies in one or more categories correspond to the expected frequencies, if the null hypothesis were true, if there are differences in terms of vaccine doses made on the basis of the type of diabetes. A statistical significance level of p-value <0.05 (5%) was used initially and, later, more conservatively p-value <0.02 (2%) due to the practical application of the correction Bonferroni hypothesis.

Results: Of the total diabetic subjects, 264058 subjects (46.19%) received the influenza vaccine, 60980 (10.67%) patients received the pneumococcal vaccine, 15137 (26.25%) received the meningococcal vaccine, 4132 (0.72%) received a type of anti-Herpes Zoster vaccine. Conclusions: The vaccination coverage in diabetic population, excluding the recent anti-SARS-COV2 vaccination campaign, is currently insufficient. In general, this study has demonstrated a significant correlation between the presence of diabetes and adherence to vaccinations. Adherence is greater among patients with type 2 diabetes than in patients with type 1 diabetes: this is likely related to the presence of more comorbidities among patients with type 2 diabetes.

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### Determinants of vaccine hesitancy towards pediatric and adolescent vaccinations and interventions aimed at contrasting that issue in Europe: an overview of systematic reviews

Alessandro Durbano<sup>1</sup>, Giuseppina Moro<sup>1</sup>, Maria Ferrara<sup>2</sup>, Elisa Langiano<sup>2</sup>, Alessandra Sannella<sup>2</sup>, Sonia Pinto<sup>1</sup>, Alex Pivi<sup>3</sup>, Sara Sbaragli<sup>2</sup>, Maurizio Esposito<sup>2</sup>, Elisabetta Vito<sup>2</sup>, Roberta Siliquini<sup>3,4</sup>

<sup>1</sup>Department of Public Health Sciences, University of Turin, Turin, Italy,

<sup>2</sup>Department of Human, Social and Health Sciences, University of Cassino

and Southern Lazio, Cassino, Italy, <sup>3</sup>Department of Public Health Sciences,

University of Turin, <sup>4</sup>A.O.U. City of Health and Science of Turin, Italy

Background and Objective: Vaccine hesitancy represents a relevant threat to global health. Specifically, vaccine hesitancy has shown an increase in the last

two decades in Europe. The present overview aimed to describe determinants of vaccine hesitancy and interventions to reduce vaccine hesitancy or increase vaccine uptake among children and adolescents in Europe.

**Methods:** We developed a comprehensive search strategy to find the latest existing systematic reviews on the following databases: PubMed, Embase, and Epistemonikos, including only papers published in 2017 or after. The search was performed in 2022. Only papers about determinants or interventions addressed to parents, children, or adolescents were considered eligible. Each article was screened at least by two authors, blinded to each other's decisions. This overview has been conducted within the project "VAX-TRUST, addressing vaccine hesitancy in Europe" (This project has received funding from European Union's Horizon 2020 research and innovation program under Grant Agreement No. 965280).

**Results:** A total of 3363 records were screened. The final set of selected papers consisted of 28 systematic reviews. We examined the overlap of the systematic reviews within the overview using the CCA index obtaining the value of 1.39%, thus suggesting a low overlap. A total of 232 European primary studies contained in the systematic reviews were identified (212 observational studies and 20 experimental studies, including 15 RCTs and 5 quasi-experimental studies). Preliminary analyses showed that safety and trust concerns were the most frequently reported hesitancy determinants and the implementation of school programs involving nurses and general practitioners was the most frequently reported effective intervention.

**Conclusions:** This overview mainly highlighted issues in trust and safety concerns and suggested that school programs can be effective in the European context. It is essential to continue to study the reasons for vaccination hesitancy and to search for methods to decrease the phenomenon.

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### Vaccination hesitancy among parents of school children in the United Arab Emirates: a cross-sectional study

Anusha Sreejith<sup>1</sup>, Aya Hassan<sup>2</sup>, Anusha Sreejith<sup>1</sup>

<sup>1</sup>Department of Community Medicine, College of Medicine, Gulf Medical University, Ajman, United Arab Emirates, <sup>2</sup>Abu Dhabi Vocational Education and Training Institute, Abu Dhabi, United Arab Emirates

**Background and Objectives:** Parental vaccine hesitancy may hinder routine vaccinations of children and increase the risk of vaccine-preventable infections. This study was conducted to assess the prevalence and determinants of parental vaccine hesitancy in the United Arab Emirates. **Methods and Materials:** This cross-sectional study was conducted among 446 the parents using a self-administered questionnaire. Parents Attitudes about Childhood Vaccines (PACV) survey tool was used to assess the vaccine hesitancy and WHO's Vaccine Hesitancy Survey Questions were used to seek information about the factors. Data analysis was done using SPSS version 28. Chi square test was used to find the association and binary logistic regression was used to determine the factors.

**Results:** The prevalence of vaccine hesitancy among parents was found to be 36%. Vaccine hesitancy was influenced by age, education, and gender. It was more common for mothers, parents with a bachelor's degree, and parents younger than 40 to express hesitation. The odds ratio showed that the variables: those who do not have enough knowledge about vaccines, those who do not trust the health system, those who do not think vaccine preventable diseases are serious, immunization not as a social norm, religion, culture, political decisions, cost, and negative motive of pharmaceutical companies in manufacturing vaccines were almost 4 times more likely to be vaccine hesitant.

**Conclusions:** Prevalence of vaccine hesitancy in the UAE is about 36% and is a major concern. Many factors have been identified from this study which make parents hesitant towards vaccines. Health care professionals are in an excellent position to provide parents with information regarding the potential benefits of immunizations.

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### The vaccination coverage rate in under-five children in Nasiriyah (Iraq) before and during the COVID-19 pandemic

Elham Ahmadnezhad<sup>1</sup>, Ali Alhaddad<sup>2</sup>, Akbar Fotouhi<sup>2</sup>

<sup>1</sup>National Institute of Health Research, Tehran University of Medical Sciences, Iran, <sup>2</sup>Tehran University of Medical Sciences, Iran

**Background and Objectives:** One of the essential services in health centers is vaccination programs for achieving universal health coverage. During COVID-19 pandemic, 90% of countries reported disruption in vaccination, especially in the earlier phases of the COVID-19. This is a trend study aimed to compare the vaccination coverage rate (VCR) in Under-5 children in Nasiriyah (Iraq) before

and during the COVID-19 pandemic. **Methods:** This cross-sectional study was conducted in the city of Nasiriyah in southeastern Iraq, with data collected from 79 primary health care facilities. This study evaluated the VCR in 3 periods (2018, 2019, and 2020) using multi-level random sampling. Pertinent data were extracted from the vaccination records of 598 children for Bacillus Calmette-Guérin (BCG); pentavalent 1, 2, and 3; measles; and activated oral poliovirus vaccine (OPV) 1 and 2. Missing data were completed by telephone calls to participants' parents. Logistic regression was applied to compare and estimate the odds ratios (ORs) with 95% confidence intervals (CIs) for the association between VCR and related factors.

**Results:** The early period of the COVID-19 pandemic (2019) showed the greatest decline in the studied vaccines. Among the vaccines studied, BCG had the highest rate in all 3 periods (100% VCR) and measles had the lowest rate (83.7%), reaching 63.6% in 2020 ( $P < 0.001$ ). The highest OR among all types of vaccine were found for the pentavalent-2 vaccine among city dwellers and those born in 2020 (OR=2.67; 95% CI, 1.39-5.10 and OR=2.34; 95% CI, 1.28-4.28, respectively). **Conclusions:** The VCR for children decreased during the COVID-19 pandemic in Iraq, and new health policies are needed to increase the coverage rate. Improving the knowledge and attitudes of parents, as well as removing barriers or risk factors, can also be effective in improving the VCR.

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### Prevalence of observed BCG scar in a cohort of health care workers from three Lusophone sub-Saharan African countries: cross-sectional comparative study

Ines Fronteira<sup>1</sup>, Frederik Schaltz-Buchholzer<sup>2</sup>, Isabel Araújo<sup>3</sup>, Lídia Nhamussua<sup>4</sup>, Paulo Ferrinho<sup>5</sup>, Christine Benn<sup>6</sup>

<sup>1</sup>Global Health and Tropical Medicine, Institute of Hygiene and Tropical Medicine, Universidade NOVA de Lisboa, Lisboa, Portugal, <sup>2</sup>Odense Patient data Explorative Network (OPEN), Institute of Clinical Research, Odense University Hospital, University of Southern Denmark, Denmark, <sup>3</sup>Faculdade de Ciências e Tecnologia, Universidade de Cabo Verde, Cape Verde, <sup>4</sup>Manhica Health Research Center, Maputo, Mozambique, <sup>5</sup>Global Health and Tropical Medicine, Institute of Hygiene and Tropical Medicine, Universidade NOVA de Lisboa, Portugal, <sup>6</sup>OPEN, Odense Patient data Explorative Network, Institute of Clinical Research, Odense University Hospital, University of Southern Denmark, Denmark

**Background and Objectives:** The BCG vaccine scar is often used as a surrogate marker of adequate vaccination, indicating correctness of the technique and effective vaccination. This study reports the prevalence of observed BCG scars and studies potential determinants in Health Care Workers (HCW) from Cabo Verde, Guinea-Bissau, and Mozambique.

**Methods:** Observational cross-sectional study of baseline data collected within the BCG-COVID-RCT trial [1] in Cabo Verde, Guinea-Bissau, and Mozambique. Participants were HCW working in hospitals and health centres. Presence of BCG scar was by a physical assessment of BCG scars including number and location(s) of observed BCG scars and self-reported vaccinations with BCG. Prevalence rates adjusted for age, gender, occupation, number of times vaccinated with BCG, chronic disease, and time of birth in relation to BCG vaccination policy were computed using Poisson regression with robust variance for the outcome observed BCG scar. Analyses are presented by country, controlling for differences in local BCG vaccination strategies.

**Results:** The prevalence BCG scar was 85.5% in Mozambican HCW, 75.0% in Guineans and 70.0% in Cabo Verdean HCW. The prevalence of scars was not associated with any of the studied background characteristics: gender, age, morbidity and occupation. After controlling for gender, age and occupation, having a BCG scar was found to be associated with having been born after the implementation of universal BCG vaccine at birth, being vaccinated more than once and being overweight or obese only for Guinea-Bissau.

**Conclusions:** Results demonstrate a relatively high prevalence of BCG scar among HCW in Cabo Verde, Guinea-Bissau, and Mozambique. There seems to have been catch-up programs for people born before the Introduction of BCG at birth in Mozambique and CV. Between 15-30% of the studied HCW still do not have a BCG scar. The role of a BCG scar for subsequent health in adults should be investigated. Links: [1] <https://clinicaltrials.gov/ct2/show/NCT04641858>

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### Vaccination among HIV+ patients: an Italian cross-sectional survey

Alex Pivi<sup>1</sup>, Antonino Russotto<sup>1</sup>, Benedetta Mollero<sup>1</sup>, Giancarlo Orofino<sup>2</sup>,

Gianluca Voglino<sup>3</sup>, Fabrizio Bert<sup>4,5</sup>, Roberta Siliquini<sup>6,7</sup>

<sup>1</sup>Department of Public Health Sciences, University of Turin, Italy, <sup>2</sup>Amedeo di Savoia Hospital, Turin, Italy, <sup>3</sup>Ministry of Health, Rome, Italy, <sup>4</sup>Health Local Unit ASL T03, Turin, Italy, <sup>5</sup>University of Turin, Department of Sciences of Public Health and Pediatrics, Italy, <sup>6</sup>Azienda Ospedaliero-Universitaria, City of Health and Science of Turin, Turin, Italy, <sup>7</sup>Department of Sciences of Public Health and Pediatrics, University of Turin, Turin, Italy

**Background:** The purpose of this study was to assess knowledge, attitudes and practices (KAP) among people living with HIV (PLWH) about general vaccination and their trust on the Italian National Health Service (NHS). **Methods:** A cross-sectional study was conducted by administering questionnaires to 160 patients followed by Amedeo di Savoia Hospital in Turin. Statistical analyses were performed to describe the samples vaccination status, its willingness to get vaccinated, the perception of the risk and the severity of infections preventable with vaccination and its trust on the Italian NHS.

**Results:** Means for vaccination status, vaccination intention, perceived risk of infection, and disease severity were calculated by grouping infections into two sets: the first was formed by sexually transmitted infections and the second by the remaining. Percentages of the two groups do not differ in being already vaccinated, willingness to be vaccinated (if not already immune), and perceived low risk of infection (51,16%, 14,76%, 75,65% for the former and 48,58%, 20,61%, 76,33% for the latter, respectively) but in perceived high risk of severity (81,7% vs 65,25%). Regarding patients opinion of the Italian NHS, interesting results were that while 95.63% of the sample believe the information provided by healthcare professionals (HCPs) and 93.08% believe that they are up-to-date on vaccines, 33.33% of the sample believe that HCPs do not give enough information about the risks related to vaccination, 40.25% believe that patients are judged by HCPs in case of unwillingness to get vaccinated and 19.50% believe that HCPs have financial interests in vaccinating. **Conclusions:** Some HIV+ patients may be hesitant to be vaccinated or believe that some infectious diseases are not dangerous. Furthermore, there is some criticality about their trust on the Italian NHS.

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### Hospital-Territory Vaccination Center: pilot study on a multidisciplinary model for administration of recombinant zoster vaccine in fragile patients

Silvia Martinelli<sup>1</sup>, Luca Regazzi<sup>2</sup>, Chiara Cadeddu<sup>2</sup>, Antonietta Spadea<sup>3</sup>, Enrica Tamburrini<sup>2</sup>, Pierluigi Salvo<sup>1</sup>, Silvia Bosello<sup>1</sup>, Maria D'Agostino<sup>1</sup>, Simona Sica<sup>1</sup>, Francesco Landi<sup>1</sup>, Rossella Mancini<sup>3</sup>, Federica Rizzo<sup>1</sup>, Domenico Pascucci<sup>1</sup>, Patrizia Laurenti<sup>1</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore, Italy, <sup>2</sup>Università Cattolica del Sacro Cuore, Italy, <sup>3</sup>ASL Roma 1, Italy

**Background and Objectives:** The literature indicates that target populations eligible for vaccinations are not comprehensively reached by out-of-hospital health services, particularly frail people with immunization deficits. The aim of this study was to evaluate the effectiveness of a model of shared management between hospital (IRCCS Fondazione Policlinico Universitario A. Gemelli) and out-of-hospital health services (ASL Roma 1) of fragile patients with an indication for herpes zoster (HZ) vaccination, based on counseling carried out by a multidisciplinary team in the hospital setting.

**Methods:** From June 2022 to November 2022, patients with congenital and/or acquired immunodepression, who were treated at the IRCCS Fondazione Policlinico Universitario A. Gemelli in the Units of Hematology, Geriatrics, Infectious Diseases, Rheumatology were selected and offered vaccination with the recombinant Zoster vaccine. At the time of enrollment, all patients completed the Vaccination Attitudes Examination (VAX-I) scale, for the purpose of assessing vaccine hesitancy. Patients received multidisciplinary counseling focusing on HZ and contrasting vaccine hesitancy. Multiple linear regression was used to analyze the impact of demographic and clinical characteristics on the VAX-I items.

**Results:** Thirty-five fragile patients were included. Mean vaccine hesitancy score was 2.3±1.0. A significant correlation between vaccine hesitancy and the age group of 45 to 64 years was demonstrated ( $p=0.0001$ ). Patients with ages between 45 and 64 years had significantly higher score of "mistrust of vaccine benefits", "worries about unforeseen future effects", "concerns about commercial profiteering" and "preference for natural immunity". After counseling, all patients adhered to the vaccination with two doses of a recombinant zoster vaccine. No serious adverse events or breakthrough HZ infections were observed during a median follow-up of 62 days (IQR=23).

**Conclusions:** Although vaccine hesitancy in some age groups is high, hospital-based multidisciplinary counseling achieved full HZ vaccination compliance.

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### Human Papillomavirus (HPV) vaccination recovery campaign in Emilia-Romagna region, Italy: impact on vaccination coverage in women up to 25 years

Valentina Giampà<sup>1</sup>, Stefania Paduano<sup>2</sup>, Gabriella Frasca<sup>3</sup>, Giovanna Mattei<sup>3</sup>, Giuseppe Diegoli<sup>3</sup>, Annalisa Bargellini<sup>4</sup>, Christian Cintori<sup>3</sup>

<sup>1</sup>Department of Biomedical, Metabolic and Neural Sciences, Section of Public Health, University of Modena and Reggio Emilia, Modena, Italy,

<sup>2</sup>Section of Public Health, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy, <sup>3</sup>Regional Health Authority, Emilia Romagna Region, Bologna, Italy, <sup>4</sup>Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy

**Background:** Vaccination is the main intervention for primary prevention against HPV-related cancers, such as cervical cancer. The most recent vaccine, used in Italy and Emilia-Romagna Region (RER), is a nine-valent vaccine that prevent more than 90% of precancerous lesions. In Italy, vaccination has been offered for 11-year-olds since 2008 (birth cohort 1997); RER, from June 2019, offers HPV-vaccination to all 25-year women, not previously vaccinated, by Regional Act 1045/2019 (RA). This study aims to evaluate the vaccination coverage in women up to 25 years-old, after 3 years from RA.

**Methods:** We analysed vaccination coverage data before and after RA with SAS-enterprise. We considered women of 1995, 1996, 1997 birth cohorts, with HPV-vaccination cycle started from July 2019, in the year of their 25th birthday. According to RA active call is at 25th birthday and the vaccination cycle should be started before 26 years-old to be entitled to free admission.

**Results:** From July 2019 to November 2022, 4025 women have started HPV-vaccination cycle in RER and 55.5% of them have already completed it. We found an increase of vaccination coverage for 1995-1996-1997 cohort of 7.7%, 7.6% and 4.6% for 1st dose, respectively, and 5.8%, 4.1% and 1.1% for completed cycle. The mean current coverage is 35.8%, 60.0%, 72.9% for 1st dose and 26.4%, 52.4%, 67.7% for a full course, for 1995-1996-1997 cohort respectively.

**Conclusions:** Preliminary data show increased vaccination coverage on all considered cohorts. The greatest increase was for 1995-1996 cohorts, while 1997 cohort may have been more affected by the delays due to the COVID-19 pandemic. Active call policies may be associated with this increased coverage. The first effects of HPV vaccination have already been visible on secondary prevention programs for the prevention of cervical cancer. Therefore, it is necessary to continue the implementation of policies for increasing vaccination coverage.

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### Routine immunization of older adults and frail people during the SARS-COV2-pandemic in Italy: a national survey by Italia Longeva

Andrea Poscia<sup>1</sup>, Daniel Fiacchini<sup>2</sup>, Davide Vetrano<sup>3</sup>, Claudio Angelini<sup>2</sup>, Daniela Cimini<sup>2</sup>, Claudio Costantino<sup>4</sup>, Giancarlo Icardi<sup>5</sup>, Rosa Prato<sup>6</sup>, Andrea Siddu<sup>7</sup>, Andrea Silenzi<sup>7</sup>, Antonietta Spadea<sup>8</sup>, Roberto Bernabei<sup>9,10</sup>, Agnese Collamati<sup>11</sup>

<sup>1</sup>Public Health Department, Asur Marche AV2, Ancona, Italy, <sup>2</sup>Public Health Department, Asur Marche, Ancona, Italy, <sup>3</sup>Aging Research Center, Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden, <sup>4</sup>Department of Health Promotion Sciences, Maternal and Infant Care, Internal Medicine and Medical Specialties (PROMISE) "G. D'Alessandro", University of Palermo, Palermo, Italy, <sup>5</sup>Department of Health Sciences, University of Genoa, Genoa, Italy, <sup>6</sup>Hygiene Unit, Policlinico Foggia Hospital, Department of Medical and Surgical Sciences, University of Foggia, Foggia, Italy, <sup>7</sup>General Directorate for Health Prevention, Ministry of Health, Rome, Italy, <sup>8</sup>UOC Vaccinations, Department of Prevention, Local Health Authority Roma1, Rome, Italy, <sup>9</sup>Department of Geriatrics and Orthopaedics, Università Cattolica del Sacro Cuore, Rome, Italy, <sup>10</sup>Italia Longeva, Italy, <sup>11</sup>Asur Marche AV2, Ancona, Italy

Despite the availability of safe and effective vaccines, older adults and frail people (OAFs) remain far from accomplishing the recommended coverage targets. The SARS-CoV-2 pandemics strongly affected the supply and coverage of routine vaccines, especially for OAFs, but it also suggested innovative solutions to catch up with the immunization schedules we were late with. Italia Longeva, the National Association for Active Longevity established in 2011 by the Ministry of Health, realized this research aiming to collect and share local good practices for the routine immunization of OAFs implemented during the SARS-CoV-2 pandemic. We surveyed 12 local health directors from 9 Regions (with a potential covered

area of about 24 million inhabitants) between January and March 2021. Starting from the 2018 Thomas and Lorenzetti's Cochrane Review, a "snowball" search of scientific and grey literature was performed to create and validate a 27-items semi-structured questionnaire used to collect information during the interviews. Full methods are available online (<https://www.italialongeva.it/>). A wide range of organizational models and settings for immunization supply to OAFs were found across regions. The local implementation of the 27 interventions to increase vaccination coverage among OAFs identified through the literature review ranges from 0% to 100%, with higher rates for interventions targeting the professionals (i.e. audits), lower when aimed to increase the vaccine offer (i.e. active calls) or its accessibility (i.e. home vaccination). Seven good local practices have been identified and described: Mass Vaccination Centre; drive-through Vaccination; Mobile vaccination clinics; co-administration; collaboration within different organization; Electronic immunization registries; standardized immunization pathways. Literature suggests many effective interventions to improve immunization of OAFs, but their implementation at local level shows huge heterogeneity. Providers should combine several interventions adequate to the specific context (organizational models, interoperability, urban or rural context, etc) and share good practices.

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### Pediatric COVID-19 vaccine hesitancy based on parents' attitudes towards mandatory and recommended vaccination in Southern Italy

Luigi Angelis<sup>1</sup>, Francesco Baglivo<sup>1</sup>, Mariano Magri<sup>2</sup>, Ingrid Nicola<sup>2</sup>, Pietro Palco<sup>3</sup>, Caterina Rizzo<sup>1</sup>, Alberto Fedele<sup>4</sup>

<sup>1</sup>University of Pisa, Italy, <sup>2</sup>Dipartimento di Prevenzione ASL Lecce, Italy, <sup>3</sup>University of Salento, Italy, <sup>4</sup>Dipartimento prevenzione ASL Lecce, Italy

**Background and Objective:** The Comirnaty-Pfizer anti-COVID19 vaccination for 5-11 years population was approved in Italy on 01/12/21. In this study, we investigate the anti-COVID19 vaccine hesitancy in eligible children in Lecce (Apulia, Italy) based on parents' attitudes towards mandatory and recommended vaccination, according to the National Immunization Plan (NIP) and the National Law Decree that introduced mandatory vaccinations in infants and adolescents in Italy. **Methods:** Using data collected within the vaccination registry of Apulia Region (Southern Italy) up to 15/11/2022 for birth cohorts 2011-2017, we evaluated for each subject the adherence to the NIP vaccine schedule. Since we wanted to investigate attitudes towards vaccination, we considered the first shot of each schedule relevant for our analysis, regardless of when it was administered. Multiple logistic regression was used to analyze associations between age, sex, adherence to mandatory vaccinations, number of recommended vaccinations and anti-COVID19 vaccination.

**Results:** A total of 42,173 subjects were included in the study, 21,361 (50.7%) of which received at least one dose of anti-COVID19 vaccine. The number of recommended vaccinations was found to be associated with anti-COVID19 vaccination (OR 1.50; 95%CI [1.46-1.53]; p<0.000001). The compliance to mandatory vaccinations was a predictor for anti-COVID19 vaccination. (OR=1.46; 95%CI [1.23-1.75]; p<0.000001). Probability of being vaccinated against COVID19 increased with age. (OR=1.33; 95%CI [1.31-1.34]; p<0.000001). No significant relationship was found between sex and anti-COVID19 vaccination. **Conclusions:** Our results show a clear association between previous vaccinations and anti-COVID19 vaccination in a sample of around 42,000 infants in Southern Italy. Despite the same recommendation for anti-COVID19 vaccination for children from 5 to 11 years, we identified a lower vaccine coverage for younger children. The COVID19 pandemic had no positive impact on vaccine hesitancy as attitudes towards previous vaccinations were confirmed for the COVID19 vaccine.

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### The frequency of missed opportunities for simultaneous vaccination and their impact on vaccination of children in The Gambia

Aliou Sowe<sup>1,2</sup>, Fredinah Namatovu<sup>2</sup>, Bai Cham<sup>3</sup>, Per Gustafsson<sup>2</sup>

<sup>1</sup>Expanded Program on Immunization, Ministry of Health, Banjul, The Gambia, <sup>2</sup>Department of Epidemiology and Global Health, Umeå University, Umeå, Sweden, <sup>3</sup>Medical Research Council Unit The Gambia, London School of Hygiene and Tropical Medicine, Bakau, The Gambia

**Background and Objective:** The number of zero-dose and under-vaccinated children has passed 20 million following the COVID-19 pandemic. Reducing missed opportunities for vaccination is recommended as a key strategy for increasing coverage because it involves utilising existing vaccination sites. To

generate actionable evidence for coverage and equality improvement targeting, this study aimed to estimate the frequencies of missed opportunities for simultaneous vaccination (MOSVs) and their correction by residential area and assess the impact of MOSVs on full vaccination and coverage of vaccine doses in The Gambia.

**Methods:** Data of children with cards aged 12-23 months from The Gambia 2019/2020 demographic and health survey was used (weighted n = 1355). We measured the number of children who experienced at least 1 MOSV any time before the survey and the proportions of children who later 1) received all doses, 2) received some doses, and 3) never received any dose by residence. Finally, valid coverage with and without MOSVs was estimated for all eligible vaccine doses.

**Results:** More than half of the children surveyed experienced at least one MOSV, and more than half of the MOSVs were later corrected. A quarter of the children who experienced MOSVs did not have them corrected. Rural and urban residents had similar experiences in the proportion of MOSVs, but children in urban areas had their MOSVs not corrected more frequently. Seventeen of eighteen vaccine doses in the national schedule would have coverage gains without MOSVs, with some gaining as much as nine percentage points in coverage.

**Conclusions:** Missed opportunities for simultaneous vaccination are frequent, negatively affecting coverage and differentially impacting rural and urban areas, and should be targeted for vaccination improvement. Our study emphasizes the importance of MOSVs for vaccination coverage and the need to implement the WHO missed opportunities for vaccination strategy.

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### Kids boost immunity: inspiring learning through global citizenship

Lily Crist<sup>1</sup>

<sup>1</sup>Public Health Association of British Columbia, Canada

**Background and Objectives:** Kids Boost Immunity (KBI) is Canadian digital education platform for schools administered by the Public Health Association of British Columbia (PHABC) with an objective to improve vaccine confidence among youth. KBI is the first digital platform in the world to pair vaccine literacy with global citizenship by enabling students to earn polio, tetanus and measles vaccines through a partnership with UNICEF.

**Methods:** KBI consists of 350 free online interactive lessons/quizzes in English and French linked to science, health and social studies curricula on a range of topics including germs and infections, vaccines/the immune system and critical thinking. After completing lesson, students use a computer or their own device (e.g. smart phone) to take a quiz that reinforces learning AND earns a vaccine to protect a child somewhere in the world through UNICEF.

Learning outcomes are assessed through gamified team/school leaderboards that track student achievement (questions answered/vaccines earned) and amplify student engagement by creating a friendly sense of competition in the classroom. **Results:** Over 30,000 students from 700 schools have answered 4 million quiz questions since 2018, earning 300,000 vaccines in support of UNICEF. Students from many countries including Canada, US, Australia, New Zealand, Columbia, Brazil, Lebanon, Malaysia, Thailand, Scotland and Ireland are active users of the platform. Students have consistently demonstrated significant positive changes in knowledge and vaccine confidence based on numerous pre/post measures (process/outcome evaluation).

**Conclusion:** KBI represents an innovative new approach to improving vaccine confidence by doing two things at once: connecting interactive learning with global disease prevention. This helps create intergenerational 'change agents' by inoculating youth against misinformation while empowering Generation Z to help others ('kids helping kids'). As KBI continues to expand to more countries, it has the potential to play an important role in helping reduce vaccine hesitancy over the long term.

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### Exploring waning COVID19 vaccine effectiveness against reinfections in the pediatric population: a retrospective population analysis

Francesco Baglivo<sup>1</sup>, Luigi De Angelis<sup>1</sup>, Valerio Aprile<sup>2</sup>, Raffele Stifini<sup>2</sup>, Mariano Magri<sup>2</sup>, Pietro Lo Palco<sup>3</sup>, Caterina Rizzo<sup>1</sup>, Alberto Fedele<sup>2</sup>

<sup>1</sup>University of Pisa, Italy, <sup>2</sup>Dipartimento di prevenzione ASL Lecce, Italy, <sup>3</sup>University of Salento

**Background and Objective:** The real-world effectiveness and duration of anti-COVID19 vaccine's protection from reinfections in the pediatric population (5-11 years) has yet to be determined. Groups with different primary immunization were compared, in terms of duration of immunity and effectiveness for COVID19

reinfections.

**Methods:** In this retrospective population analysis, we analyzed data from the vaccination registry and Infections Regional Information System of Apulia region (Southern Italy) for birth cohorts 2011-2017 from 31/12/2020 to 02/12/2022. We identified three groups based on the primary immunization schedule: subjects 5-11 years old vaccinated with two doses (vaccine immunity), not vaccinated with a history of SARS-CoV2 infection (natural immunity) and individuals with a combination of both (hybrid immunity). Subjects with a SARS-CoV2 infection occurring within the first 14 days from the primary immunization course were excluded. COVID19 reinfection was defined as a positive swab after 90 days from previous infection. Data were analyzed using R and compared using chi-square test.

**Results:** A total of 30,997 children were included (15,064 females, 15,933 males; mean age 8.3±1.9); 22,073 (71.2%) children were infected from SARS-CoV2 at least once and 1,533 (4.9%) had a COVID19 reinfection. Cases of reinfections and mean distance since COVID19 infection were in the vaccine immunity group 192 (1.12%) 87.8±55.8 days; in the natural immunity group 1,254 (9.5%) 214±95.9 days; and hybrid immunity group 87 (12.3%) 155.4±85.5 days. We observed a significant relationship between natural immunity group and COVID19 reinfections ( $X^2 = 1142$ ;  $p < 0.00001$ ).

**Conclusion:** In our study the mean time of protection from SARS-CoV2 reinfections (about 6 months) in children is in line with the available literature for adults. Our results show a significant lower rate of SARS-CoV2 reinfections in children with a completed vaccination cycle.

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### Potential side effects after paediatric anti-COVID19 vaccination in subjects with existing comorbidities, congenital and otherwise

Federica Denaro<sup>1</sup>, Giuseppe Pantò<sup>1</sup>, Federica Denaro<sup>1</sup>, Anna Capra<sup>1</sup>, Ioselita Giunta<sup>1</sup>, Rosaria Cortese<sup>1</sup>, Antonino Privitera<sup>1</sup>, Roberto Venuto<sup>1</sup>, Emanuela Esposito<sup>2</sup>, Raffaele Squeri<sup>1</sup>

<sup>1</sup>Università degli Studi di Messina, Dipartimento di Scienze Biomediche, Odontoiatriche e delle Immagini morfologiche e funzionali, Italy,

<sup>2</sup>Università degli Studi di Messina, Dipartimento di Scienze Chimiche, Biologiche, Farmaceutiche ed Ambientali / Direttore U.O.S.D. Genetica e Farmacogenetica, Italy

**Introduction:** In children, COVID-19 disease presents asymptotically in 90% of cases, with a 0.6% risk of PIMS-TS; in addition, 5% of children who are also asymptotically infected develop Long COVID. Our weapon of defence for children under 12, as for adults, is the Pfizer-BioNTech paediatric vaccine.

- and long-term undesirable effects after the complete vaccine cycle and to assess the symptomatological picture of post-vaccine infections in subjects with existing comorbidities, congenital and otherwise.

**Materials and Methods:** Seventy subjects with a mean age of 8.41 years were recruited. At the time of the first vaccination session, a medical history was taken, assessing the presence of existing congenital comorbidities (cystic fibrosis, congenital heart disease, Downs syndrome, type 1 diabetes, congenital epilepsy, familial Mediterranean fever) and non congenital comorbidities. Then they were contacted by telephone at time T1 and at time T2 by submitting a questionnaire to investigate the development of undesirable effects; in addition, were assessed at four months interval T3, possible long-term undesirable effects and the acute and chronic clinical picture of those who had been infected after vaccination.

**Results:** a) There were no statistically significant differences between the undesirable effects reported after the 1st dose and after the 2nd dose. b) There was no statistically significant correlation between the anamnestic data collected (pre-existing comorbidities) and the development of undesirable effects. c) None of the study subjects who became infected after vaccination developed a severe clinical picture.

**Conclusions:** Following the results obtained in the cohort of affected subjects, it can be affirmed that the undesirable effects occurring after administration of the paediatric Pfizer-BioNTech vaccine are mild with a duration of no more than 24-48h and no serious reactions. The paediatric anti-COVID19 vaccine appears to be safe and effective.

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### Sustained effect of pneumococcal vaccination in the Stockholm area: a follow up between 2012 and 2016

Giulia Dallagiocoma<sup>1</sup>, Tobias Alfvén<sup>2</sup>, Anna Odone<sup>3</sup>, Rutger Bennet<sup>4</sup>, Margareta Eriksson<sup>4</sup>

<sup>1</sup>University of Pavia, School of Public Health, Department of Public Health,

Experimental and Forensic Medicine, University of Pavia, Pavia, Italy.

Department of Global Public Health, Karolinska Institutet, Stockholm, Sweden, Italy, <sup>2</sup>Karolinska Institutet, Department of Global Public Health, Karolinska Institutet, Stockholm, Sweden; Sachs' Children and Youth Hospital, South General Hospital, Stockholm, Sweden, <sup>3</sup>University of Pavia, <sup>4</sup>Astrid Lindgren Children's Hospital, Stockholm, Sweden

**Background and Objective:** Streptococcus Pneumoniae is a leading cause of mild to severe respiratory infections worldwide, especially among children below 5 years of age. In Sweden, a pneumococcal conjugated vaccine (PCV) covering 7 serotypes of S. Pneumoniae (PCV7) was introduced in 2007, and was replaced by a thirteen-valent vaccine (PCV13) in 2011. A previous study, conducted between 2003 and 2012 reported a decrease in pneumonia and sinusitis among young children after the introduction of PCV7, in addition to the known effect of the vaccine on invasive pulmonary disease (IPD) burden. The aim of this study is to follow-up on the incidence of pneumonia, sinusitis and IPD in Stockholm between 2012 and 2016.

**Methods:** This is a population-based study of hospital registry data on hospitalization of children (aged 0-18 years) with a diagnosis of sinusitis, pneumonia, mastoiditis, bacterial meningitis, empyema, viral pneumonia and pyelonephritis. The setting is Stockholm County, Sweden. The analysis was carried out comparing three time periods: 2003-2007 (before PCV7), 2008-2012 (after PCV7) and 2012-2016 (follow up, with PCV13).

**Results:** Hospitalizations for bacterial pneumonia decreased in all age groups from 2003 to 2016 (from 449.7 to 339.7 /100.000 among 0-1 year old; from 250 to 170.8/100.000 among 2-4 year old; from 51.3 to 41.4 /100.000 among 5-17 year old). The incidence of sinusitis decreased significantly both among children aged 0-1 years (from 69.9 to 23/100.000) and among those aged 2-4 years (from 25.5 to 14.3/100.000). The incidence of mastoiditis and bacterial meningitis also decreased significantly among children younger than 2 years of age (mastoiditis: from 41 to 15/100.000; bacterial meningitis: from 29 to 7/100.000).

**Conclusion:** The effect of vaccination among children is therefore sustained even 8 years after the introduction of PCV7 and 5 years after the introduction of PCV13.

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### COVID-19 Pandemic and the increasing measles attack rate among under-five children in Gezira state, Sudan, 2020-2022

Samar Mohamed<sup>1</sup>

<sup>1</sup>Sudan Field Epidemiology Training Program, Gezira State, Sudan

**Background:** Measles is a leading cause of death among young children in Sudan. Coronavirus Disease 2019 (COVID-19) has increased the risk of vaccine-preventable disease outbreaks due to disruptions of Routine Immunization (RI) services, which leaves many children without protection against measles in Sudan. This study aimed to assess the impact of the COVID-19 pandemic on measles epidemiology in Gezira state, from January 2020 to October 2022.

**Methods:** We extracted variables of time, place, person, and vaccination status from measles surveillance records of all reported suspected cases and laboratory-confirmed cases (suspected measles cases with positive serum immunoglobulin M (IgM). suspected cases (Anyone with fever and maculopapular rash, at any age) and laboratory-confirmed cases (suspected measles cases with positive serum immunoglobulin M (IgM). Missing or incomplete records were excluded. Data were analyzed using Epi info 7. A descriptive analysis informs of Attack Rates (AR), Case Fatality Rate (CFR) percentages, frequencies, and percentages were performed.

**Results:** A total of 273 suspected and 24 laboratory-confirmed measles cases were reported in the period. Overall, the measles AR has decreased from 0.20 per 100,000 population in 2020, to 0.09 per 100,000 population in 2022. However, Subgroup analysis by age showed around 67% increase in measles AR among children under five (6 per 100,000 in 2020 and 10 per 100,000 in 2022 respectively). 16% of confirmed measles cases died during 2020, compared to a 14% CFR in 2021 and zero death in 2022. RI coverage for the first and second doses of measles vaccine decreased by 5% and 21%, in 2020 and 2022 respectively.

**Conclusions:** The first year of the COVID-19 pandemic marked the highest measles morbidity among children under five years. Although the measles AR has decreased in 2022, a cohort of susceptible to measles infection has accumulated over the three years. Measles immunization coverage should be strengthened to prevent future outbreaks

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### A pilot experience of a clinic for the evaluation of contraindications to vaccine administration: results from the first

**year of activities in Puglia, Italy**

Lorenza Moscara<sup>1</sup>, Chiara Trincherà<sup>2</sup>, Giulia Zonno<sup>1</sup>, Alessia Mangieri<sup>1</sup>, Eleonora Valente<sup>2</sup>, Paola De Petro<sup>1</sup>, Felice Leone<sup>1</sup>, Pasquale Stefanizzi<sup>3</sup>, Silvio Tafuri<sup>3</sup>

<sup>1</sup>Public Health Post-Graduate School, University of Bari Aldo Moro, Italy, <sup>2</sup>Public Health Post-Graduate School, <sup>3</sup>University of Bari Aldo Moro, Italy

**Background and Objectives:** Since August 2021, Italian law provided limitations for subjects without SARS-CoV-2 vaccination, prohibiting attendance of restaurants, gyms, workplaces, and use of public transportation. Subjects with contraindications to vaccination needed certification by authorized physicians. Bari Policlinico General Hospital, in Puglia, has been providing a service for the evaluation of possible causes of contraindication, such as medical conditions and past adverse events following immunization.

**Methods:** This is a retrospective observational study. Patients evaluated from August 18, 2021, to August 13, 2022, were included. Subjects were interviewed about their medical history, and clinical documentation was reviewed.

**Results:** 168 patients were evaluated before anti-SARS-CoV-2 vaccination, with an average age of  $46.5 \pm 16.2$  years (7-82). The male-to-female ratio was 64/104. 71 patients (42.3%) asked for evaluation after suffering from adverse events following previous vaccine administrations, 80 (47.6%) had previous medical conditions, and 9 (5.3%) reported both circumstances. Eight subjects (4.8%) underwent evaluation due to pregnancy. After anamnesis, 149 subjects (88.7%) were found to be affected by at least one medical condition; most conditions were classifiable as either cardiovascular (30.9%), allergies (30.2%) or endocrine/metabolic (28.2%). 41 patients required further specialistic evaluation; most evaluations were requested to allergologists (58.5%). Only 40 evaluations resulted in the release of a vaccination exemption, 39 of which were due to transitory conditions. 42.5% of all exemptions were due to a temporary clinical condition; 32.5% were due to ongoing therapy; 8 cases (20.0%) were related to a complicated pregnancy; in 2 cases (5.0%) the certificate was issued for hypersensitivity to vaccine components. 83 patients (49.4%) did receive at least one vaccine dose after evaluation. 84 (50.0%) still refused vaccination, and another (0.6%) is currently exempt from vaccination.

**Conclusions:** The pre-vaccination evaluation service helped strengthening the patients' trust towards vaccination and physicians and promotes the patients' empowerment and awareness.

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**Determinants of timely administration of the hepatitis B vaccine birth dose in Senegal in 2019: Secondary analysis of the demographic and health survey**

Oumar Bassoum<sup>1</sup>, Oumar Bassoum<sup>1</sup>, Mouhamadou Ba<sup>1</sup>, Adama Faye<sup>1</sup>, Ibrahima Seck<sup>1</sup>, Alioune Dieye<sup>1</sup>

<sup>1</sup>Université Cheikh Anta Diop, 1 Service de médecine préventive et santé publique, faculté de médecine, de pharmacie et d'odontologie, Université Cheikh Anta Diop, Dakar, Sénégal 2 Institut de santé et développement, Université Cheikh Anta Diop, Dakar, Sénégal, Dakar, Senegal

**Background & Objective:** In developing countries, hepatitis B is spread primarily through the perinatal or horizontal transmission. Thus, the Senegalese government recommends the administration of the hepatitis B vaccine birth dose (HepB-BD) within 24 hours of birth. The objective was to identify the determinants of timely administration of HepB-BD in Senegal in 2019.

**Methods:** A secondary analysis of the nationwide Demographic and Health Survey was conducted. The study population consisted of children aged 12 to 23 months whose vaccination status is documented. A two-stage cluster sampling, stratified in urban and rural areas, was carried out. Individual interviews were conducted. Vaccination coverage is estimated as a proportion. Logistic regression made it possible to identify the determinants of timely vaccination using the adjusted odds ratio (aOR) and its 95% confidence interval.

**Results:** A total of 747 children were included. Among them, 47.7% were born to mothers aged 25-34, 46.9% are male and 86.6% were born in health facilities. The mean time between birth and HepB-BD administration was  $13.1 \pm 46.6$  days. Only 65.2% received HepB-BD within 24 hours of birth. The determinants were maternal age of at least 35 years (aOR= 2.03 [1.29 - 3.20]), belonging to central (aOR=0.22 [0.11 - 0.44]) regions and north regions (aOR= 0.18 [0.08 - 0.40]), mother's primary level of education (aOR=1.94 [1.13 - 3.35]), at least four prenatal consultations (aOR=1.74 [1.12 - 2.69]) and delivery in a health facility (aOR=3.42 [1.90 - 6.15]).

**Conclusion:** The education and retention of girls in school, community postnatal care in hard-to-reach areas, the promotion of prenatal consultations and delivery in a health facility should improve the timeliness of HepB-BD vaccination.

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**Reasons for non-uptake of Influenza Vaccination: comparison between high-risk and non-high risk groups in Portugal**

Ana Santos<sup>1</sup>, Irina Kislaya<sup>1</sup>, Ausenda Machado<sup>1</sup>, Carlos Matias-Dias<sup>1</sup>, Sónia Namorado<sup>1</sup>, Mariana Neto<sup>1</sup>

<sup>1</sup>National Health Institute Doutor Ricardo Jorge, Department of Epidemiology, Portugal

**Reasons for non-uptake of Influenza Vaccination: comparison between high-risk and non-high risk groups in Portugal.**

In Portugal, the Influenza Vaccine (IV) coverage remains below the coverage goals proposed by the European Union. Understanding motives for IV non-uptake, particularly for high-risk groups, is essential. One of the most used theoretical frameworks to understand vaccination is the Health Belief Model (HBM). This study aims to describe the Portuguese non-uptake and differences between HBM dimensions (susceptibility, severity, benefits, barriers and cues for action) for high-risk and non-high-risk groups.

A cross-sectional study was developed using a probabilistic dual-sampling frame telephone household panel of families in Portugal. The survey was conducted between June-September 2021, with data collected by questionnaire applied in mixed mode to one 18+ years element of each household unit (n=1050). Content thematic analysis was conducted in one open question about the reasons for IV non-uptake and included HBM dimensions. Statistical analysis focused on estimating non-adherence to IV and HBM categories' frequency stratified by target group. Results were weighted by sex, age group, region, and study design.

Of the total sample, 671 individuals did not uptake the IV (69.3%, CI95%:64.8-73.5). For the IV recommended population, non-uptake was 49.8% (CI95%:43.6-55.9). The perception of low Susceptibility was more common in individuals who didn't belong to the target group (74%, CI95%:63.4-82.3 vs. 26%, CI95%:17.7-36.6). The Barriers dimension was more frequently mentioned by the target population (45%, CI95%:32.4-58.2 vs. 55%, CI95%:41.8-67.6), namely due to unavailability of stock.

IV non-uptake was lower for high-risk group, compared to the general population. Differences between the reasons for non-uptake, suggest that the group to whom the IV is recommended, due to increased risk of complications, is aware of increased susceptibility. The vaccination campaign seems to be successfully targeting the high-risk group, even though efforts need to be maintain to decrease non-uptake.

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**Impact of influenza vaccination strategy on medically attended influenza in Portugal in five pre-pandemic seasons (2015/16 to 2019/20)**

Ausenda Machado<sup>1</sup>, Irina Kislaya<sup>1</sup>

<sup>1</sup>Instituto Nacional de Saúde Doutor Ricardo Jorge, Portugal

**Background:** There is limited research on the impact of the yearly influenza vaccination programs in the eligible population. This study aimed to estimate the number of primary care medically attended influenza-confirmed cases (MAICC) among the population aged  $\geq 65$  years averted by influenza vaccination programme in Portugal during five seasons in the pre-COVID pandemic period (2015/16 to 2019/20).

**Methods:** We compared the number of observed MAICC to the estimated number that would have occurred in a population without seasonal influenza vaccination (N). To estimate N, we used: i) number of MAICC estimated from national influenza surveillance systems, ii) vaccine coverage (VC) collected in a national telephone survey, iii) influenza vaccine effectiveness (IVE) estimates weighted by the proportion of virus circulation each season in Portugal. We estimated the number of MAICC averted (NAE) by the influenza vaccination programme per 100.000 inhabitants and number needed to vaccinate to prevent one MAICC. We used Monte-Carlo simulations to estimate 95% uncertainty intervals (UI).

**Results:** Comparing with results from 2015/16 to 2017/18 (NAE ranged 24 to 44 per 100.000 inhab) the season 2018/19 showed the highest NAE (62.3 per 100.000 inhab) attributed to the influenza vaccination programme. In 2019/20 season the vaccination strategy averted approximately 11.7 per 100.000 inhab (95%UI: 6.0 to 20.9) events and it was necessary to vaccinate 549 (95%UI: 436 to 742) to prevent one MAICC in primary care.

**Conclusion:** The influenza vaccination strategy had consistent and positive benefit, with more pronounced impact in 2018/19 season. This results were mainly due to a combination of a higher vaccination coverage assumed for 2018/19 (60.8%) and one of the highest vaccine effectiveness (34.8% vs. previous study

range 8.5% to 40.6%). To maximize its impact, efforts should be conducted to increase the vaccine coverage. In addition, the surge for more effective vaccines should be maintained.

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### The “access to vaccination for newly arrived migrants” project: barriers and solutions in the vaccination offer among the consortium countries

Giulia Marchetti<sup>1</sup>, Franca D’Angelo<sup>2</sup>, Salvatore Scarso<sup>3</sup>, Susanna Caminada<sup>3</sup>, Maria Tosti<sup>2</sup>, Maria Dente<sup>1</sup>, Dara Giannini<sup>3</sup>, Anissa Jaljaa<sup>3</sup>, Elena Mazzalai<sup>3</sup>, Maria Russo<sup>3</sup>, Maurizio Marceca<sup>3</sup>, Silvia Declich<sup>1,4</sup>

<sup>1</sup>Italian National Institute of Health, National Centre for Global Health, Italian National Institute of Health, Italy, <sup>2</sup>Italian National Institute of Health, <sup>3</sup>Sapienza University of Rome, Department of Public Health and Infectious Diseases, Sapienza University of Rome, Italy, <sup>4</sup>AcToVax4NAM Consortium Group, Greece

**Background and Objective:** The project “Access To Vaccination for Newly Arrived Migrants”-AcToVax4NAM (Grant n.101018349, 3rd EU Health Programme) intended to describe the vaccination offer and the critical issues that hinder the access to immunization services for Newly Arrived Migrants (NAMs).

**Methods:** The survey was conducted among the Consortium Countries (Greece, Italy, Spain, Cyprus, Malta, Germany, Poland and Romania) through a standardized data collection template to investigate the organization of National Health System (NHS), immunization services and vaccination offer. The representatives of all Countries, with the support of national experts in the field of migration and/or immunization offer, filled in the template.

**Results:** Regarding the NHS organization, migrants not registered with the NHS and those undocumented are guaranteed only for emergency care in most Countries. Migrants’ access to the NHS largely depends on their status (documented/undocumented) and the country of origin (EU countries/Third countries). Information collected on the vaccination offer identified that, unlike the general population, migrants are not always offered all the vaccinations included in the National Immunization Program (NIP) due to their legal status and the impossibility of assessing vaccination status and follow-up. The main barriers to vaccination collected are legal, economic, organizational, logistic/physical and linguistic/cultural. The solutions adopted by Countries to overcome the barriers include vaccination campaigns, communication strategies, training activities, free vaccinations to adults, collaboration with non-governmental organizations and flexibility of vaccination status. During COVID-19 pandemic, all Countries included undocumented migrants in the vaccination campaigns.

**Conclusion:** The survey collected information on main barriers to immunization of NAMs and possible solutions to overcome them. Indeed, assessing the differences within the consortium countries can help to identify strategies and ensure a better vaccination uptake. In the end, the experience of vaccination against COVID-19 organized with an inclusive approach, should be a starting point for including migrants in the NIP.

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### Adverse events following immunization with recombinant adjuvated anti-herpes zoster vaccine: data from active surveillance in Puglia, Italy

Pasquale Stefanizzi<sup>1</sup>, Pasquale Stefanizzi<sup>1</sup>, Andrea Martinelli<sup>2</sup>, Antonio Di Lorenzo<sup>2</sup>, Federica Toro<sup>2</sup>, Paola Berardi<sup>2</sup>, Francesco Scazzia<sup>2</sup>, Sabrina Lattanzio<sup>1</sup>, Francesco Bianchi<sup>1</sup>, Silvio Tafuri<sup>1</sup>

<sup>1</sup>University of Bari Aldo Moro, Italy, <sup>2</sup>Public Health Post-Graduate School, University of Bari Aldo Moro, Italy

**Background and Objectives:** Since 2021, a recombinant adjuvated anti-Herpes Zoster (HZ) vaccine (RZV) is available in Italy, offered to immunocompromised subjects. In pre-marketing evaluation, the most reported adverse reaction following RZV were pain (78%), redness (38%), and swelling (26%). Due to the recent introduction, no real life data about safety profile of RZV are available. This study investigates AEFIs occurring after RZV administration to design its safety profile.

**Methods:** This is a cross-sectional observational study. The study population is represented by patients vaccinated with adjuvated anti-HZ vaccine within Bari Policlinico General Hospital, from 01/10/2021 to 31/08/2022. Subjects were contacted via phone call two weeks after the first dose and two weeks after completing the vaccination cycle, and were asked about AEFIs they experienced. **Results:** Three-hundred-eighty-two people were vaccinated and 366 accepted to participate to the follow-up (response rate 95.8%). Two-hundred-five subjects

underwent both administrations; 571 doses were therefore administered. The male-to-female ratio was 189/177, with mean age of 58.6 ± 13.7 years.

Out of 571 follow-ups, 292 AEFI cases were reported (reporting rate 51.14 per 100 administered doses). One-hundred-ninety-four AEFIs happened after the first dose (53.01 per 100 doses), while 98 occurred after the second (47.80 per 100 doses). Most common symptoms were pain at site of injection (45.2 per 100 doses), asthenia (13.1 per 100 doses), redness at site of injection (9.5 per 100 doses) and fever (9.1 per 100 doses). No serious AEFIs were identified. Three subjects (0.82%) reported HZ after vaccination, of which only one case occurred more than two weeks after immunization, thus representing a vaccine failure. Risk of AEFIs was not influenced by sex, age, or dose number (p>0.05).

**Conclusions:** The recombinant adjuvated vaccine’s safety profile appears to be coherent with pre-marketing evidence. Vaccine failure was sporadic, suggesting high effectiveness even in immunocompromised subjects.

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### From birth to booster and beyond

Alberto Tozzi<sup>1</sup>, Gary Marlowe<sup>1</sup>, Gary Marlowe<sup>2</sup>, Alberto Tozzi<sup>1</sup>, Alex De Figueiredo<sup>3</sup>

<sup>1</sup>Ospedale Pediatrico Bambin Gesù, Italy, <sup>2</sup>British Medical Association, United Kingdom, <sup>3</sup>Vaccine Confidence Project & Imperial college London, Dr, United Kingdom

**Background and Objective:** After clean water, vaccinations are recognized as one of the most cost-effective public health investments governments can make. [i]. [ii] Despite all European countries having national immunization programs, many children go unvaccinated and remain vulnerable to vaccine preventable diseases (VPDs). [iii] COVID-19 highlighted the risk of cross-border contamination of infectious diseases and evidenced the need to achieve immunity through a united approach. [iv] Pathway effectiveness is essential in improving uptake rates and increase population immunity.

This session will set out an implementable framework to strengthen routine immunization systems and build vaccine confidence.

**Methods:** The framework has been developed using insights from an advisory group comprised of diverse professionals with a range of experience and supplemented with secondary research.

**Results:** The framework outlines an optimum vaccination pathway, offering holistic recommendations including: HCP training, data, surveillance systems, accessibility; and underpinning factors such as: avoidance of vaccine complacency and fatigue, and building vaccine confidence.

**Conclusion:** European governments and health system leaders must develop clear and actionable plans that address all elements contributing to vaccine uptake to support 95% target rates in pediatric immunization, ensuring they’re met within all countries and regions. Policy makers should use the framework to implement cohesive pediatric routine immunization pathways, to improve confidence and increase population immunity against VPDs.

**Authors:** Dr Marlowe, Chair London BMA and Dr Tozzi, epidemiologist Ospedale Pediatrico Bambin Gesù et al.

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### Glossary on Essential Definitions related to vaccines: strengthening vaccine literacy and promoting a participatory approach

Igor Aloise<sup>1</sup>, Maria Russo<sup>2</sup>, Salvatore Scarso<sup>3</sup>, Chiara Bartolucci<sup>1</sup>, Giulia Marchetti<sup>4</sup>, Franca D’Angelo<sup>5</sup>, Maria Tosti<sup>4</sup>, Angela Gatta<sup>1</sup>, Chiara De Marchi<sup>1</sup>, Arianna Bellini<sup>1</sup>, Caterina Ferrarini<sup>1</sup>, Marise Sabato<sup>1</sup>, Silvia Declich<sup>4</sup>, Maurizio Marceca<sup>1</sup>, Consortium Group, AcToVax4NAM<sup>6</sup>

<sup>1</sup>Sapienza University of Rome, Department of Public Health and Infectious

Diseases, Sapienza University of Rome, Italy, <sup>2</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome, Rome, Italy, <sup>3</sup>Sapienza University of Rome, <sup>4</sup>Italian National Institute of Health, National Centre for Global Health, Italian National Institute of Health, Italy, <sup>5</sup>Italian National Institute of Health, <sup>6</sup>AcToVax4NAM Consortium Group, Greece

**Background and Objective:** The project Access To Vaccination For Newly Arrived Migrants-AcToVax4NAM (Grant No. 101018349, Third EU Health Programme) aims to ensure equal access to vaccination services for all migrants, without discrimination. It also aims to provide tools for vaccination services to be more accessible and less complex. A glossary was developed on the essential definitions of vaccines to be validated and tailored in each AcToVax4NAM consortium countries. The Glossary is intended to be a tool in the hands of non-health professionals for the promotion of NAM vaccination.

**Methods:** The essential glossary is structured in three different sections: vaccination related terminology; organisational/management related terminology; specific terms referring to the country context health care organization. Each country organised a workshop to consult local health and non-health professionals who work with migrants to make the tool as actionable as possible. The workshop was held on the basis of shared guidelines, while two evaluation tools were used to assess respectively the clarity, completeness and usability of the glossary and the participants satisfaction.

**Results:** A total of 8 workshops were organized in Greece, Italy, Spain, Germany, Cyprus, Malta, Poland and Romania with more than 62 participants. Cultural mediators were most represented following by NGO operators and Physicians. 90% reported that the glossary is clear and useful, 80% considers the tool relevant for migrants immunization promotion strategies, while 75% consider it easy to be used. Interestingly, the use of plain language could also help healthcare professionals to improve their communication with migrant patients.

**Conclusion:** With the glossary, we aim at informing and sharing, in an easily operable manner, essential information related to vaccines with the targeted professionals, to boost their ability to advocate for NAMs access to vaccination. The participatory approach adopted enhances the effectiveness and permeability of the instrument itself.

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### Knowledge and Attitude Towards the Tdap (Tetanus, diphtheria, acellular pertussis) Booster Vaccination in Healthcare Workers in a Large Academic Hospital in Southern Italy in 2022: a Cross-sectional Study

Michelangelo Mercogliano<sup>1</sup>, Claudio Fiorilla<sup>1</sup>, Federica Esposito<sup>1</sup>, Michele Sorrentino<sup>1</sup>, Pasquale Mirizzi<sup>1</sup>, Antonio Parisi<sup>1</sup>, Maria Triassi<sup>1</sup>, Raffaele Palladino<sup>1</sup>

<sup>1</sup>Department of Public Health, University "Federico II" of Naples, Naples, Italy

**Background and Objective:** In Europe there is still a suboptimal Tdap (Tetanus, diphtheria, acellular pertussis) booster coverage, which might explain the increased incidence of Pertussis and, specifically in Italy, the relatively large proportion of Tetanus cases diagnosed. The aim of this study was to assess coverage status, knowledge, and attitudes on Tdap vaccination in health workers (HCWs) at the University Hospital "Federico II" in Naples, South of Italy, in 2022, to improve current vaccination strategies.

**Methods:** A cross-sectional study was conducted using a validated anonymous questionnaire. Knowledge and attitude were measured as scores (1-30). Multivariable logistic and linear regression models were employed to identify correlates of Tdap booster and knowledge and attitude towards the vaccination, as appropriate. Models were controlled for age, sex, job, Department, and years of employment.

**Results:** 206 questionnaires were administered among HCWs, 143 (69.4%) were medical doctors. 71 (34.47%) HCWs received the Tdap booster. Those who had worked 5-9 years at the hospital had a 78% lower likelihood of being vaccinated with the Tdap booster (5-9 years - OR: 0.22, CI: 0.06 | 0.85) as compared with newly hired HCWs. No other variable was significant in the model. Medical doctors had a greater attitude towards vaccination than non-medical HCWs (Other - Coef. -2.15 on 30; CI: -4.14 | -0.15). Compared with HCWs in clinical departments, those in diagnostic-therapeutic and public health organizational departments considered vaccination less useful as prevention tool (diagnostic-therapeutic - Coef. -3.12 on 30, CI: -5.13 | -1.12; public health - Coef. -1.98 on 30, CI: -3.41 | -0.56).

**Conclusion:** The study findings support the need to implement public health strategies to improve information and awareness toward vaccinations, and specifically the highlight importance of Tdap booster every 10 years as prevention tool to protect high-risk populations.

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### The public health challenge of addressing communities with sub-optimal uptake of routine childhood vaccinations in Israel

Chen Stein-Zamir<sup>1</sup>

<sup>1</sup>Jerusalem district health office, 86 Jaffa rd, Israel

**Background and Objectives:** Childhood vaccinations have considerably averted morbidity and mortality from Vaccine-Preventable Diseases (VPD) worldwide. Despite a high overall national vaccination coverage in Israel, there are communities with suboptimal coverage and recurrent VPD outbreaks (e.g. measles). These communities mainly reside in the Jerusalem district. We aimed to evaluate the vaccination coverage in the Jerusalem district compared to the national rates and describe the challenge of addressing these communities.

**Methods:** Childhood vaccinations are included in Israel's National Health Insurance Law. Community-based health clinics provide free vaccination to all children. Vaccinations are not mandatory. The vaccination coverage data for 2017-2022 were retrieved from the National Immunization Registry. The vaccines evaluated were Diphtheria, Tetanus, acellular Pertussis, polio, Haemophilus influenzae b (DTaP-IPV-Hib4: dose 4) and Measles-Mumps-Rubella/Measles-Mumps-Rubella-Varicella (MMR/MMRV1), both scheduled at age 12 months. The national population is 9.3 million, children (0-17 years) consist a third of the population. The national birth cohort is 185,000 with 35,000 in the Jerusalem district.

**Results:** The overall national vaccination coverage rates (%) were adequate and lower in the Jerusalem district. The mean vaccination coverage rates for DTaP-IPV-Hib4 and MMR/MMRV1 were 95.1±2.1 and 97.5±1.6 in the country overall, compared to 88.4±4.8 and 96.3±2.6 in the Jerusalem district, respectively. A trend of decline was observed during the COVID-19 pandemic years (2020-2022), nationally and prominently in Jerusalem. The decline was more noticeable in the DTaP-IPV-Hib4 (90.7% nationally and 78.8% in Jerusalem in 2022) than in MMR/MMRV1 (94.2% nationally and 91.5% in Jerusalem in 2022). Vaccination campaigns and supplemental immunization activities are carried out constantly in the Jerusalem district hard-to-vaccinate communities

**Conclusion:** While aggregated vaccination coverage rates are nationally high, disaggregated data reveal gaps among population groups. Vaccination gaps have been reported globally and deepened during the COVID-19 pandemic. Sustainable public health programs and community-based campaigns are essential.

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### Systematic review and meta-analysis of the effectiveness of vaccine catch/mop/keep-up remind or recall interventions in comparison to standard vaccination offer

Walter Priano<sup>1</sup>, Alessandra Fallucca<sup>2</sup>, Patrizia Ferro<sup>1</sup>, Alessandro Carubia<sup>1</sup>, Vincenzo Pisciotta<sup>2</sup>, Gaia Vitale<sup>2</sup>, Alessandra Casuccio<sup>1</sup>, Vincenzo Restivo<sup>1</sup>

<sup>1</sup>University of Palermo, Department of Health Promotion, Mother and Child Care, Internal Medicine, and Medical Specialties "G. D'Alessandro" (PROMISE), University of Palermo - 90133 Palermo, Italy, <sup>2</sup>University of Palermo

**Background and objective:** Within the worldwide challenge of tackling vaccine hesitancy, the Strategic Advisory Group of Experts on Immunization (SAGE group) strongly fosters vaccination remind or recall interventions that, alongside new opportunities offered by scientific progress, represent key to successfully immunize target population classes. This systematic review with meta-analysis will provide an evaluation of the effectiveness of different remind or recall vaccination interventions in comparison to standard vaccination offer.

**Methods:** Two literature databases (PubMed/MEDLINE and Scopus) were consulted in February 2022, retrieving 1850 studies. PRISMA statement guidelines were adopted and 80 manuscripts (47 trial/RCTs, and 33 before-after studies) were included after the assessment phase. Meta-analysis with random-effects model was performed by using STATA software (ver.14.1.2). The selected outcome was the relative risk (RR) of vaccination coverage improvement effectiveness. Furthermore, meta-regression analyses and funnel plots were provided for the included manuscripts.

**Results:** The analyses displayed, for cumulatively considered interventions, an overall effectiveness of RR=1.22 (95% C.I.:1.18-1.25, p<0.001) for RCTs and RR=1.70 (95% C.I.:1.54-1.87, p<0.001) for before-after studies. Subgroup analyses allowed to identify "multicomponent" (RR=1.48, 95% C.I.:1.32-1.66, p<0.001) and "remind clinical" (RR=1.25, 95% C.I.:1.17-1.34, p<0.001) interventions as the most effective activities that increased vaccination coverage for RCTs. On the other hand, "education" (RR=2.13, 95% C.I.:1.60-2.83, p<0.001) and "multicomponent" (RR=1.61, 95% C.I.:1.43-1.82, p<0.001) interventions

granted highest increase levels for before–after studies. As showed in meta-regression analyses, more effective interventions were carried out among adult-middle-aged population (RCTs:  $p=0.01$ , 95% C.I.:0.09–0.61, coeff.:0.51; before–after:  $p=0.01$ , 95% C.I.:0.70–1.84, coeff.: 1.27).

Conclusion: Community, family, and healthcare-based multidimensional interventions, as well as education-based catch-up strategies, effectively improve vaccination coverage. Therefore, their systematic implementation could be utmost relevant to target under-vaccinated population classes, thus aligning with nationally scheduled coverage levels and, ultimately, trying to eliminate or eradicate vaccine-preventable diseases.

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### Retrospective multicenter study on 'real life' experience on the use of two different hexavalent vaccines in 5 local health authorities of the sicilian region from 2016 to 2019

Livia Cimino<sup>1</sup>, Francesco Blangiardi<sup>2</sup>, Claudio Costantino<sup>1</sup>, Nicole Bonaccorso<sup>1</sup>, Arianna Conforto<sup>1</sup>, Martina Sciortino<sup>1</sup>, Girolama Bosco<sup>3</sup>, Calogero Collura<sup>3</sup>, Nicolò Casuccio<sup>4</sup>, Maria Randazzo<sup>4</sup>, Gaspare Canzoneri<sup>5</sup>, Giuseppe Palermo<sup>5</sup>, Vincenzo Di Gaetano<sup>5</sup>, Gino Taranto<sup>2</sup>, Mario Cuccia<sup>6</sup>, Roberto Furnari<sup>6</sup>, Mario Palermo<sup>7</sup>, Francesco Vitale<sup>1</sup>

<sup>1</sup>Department of Health Promotion, Maternal and Infant Care, Internal Medicine and Excellence Specialist Medicine, University of Palermo, Palermo, Italy, <sup>2</sup>Prevention and Epidemiology Unit of the Local Health Authorities of Ragusa, Ragusa, Italy, <sup>3</sup>Prevention and Epidemiology Unit of the Local Health Authorities of Agrigento, Agrigento, Italy, <sup>4</sup>Prevention and Epidemiology Unit of the Local Health Authorities of Palermo, Palermo, Italy, <sup>5</sup>Prevention and Epidemiology Unit of the Local Health Authorities of Trapani, Trapani, Italy, <sup>6</sup>Prevention and Epidemiology Unit of the Local Health Authorities of Catania, Catania, Italy, <sup>7</sup>Department for Health Activities and Epidemiological Observatory of the Sicilian Region Italy

Background and Objective: Hexavalent vaccination (HV) is a priority for protecting infants against six potentially deadly infectious diseases. In Italy, Europe and recently in the U.S. there are three commercially authorised vaccines. HV is currently used in a primary immunisation regimen with three doses (3-5-11 months). A retrospective clinical study was conducted in Sicily, Italys fourth-most populated region (10% of national population and 9% of all newborns), in order to evaluate real life data on HV during 2016-2019.

Methods: Data on the completion of the administration of HV, on interchangeability between the two vaccines that alternated between 2016 and 2019 (Infarix Hexa® - Vaxelis®), on use above the established age and on co-administration with Rotavirus and Pneumococcus vaccines were investigated in five Local Health Unit of the Sicilian Region. Scientific coordination was in charge to the Clinical Epidemiology Unit of the University Hospital (UH) of Palermo, through a questionnaire approved by the ethics committee of the same UH.

Results: Data collected from the LHUs of Agrigento, Catania, Palermo, Ragusa and Trapani, constituting 72.5% of the Sicilian population, showed an average of 91.5% completion of the HV cycle at 24 months of age. The average age of administration gradually increased in children who switched between the two vaccines compared to those who completed the vaccination cycle with the same product. Interchangeability with one or two doses of hexavalent was documented in 17.8% (2018) and 16% (2019) of infants. Co-administration was 93% with the 13-valent conjugate anti-pneumococcal vaccine and 70% with the anti-rotavirus vaccine.

Conclusions: This retrospective analysis could contribute to demonstrate safety and sustainability of the interchangeability between different types of the same HV, helping Public Health Authorities to manage potential disruptions due to missed routine immunization opportunities pandemic-related or change of vaccines due to National or Regional tender.

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### COVID-19 vaccination effectiveness: one year of observation

Domitilla Marconi<sup>1</sup>, Chiara Guidoni<sup>2</sup>, Enrico Simoncini<sup>3</sup>, Bruno Sposato<sup>4</sup>, Antonio Perrella<sup>5</sup>, Cesira Nencioni<sup>6</sup>, Nicola Nante<sup>7</sup>, Gabriele Messina<sup>7</sup>, Andrea Serafini<sup>3</sup>

<sup>1</sup>University of Siena Post Graduate School of Public Health, University of Siena, Siena, Italy, <sup>2</sup>Local Health Authority Toscana Sud-Est, <sup>3</sup>Local Health Authority Toscana Sud-Est Health Management, Misericordia Hospital, Local Health Authority Toscana Sud-Est, Grosseto, Italy, <sup>4</sup>Local Health Authority Toscana Sud-Est Pneumology Unit, Misericordia Hospital, Local Health Authority Toscana Sud-Est, Grosseto, Italy, <sup>5</sup>Local Health Authority Toscana

Sud Est, <sup>6</sup>Local Health Authority Toscana Sud-Est Infectious Diseases Unit, Misericordia Hospital, Local Health Authority Toscana Sud-Est, Grosseto, Italy, <sup>7</sup>University of Siena Department of Molecular and Developmental Medicine, University of Siena, Siena, Italy

Background and Objective: In 2020, Italy was one of the most affected countries in the world, counting over 70.000 deaths for covid-19. The Italian ministry of health led the nationwide vaccination campaign. On 1st september 2021, 72% of the population received at least one dose. We aimed to assess the effectiveness of COVID-19 vaccines regarding infection, admission, days of hospitalization, access to the intensive care unit (icu) and death for one year of observation; to the best of our knowledge, there are no studies with such a long study period.

Methods: We conducted an observational retrospective study on all the residents older than 18 of grosseto province (tuscany, Italy) from 1st september 2021 to 31 august 2022. We included who had completed the primary vaccination cycle at the begging of the study and who had never received either one dose by the end of the period. Moreover, all the people who contracted COVID-19 infection before 1 september 2021 were excluded. First, we extracted data regarding vaccine Administrations and reportable COVID-19 tests for all the residents; Then, we linked data of the COVID-19 hospitalizations (the main reason for the admission). We performed logistic and multiple linear regressions adjusting for age, sex, and charlson-comorbidity-index with stataV17.

Results: We observed 213.895 residents and 44.236 COVID-19 cases, and 613 hospitalizations for COVID-19. Considering age, sex and charlson-comorbidity-index, the effectiveness of vaccination is high for all the outcomes: admission (adjor 0.22 95%ci 0.19-0.26), uci (adjor 0.49 95%ci 0.26-0.91), death (adjor 0.40 95%ci 0.25-0.65). Moreover, vaccination reduced days of hospitalization (coef. -3.11 95%ci -4.50 to -1.71). However, increasing age, male sex and comorbidities increased the risk of severe outcomes.

Conclusion: Our results confirm that vaccination prevents severe disease with hospitalization, admission to uci, and death and it is crucial especially for older male people with comorbidities.

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### Exemption or hesitation? Analysis of COVID-19 vaccination exemption requests in a health district in marche region

Giulia Paolorossi<sup>1</sup>, Federica Scaccia<sup>2</sup>, Giorgia Mazzarini<sup>3</sup>, Daniel Fiacchini<sup>4</sup>, Patrizia Marcolini<sup>2</sup>, Corinna Fotunato<sup>5</sup>, Davide Rinaldini<sup>5</sup>, Lidia Pascucci<sup>5</sup>, Daniela Cimini<sup>4</sup>, Andrea Poscia<sup>4</sup>

<sup>1</sup>Università Politecnica delle Marche, Dipartimento Scienze Biomediche e Sanità Pubblica, Sezione di Igiene, Medicina Preventiva e Sanità Pubblica, Ancona, Italy, <sup>2</sup>Public Health Department, Asur Marche AV2, Ancona, Italy, <sup>3</sup>Dipartimento di Prevenzione U.O.C. ISP-Sorveglianza e Prevenzione delle Malattie Infettive e Cronico Degenerative - ASUR AV2, Jesi, Italy, <sup>4</sup>Public Health Department, Asur Marche AV2, Ancona, Italy, <sup>5</sup>Department of Biomedical Sciences and Public Health, Section of Hygiene, Preventive Medicine and Public Health, Polytechnic University of the Marche Region, Ancona, Italy, Italy

Background: SARS-CoV-2 vaccination represented a breakthrough against the pandemic, but sub-optimal coverage in Italy led to the introduction of obligatoriness for several workplaces and citizens over50. Exemptions have ensured when vaccination is contraindicated. In doubtful cases, physicians could refer to experts' committees. Aim of this work is to analyse the appropriateness of these kinds of requests received in a Local Health District.

Methods: In September 2021, the regional group for SARS-CoV-2 vaccination exemptions was established and the procedure for requesting advice defined. From 1/10/2021 to 15/06/2022, 53 requests were submitted in the Health District of Jesi (approximately 100.000 inhabitants). They were independently assessed by 2 physicians expert in vaccination and classified using a structured grid describing query, presence of specialist certification, response time and outcome. Results: 34 requests (66%) were motivated by known allergies or diseases, 34% by previous adverse reactions to vaccinations. The average response time was 40,3 days. Only 5 (9%) requests received a certificate of temporary unsuitability and 1 (2%) unsuitability for mRNA vaccine. Among these, only 33% carried out the vaccination as appropriate. The remaining 89% of the requests did not justify any contraindication, but only 17% proceeded with the vaccination. 51% of the requests were accompanied by a specialist certificate. Of these, 89% appeared in contrast with the vaccination guidelines and has been assessed as having no contraindications, but in no case did vaccination follow

Conclusion: This work highlights an excessive use of the specialist committees assessment, which was not justified by the complexity of the case history, but rather by a defensive medicine approach (for specialist certificates misaligned

with the guidelines or a lack of knowledge of the latter), with a consequent delay in vaccination suggesting the urgency of reconsider pathways for future mandatory vaccination.

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### Observatory of immunization programs of Ibero-America: Year 2020

Analia Urueña<sup>1</sup>, Maria Rombini<sup>1</sup>, Romina Mauas<sup>1</sup>, Amos García Rojas<sup>2</sup>

<sup>1</sup>Universidad Isalud Argentina, <sup>2</sup>Dirección General de Salud Pública de Canarias Spain

**Background and Objective:** Iberia (Spain and Portugal, IB) implemented the Expanded Program on Immunization (EPI) in 1974 and Latin America (LA) in 1979. Calendars and management evolved with differences, and the implementation and achievement of goals between countries show inequalities. We aimed to conduct an observatory of the EPIs in Ibero-América (IA) and build a Ranking based on their indicators.

**Methods:** Descriptive study of 20 countries (2 from IB, 18 from LA). We searched public sites of the Ministries of Health, WHO, PAHO and UNICEF and conducted interviews with referents. We analyzed calendars of 2020, vaccination coverage rates (VCRs) of 2019 (LA) and 2020 (IB), and management variables. We defined 6 domains: vaccination of the 1st year; from 2 years to school entry; adolescents, pregnant women, adults, and elderly; against influenza; special populations; and programmatic aspects. The 149 variables analyzed, and their categories added up a maximum of 400 points. Country score is expressed as a percentage of the maximum possible.

**Results:** Different schedules, vaccine combinations, VCRs and programmatic aspects were observed between countries and regions. Spain, Chile, and Portugal led the global ranking reaching a score of 286 (72%), 271 (68%) and 262 (66%), respectively. The rest of LA countries ranged from 209 (52%, Uruguay) to 96 (24%, Bolivia). The countries positioned down in the ranking showed lower VCRs, shorter scope calendars, information, and programmatic gaps. However, when domains were analyzed independently, the order of countries changed and the same pattern was not repeated, highlighting the strengths and weaknesses of each EPI.

**Conclusions:** This first observatory of the IA EPIs shows large disparities between regions and countries. The ranking aims to encourage EPI leaders and decision-makers to identify remaining challenges and opportunities to improve outcomes. The periodicity of the analysis will allow to compare EPIs evolution over time.

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### Evaluating the impact of COVID-19 vaccination and vaccine timing on SARS-COV2 infection in healthcare workers in the real-world healthcare practice

Edlira Skrami<sup>1</sup>, Marica Iommi<sup>1</sup>, Andrea Faragalli<sup>1</sup>, Rosaria Gesuita<sup>1</sup>, Luigi Ferrante<sup>1</sup>, Marco Morbidoni<sup>2</sup>, Cristina Mancini<sup>2</sup>, Antonella Guidi<sup>2</sup>, Annalisa Cardone<sup>2</sup>, Pietro Serafini<sup>3</sup>, Remo Appignanesi<sup>3</sup>, Flavia Carle<sup>1</sup>

<sup>1</sup>Centre of Epidemiology, Biostatistics and Information technology, Università Politecnica delle Marche Via Tronto, 10A, Ancona Italy, <sup>2</sup>ASUR Marche Area Vasta 2, UOC-ISP Environment and Health-UOS Epidemiology Ancona Italy, <sup>3</sup>ASUR Marche, Health Management Ancona Italy

**Background and Objective:** The aim was to evaluate the impact and timelessness of vaccination on SARS-COV2 infections among healthcare workers (HWs), using healthcare utilisation databases in Marche Region, Italy.

**Methods:** The cohort comprised HWs of Marche Region Health Authority divided into five local units (LU), 18-70 years old, residing in the Region since 2018.

Follow-up began on December 27, 2020, or hiring date, or 90 days after a positive RT-PCR test for HWs with prior infection, if after this date.

Follow-up ended at the date of the SARS-CoV2 infection, employment termination, seven days after vaccination course completion for participants with post-vaccine follow-up < 21 days, first vaccine dose if partially vaccinated, death, study end (May 31, 2021), whichever occurred first.

Cox regression was performed to estimate the impact of vaccination, time to vaccination, occupational role, age, sex, health status on the infection risk, adjusted for vaccination velocity, the probability of being swabbed and the intensive care unit admissions monthly rate, in each LU. The latter two covariates and vaccination were considered time-dependent variables.

**Results:** Overall, 7967 HWs (28% males) with median age 47 years, 77% fully vaccinated by May 31, 2021, were evaluated.

Vaccination significantly reduced the risk of infection (HR=0.2, IC95%: 0.2; 0.3); the risk was higher for auxiliary nurses (HR=1.7, IC95%: 1.2-2.3) and for nurses/physiotherapists/technicians (HR=1.4, IC95%: 1.1-1.7) versus physicians, in

males versus females (HR=1.5, IC95%:1.2; 1.8).

Infection probability increased with increasing time to vaccination, for example, in male physicians, from 6% (IC95%: 5; 6) to 11% (IC95%: 10; 12), at 40 and at 133 days after vaccine initiation, respectively.

**Conclusion:** Vaccination reduces infection risk regardless of occupational, health, demographic and territorial characteristics in HWs; the association between vaccine timelessness and risk reduction highlights the importance of appropriate actions to promote and ensure a rapid access to the vaccine offer.

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### Refugees from ukraine in the pandemic context: the approach of a Public Health Unit in Tuscany, Italy

Linda Botarelli<sup>1</sup>, Linda Botarelli<sup>1</sup>, Nicola Nante<sup>2</sup>, Mattia Fattorini<sup>3</sup>, Daniele Rosadini<sup>3</sup>, Nicola Vigiani<sup>4</sup>, Gabriele Messina<sup>5</sup>, Silvia Cappelli<sup>3</sup>

<sup>1</sup>University of Siena Post Graduate School of Public Health Italy, <sup>2</sup>University of Siena, <sup>3</sup>Local Health Authority Toscana Sud-Est Department of Public Hygiene and Nutrition, Valdichiana Senese Area Italy, <sup>4</sup>Local Health Authority Toscana Sud-Est, <sup>5</sup>University of Siena Post Graduate School of Public Health and Department of Molecular and Developmental Medicine Italy

**Background and Objective:** In the last year, the conflict in ukraine has caused the arrival in Italy of more than 150.000 refugees. The tuscan region provided to verify the refugees general vaccination status, particularly for covid-19, through the prevention departments. The public health unit of zona valdichiana senese – ausl toscana sud est dedicated specific outpatient sessions to this mission. Refugees were invited via active call in collaboration with stakeholders. Vaccinations were offered for free according to the italian health system. Missing vaccinations were proposed and carried out after anamnesis and collection of informed consent. Cultural mediators took part in the sessions and guaranteed the service. The aim of our study was to assess the PRE – post intervention vaccination status of refugees of the zona valdichiana senese – ausl toscana sud est.

**Methods:** This descriptive study was conducted by collecting reports from stakeholders relating to arrivals from ukraine (299 refugees) in the asl tse zona valdichiana senese territory from 20 february 2022 to 13 april 2022. The extraction query was processed using ms excel software. We analyzed the id code, age, vaccination status and vaccines carried out (date of vaccination, type of vaccines). A descriptive analysis was therefore carried out on which vaccines were administered.

**Results:** During the study period, 70/299 refugees (23,4%) were managed by our unit. 52/70 (74,3%) have had at least one dose of the covid vaccine, 20 of which were booster. 19/70 had other vaccines, of which 7 for a,w,yc-meningitis, 5 for chickenpox, 4 for pneumococcus, 4 for b-hepatitis.

**Conclusion:** Although the number of reports is relatively modest, this work highlights that every initiative of public health is fundamental to improve the protection against infectious diseases vaccination and to ensure continuity and free health care access for migrants.

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### How to guarantee more dTpa boosters doses in Italy?

Domitilla Marconi<sup>1</sup>, Mariachiara Gennari<sup>1</sup>, Linda Botarelli<sup>1</sup>, Alessandra Cartocci<sup>2</sup>, Nicola Vigiani<sup>3</sup>, Gabriele Messina<sup>4</sup>, Nicola Nante<sup>4</sup>

<sup>1</sup>University of Siena Post graduate School of Public Health, University of Siena Italy, <sup>2</sup>University of Siena Department of Medical Biotechnology Italy, <sup>3</sup>Local Health Authority Toscana Sud Est, <sup>4</sup>University of Siena Post graduate School of Public Health and Department of Molecular and Developmental Medicine Italy

**Background:** Italy reported the highest number of tetanus cases in the EEA in 2014-2018. The most affected group are the elderly, particularly females, because of the low vaccination coverage. Sporadic diphtheria cases continue to occur in not properly vaccinated people, especially travellers from endemic countries. High vaccination coverage is required to ensure indirect and direct protection from pertussis in infants and the elderly, the most vulnerable groups to this disease. Booster dTpa doses are recommended in adults every 10 years for all life. We aimed to evaluate which factors may be associated with our country's immunisation rate decline.

**Methods:** In September 2021, we conducted a cross-sectional survey among the population of the Tuscany Region, Italy. We collected data on demographics, knowledge of dTpa vaccination, vaccine-preventable diseases and healthcare access knowledge. In addition, we performed a descriptive and inferential analysis with the software Rv4.0. The significance level was set at p<0.05.

**Results:** Of the sample (N=408), 57% received dTpa booster in 10 years, and 69%

it is free.

We observed an association between receiving dTpa and knowledge of diphtheria (OR 3.28 95%CI 1.27-8.46 p=0.011) and pertussis (OR 2.65 1.19-5.92 p=0.015). Moreover, people who know that dTpa booster is recommended every 10 years (OR 10.0 5.59-18 p<0.001), that it is free (OR 6.97 3.69-13.2 p<0.001), and have a healthcare service app on their phone (OR 2.29 1.38-3.80 p0.001) are more likely to getting vaccinated.

Conclusion: In Italy, we must promote dTpa campaign to protect vulnerable people. Our study shows that health literacy increases the likelihood of getting vaccinated. Therefore, it is essential to encourage communication campaigns on dTpa and propose strategies to strengthen the vaccination coverage (e.g. offering vaccination during the driving license renewal visit or implementing co-administrations).

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### Moving the needle: Improving uptake of adult vaccination in Japan

Patrick Swain<sup>1</sup>, Arun Himawan<sup>1</sup>

<sup>1</sup>International Longevity Centre UK United Kingdom

Background and objective: While Japan tops the charts in terms of healthy life expectancy across the world, uptake of vaccination remains surprisingly low. COVID-19 vaccination uptake has been high but other adult immunisations are trailing behind.

This innovative ethnographic project, led by the International Longevity Centre UK (ILC-UK) and Stripe Partners, has worked to identify, develop, and refine two implementation-ready interventions designed to increase the uptake of vaccinations for people aged 65 and over in Japan, with lessons for countries across the region.

Methods: ILC-UK and Stripe Partners conducted ethnographic research and face-to-face interviews with older adults, doctors, pharmacists, and health system actors in urban and rural Japan to understand the barriers to vaccination and develop innovative solutions to improve uptake.

Results: From healthy eating to exercise, older people in Japan engage in their health and want to stay independent for as long as possible. However, a combination of historical cautiousness from national and local government in promoting life course immunisation, practical barriers including supply issues, a lack of shared electronic health records and attitudinal barriers, push down uptake.

Conclusion: The success of the COVID vaccination rollout shows that people are willing to get vaccinated when there is urgency and systems are designed to integrate into people's lives. Heeding these lessons could create some easy wins in increasing uptake of other routine immunisations.

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### Widening disparities in teen hpv vaccinations during covid-19 pandemic: A case study Italy

Alessandra Dal Zotto<sup>1</sup>

<sup>1</sup>Local Health Unit 7, Veneto Region via Boldrini, 1 36016 Thiene (VI) Italy

Introduction: In Local Health Unit 7, human papillomavirus (HPV) vaccination campaigns for 12-year-olds have long been implemented by the vaccination services of the Department of Prevention. Due to the pressure of the COVID-19 pandemic on these services, an emergency vaccination campaign was directly managed by primary care pediatricians (PCPs). An initial evaluation of this experience was conducted.

Materials and methods

Data on 12-year-olds assisted by PCPs belonging to the 2006 (pre-pandemic) and 2008 (pandemic) birth cohorts were extracted, along with HPV vaccination data. Health district, gender, citizenship, socioeconomic status, and PCPs were evaluated as possible influencing factors in a two-level logistic regression (second level: single PCP).

Results: The HPV vaccination gap between males and females increased significantly for the 2008 compared to 2006 birth cohort (11 vs. 4 percentage points). As for PCPs, the vaccination uptake range was 4-71% for the 2008 birth cohort vs. 32-85% for the 2006 cohort. The proportion of variance explained at the second level was overall equal to 9.7% for the 2008 cohort vs. 3.6% for the 2006 cohort.

Conclusions: The vaccination campaign carried out during the peak of the COVID-19 pandemic increased the HPV vaccination gaps among Health Districts, genders, and individual PCPs, probably due to a lack of homogeneity in professional practices and attitudes toward HPV vaccination. Catch-up interventions are required in the immediate term, while an equity lens approach should be taken for

reprogramming the vaccination campaign. Greater involvement of schools and families could ensure a more equitable approach and better uptake.

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### Interventions to increase vaccine uptake in prisons: A global systematic scoping review

Babak Moazen<sup>1</sup>, Emma Plugge<sup>2</sup>, Heino Stöver<sup>3</sup>, Nisreen Agbaria<sup>4</sup>, Nasrul Ismail<sup>5</sup>, Sara Mazzilli<sup>6</sup>, Lara Tavošchi<sup>6</sup>

<sup>1</sup>Heidelberg University Universitätsklinikum Heidelberg, Institute für Public Health, Bergheimer Str. 20, Raum 317 69115 Heidelberg, Germany,

<sup>2</sup>University of Southampton, <sup>3</sup>Frankfurt University of Applied Sciences Germany, <sup>4</sup>Heidelberg University Germany, <sup>5</sup>Bristol University, <sup>6</sup>Psa University Italy

Background And Objective: Lack of vaccine uptake is a key global challenge in controlling the spread of infectious diseases in prisons. Based on the international research project "Reaching the hard-to-reach: Increasing access and vaccine uptake among prison populations in Europe (RISE-Vac)" funded by the EU Health Program, we will report the implementation of interventions to increase vaccine uptake among people who live and work in prisons.

Methods: Operationalizing the "Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) extension for scoping reviews" criteria, we searched five databases of peer-reviewed literature—PubMed, ISI Web of Science, Cochrane library, Science Direct, and EBSCO—as well as 14 databases of grey literature to access publications between 2012 and 2022. Suitable publications were reviewed by two researchers independently and the quality of these publications was assessed through established quality assessment tools.

Results: Of the 11,281 publications identified and reviewed, 17 met the inclusion criteria. For people who live in prisons, the following interventions have been implemented to improve their vaccine uptake: 1) knowledge dissemination through educational courses and open focus group discussion; 2) distribution of learning materials, e.g., posters, factsheets, pamphlets; 3) implementing rapid-schedule vaccination services; 4) revision of the existing vaccination protocols; and 5) prioritizing these individuals in national vaccination programs. For juveniles, the development of virtual forums with youth, guardians, and community partners has been adopted to increase vaccine uptake in prisons. For people who work in prisons, e-learning courses and follow-up information through email communication are the main interventions implemented to increase their vaccination uptake.

Conclusion: Considering that most of the people who live in prisons will eventually return to their community and that those who work in prisons return to their community daily, increasing vaccination uptakes as per the measures above should be a key priority for public health investment.

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### Co-administration of vaccines against rotavirus and group b meningococcus is associated with an increased rotavirus vaccination coverage: a 5-year retrospective population study

Andrea Vecchio<sup>1</sup>, Sara Scarano<sup>1</sup>, Giuseppina Affinito<sup>2</sup>, Alessandro Scoppa<sup>3</sup>, Pietro Buono<sup>3</sup>, Raffaele Palladino<sup>2</sup>, Alfredo Guarino<sup>2</sup>

<sup>1</sup>Department of Translational Medical Sciences-Section of Paediatrics, University of Naples "Federico II," Naples, Italy. Italy, <sup>2</sup>Department of Public Health, University of Naples "Federico II," Naples, Italy. Italy, <sup>3</sup>Department of Maternal and Child Health, General Directorate for Health, Naples, Italy

Background: In Italy Rotavirus vaccination (RVV) is recommended and provided free of charge from 2018, however, the coverage is scattered and suboptimal. The narrow time frame to complete the schedule is a major barrier to vaccine uptake, and co-administration with other vaccines may potentially increase the coverage. Although the co-administration of RVV and Meningococcal Group B vaccines (MenB) is currently not included into product labels, we aimed at studying its impact on RVV coverage.

Methods: The Regional Vaccination Registry was used to conduct a retrospective cohort study in children born in Campania Region between January 1, 2016 and December 31, 2020, and receiving vaccines scheduled in the first year of life.

Results: A total of 224.110 children accessing the vaccination centers in the study period were included. Overall 60.614 (27.0%) completed the RVV schedule, with a progressive increase over time (from 1.15% in 2016 to 56.92% in 2020), in parallel with MenB/RVV co-administration (from 0.7% in 2016 to 46.85% in 2020). Monovalent RVV schedule (2-doses) was completed in 91.1% of children compared to pentavalent RVV Schedule (3-doses) in 81.3% (p<0.00001).

Children receiving RVV/MenB co-administration had a significant higher chance to complete RV schedule compared to those receiving RVV alone during a specific

appointment (94.78% vs 72.26%, Prevalence Ratio -PR- 1.275, 95%CI 1.245-1.295 p<0.00001). The positive effect of RVV/MenB co-administration was more evident for children receiving pentavalent RVV (PR 1.288) than monovalent RVV (PR 1.115), this evidence was confirmed when adjusted for confounding variables (i.e. year of vaccination, local health district, gender).

Conclusion: Although still far from the target, the RVV coverage has increased in recent years in Campania Region. Co-administration with MenB vaccine may aid in achieving this goal, especially for Rotateq. More data about safety and tolerability are needed to support co-administration as a key tool to increase coverage.

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### Real life experience of knowledge, attitudes and acceptance rate of covid-19 and influenza vaccine administration in one of the main vaccination hub of sicilian region at the university hospital of palermo, Italy

Arianna Conforto<sup>1</sup>, Claudio Costantino<sup>2</sup>, Livia Cimino<sup>1</sup>, Sara Rusignuolo<sup>1</sup>, Giorgio Graziano<sup>2</sup>, Walter Mazzucco<sup>1</sup>, Vincenzo Restivo<sup>1</sup>, Francesco Vitale<sup>1</sup>

<sup>1</sup>Department of Health Promotion, Maternal and Infant Care, Internal Medicine and Excellence Specialties (PROMISE), University of Palermo, Palermo, Italy, <sup>2</sup>Department of Health Promotion, Maternal and Infant Care, Internal Medicine and Excellence Specialties (PROMISE), University of Palermo, Palermo, Italy

Introduction: In temperate countries of the southern hemisphere, influenza surveillance showed an increase in influenza circulation in 2022 season, anticipating a peak of influenza cases in the Northern hemisphere during 2022/2023 season. The Italian Health Ministry strongly recommend coadministration of seasonal influenza vaccines with other vaccines, including bivalent COVID-19 vaccines. The Vaccination HUB of University Hospital (UH) of Palermo, since the beginning of the campaign, administered over 90,000 doses of COVID-19 vaccines and more than 900 influenza vaccines have been co-administered with COVID-19 vaccines in the 2021/2022 season.

Materials and methods

Data were collected from October to December 2022 at the Vaccination Hub of UH of Palermo, using a self-administered online questionnaire to subjects afferent to the Center, by Google® Forms platform. The research group had access and recorded all data on a password-protected Excel file (ver. 1997-2003).

The questionnaire consisting in 15 items, the informative of the study and the consent form was approved by the Ethic Committee of the Palermo's UH

Results: Overall, 904 subjects answered the questionnaire. 74.5% of the respondents were willing to receive the co-administration with the COVID19 and seasonal influenza vaccines. The main reason reported for accepting the co-administration was confidence in the official recommendations (43.5%) whereas 46.6% were not willing to receive the co-administration for fear of side effects. At the multivariable analysis subject with age ≤59 years (AdjOR: 0.48;CI95%:0.31-0.75) and those who received the two vaccines co-administered during the last season (AdjOR: 87.1;CI95%:61.4-463.8) were significantly associated with coadministration during 2022/2023 season.

Conclusion: First data obtained from this study show that those who received COVID19 and seasonal influenza vaccination in the same session also in the 2021/2022 season are willing to receive the co-administration of the two vaccinations again for the current season, arguing for the absolute safety and efficacy of the co-administration.

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### Between compulsory vaccination and the COVID-19 pandemic: effects on the vaccination coverage trend in a province of Southern Italy

Miriam gorgone<sup>1</sup>, Cristina genovese<sup>2</sup>, Serena calderone<sup>3</sup>, Ilaria saia<sup>3</sup>, Francesco Ioddo<sup>2</sup>, Irene faranda<sup>1</sup>, Paola tripodi<sup>3</sup>, Isabella spina<sup>3</sup>, Raffaele squeri<sup>3</sup>

<sup>1</sup>University of messina department of biomedical sciences and morphological and functional images, university of messina Italy, <sup>2</sup>University of messina, <sup>3</sup>University of messina department of biomedical sciences and morphological and functional images, university of messina Italy

Background and objective: The Italian immunisation schedule includes the main indications for the different types of vaccine, based on the most recent scientific evidences. The purpose of this study is to evaluate the trend of population compliance with mandatory and recommended vaccinations in 2019-2022 in the Messina area after the introduction of the Law 119/2017 and after COVID-19 pandemic.

Methods: This study analyses the data on the vaccination coverage in the Messina area between 2019-2022, and it compares them with the regional and national ones. The research was started on 1st October 2019 and the data were collected through the OnVac program at time 0, 12, 24, 36 months stratified according to the type of vaccine, age group and gender.

Results: Data shows an initial positive trend due to compulsory vaccination, as evidenced by the increased coverage for the hexavalent from one year after the introduction of the law until 2020-2021, followed by a drastic decrease to values below the cut-off. Regarding the flu vaccination, the study records an undulating trend, having an initial decrease in the percentages in 2020, followed by a rise to 80% in 2021 and a new decrease in 2022. It is evident that the maximum vaccination peak occurs thanks to the effect of the Law 119/2017 on compulsory vaccination, followed by a slight positive deflection in the initial phase of the COVID-19 pandemic, and a new collapse in the adhesion of the population, probably linked to the fear of contagion in the health sector.

Conclusion: In conclusion, considering the pandemic implications, we can state that the vaccination obligation is a valid tool for Public Health, but it reveals ineffective if not integrated with an adequate reorganization of the Regional Health System.

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### Monkeypox (mpox)-related knowledge and vaccine hesitancy among czech healthcare professionals

Abanoub Riad<sup>1</sup>, Anton Drobov<sup>1</sup>, Jana Rozmarinová<sup>1</sup>, Pavla Drapáčová<sup>1</sup>, Jitka Klugarová<sup>1</sup>, Ladislav Dušek<sup>1</sup>, Andrea Pokorna<sup>1</sup>, Miloslav Klugar<sup>1</sup>

<sup>1</sup>Masaryk University Czech Republic

Background: The recent human monkeypox (MPOX) outbreak in non-endemic countries has raised concerns among public health authorities worldwide. Healthcare professionals (HCPs) play a decisive role during epidemics in transmitting accurate information to the public and motivating them to pursue protective behaviours, including immunisation.

Methods: A cross-sectional survey-based study was conducted in the Czech Republic in September 2022 to evaluate MPOX-related knowledge and vaccination perceptions among HCPs. The study utilised a digital self-administered questionnaire (SAQ) which inquired about participants' sociodemographic and anamnestic characteristics, perceived knowledge of MPOX, factual knowledge, and vaccination perceptions according to the health belief model (HBM).

Results: A total of 341 participants were included in this study; most of them were females (88.9%), allied HCPs (89.4%), heterosexuals (87.1%), married (61.9%), and vaccinated against COVID-19 (91.2%). Only 8.8% of the participants agreed to receive vaccination against MPOX; 44.9% rejected it, while 46.3% were hesitant. While digital news portals (47.5%) and social media (25.8%) were among the most utilised sources of information about MPOX, the scientific journals (5.6%), ECDC (5%), and the U.S. CDC (1.5%) were the least common sources. The participants demonstrated suboptimal levels of factual knowledge, especially regarding MPOX vaccines (1.5 ± 1.2 (0-4)) and treatments (0.9 ± 0.9 (0-4)). Additionally, several misconceptions were detectable among the participants regarding topics such as the availability of effective vaccines and antivirals against MPOX, the risk of vertical transmission, and homosexual stigmatisation. The HBM indicated that the cues to action and perceived susceptibility were the most important constructs to predict MPOX vaccine acceptance.

Conclusions: The findings of this study call upon public health practitioners and health policymakers in the Czech Republic to tailor dedicated educational campaigns should encounter the HCPs' misconceptions about MPOX, and future studies should explore the prevalence and drivers of MPOX vaccine hesitancy among the general population.

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### What is the difference between choosing to vaccinate for a mandatorily or recommended vaccine?

Aida Bianco<sup>1</sup>, Francesca Ficara<sup>1</sup>, Natascia Costantino<sup>1</sup>, Silvia Angelillo<sup>1</sup>, Francesca Licata<sup>1</sup>

<sup>1</sup>Department of Health Sciences, School of Medicine, University of Catanzaro "Magna Græcia", Catanzaro, Italy

Background and Objectives: The National Immunization Prevention Plan 2017-2019 (extended to 2021) states that Diphtheria, Tetanus, acellular Pertussis (dTTap) and Inactivated Poliomyelitis vaccine (IPV) have to be boost between 11 and 18 years of age, mandatorily. Among other vaccines, conjugated quadrivalent meningococcus (Men ACWY) is recommended during adolescence. The present study aimed to investigate dTap-IPV and Men ACWY coverage and potential

predictors of the uptake among undergraduate university students in Southern Italy.

**Methods:** This cross-sectional survey was conducted through an anonymous online questionnaire that included socio-demographic characteristics, attitudes, and reasons for not having received vaccinations and willingness to receive vaccinations.

**Results:** Preliminary findings refer to a sample of 407 respondents with a mean age of 22.8 years (SD±2.9). During adolescence, 88.6% of respondents received dTap-IPV vaccine, 74% had received the Men ACWY and over two-third of the sample received both vaccinations. Among dTap-IPV unvaccinated students, 39.3% declared to be unwilling to receive the vaccine booster because they believed to be not at risk of contracting vaccine preventable infectious diseases (46%), vaccination was not offered to them (41%) and because they were afraid about potential serious side effects (13.6%). Furthermore, the reasons for not getting Men ACWY were the lack of vaccination proposal (59.4%), the fear of serious side effects (20.3%), believing to be not at risk of meningococcal infection (18.8%) and, lastly, because it was not mandatory (10.9%).

**Conclusion:** Preliminary results show low perception of the risk of acquiring vaccine-preventable diseases and this represent a key issue to address in order to keep high vaccines' coverage. Although it is preferable that public acceptance make compulsory vaccination programs unnecessary, the finding that some young adults did not get vaccinated against Men ACWY, since it is not mandatory, highlight the need of better understanding the impact on immunization coverage of different approaches.

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### Digital Assessment and Intervention based on HPV vaccination hesitancy and related cognitive biases

Dario Menicagli<sup>1</sup>, Virginia Casigliani<sup>2</sup>, Lara Tavoschi<sup>2</sup>, Stefano Gandolfi<sup>3</sup>

<sup>1</sup>IMT School for Advanced Studies Lucca Italy, <sup>2</sup>University of Pisa, Italy

<sup>3</sup>Sant'Anna School of Advanced Studies

**Background and Objective:** The HPV vaccination is considered an essential prevention strategy by the World Health Organization(WHO). The Italian Ministry of Health set the goal to reach the 95% vaccinated female and male population susceptible by age. However, the coverage remains below 70%. Vaccine hesitancy (VH) is linked to the risks and benefits information of HPV immunization, but knowledge alone is insufficient to determine the vaccination choice. Individual decision-making is influenced by cognitive biases that distort severity and costs perception of vaccination behavior. This study aims to provide a characterization of the decision-making and cognitive biases in adolescents and design a promotional strategy targeting HPV VH.

**Methods:** The project is bounded into two phases. First, a sample size of 500 subjects aged 14-20 will be investigated through an online questionnaire regarding decision-making and related biases involved in HPV vaccination choice. Secondly, we will implement a promotional intervention in high school population to increase HPV knowledge and vaccine confidence. A before-after study with control will be proposed in different schools: specific web-based dissemination messages framed on HPV vaccination bias, resulted from the previous survey, will be created and distributed through dedicated channels. In the control group, the standard informative intervention will be maintained.

**Results:** It is expected an improvement in the understanding of the factors that determine HPV VH and the evaluation of the feasibility and effectiveness of a design-specific promotional campaign through channels suited for adolescents. The results of the campaign will be evaluated according to the vaccination intention of the participants in treatment and control group (Youth Attitudes about Vaccines scale), and through the local administrative data on vaccination rate.

**Conclusion:** A de-biasing approach is fundamental to improving health patterns and changing the level of VH. This will result in better vaccine uptake in line with WHO recommendations.

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### Delivery of international vaccinations at the territorial units (uts) of the air and maritime border health offices and seafarers' health services (usmaf-sasn) of the ministry of health in the period 2017-2022

Eleonora Tassone<sup>1,2,3</sup>, Emanuela Friscicale<sup>4</sup>, Roberto Falvo<sup>3</sup>, Cosimo Trionfo<sup>4</sup>, Camilla Romano<sup>4</sup>, Marina Di Vona<sup>4</sup>, Ulrico Angeloni<sup>3</sup>, Giovanni Rezza<sup>3</sup>, Romina Sezzatini<sup>5</sup>, Anna Odone<sup>1</sup>

<sup>1</sup>University of Pavia Italy, <sup>2</sup>General Directorate for Health Prevention, Ministry of Health, Rome, Italy, <sup>3</sup>Ministry of Health, Rome, Italy General Directorate

for Health Prevention, Ministry of Health, Rome, Italy, <sup>4</sup>Ministry of Health, Rome, Italy, <sup>5</sup>Ministry of Health, Rome, Italy

**Background:** The USMAF-SASNs, which grouped several UTs, provide the mandatory and recommended vaccines for international travel at their outpatient clinics, which are recognised centres for the administration of yellow fever vaccination. During the COVID-19 emergency, the Italian Government issued legislative provisions and rules that affected and restricted the lives of citizens and their habits, also international travels. This works aims at describing the impact of COVID-19 pandemic on the delivery of international vaccinations at USMAF-SASNs.

**Method:** From the NSIS (New Health Information System) of the Ministry of Health, data about the number of vaccine doses administered specific to vaccine type and the UTs-USMAF of delivery were extrapolated. A pre-post time trend analysis was conducted.

**Result:** During the considered period, 28,868 doses of vaccine were administered in all Italian UTs. Out of these, 22,241 were delivered in the three-year period 2017-2019 and 6,627 in the three-year period 2020-2022. The main USMAF- SASN vaccine outpatient clinics delivered respectively 5,621 vaccines in Lazio and 8,927 vaccines in Lombardy in the six years considered. The pre-post analysis of delivery data showed the negative impact of the pandemic on the access to international vaccinations at USMAF-SASN outpatient clinics, quantifiable in a delivery decrease of 69% between the first and second three-year periods.

**Conclusion:** The decrease in vaccinations delivery is probably attributable to the decrease in international travel and the restrictive rules applied by Italy and Europe for travel from/to Third Countries. The USMAF-SASN outpatient clinics can represent a support to Local Health Authorities/Regional Health Services widening vaccination delivery as essential service for all citizens.

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### Building towards vaccine acceptance -community co-design framework

Shane Piper<sup>1</sup>, Alison McCallum<sup>2</sup>

<sup>1</sup>Health Protection Surveillance Centre, Health Service Executive ASPHER Young Professional Programme "HSE-Health Protection Surveillance Centre (HPSC), 25-27 Middle Gardiner Street, Dublin, D01 A4A3, Ireland FSS - Lárionad Faire um Chosaint Sláinte | 25- 27 Sráid Ghairdinéir, Baile Átha Cliath, D01A4A3, Éire" Ireland, <sup>2</sup>Usher Institute

**Background and objective:** Vaccine hesitancy is a global public health threat. As the COVID-19 pandemic progressed, vaccines, particularly mRNA vaccines, have reduced overall disease severity and death but population coverage has fallen short and uncertainty about vaccination grown. Miscommunication, neglect of health inequities, failure to address vaccine access and other concerns sufficiently have affected trust between populations and healthcare systems. We built on existing models of increasing vaccine acceptance to develop a more comprehensive explanatory model for testing and evaluation.

**Methods:** We reviewed the literature on vaccine hesitancy/acceptance models in English and French from PUBMED, ScienceDirect and Google Scholar. We grouped search terms as disease (COVID-19), issue (Vaccine hesitancy) and timeline (COVID-19 pandemic). We explored their application using the Irish case study, including the Irish tailored communication model, and used the findings to build our model.

**Results:** Previous models had gaps in issues considered, planning and implementation. Many neglected wider determinants or health system responsibilities, treating vaccine acceptance as a one-dimensional issue not a continuum. While the need for vaccination programmes to be redesigned to counter known health inequities, gaps in health literacy, access difficulties, exclusionary practices and mistrust of authorities was recognised, few studies addressed these issues. Our analysis also identified the importance of co-creating delivery models with communities. The resulting model supports prioritisation of communities and individuals in line with need, exposure risk and barriers to immunisation, regardless of their nature or source. Ongoing communication provides space for people to move from vaccine hesitancy to shared understanding while authorities tackle barriers and concerns actively.

**Conclusion:** Emergency vaccination programmes require greater depth of shared communication and decision making between populations, practitioners, and policy makers. Our model, which incorporates tailored communication, provides a framework for building vaccine acceptance, widening and welcoming participation in development, design, delivery, and improvement.

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### COVID19 vaccine hesitancy among an urban population during lockdown in India

Joe braham<sup>1</sup>, Serah Mamachan<sup>2</sup>

<sup>1</sup>Pushpagiri Institute of Medical Sciences and Research Centre Department of Community Medicine <sup>2</sup>Department of Community Medicine Pushpagiri Institute of Medical Sciences and Research Centre Tiruvalla, Kerala, India 689101 <sup>1</sup>India, <sup>2</sup>SUT Academy of Medical Sciences

**Background and objective:** Sufficiently high uptake of vaccines among the general public is important for containing the spread of infections like COVID19. However, mistrust, complacency, misinformation, and wrong beliefs raise apprehension amongst the public regarding the introduction of a new vaccine. The objective of this study was to determine the level of vaccine hesitancy as well as the various factors associated with it among an urban population. **Methods:**

India began its COVID19 vaccination program in January 2021 with the vaccine rollout for the general public starting in May. A community-based cross-sectional study was carried out in the month of April 2021, in the field practice area of the urban health center of a tertiary care hospital, using a self-administered questionnaire. With the rapid increase in cases, most parts of the country, including the study location, were under lockdown during the study period.

**Results:** Out of 132 study participants, nearly 20% were unwilling to take the vaccine. The most common specific reason for refusing the vaccine was inadequate data about the vaccine's safety followed by concerns about adverse effects. The most commonly used source of information on vaccines was newspapers (62.1%) followed by the websites of the Government ministry and information passed by healthcare workers. Over 26% of those with graduate-level education were unwilling to take the vaccination. Nearly 23% of the respondents who perceived high risk of contracting infection for themselves were unwilling to take the vaccine while nearly 15% of those who perceived they were at no risk of contracting the disease were unwilling to take the vaccine. ( $p=0.086$ )

**Conclusion:** Vaccine hesitancy is high even among well-educated sections of society and public health systems should devise strategies to build trust by disseminating health information through tailored interventions.

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### Outcomes of cervical cancer screening among vaccinated and unvaccinated women against papillomavirus: a study protocol and preliminary data in the metropolitan area of Palermo

Giuseppa Minutolo<sup>1</sup>, Mario Valenza<sup>2</sup>, Rosario Piparo<sup>3</sup>, Milena Emmiti<sup>4</sup>, Alessia Dolce<sup>2</sup>, Maria Randazzo<sup>5</sup>, Marylea Spedale<sup>5</sup>, Vincenzo Restivo<sup>1</sup>

<sup>1</sup>University of Palermo Health Promotion, Mother and Child Care, Internal Medicine and Medical Specialties Via del Vespro, 133 - Palermo 90127 Italy, <sup>2</sup>Local Health Unit of Palermo, <sup>3</sup>Local Health Unit of Palermo Local Health Unit of Palermo Via Carmelo Onorato, 6 - Palermo 90100 Italy, <sup>4</sup>Local Health Unit of Palermo Operative Unit of Screening Management Center Via Carmelo Onorato, 6 - Palermo 90100 Italy, <sup>5</sup>Local Health Unit of Palermo Italy

**Background and objective:** Several studies had shown the effectiveness of vaccination against papillomavirus (HPV) in reducing hospitalization and severe prognosis due to cervical cancer. However, in Italy data on cervical cancer screening outcomes among HPV vaccinated women are still lacking. The purpose of this study is to evaluate outcomes cervical cancer screening among vaccinated women against HPV.

**Methods:** Female residents in the Palermo area aged 25 years old were the eligible study population. Data on both quadrivalent and nonavalent HPV vaccination and cervical cancer screening (PAP test and HPV DNA test) were retrieved from informative dataset of Palermo local health unit (LHU) between 1st January and 30th November 2022.

Descriptive and inferential statistical analyses were performed. Appropriated measures of central tendency (mean or median) and related dispersion measures (standard deviation [SD] or interquartile range [IQR], respectively) were chosen. Chi square test compared PAP test results with HPV vaccination, with  $p \leq 0.05$  as statistically significant value.

**Results:** Women invited to cervical cancer screening by Palermo LHU were 4718. No more than 8.4% (389) of them had a report of cervical cancer screening. The median age at first dose of HPV vaccine was 15 years old (IQR=13-21). Although the frequency of positive PAP test was higher among unvaccinated women compared with the vaccinated (68.4% vs 31.6%), it was not statistically significant ( $p=0.528$ ). Also, the percentage of positive HPV DNA test was higher in the unvaccinated than the vaccinated (75.0% vs 25.0%), but this result was not statistically significant ( $p=0.553$ ).

**Conclusion:** Notwithstanding no evidence of the HPV vaccination effectiveness

has been shown in this study population, vaccination data of Palermo LHU should be implemented, as well as increasing cervical cancer screening uptake. Since the high frequency of positive PAP/HPV DNA test among unvaccinated women, HPV vaccination should be promoted in early adolescence.

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### Vaccine service quality and confidence assessment results of a survey in outpatient clinics of the Catania ASP

Rosario Vinci<sup>1</sup>, Milena Nardi<sup>2</sup>, Melissa Gullotta<sup>1</sup>, Mario Cuccia<sup>3</sup>

<sup>1</sup>University of Catania Italy, <sup>2</sup>University of Catania, <sup>3</sup>2. Epidemiology and Preventive Medicine Unit - Department of Prevention, ASP Catania" Italy Gabriele Giorgianni "2. Epidemiology and Preventive Medicine Unit - Department of Prevention, ASP Catania" Giuseppe Mangano University of Catania Italy

**Background and Objective:** The second edition of the "Surveillance system for the main determinants of health in children aged 0-2 years", promoted by the Ministry of Health and coordinated by the ISS, was held from July to September 2022.

We took this opportunity to administer a "satisfaction survey" to assess the perceived quality of the service offered by the local health care system and the level of information and confidence about vaccines.

**Methods:** A total of 367 anonymous questionnaires were administered, self-filled out by mothers of children no older than 2 years of age who underwent one of the mandatory vaccination (one of the first three doses of hexavalent or the first dose of MMR-V). Among the questions, two were about confidence and fear related to vaccines.

**Results:** 281 (76.6%) of mothers attended the pediatrician's clinic before the vaccination appointment; 310 (84.6%) declared they were correctly informed by the pediatrician; 355 (96.7%) faced no difficulties in booking the vaccination; 338 (92.2%) reported no overly time elapsed between booking and vaccination. When asked "On a scale of 1 to 10 how much confidence do you place in vaccinations?", 338 (92.1%) rated their confidence from 6 to 10. Relative to the question "On a scale of 1 to 10, how much fear do you have of vaccinations?" the answers were more heterogeneous: 246 (67%) from 6 to 10, 28 (7,7%) 5 and 93 (25.3%) from 1 to 4.

**Conclusions:** Getting feedback about the service offered can help improve it. WHO considers vaccine hesitancy one of the main threats to global health. Monitoring the population level of trust and fear toward vaccines is relevant for prompt intervention to build and sustain vaccine confidence. This survey tells us that although there is good confidence among mothers, fear continues to be an important issue.

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### From vaccines to vaccinations ...listen to the professionals involved on the vaccination of newly arrived migrants in Italy

Giulia Marchetti<sup>1</sup>, Maria Russo<sup>2</sup>, Salvatore Scarso<sup>2</sup>, Chiara De Marchi<sup>3</sup>, Silvia Declich<sup>1</sup>, Maurizio Marceca<sup>2</sup>, Igor Aloise<sup>3</sup>, Angela Gatta<sup>2</sup>, Marise Sabato<sup>2</sup>, Arianna Bellini<sup>2</sup>, Caterina Ferrari<sup>2</sup>, Maria Tosti<sup>1</sup>, Franca D'Angelo<sup>1</sup>

<sup>1</sup>Italian National Institute of Public Health National Centre for Global Health, Italian National Institute of Public Health Italy, <sup>2</sup>Sapienza University of Rome Department of Public Health and Infectious Diseases, Sapienza University of Rome Italy, <sup>3</sup>Sapienza University of Rome

**Background:** Provide equitable access to vaccination for all migrants, regardless of their nationality and migration status is essential to making progress towards universal health coverage. Access to Vaccination for Newly Arrived Migrants (AcToVx4NAM) is a project (Grant n 101018349, 3rd EU Health Programme) that aims at improving the vaccine literacy of the health system and making access to vaccinations for migrants more equitable and guaranteed.

**Methods:** Qualitative research has been carried out to identify barriers of Italian vaccination system and possible solutions to overcome them. Focus groups and interviews were conducted with 17 professionals: vaccination planning experts, health, social professionals engaged in the topic of migrant vaccination. The results were analyzed using a thematic analysis linked to the framework produced by the project, which divided the vaccination process into five conceptual hubs: entitlement, reachability, adherence, achievement and evaluation.

**Results:** In Italy, migrants are entitled to vaccinations, regardless of their legal status. Nevertheless, some differences in age, gender and migratory route directly influence the interception of migrants by Italian vaccination system. The compulsory vaccines for schooling and the pathways of the reception system are key opportunities offering the recommended vaccinations. Beyond these, the capability of the vaccination offer to reach migrants is very limited. The

main strategies, that can be adopted to improve the vaccination offer, are the transversal promotion of vaccinations by all those who encounter migrants; building relationships of trust between service providers and the target population, especially through partnerships with NGO active on the issue

Conclusion: Vaccinations should be a multi-step process of protecting and promoting individual and community health, not just a single vaccine shot. Multi-sectoral alliances with a multiplicity of stakeholders are needed. Moreover, it seems that are not migrants who are hard to reach, but the vaccination system that is unable to reach them.

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### COVID-19 in high-risk exposure population: vaccine effectiveness in the portuguese navy

Verónica Gómez<sup>1</sup>, Irina Kislaya<sup>2</sup>, Rui de Deus<sup>3</sup>

<sup>1</sup>Instituto Nacional de Saúde Doutor Ricardo Jorge Portugal, <sup>2</sup>Instituto Nacional de Saúde Doutor Ricardo Jorge, <sup>3</sup>Marinha Portuguesa Portugal  
Ausenda Machado Instituto Nacional de Saúde Doutor Ricardo Jorge Portugal

Background and Objectives: Given the mass vaccination campaigns to control COVID-19 pandemic, it is important to measure the effect of vaccination against COVID-19, in real conditions. The Portuguese Navy, a population at high risk of exposure due to its functions of defence and support to the population in the scope of the pandemic were eligible to early vaccination in December 2020.

Using data from the Portuguese Navy electronic health registries, this study intended to estimate COVID-19 vaccine effectiveness in the Portuguese Navy, against laboratory-confirmed SARS-CoV-2 infection, overall and by time since complete primary vaccination.

Methods: We established a retrospective and prospective cohort that took place for 20 months (December 2020-June 2022). The study population was composed of active-duty and reserve militaries of the Portuguese Navy, all eligible for COVID-19 vaccination that consented to participate in this study. Invitation was via e-mail and consent was obtained to link data from health registries and vaccination. Complete scheme vaccine effectiveness (VE) was estimated as  $100\% \times (1 - HR)$  where HR is the confounding-adjusted hazard ratio from time-dependent Cox regression, adjusted for age, sex, and presence of chronic conditions.

Results: A total of 860 Portuguese Navy militaries accepted to participate in the study. Complete primary scheme overall VE against laboratory-confirmed SARS-CoV-2 infection was 54.0% (-5.7 to 79.9) after 14 days of last dose. This estimate was 73% (16.5 to 90.1), 14 to 97 days after the conclusion of the primary vaccination scheme and a waning effect was observed for 98 to 181 days and 182+ days after primary vaccination, 47.6% (-43.5 to 80.9) and 37.8% (-60.4 to 75.9), respectively.

Conclusion: Regarding overall VE estimates against laboratory confirmed SARS-CoV-2, according to time since complete vaccination, we observed a waning effect, similar to the general population. These results should be interpreted with caution given the high uncertainty of the estimates.

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### European immunization week as an opportunity for raising awareness on prevention function of the primary health care services in rural settings: 2022 shamakhi-azerbaijan case

Sevinc Hasanova<sup>1</sup>, Kevser Vatansever<sup>1</sup>, Mehmet Akman<sup>2</sup>, Araz Ibrahimov<sup>1</sup>, Emin Huseyn<sup>3</sup>, Gunel Mammadova<sup>4</sup>, Shabnam Shahgeldiyeva<sup>4</sup>, Neymat Rahmanov<sup>4</sup>, Ramin Burcaliyev<sup>4</sup>, Fatos Harmanci<sup>5</sup>, Halil Durak<sup>5</sup>

<sup>1</sup>WHO Dr. "WHO Country Office 62 Uzeyir Hajibeyov str. Marine Plaza, 5th floor Baku AZ-100 Azerbaijan" Azerbaijan, <sup>2</sup>WHO dr. WHO CO Azerbaijan. Uzeyir Hacibeyov Baku Azerbaijan, <sup>3</sup>TABIB dr. Shamakhi Region Central Hospital. Shamakhi Azerbaijan, <sup>4</sup>The Administration of the Regional Medical Divisions (TABIB) Azerbaijan, <sup>5</sup>WHO Azerbaijan Country Office Azerbaijan  
Background and objective: Azerbaijan WHO country office used 2022 European Immunization Week (EIW) for raising awareness on preventive functions of primary health care (PHC) among stakeholders, healthcare workers (HCW), medical and nursing students, and the community. EIW 2022 activity in six villages of Shamakhi aimed to resume COVID-19 vaccination in adults and immunization courses of 0-15 ages children, besides screening.

Methods: Multifaceted and ten-day-long EIW 2022 activity was realized in Shamakhi, a mountainous region of Azerbaijan with 107.800 population, where the WHO country office has implemented PHC demonstration project. First-approach was home visits by students and community leaders for applying the second approach of raising awareness. The third was screening and vaccination

of children and adults. Rewarding of vaccinated was used as the fourth approach and incentives were provided to HCWs as an example of P4P approach. Total 80 HCWs (17 medical students, 17 nursing students, and 12 community leaders) participated.

Results: Active engagement of community leaders improved acceptability. Total 387 children and 78 adults with incomplete immunization schedule were vaccinated. Administration of next doses were followed up and 101 children were administered booster or primary doses, until September 2022. 1091 adults and 473 children of 0-18 ages were screened using WHO cardiovascular risk charts, FINDRISK scale, and WHO percentile charts. 580 (53.2%) adults had a risk of fatal cardiovascular disease >5%, and 693 (63.5%) had diabetes risk score >7. Among 0-5 ages children, 46(20.6%) were stunted and 23(10.3%) were underweight. Among 5-18 ages, 38(15.0%) were overweight or obese and 32(13.4%) were wasted.

Conclusion: EIW helped to expand PHC horizons in Shamakhi and meet all stakeholders on common grounds, and served as an interprofessional education program. With a thorough organization, home visiting is shown to be a good tool for primary prevention without waiting for peoples demand for healthcare.

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### Immunisation of people with HIV: an analysis of current pathways

Juan Juaneda<sup>1</sup>, Alva Saa-Casal<sup>2</sup>, Escrig-Collado Miriam<sup>1</sup>, Jose Antonio Lluch-Rodrigo<sup>1</sup>, Pastor-Villalba Eliseo<sup>1</sup>, Julio Muñoz-Miguel<sup>2</sup>

<sup>1</sup>General Direction of Public Health and Addictions - Valencian Community, Spain, <sup>2</sup>Sagunto Hospital, Valencia, Spain

Background and objective: Immunisation of patients with altered immunity is indicated to prevent diseases for which they are considered to have an increased vulnerability. Adapted vaccination protocols have been implemented through Preventive Medicine departments since 2013 according to national and regional guidelines in the Valencian Community. This study aims to evaluate the success of high risk patient vaccination through existing clinical pathways by assessing the vaccination protocol in people infected with HIV.

Methods: We conducted a descriptive retrospective study in the Valencian Health System (VHS). People 18 years or older with an HIV diagnosis (ICD-9 042, V08; ICD-10 Z21, B20) and microbiological confirmation were included. People with less than 14 months between diagnosis and death, withdrawal from the VHS or data extraction date were excluded. Adequate vaccination was assessed through: vaccination protocol initiation success, successful initiation within 6 months of diagnosis and success in protocol completion. Global, antipneumococcal, antimeningococcal, papillomavirus (3 doses) and shingles (2 doses) vaccination coverages were calculated. For global coverage, we assumed that people with sequential antipneumococcal vaccination and 2 antimeningococcal doses (menC+menACWY or 2 MenACWY doses) were fully vaccinated.

Result: 10610 people with an HIV diagnosis were included (22.9% women). Mean age and mean age (SD) at diagnosis were 56.6 (13.1) and 41.7 (10.9) years. 30.5% were foreign, of which 78.4% were non-EU citizens. 39.9% of people had initiated a vaccination protocol, of which 28.8% did so within 6 months of diagnosis and 27.4% were fully vaccinated. 511 people had not received any vaccine in their lifetime. Vaccination coverages were: global 11.3%, antipneumococcal 35.2%, antimeningococcal 14.1%, papillomavirus 16.3% and shingles 3.1% (vaccination strategy since December 2021).

Conclusion: Current vaccination coverages and patient engagement in the vaccination protocol are suboptimal. While more research is needed on underlying factors, data-based active inclusion strategies may improve the studied indicators.

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### Herpes zoster vaccination pathway in the immunocompromised patients

Smeralda D'Amato<sup>1</sup>, Caterina Rizzo<sup>1</sup>, Vincenza Fauci<sup>1</sup>, Francesco Fedele<sup>1</sup>, Concetta Ceccio<sup>1</sup>, Cristina Genovese<sup>1</sup>, Raffaele Squeri<sup>1</sup>

<sup>1</sup>University of Messina Department of Biomedical and Dental Sciences and Morphofunctional Imaging Italy

Material and methods: Shingles vaccine was administered at the vaccination center afferent to the Hospital Hygiene, thanks to an agreement of it with the operative units that manage particularly frail patients to improve vaccination coverage, to reduce vaccine hesitancy and offering therapeutic continuity. Tailored vaccination pathways have been created for "fragile" patients such as patients with HIV, patients with inflammatory bowel disease (IBD) and patients splenectomized or to undergo splenectomy.

Results: We administered a total of 143 doses whereof 64.58% in patients with IBD,

18.06% with HIV, 4.08% patients with splenectomy and the remaining part patients with over 65 years old.

Discussion and conclusion: It is necessary to alert policy makers about the need to operationalize the vaccination indications for frail/immunocompromised individuals contained in the PNPV 2017-2019 as well as in the recommendations expressed by several guidelines. Vaccination coverage of these individuals is in fact very low to date. It is deemed necessary to act with a sense of urgency with actions aimed at fostering new vaccination pathways, closer to the places where patients attend for disease treatment.

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### Active offering influenza vaccination for frail people during hospitalization: a pilot study in Sicily (Italy)

Alessandra Fallucca<sup>1</sup>, Patrizia Ferro<sup>2</sup>, Luca Mazzeo<sup>3</sup>, Luigi Zagra<sup>3</sup>, Francesco Vitale<sup>2</sup>, Alessandra Casuccio<sup>3</sup>, Vincenzo Restivo<sup>4</sup>

<sup>1</sup>University of Study of Palermo Department of Health Promotion, Maternal and Infant Care, Internal Medicine, and Medical Specialties, "G. D'Alessandro", University of Palermo. Via Costanza D' Altavilla 32 Italy,

<sup>2</sup>University of Study of Palermo, <sup>3</sup>University of Study of Palermo Italy,

<sup>4</sup>University of Study of Palermo Italy Vaccination Team University of Study of Palermo Via Costanza D' Altavilla 32 Italy

Background and objective: Influenza is a highly contagious infection that it is estimated to kill 290.000 to 650.000 people each year. Elderly and the immunocompromised are particularly exposed to risk of severe complications. Although immunization is strongly recommended as effective in reducing the burden of the disease, vaccination coverage for influenza is still far from the desirable target. There are few studies in the literature that promote vaccination interventions for the high-risk population. This study has the aim to evaluate the impact of an innovative vaccine offer strategy and to analyze the factors associated with influenza vaccination uptake among frail people.

Methods: The vaccination intervention began at the Policlinic Hospital in Palermo at November 2022. Hospitalized patients, over 60 years old or with chronic diseases, were offered vaccination against influenza upon discharge and a questionnaire was administered. The "Health Action Process Approach" model has been used to investigate the propensity to adopt the health behavior of vaccination. The project will continue throughout the flu season, until the end of February.

Results: After one month of activity, 149 patients with a median age of 67 (IQR:58-75) years have been recruited. Frail patients who accepted to be vaccinated against influenza were 60% (n=85). Multivariate logistic regression showed the factors significantly associated with vaccination acceptance were: having received influenza vaccine advice from specialist physicians (OR:3.7,p=0.010), a low level of education (OR:14.4,p=0.004) and a high degree of expectation of a successful vaccination outcome (OR:3.1,p=0.035).

Conclusions: Data collected show that vaccination in the ward could be an effective strategy to vaccinate precisely the most susceptible population. Furthermore, counsel by medical personnel and the correct perception of the benefits of vaccination play an important role in the influenza vaccine acceptance process. Therefore, the results obtained could be useful for planning and improving future influenza vaccination campaigns.

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### Effectiveness of covid-19 vaccine booster dose among healthcare workers: a systematic review

Luca Bartolucci<sup>1</sup>, Gianfranco Damiani<sup>2</sup>, Patrizia Laurenti<sup>1</sup>, Domenico Pascucci<sup>3</sup>

<sup>1</sup>Università Cattolica del Sacro Cuore, Roma, Italia Italy, <sup>2</sup>Università Cattolica del Sacro Cuore, Roma, Italia, <sup>3</sup>Fondazione Policlinico Universitario A. Gemelli IRCCS Roma, Italia Italy

Background and objective: The pandemic caused by the SARS-CoV-2 virus still being a major public health issue, causing significant death tolls and straining national health systems. Characterized by innovative technologies (mRNA for Spikevax and Comirnaty, viral vector for Jcovden and Vaxevria), new vaccine products have been developed, approved, distributed and, starting from December 2020, given primarily to Healthcare Workers (HCWs) in countries such as Italy and USA. The aim of this systematic review is to define the term of protection offered by the administration of EMA (European Medicines Agency)-approved COVID-19 vaccine booster dose for healthcare professionals, considering the Vaccine Efficacy/Effectiveness (VE) against SARS-CoV-2 infections.

Methods: A systematic research of the literature was carried out using the PICO (Population, Intervention, Comparison, Outcomes) model and following the

recommendations of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines.

Results: Starting from 1241 obtained, 4 studies met the inclusion criteria. All studies dealt with only first booster dose. Considering the different viral variants reported, VE against infection was estimated, with Comirnaty booster dose, between 50% (95% C.I. 42–56%) and 85,6% (95% C.I. 79,2–90,1%) and, with Spikevax booster dose, between 56% (95% C.I. 45–65%) and 96% (95% C.I. 82–99%).

Conclusions: The results of this systematic review show high VE levels among HCWs in the prevention of SARS-CoV-2 outcomes of infections, which however rapidly decline. Hence, the periodic administration of additional booster vaccine doses, could maintain the percentages previously recorded.

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### COVID-19 vaccination hesitancy in people affected by diabetes and strategies to increase vaccine compliance: A systematic review and meta-analysis

Eustachio Cuscianna<sup>1</sup>, Francesco Bianchi<sup>1</sup>, Silvio Tafuri<sup>1</sup>, Giacomo Riformato<sup>1</sup>, Sara Colonna<sup>1</sup>, Donato Rizzi<sup>1</sup>, Giovanni Migliore<sup>2</sup>, Pasquale Stefanizzi<sup>1</sup>

<sup>1</sup>Interdisciplinary Department of Medicine, Aldo Moro University of Bari Italy,

<sup>2</sup>General Hospital Policlinico Bari

Background and objective: People affected by diabetes are at higher risk for complications from certain vaccine-preventable diseases. Thus, international public health authorities, such as the Center for Disease Control and Prevention, have highlighted the priority of COVID-19 vaccination for diabetic persons. Despite this, suboptimal vaccination coverages are reported in this population sub-group. The purpose of this study is to estimate the proportion of people with diabetes who express hesitation to the COVID-19 vaccine worldwide. Determinants of vaccine compliance and options suggested by these studies to address vaccine hesitancy were also analyzed.

Methods: Seven studies were included in the meta-analysis and systematic review, selected from scientific articles available in the MEDLINE/PubMed, Google Scholar and Scopus databases between January 1, 2020 and March 21, 2022. The following terms were used for the search strategy: (adherence OR hesitancy OR compliance OR attitude) AND (covid\* OR SARS\*) AND (vaccin\* OR immun\*) AND (diabet\*).

Results: The vaccine hesitation rate among persons with diabetes was 27.8% (95%CI: 15.6–41.9%). In the comparison of vaccine hesitancy between sexes (male vs. female), the RR was 0.90 (95%CI=0.71–1.15); in the comparison based on educational status (college or more vs. lower education) the RR was 0.88 (95%CI=0.76–1.02). The systematic review showed that the main reasons of unwillingness were lack of information about vaccination, opinion that the vaccine was unsafe or not efficient, and fear of adverse events.

Conclusion: In order to achieve a high vaccination coverage, multifactorial approach is needed, which requires major social, scientific and health efforts. The success of the vaccination campaign in this population depends on the capillarity and consistency of the interventions implemented.

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### Factors associated with covid-19 vaccine hesitancy: Cross-sectional study

Pedro Teixeira<sup>1</sup>, Alex França<sup>1</sup>, Angelo Pergo<sup>1</sup>, Lucas Siqueira<sup>1</sup>, Paulo Cortez<sup>2</sup>, Luciano Vitorino

<sup>1</sup>Faculty of Medicine of Itajubá Brazil, <sup>2</sup>Faculty of Medicine of Itajubá

Background and Objectives: The coronavirus 2019 (COVID-19) pandemic has the vaccine as the best preventive measure. A lot of unscientific information about COVID-19 vaccines has been circulated, which can increase vaccine hesitancy (VH). This study assessed the associated factors with the VH of COVID-19, such as sociodemographic variables and anxiety disorder.

Methods: In this cross-sectional community-based online survey with 1345 Brazilians aged 18 years and older. All Brazilian residents were able to participate in the study. The dependent variable was VH (the VH-COVID-19 tool was developed and validated based on the General Childhood Vaccination Hesitation Questionnaire from the United Nations Strategic Advisory Group of Experts on Immunization Working Group). The associated variables were sociodemographic variables (e.g., age, gender, health care professional, friend/family with COVID-19; risk group for COVID-19, has a religion, income, health status, use of Primary Care Unit and News on COVID-19 vaccine) and anxiety disorder (General Anxiety Disorder Scale).

Results: The mean age of the participants was 35.02 years (SD=14.84), most were female (n=840; 62.5%), single (n=688; 51.2%), and 40.9% (n=544) were health care professionals. We identified that being older, being a health care professional, being in the COVID-19 risk group, more dissatisfied with their health, using controlled medications, and having more frequent access to news on COVID-19 vaccines were associated with higher VH. On the other hand, being female, having a friend or family member with COVID-19, not having a religion, having a lower family income, and using Primary Health Care in the last six months were associated with lower levels of VH. Higher levels of anxiety disorder were associated with lower levels of VH.

Conclusion: We identified modifiable and non-modifiable factors associated with COVID-19 VH during the heart of the first wave in Brazil. The dissemination of misinformation is one of the main factors.

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### Preventable post-measles Subacute Sclerosing Panencephalitis (sspe) in Northern Pakistan: a call to investigate vaccine failure

Talha Durrani<sup>1</sup>

<sup>1</sup>Resident Physician, Khyber Teaching Hospital, Pakistan

Background: Global disruption of measles vaccination coverage during the COVID-19 pandemic may amplify the future prevalence of the fatal post-measles neurodegenerative disorder Subacute Sclerosing Panencephalitis (SSPE). To provide a foundation for future comparison, we assessed SSPE cases about their vaccination status prior to the COVID-19 pandemic, between March 1, 2019, and August 31, 2019. Methods: A 26-week prospective study of SSPE was performed at a tertiary care facility serving urban and rural regions of Peshawar in northern Pakistan and the adjacent region of Afghanistan.

Results: Sixty-six cases of SSPE were diagnosed at a mean age of 6.67 years, including 38 measles-vaccinated, 19 unvaccinated, and 9 with unknown vaccination status. Only 57% of the patients had received the 1st dose of the measles vaccine, and, among them, only 38% had received the second dose. Interpretation: While the preventable disease SSPE is now rare in countries with effective vaccination campaigns targeting measles, vaccination coverage remains insufficient in Pakistan (and neighboring Afghanistan). Investigation into the causes of vaccine failure in Pakistan needs urgent attention. Directed community education, mandatory measles vaccination, proper registration of acute measles infection, and particularly of SSPE, are key factors that need to be addressed so this deadly disease can be controlled and prevented.

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### Sentiment towards vaccinations in Chinese healthcare workers: preliminary results from an international survey

Luca Regazzi<sup>1</sup>, Chiara Cadeddu<sup>2</sup>, Angelica Gris<sup>3</sup>, Marta Lomazzi<sup>3</sup>

<sup>1</sup>Section of Hygiene, Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Roma, Italy, <sup>2</sup>Section of Hygiene, Department of Life Sciences and Public Health, Università Cattolica del Sacro Cuore, Roma, <sup>3</sup>World Federation of Public Health Associations, Geneva, Switzerland

Background and Objective: Health care workers (HCWs) are a trusted source of vaccine information for patients and communities. Our Objective is to analyze the impact of the COVID-19 pandemic on Chinese HCWs' feelings about vaccination, focusing on COVID-19 and influenza.

Methods: We designed a multilingual Knowledge-Attitudes-Practice web-survey with 4-point-Likert-items addressed to HCWs in 11 countries. Survey dissemination is ongoing through the mediation of national Public Health Associations. We present a preliminary descriptive analysis of a representative sample from China. Results: The completion rate is 72.7% (1,938/2,665). Respondents are mostly females (67.5%), with a median age of 42 (IQR:17), mainly employed as health professionals (30.7%), nurses (27.7%) or physicians (26.8%). Most respondents agree on the effectiveness (96.1%), safety (92.7%) and necessity (96.8%) of vaccinations in general. However, many think their side effects are minimized by pharmaceutical companies (91.2%) and health authorities (91.3%). Most respondents received 3+ doses of COVID-19 vaccines (90.9%) and agree that these vaccines are effective (92.3%) and dominate the disease in terms of benefit-risk ratio (87.7%). However, many have concerns about their rapid development (41.4%) and their administration in pregnancy (68.6%), with 28.9% favoring natural immunity over vaccine-induced immunity. Most HCWs agree with mandatory COVID-19 vaccine for their category (62.0%), but only 48.1% agree with work restrictions for those noncomplying. The majority is ready to accept a further COVID-19 booster vaccination if recommended (73.5%) and agrees that

the pandemic increased their confidence in vaccines safety (80.4%) and their attention to update their vaccination schedule (86.74%). Accordingly, only 19.0% received regular influenza vaccination before the pandemic, while 36.2% got vaccinated in the last season and 42.0% plan to do so in the next one.

Conclusions: Despite some persisting doubts about COVID-19 vaccines, the sentiment towards vaccinations in Chinese HCWs is generally positive and has improved after the pandemic.

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### Symbolic barriers for access to health services in Guatemala: children's immunization as marker

Ernestina Tecu<sup>1</sup>, Cristian Figueroa<sup>2</sup>

<sup>1</sup>Universidad Rafael Landívar, Guatemala, <sup>2</sup>Instituto de Saúde Coletiva (ISC-UFBA), Guatemala

Background and Objective: Guatemala's immunization coverage lowered between 10-12% in the past five years. Previous studies show that users' untrust of health services has a great influence on children's immunization, mainly due to Institutionalized racism. Thus, this study aimed to determine the association between symbolic barriers for access to health services and updated immunization card of children <5 years in Guatemala. Methods: We conducted a cross-sectional study using data from Guatemala's VI Demographic and Health Survey (2014-2015). We delimited the sample to all children < 5 years. We selected health services' linguistic competence and mother's unwillingness to visit health services alone as markers for symbolic barriers. Language spoken by the mother, self-identification as Indigenous, using Indigenous clothing, religion, and place of birth were selected as indirect markers, as they may affect health services' welcoming process due to institutionalized racism. Updated immunization was defined as having all doses recommended by age group, according to Guatemala's Immunization Program. Bivariate and multivariate analysis included OR estimation, and binary logistic regression modelling.

Results: We found 73% of children not fully vaccinated. Individually, not wanting to go alone (OR: 1.26), linguistic competence (OR: 1.16), language spoken by the mother (OR: 1.51), self-identification as Indigenous (OR: 1.44), using Indigenous clothing (1.51), and place of birth (OR: 1.80) increased the risk of children not being fully vaccinated (p<0.05). After adjustment, not wanting to go alone (OR: 1.14), place of birth (OR: 1.53), and self-identification as Indigenous (OR: 1.19) remained significantly associated (p<0.05). Conclusions: Symbolic barriers for access to health services are associated with lower rates of fully vaccinated children <5 in Guatemala. Public policies oriented to mitigate Institutionalized racism on Guatemala's Health System urge. New studies approaching racism on health services are needed for a better description of the phenomenon.

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### Insights and expectations of health care professionals on the implementation of the new pediatric Regional Immunization Calendar in Calabria, Italy

Sandro Giuffrida<sup>1</sup>, Fabiana Fiasca<sup>2</sup>

<sup>1</sup>Provincial Health Agency, Reggio Calabria, Italy, <sup>2</sup>Department of Life, Health and Environmental Sciences, Italy

Background and Objectives: The recently updated official immunization calendar of the Calabria Region includes, for the first time in Italy, the facultative opportunity of administering hexavalent, conjugate pneumococcal, 4 components meningococcal B (4CMenB) and rotavirus vaccines at the same visits of 3<sup>o</sup> and 5<sup>o</sup> months of age (1st y) and measles-mumps-rubella-varicella, meningococcal ACWY125 and 4CMenB vaccines at the same visit of 13<sup>o</sup>-15<sup>o</sup> months of age (2nd y). This innovative schedule is intended to generate advantages for vaccinees and their caregivers, healthcare providers and the regional healthcare system. To design supportive interventions for the new Calendar implementation, insights and expectations of health professionals were investigated.

Methods: A 11- questions online survey dealing with the new pediatric calendar feasibility was administered to Public Health providers (PH) and Family Pediatricians (FP). Afterwards, remote Focus Group meetings were carried out to explore in depth the major survey Findings.

Results: A total of 132 questionnaire (86 PH and 46 FP) were collected representing 22% of the PH+FP regional population. Overall, most of responses were in favor of the co-administration concept, recognizing the benefits generated for vaccinees/caregivers and Public Health organization. Among coadministrations, the most voted items concerned sharing of safety data, take into consideration the caregiver expectations and release of local recommendations on the use of paracetamol. Regional/local CME events were the preferred educational frames. Both FP and

PH specific Focus Groups generated in depth insights complementing the survey results. In the Reggio Calabria district, among 1500 1st y + 2nd y vaccinations carried out in 2022, 1200 (80%) turned out to be in the new co-administration schedule.

Conclusions: Insights and expectations of both FP and PH collected in the survey and by Focus Groups proved to be very useful to design an engagement program to support the implementation of the new Calendar.

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### The first 9 years of use of 4 components meningococcal B vaccine administered to nearly 3 million subjects in Italy: an outstanding achievement in public health

Paolo Bonanni<sup>1</sup>, Federico Marchetti<sup>2</sup>, Chiara Azzari<sup>3</sup>, Stefano Castagna<sup>2</sup>

<sup>1</sup>Dipartimento di Scienze della Salute (DSS), University of Florence, Firenze, Italy, <sup>2</sup>GlaxoSmithKline, Verona, Italy, <sup>3</sup>University Hospital Meyer, Florence, Italy

Background and Objectives: In Italy, the peak of invasive meningococcal B disease (IMBD) occurs mainly between the 4th and 8th month of age but encompassing cases up to 5 years of age and beyond. The 4 components meningococcal B vaccine (Bexsero; 4CMenB) was first commercialized in Italy in 2013. The present work Aims to summarize 9-year experience of 4CMenB use in Italy in the Public Health perspective. Methods: A non-systematic review of scientific literature (2013-2022) on IMBD and 4CMenB in Italy was carried out including web searching for official documents.

Results: IMBD vaccination was firstly introduced in Italy among selected Regions in 2014, on a spontaneous basis. In 2017, IMBD vaccination was recommended to all newborns in the National Immunization Plan, and offered for free. The initial schedule was 3+1 doses but it was turned into a 2+1 after posology update in the label (albeit with differences among Regions). Overall, 10 million doses of 4CMenB were distributed in Italy, potentially protecting about 3 million subjects, mainly newborns. In the latest figures (2019 birth cohort), the average national coverage of 4CMenB was 79.7%. 4CMenB effectiveness measured in Italy was higher than 90%, with a greater impact of early immunization schedule. Different Regions released formal recommendations on the co-administration of 4CMenB with other pediatric vaccines (measles-mumps-rubella-varicella, rotavirus, 13-valent conjugate pneumococcal vaccine). In the national post-marketing surveillance of 4CMenB adverse events (AEs), fever and injection-site reactions are the most frequently observed. In 2017, highest rates of severe AEs were hyperpyrexia (6.7/100000 4CMenB doses) and fever (1.5/100000 4CMenB doses). Occurrence of 4CMenB AE was reported similar among healthy children or those with chronic conditions. Conclusions: The continuous efforts of different health professionals (public health vaccinators, pediatricians, etc.) made 4CMenB vaccination a well-known and accepted practice in Italy, protecting millions of babies from IMBD.

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### Results of the first national survey on vaccines co-administration knowledge and beliefs carried out among Italian health assistants

Michela Barbato<sup>1</sup>, Roberto Rosselli<sup>2</sup>, Carmela Russo<sup>3</sup>, Angelo Butera<sup>4</sup>, Letizia Esposito<sup>5</sup>, Fabiana Fiasca<sup>6</sup>, Maria Cavallo<sup>7</sup>

<sup>1</sup>Register Commission Health Assistants, Roma, Italy, <sup>2</sup>Prevention Health Professions, Local Health Unit, Italy, <sup>3</sup>Health Assistance University of Padova, Padua, Italy, <sup>4</sup>Prevention Health Professions, Local Health Unit Brianza, Desio, Italy, <sup>5</sup>Register Commission Health Assistants, Italy, <sup>6</sup>Department of Life, Health and Environmental Sciences, University of L'Aquila, L'Aquila, Italy, <sup>7</sup>National Register Commission Health Assistants, Bari, Italy

Background/Objective: Vaccination coverage in Italy for pediatric mandatory vaccinations is in line with the target of 95%, while recommended vaccinations rotavirus and meningococcus B are consistently below the same target. To face this challenge, vaccine co-administrations (co-admin) is considered a major tool to optimize the crowded pediatric vaccination schedule even though it can be perceived as potentially harmful. Health Assistant (HA) engagement in co-admin is instrumental to allow calendars evolution while keeping trust in vaccination and increase coverage. The aim of the project is to document the current knowledge and beliefs on co-admin in a sample of HA.

Methods: A questionnaire including 11 questions was structured and released online. Questions were divided in conceptual sections: demographics, beliefs and knowledge on co-admin, expectations on medical education format. HA signed up to the first HA national congress were invited to take part to the survey.

Results: Within October and November 2022, 255 questionnaires were filled in, generating a 90% confidence level with a 5% error margin of the survey results.

Respondents were well distributed Countrywide. Co-admin was considered "a very useful tool to optimize calendars" in 67.9% questionnaire, while 25.5% gave co-admin the same relevance of other practices. Co-admin were considered favorable for Public Health and/or for vaccines and caregivers in more than 57% of responses while 18.5% were not in favor. Data on the co-admin immunogenicity/effectiveness (68.3%), safety profile/contraindication (75.3%) and presence in the vaccine label (80.2%) were considered the more relevant topics. No specific preferences on CME format came out.

Conclusions: The results of first survey carried out in Italy on co-admin among HA suggest an overall positive insight, although not fully endorsed by all respondents. Educational program on the value of co-admin, focusing on safety and effectiveness are warranted to increase the HA engagement.

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### Risk factors for reinfection after booster dose of the anti-SARS-CoV-2 vaccine BNT162b2 among healthcare workers

Alberto Lontano<sup>1</sup>

<sup>1</sup>Catholic University of the Sacred Heart, Italy

The spread of the Delta variant of SARS-CoV-2 led to a reduction in the efficacy of the primary schedule of anti-SARS-CoV-2 vaccination, making a booster dose necessary to prompt the neutralizing immune response. This retrospective cohort study aims at evaluating risk factors associated with SARS-CoV-2 infection after the booster dose of Pfizer-BioNTech BNT162b2 mRNA vaccine in healthcare workers (HCWs) of a large Teaching Hospital in Rome. HCWs who completed the primary course with the BNT162b2 vaccine and received the booster dose at the Hospital Vaccination Center were included, while those who received a vaccine other than BNT162b2 or carried out the booster vaccination in a vaccination center outside the Hospital were excluded. Data about vaccinations of HCWs and nasal swabs positive for SARS-CoV-2 were extracted from the digital archives of the Hospital from October 2021 to May 2022. Risk of infection was estimated using the Nelson-Aalen cumulative risk function. In total, 6,103 HCWs were observed. The cumulative risk of becoming infected by SARS-CoV-2 increased with time (9.0% at 8 weeks, 25% at 16 weeks and 45% at 32 weeks) and was significantly higher for women compared to men (at 32 weeks 48% vs 41%) and younger classes of patients compared to elderly (at 32 weeks 55% vs 30%); no significant differences were detected according to occupational category and risk profile. Multivariate analysis by Cox regression confirmed the differences detected by the univariate analysis. This study describes a higher incidence of infections after the booster dose of COVID-19 vaccine among women and young people; moreover, the probability of being infected increases over time, as a results of the reduction in the neutralizing potency and titer of the antibodies: this poses the need for continuous monitoring of vaccine-induced immunogenicity, to establish the correct timing of vaccination with more effective vaccination schedules.

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### Knowledge and practices among healthcare professionals regarding measles vaccination: is there a gap?

Bouthaina Werchfeni<sup>1</sup>, Bouthaina Werchfeni<sup>2</sup>, Imene Mlouki<sup>3</sup>, Aymen Zayed<sup>4</sup>, Olfa Frikha<sup>5</sup>, Emna Hariz<sup>1</sup>, Ward Mallek<sup>6</sup>, Malek Belkhiria<sup>6</sup>, Nawres Aouichri<sup>6</sup>, Sana Mhamdi<sup>6</sup>

<sup>1</sup>Preventive Department, Taher Sfar Hospital, Tunisia, <sup>2</sup>Taher Sfar hospital, Tunisia, <sup>3</sup>Taher Sfar Hospital, Tunisia, <sup>4</sup>Souk Lahad Hospital, Tunisia, <sup>5</sup>Hedi Chaker Hospital, Tunisia, <sup>6</sup>preventive department, Taher Sfar hospital, Tunisia  
Introduction: Measles is a highly contagious disease. As part of the measles vaccination (MV) campaign that was conducted in our country among young adults. We aimed to assess the perception and knowledge among Tunisian health professionals (HC) with regard to MV.

Methods: A cross sectional study was carried out among HC, in Tunisian hospitals, during the months of January and February 2022. The measurement tool was a self-administered questionnaire or online via Google Forms.

Results: A total of 112 healthcare workers responded to the questionnaire, including 82% of women. Medical staff accounted for 83% of responders. The average age was 30 ± 2.95 years. Fifty-two percent scored average on questions assessing knowledge of measles infection and vaccine. Among them, the correct answers were: measles infection is dangerous (60.7%), those vaccinated can transmit the virus to others (54.5%) and the vaccine against measles protects against severe forms (91.1%). Two-thirds of HC responded that the vaccine does not cause measles. The correct answers on the long duration of protection of the vaccine and on its variable effectiveness from one person to another were 75% and 77.7%, respectively. Regarding attitudes, 85.7% said they should be

vaccinated against germs they risk transmitting to their patients. Almost two thirds of responders had a moral responsibility to get MV (62.5%) and 91% were for the vaccination against contagious diseases including measles. Although most of the answers were for MV, only 35% of the responders were willing to vaccinate. The main reasons for vaccination were the protection of family members and of patients (35.6%) and the protection of oneself (33.70%).

Conclusions: Despite the good knowledge level, measles vaccine is not sufficiently accepted among healthcare providers. Awareness campaigns should be organised to encourage young people to vaccinate.

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### Assessment of vaccination coverage in patients with functional or surgical asplenia: analysis of vaccination coverage for pneumococcus and influenza in the population of Azienda Sanitaria Universitaria Friuli Centrale

Alessandro Marino<sup>1</sup>, Alessandro Marino<sup>2</sup>, Nicoletta Presot<sup>1</sup>, Paolo Collarile<sup>3</sup>, Massimo Zuliani<sup>3</sup>, Maria Parpinel<sup>1</sup>

<sup>1</sup>Dipartimento Area Medica, Università degli Studi di Udine, Italy, <sup>2</sup>Dipartimento Area Medica Università degli Studi di Udine, Italy, <sup>3</sup>Dipartimento di Prevenzione Azienda Sanitaria, Universitaria Friuli Centrale, Italy

Background and Objective: A patient with asplenia has a greater susceptibility and an increased risk of developing invasive infectious diseases or severe complications, preventable with vaccination by some micro-organisms such as Streptococcus Pneumoniae and Influenza Virus. Preventing infectious diseases through vaccinations is a priority in public health; therefore, it's essential to investigate vaccination coverage in our target population. The study's objectives are primarily to analyze whether the target population has adhered to the pneumococcal and influenza vaccinations and, subsequently, to assess the difference in vaccination coverage across age groups with a particular focus on completed and partial vaccination courses. Finally, evaluate the proper vaccine counseling for the target category.

Methods: The population sample was analyzed through the survey of the Regional Epidemiological Repository and subsequent analysis. Patients with surgical or functional asplenia were studied from 01/01/1995 to 27/12/2020, divided by age groups starting from five years of age.

Results: The statistical analyses of subjects affected by surgical/functional asplenia (660 subjects) highlight complete pneumococcal vaccination coverage (sequential schedule) equal to 52.88%; partial coverage corresponding to 25.75% and 21.37% of patients who are not vaccinated for pneumococcus. Concerning the coverage of influenza in the target population, we see full coverage (annual vaccination performed) of 30.45%; partial (at least one vaccination from the date of diagnosis) equal to 46.66% and 22.89% of subjects are not vaccinated for influenza at all.

Conclusions: Our analysis shows that a considerable part of the target population doesn't have adequate disease protection because 47.12 % of subjects have partial or no courses against pneumococcus, and 69.55 % of patients have partial or no courses against influenza. The assessment will consider the impact of COVID-19 pandemic on the vaccinations under study. It's necessary to undertake vaccination catch-up and mop-up strategies to improve current coverage in the studied population.

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### Assessment of vaccination coverage in Diabetic patients: analysis of vaccination coverage for pneumococcus and influenza in the population of Azienda Sanitaria Universitaria Friuli Centrale

Nicoletta Presot<sup>1</sup>, Alessandro Marino<sup>1</sup>, Paolo Collarile<sup>2</sup>, Massimo Zuliani<sup>2</sup>, Maria Parpinel<sup>1</sup>

<sup>1</sup>Dipartimento Area Medica, Università degli Studi di Udine, Italy, <sup>2</sup>Dipartimento di Prevenzione Azienda Sanitaria, Universitaria Friuli Centrale, Italy

Background and Objective: A diabetic patient has an increased risk of developing invasive infectious diseases caused by micro-organisms such as Influenza Virus and Streptococcus Pneumoniae or serious complications. This risk can be drastically reduced through vaccination. Preventing infectious diseases through vaccinations is a milestone of public health; hence it is essential to investigate vaccination coverage in our target population. The main objective of our study is to analyze the adherence to anti-influenza and anti-pneumococcal vaccinations in the diabetic patient population. Secondly, the coverage of vaccines between age groups was examined with particular attention to completed and partial vaccination courses.

Methods: The population was analyzed through the interrogation of the Regional Epidemiological Repository and subsequent analysis. Diabetics residents from

01/01/2002 to 30/04/2022 were studied.

Results: The statistical analysis of diabetic patients (32 500 subjects) highlights a full pneumococcal vaccination coverage (sequential schedule) of 16.46%; partial coverage tantamount to 36.75% and 46.79% of patients not vaccinated for Pneumococcus. On the subject of influenza coverage in the target population, we see a complete coverage (annual vaccination carried out) of 47.25%; partial (at least one vaccination from the date of diagnosis) equal to 31.2% and 21.55% of subjects are not vaccinated at all for influenza. It also emerges that 5% of diabetic patients have no known vaccination history in the regional vaccine service.

Conclusions: Our analysis underlines that a considerable part of the target population does not have adequate protection from the disease because 83.54% of patients have a partial or absent course against Pneumococcus and 52.75% of cases have a partial or absent course against influenza. Our study will continue by evaluating the impact of COVID-19 pandemic on our target vaccination coverage. In conclusion, it is considered essential to undertake mop-up and catch-up strategies to implement the current coverage in the diabetic population.

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### The vaccination coverage of the poliovaccine in Brazil: a time-series analysis from 2012 to 2022

Valter Barbosa Filho<sup>1</sup>, George J6 Bezerra Sousa<sup>2</sup>, Lucélia Malaquias Cordeiro<sup>2</sup>, Maria Alves de Azevedo<sup>2</sup>, Valesca de Sousa Brito<sup>2</sup>, Suzyane Cortês Barcelos<sup>2</sup>, Jamile Vivas Costa<sup>3</sup>, Marcelo Carlos da Silva<sup>1</sup>, Maria Duarte Pereira<sup>1</sup>, Kellyane Rodrigues soares Holanda<sup>4</sup>

<sup>1</sup>Instituto Federal do Ceará, Universidade Estadual do Ceará, Brazil,

<sup>2</sup>Universidade Estadual do Ceará, <sup>3</sup>Universidad de la Coruna Spain,

<sup>4</sup>Universidade Estadual do Ceará e Universidad de la Coruna Brazil

Results: In relation to the poliovaccine, it was observed a significant down ward trend of the coverage of this vaccine, with the coverage going from 97,8' in 2012 to 56,9' in 2022. The line equation was  $y = -3,8x + 7766$ , with  $p = 0,01$ . The adjusted coefficient of determination  $R^2$  was 0,49, indicating that the annual variation describes in 49' the variance of the vaccination coverage.

Conclusion: It was identified a decrease in the vaccination coverage against polio over the last years in Brazil. There is a need for public health actions for expanding its coverage and selection of multisector strategies for the confront of this decrease in the vaccination coverage rates.

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### Impact of the covid-19 pandemic on the children's immunization program in the Federal District, Brazil

Jaime Ribeiro Filho<sup>1</sup>, Davi Maia de Araújo<sup>1</sup>, Ludmilla de Almeida Santiago<sup>1</sup>, Nathália da Silva Sampaio<sup>1</sup>, Bruno Pereira Stelet<sup>2</sup>

<sup>1</sup>Oswaldo Cruz Foundation, Fiocruz Ceará, Eusébio, Ceará, Brazil, <sup>2</sup>Health Department of the Government of the Federal District

Background and Objective: Vaccination is an integrated action, experienced mainly in the scope of Primary Health Care (PHC) in Brazil, where vaccines are provided free of charge in the Unified Health System. Vaccination significantly reduces morbidity and mortality rates due to preventable diseases. While social distancing measures related to the COVID-19 pandemic were crucial to prevent the spreading of the disease, evidence has indicated that they impaired access to health services, including vaccination. This study aimed to investigate the impact of the COVID-19 pandemic on children's vaccination coverage in the Federal District, Brazil.

Methods: This is a descriptive, retrospective epidemiological study whose data were collected through the public domain generic tabulator (TABNET), developed by the information management department of the unified health system (DATASUS) for information management and through the Information System of the National Immunization Program (SI-PNI WEB). The search included vaccination data on children aged up to 05 years from July 2018 to June 2021 in the Federal District of Brazil.

Results: Over the covered period, 3,010,938 vaccine doses were registered, prevailing the following pentavalent (320,195), pneumococcal 10 (319,651), and meningococcal C (316,696). The second half of 2018 had the highest number of administered doses (550,320). Vaccination coverage fell progressively in 2019 (494,869 doses from January to June and 460,665 from July to December), rising again in 2020 (510,458 doses from January to June and 533,156 from July to December). However, in the first half of 2021, the number of administered doses dropped again to 461,147. Of note, this period was marked by both pro- and anti-COVID-19 vaccination campaigns, which may have interfered with adherence to immunization.

Conclusion: Vaccination coverage varied irregularly during the COVID-19 pandemic. However, further research is required to investigate the causes associated with

this phenomenon.

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### Perception of the health providers on the factors affecting vaccine hesitancy and acceptance

Camelle Celis<sup>1</sup>

<sup>1</sup>Department of Health, Philippines

This study sought to determine the perception of the health providers in identified municipalities in Cebu Province, Philippines on the factors affecting vaccine hesitancy and acceptance. The immunization rate for the last three years under the Fully Immunized Child (Program) in the Fifth District of Cebu Province were analyzed and Focus Group Discussions with health care workers in the frontlines of the implementation of the program was done. As a healthcare provider, their confidence in delivering the vaccines is relevant to the success of any vaccination program, specifically with the current roll out of COVID-19 vaccines. Results revealed that there is a decline in the proportion of Fully Immunized Children starting 2018 to 2019 after the Dengvaxia fiasco. Since then, the fear in vaccines has created a domino effect in the decline in immunization accomplishments. Trends showed that health promotion activities and community engagement of relevant stakeholders can increase the immunization rates. In addition, the Focus Group Discussions resulted to 182 codes that are reported as three themes with two underlying subthemes. The factors that contribute to vaccine hesitancy and acceptance in the perception of health care providers is the track record of the efficacy and safety of the vaccines, people's perceptions of credible information and their corresponding understanding of the nature and use of the vaccines. It is recommended that community vulnerabilities be assessed in the areas of the themes as reported as basis for the interventions to be introduced and utilize the themes identified in crafting and localization Risk communication strategies for health workers and member of the community.

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### Influence of vaccination of pregnant women on the epidemiology of pertussis in infants under one year of age, Spain 2006-2019

Ana Garzon<sup>1</sup>, M. Luna<sup>2</sup>, Noemi Lopez<sup>3</sup>, Marta Soler<sup>4</sup>, Rosa Diaz<sup>1</sup>, Esther Garcia<sup>1</sup>, Josefa Masa

<sup>1</sup>Centro Nacional de Epidemiología. Instituto de Salud Carlos III- Ciber de Epidemiología y Salud Pública (CIBERESP). Instituto de Salud Carlos III (ISCIII), St. Helena, <sup>2</sup>Hospital Central de la Cruz Roja de Madrid., Spain, <sup>3</sup>Centro Nacional de Epidemiología. Instituto de Salud Carlos III- Ciber de Epidemiología y Salud Pública (CIBERESP). Instituto de Salud Carlos III (ISCIII), Spain, <sup>4</sup>Centro Nacional de Epidemiología. Instituto de Salud Carlos III, Spain

**Background and Objective:** Pertussis is an emerging disease in countries with long-established vaccination programmes and high vaccination coverage. Immunity waning has led to a worrying upsurge in severe cases in unvaccinated infants.

In Spain, since 2006, pertussis has emerged in several epidemic waves reaching a peak in 2015, which introduced the pertussis vaccination in pregnant women in 2016.

The objective is to estimate the influence of this vaccination on the incidence and hospitalizations in children under one year of age.

**Methods:** We studied pertussis cases reported to the national surveillance system and hospitalisations in children under 1 year of age (<1y) between 2006-2019. We analysed the evolution of the incidence rate (IR) and hospitalisation rate (HR) in children under 1 year of age and by subgroups: <3 months (<3m) and 3-11 months (3-11m).

We calculated both rates for the pre-vaccination (P1: 2006-2015) and post-vaccination (P2: 2016-2019) periods as well as the incidence rate ratio (IRR) and hospitalisation rate ratio (HRR) using Poisson regression.

**Results:** Between 2006-2019, 9107 pertussis cases were reported in infants (IR: 146.6/105). IR in <1y slightly increased (P1: 145.2/105 and P2: 153.6/105) with IRR: 1.06 (95%CI: 1.59-1.65); by subgroups, in <3m IR decreased (IRR: 0.61 (95%CI: 0.58-0.67) by 39% but IR increased (IRR 1.74 (95%CI: 1.64-1.84) in the 3-11m group.

The overall HR 2006-2019 was 142.5/105. HT in <1y was reduced in the post-vaccination period (P1: 154.9/105 and P2: 107.7/105) with HRR: 0.70 (95%CI: 0.66-0.74); the reduction is maintained for the two subgroups: <3 months (HRR: 0.61 (95%CI: 0.58-0.67), 39% reduction and between 3-11m (HRR: 0.85 (95%CI: 0.78-0.92) 15% reduction.

**Conclusion:** In Spain, pertussis vaccination in pregnant women has reduced severe pertussis in children under one year of age, especially in the under-3 months group. High vaccination coverage should be maintained as an effective

measure to prevent complications.

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### Herpes Zoster vaccination trends: can more be done?

Elisa Fanti<sup>1</sup>, Chiara Cinughi De Pazzi<sup>2</sup>, Eleonora Frilli<sup>1</sup>, Emma Ceriale<sup>3</sup>, Gabriele Messina<sup>4</sup>, Nicola Nante<sup>5</sup>

<sup>1</sup>University of Siena Post Graduate School of Public Health, University of Siena, Italy, <sup>2</sup>Local Health Authority Toscana Sud-Est, <sup>3</sup>Local Health Authority Toscana Sud-Est Public Hygiene and Nutrition Department, Local Health Authority Toscana Sud-Est, Siena, Italy, <sup>4</sup>University of Siena, <sup>5</sup>University of Siena Department of Molecular and Developmental Medicine, University of Siena Italy

**Background and Objective:** Herpes zoster (HZ) is the result of the reactivation of the latent varicella zoster virus. HZ reactivation is more common in the elderly and immunocompromised people. Currently, there are two HZ vaccines, one live-attenuated (ZOSTAVAX, LZV) administered with a single dose and another recombinant (SHINGRIX, RZV) with two doses. The latter was administered in October 2021 in the Local Health Authority (LHA) Toscana Sud-Est for the first time. This study aims to analyse the trend of HZ vaccinations administered in our LHA for further strategies.

**Method:** This retrospective descriptive study was conducted in the Public Health Department of Siena, Italy. We collected HZ vaccines data, through the SISPC management system, from 1 January 2019 to 5 December 2022. A descriptive analysis was carried out using EXCEL, and the following variables were collected: age, sex, and vaccine type.

**Results:** During the analysed period, the total RZV first doses administered were 205, while the total LZV doses were 64. The number of LZV shots was: 3 (2019), 9 (2020), 12 (2021) and 40 (2022), while for RZV, they were: 5 (2021) and 200 (2022). The mean age for both vaccines was 70 years (SD± 6.33 for LZV; SD ±8.56 for RZV). The total percentage of vaccinated males and females with LZV is 35.9 and 64.1, while with RZV is 47.8 and 52.2.

**Conclusion:** From 2019 to 2022, there was a progressive increase in the administration of both vaccines, especially for RZV in 2022, probably related to the awareness campaign promoted on TV and radio starting in July. To achieve higher adherence, especially in immunocompromised patients, it might be useful to establish a collaboration between vaccine HUBs and hospital facilities that would allow them to have direct access to vaccination.

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### Results of a pilot onsite school-based intervention aimed at increasing influenza vaccination coverage among children in an Italian local health authority

Maria Riccardi<sup>1</sup>, Gennaro D'Agostino<sup>2</sup>, Leonardo Villani<sup>3</sup>, Marcello di Pumo<sup>4</sup>, Andrea Barbara<sup>1</sup>, Marta Marino<sup>5</sup>, Silvia Bracci<sup>1</sup>, Paolo Parente<sup>1</sup>, Antonietta Spadea<sup>1</sup>

<sup>1</sup>Azienda Sanitaria Locale Roma 1 Italy, <sup>2</sup>Azienda Sanitaria Locale Roma 1, Italy, <sup>3</sup>Università Cattolica del Sacro Cuore, Roma, <sup>4</sup>Università Cattolica del Sacro Cuore, Roma Italy, <sup>5</sup>Azienda Sanitaria Locale Roma 1

**Background:** Recommending annual flu vaccination to healthy children is a value-based intervention, and school-based interventions are proved to be effective in increasing vaccination uptake. For the 2021-2022 flu season, a nasal spray vaccine was available, making both the acceptance from a parents' perspective and the administration out of hospital context easier. In this study the results of a school flu vaccination campaign among children in a large urban area of Rome, Italy, are reported.

**Methods:** Target population was children aged 2-6 years. Schools were involved through formal communication channels. Two meetings were organized to engage school representatives in the project. Outcomes included meetings attendance, vaccination coverage and the proportion of naive children vaccinated. Secondary endpoint was the number of opportunistic vaccination among school staff, teacher, or parents.

**Results:** Twenty-nine schools were involved, for a total of 2.424 children. Meeting attendance rate was 100%. From November 2021 to January 2022, 405 (16.7% of the school attendees) children were vaccinated, of which 228 naive (56.3%). While the flu vaccination rate in other age groups decreased compared to the previous year, it increased in the 2-6 year age group. As for the secondary endpoint, 138 doses were administered.

**Conclusion:** In order to improve population health and strengthen the partnership between health professionals and community, engaging with schools for public health programs targeting children can play a pivotal role in increasing acceptance

and effectiveness. Finally, this study shows how such intervention can greatly increase the vaccination coverage of children, which in Italy was, on average 2.4% considering the period 2010-2021.

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### Vaccine Hesitancy in Albanian university healthcare students: preliminary results

Gaia Piunno<sup>1</sup>, Daniele Giovanni<sup>2</sup>, Enkeleda Gjini<sup>3</sup>, Bora Kërpi<sup>3</sup>, Fabian Cenko<sup>4</sup>, Mariachiara Carestia<sup>1</sup>, Stefania Moramarco<sup>1</sup>, Ersilia Buonomo<sup>1</sup>

<sup>1</sup>University of Rome Tor Vergata Department of Biomedicine and Prevention, University of Rome Tor Vergata, Rome, Italy, <sup>2</sup>University of Rome Tor Vergata, <sup>3</sup>Catholic University of "Our Lady of Good Counsel", Tirana Faculty of Medicine, Catholic University of "Our Lady of Good Counsel", Tirana, Albania, <sup>4</sup>Catholic University of "Our Lady of Good Counsel", Tirana

**Introduction:** Vaccination is one of the most successful Public Health interventions. Vaccine hesitancy can affect healthcare providers, putting their contribution to vaccination campaigns at risk, since they are also important models for their patients. The following work focuses on vaccine hesitancy among healthcare students in Albania, to identify additional educational needs.

**Materials and Methods:** In October 2022, an anonymous questionnaire was submitted to a sample of healthcare students (Medicine and Surgery, Nursing, Pharmacy, Dentistry) of the University of Our Lady of Good Counsel (Tirane). Attitudes, confidence, knowledge and hesitancy towards vaccinations, including COVID-19 vaccine, were investigated. The protocol was approved by the Ethical Committee of Policlinico Tor Vergata (Rome).

**Results:** A total of 384 questionnaires have been collected. Main results of the analysis showed a good degree of confidence in vaccines: 73.7% of respondents fully or partially agreed with the statement "I can rely on vaccines to stop serious infectious diseases", but 10.4% of them declared to "have refused a recommended vaccine". When asked about the public health role of vaccines, 24% of the sample answered "no" or "do not know" to the statement "Vaccination benefits the whole community". A positive attitude was observed in 58.6% of the respondents, who "encouraged others to be vaccinated against COVID-19". Despite living in a country where the access to COVID-19 vaccines has been disrupted, 75.3% of the sample declared to be vaccinated, although 53.2% affirmed to not feel protected against the COVID-19 infection even after the vaccination. As concerns sources of information, 44.8% of the sample considered TV and radio to be the most influential ones.

**Conclusions:** The preliminary results of the study show that the fight against vaccine hesitancy and low confidence is still a priority in medical university courses in Albania, and requires further investigations.

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### Baseline survey on the determinants of hesitancy to vaccination against covid-19 in 10 priority provinces in Chad

Mouhamadou Ba<sup>1</sup>, Valéry Ridde<sup>2</sup>, Dahab Manoufi<sup>3</sup>

<sup>1</sup>Cheikh Anta Diop University Senegal, <sup>2</sup>Institute of Research for Development, <sup>3</sup>BASE Chad

**Introduction:** COVID-19 is a global public health problem today. Vaccination is one of the effective strategies for controlling COVID-19. The objective of this survey was to obtain reliable baseline information on the determinants of hesitancy to vaccinate against COVID-19 in 10 priority provinces of Chad.

**Method:** This was a cross-sectional, descriptive and analytical study that took place between July 28 and September 28, 2022. The survey was conducted among households in the 10 provinces with the head of the household or his representative as the observation unit. The sample design used for this survey was a stratified, two-stage random sample. The data collected allowed for descriptive and analytical analyses. The analyses were weighted and the complex sampling design was taken into account. Data analysis was performed with R software version 4.2.1.

**Results:** A total of 3346 households were surveyed. Vaccination hesitancy and refusal were estimated at 16.9% and 23.3% respectively. Vaccine hesitancy was associated with age, religion, education level, history of refusal to vaccinate, and attitude toward the COVID-19 vaccine. Vaccine refusal was associated with religion, education level, economic well-being quintile, history of vaccine refusal, lack of confidence in vaccines to prevent disease in general, and attitude toward the COVID-19 vaccine.

**Conclusion:** Following this baseline survey, a risk communication and community engagement plan should be developed and adapted to the realities on the ground so that communities are informed and sensitized about the benefits as well as the

adverse effects of COVID-19 vaccination.

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### COVID-19 vaccine hesitancy among a sample of students in Tunisia

Wafa Dhoubi<sup>1</sup>, Manel Fredj<sup>1</sup>, Cyrine Bennasrallah<sup>1</sup>, Amel Gara<sup>1</sup>, Amani Maatouk<sup>2</sup>, Imen Zemni<sup>1</sup>, Hela Abroug<sup>1</sup>, Meriem Kacem<sup>2</sup>, Ines Bouanene<sup>1</sup>, Asma Sriha<sup>1</sup>

<sup>1</sup>University Hospital of Monastir Tunisia, <sup>2</sup>University Hospital of Monastir

**Background:** Immunization with a safe and effective vaccine appears to be among ways to contain and control the pandemic of COVID-19. However, the overall population response to receiving the new vaccines was less than optimal. The aims of our study were to determine the rate of reluctance to receive COVID-19 vaccines, to assess the factors associated with this behavior and vaccine satisfaction among Tunisian student in Monastir (Tunisia).

**Patients and methods**

It was a cross-sectional study on the hesitation to vaccinate against COVID-19 among the student population in the city of Monastir, conducted during the month of October 2021.

**Results:** Among the 217 students interviewed, 180 agreed to participate in our survey with a response rate of 82.9%. The total vaccination rate was 77.7%; 61.1% were fully vaccinated. The main motivating factor was simple confidence in the vaccine, reported by 43% of participants. The rate of vaccine hesitancy was 19.5%, (CI95%=13.7-25.2). The main reason for hesitancy was the insufficient number and duration of studies (50%). Comparing the two groups (vaccinated and hesitant), the results of the univariate analysis showed that vaccine hesitancy in the study population was related to belief in the reliability of vaccine information and confidence in the likely efficacy and safety of the vaccine.

**Conclusion:** Despite an abundance of scientific evidence of vaccine safety and efficacy, vaccine hesitancy continues to emerge in different populations. There is a need to rapidly strengthen communication and planning with communities to increase vaccine coverage, especially among youth.

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### Using the card (comfort ask relax distract) system to deliver influenza vaccinations in university pop-up clinics

Anna Taddio<sup>1</sup>, Victoria Gudzak<sup>2</sup>, Charlotte Logeman<sup>3</sup>, Natalie Crown<sup>1</sup>, Lisa Dolovich<sup>2</sup>, C McMurtry<sup>3</sup>, Lucie Bucci<sup>4</sup>, Joshua LeBlanc<sup>1</sup>

<sup>1</sup>University of Toronto Canada, <sup>2</sup>University of Toronto, <sup>3</sup>The Hospital for Sick Children Canada, <sup>4</sup>University of Guelph Canada

**Background:** CARD (Comfort Ask Relax Distract) is an evidence-based vaccination delivery framework that promotes person-centred care. No studies have evaluated its implementation in mass influenza vaccination clinics. The objective was to integrate CARD in university-based influenza vaccination pop-up clinics and evaluate client and staff experiences.

**Methods:** Mixed methods before-and-after quality improvement study. A baseline (control – usual care) phase preceded CARD implementation in one popup clinic. Then CARD was implemented incrementally in two subsequent clinics. Changes to the environment (delineating waiting and aftercare areas, providing privacy, obscuring needles from view), education (clients given CARD coping checklist at check-in), and interactions (defining discrete clinic roles and processes, using coping-promoting behaviours, removing alcohol skin antiseptics prior to vaccine injection) were made. Clients provided feedback using standardized surveys. Staff, including pharmacy student vaccinators, participated in clinic debriefs. Feedback informed real-time process changes during and between clinics.

**Results:** Clinics were held Nov 17 (control), Nov 22 and Nov 24 (both CARD). Feedback from 298 adult vaccine clients, including university students and staff (representing >98% of all vaccinated individuals) demonstrated an incremental increase in the percent of clients with an improved experience compared to the last vaccination (34% baseline, vs. 49% and 57% in CARD clinics, respectively; p=0.003). Ten percent reported CARD influenced their decision to attend by a moderate amount to a lot. Staff liked the changes. Sample quotes after the final clinic included: "very organized" and "best clinic ever."

**Conclusion:** This study demonstrated improvement in vaccination delivery after CARD implementation as reported by vaccine clients and staff.

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### Actions for counteracting vaccine hesitancy: a deep dive into three multicentre projects conducted in Europe

Anna Odone<sup>1</sup>, Fabrizio Bert<sup>2</sup>, Giuseppina Moro<sup>2</sup>

<sup>1</sup>University of Pavia, Italy, <sup>2</sup>University of Turin, Italy

Brief outline of the overall workshop: Human behaviours can influence the likelihood of infectious diseases transmission: the willingness to get vaccinated can impact population's susceptibility to infection and affect diseases spread. Although vaccinations represent a substantial success of public health, a growing number of people are reluctant towards these measures and the World Health Organization has identified vaccine hesitancy among the greatest threats to global health. In addition, vaccine hesitancy is particularly relevant for healthcare professionals (HCPs) who face multiple challenges in building relationships of trust with immunization programmes' target populations. Overall, this workshop will present three multicentre projects that aim to address vaccine hesitancy and that have been developed thanks to consortia of universities, public health associations and institutions across Europe. Specific Aims and Component Parts: The first presentation will introduce the VXTrain project, funded by the European Center for Disease Prevention and Control (ECDC) and led by the Association of Schools of Public Health in the European Region (ASPHER). VXTrain's main purposes are assessing training needs and existing courses in vaccinology, vaccine hesitancy, and behaviour change communication across European Member States and, consequently, designing a comprehensive curriculum for an e-learning course for primary care HCPs, which may then become trainers for their peers. The second presentation will delve into the "VAX-TRUST Addressing Vaccine Hesitancy in Europe" project, developed to improve the experience of HCPs and parents dealing with vaccination (funding from European Union's Horizon 2020 research and innovation program under Grant Agreement No. 965280). Among the main objectives, VAX-TRUST aims to support HCPs when addressing patients' vaccine hesitancy through the implementation of tailored interventions. Giuseppina Lo Moro (University of Turin) will guide through the development of the intervention, discussing the data gathered to lay the foundations of the intervention and the design of a common framework to be adapted across Europe. The last presentation will provide insights of the epidemiology, monitoring and modelling spoke (EPIMOD) within the INF-ACT project (Next Generation EU funding within the MUR PNRR Extended Partnership initiative on Emerging Infectious Diseases, Project no. PE00000007). The EPIMOD spoke will develop actions in a One Health perspective through combining surveillance and operational research. Key questions that the workshop will address: Overall, the workshop will address the following main questions: 1. What are the training needs of European HCPs in the field of vaccinology, vaccine hesitancy and behaviour change communication? 2. What are the potential interventions to help HCPs in addressing patients' hesitancy? 3. How can human behaviours during epidemics be monitored and how do they impact the implementation of public health interventions such as vaccinations?

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### Vaccine literacy: strategies and tools to improve vaccination uptake for newly arrived migrants and people living in prisons

Igor Aloise<sup>1</sup>, Babak Moazen<sup>2</sup>, Guglielmo Bonaccorsi<sup>3</sup>, Maurizio Marceca<sup>4</sup>, Lara Tavoschi<sup>5</sup>, Silvia Declich<sup>6</sup>, Pania Karnaki<sup>7</sup>

<sup>1</sup>Sapienza University of Rome Department of Public Health and Infectious Diseases, Sapienza University of Rome Italy, <sup>2</sup>Institute of Addiction Research, Frankfurt University of Applied Sciences, Germany, <sup>3</sup>Dipartimento di Scienze della Salute, Università degli Studi di Firenze, Italy, <sup>4</sup>Department of Public Health and Infectious Diseases, Sapienza University of Rome Department of Public Health and Infectious Diseases, Sapienza University of Rome Italy, <sup>5</sup>Università di Pisa Department of Translational Research on New Technologies in Medicine and Surgery, University of Pisa "Lungarno Pacinotti 43 56126 Pisa" Italy, <sup>6</sup>Italian National Institute of Public Health National Centre for Global Health, Italian National Institute of Public Health Via Giano Della Bella, 34 00161 Roma Italy, <sup>7</sup>Prolepsis Institute Greece

Health systems are complex and health organisations are often structured and operate in ways that make access to vaccination services difficult and inequitable for some marginalized populations. In addition, professionals may not be equipped to identify and address the cultural and social needs of these groups of people. The concept of vaccine literacy (VL) emphasizes that VL is not simply knowledge of vaccines, but also development of a less complex health system for communicating and offering vaccines as a conditions of a functioning health system (Ratzan, 2011). Newly arrived migrants (NAM) and people living in prisons (PLP) are two populations with overall low vaccination rates compared to the general population. Efforts to change this situation must emphasize activities not only geared toward increasing individual vaccine literacy, but more importantly supporting the system to become more vaccine literate.

The general aim of the "Access to Vaccination for Newly Arrived Migrants -AcToVax4NAM" project is to improve the responsiveness of health systems in terms of vaccination literacy, making the conditions for access to vaccinations more equitable and guaranteed. Similarly, the "Reaching the hard-to-reach: increasing access and vaccine uptake among the prison population in Europe -RISE-Vac" aims to improve the health of people living in prisons in Europe by promoting staff and prisoners' VL, enhancing vaccine offer and increasing vaccine uptake. During the workshop, AcToVax4NAM and RISE-Vac will discuss strategies and tools developed within these two EU co-funded projects (3rd EU Health Programme) to address vaccine literacy at the organizational and individual level for the particular target groups.

The core parts of the workshop will comprise:

1. Presentation of the concept of organisational and individual VL (10 minutes – Maurizio M. Marceca/Maria Laura Russo / Babak Moazen)
2. Sharing experiences on construction of strategies and tools to increase organizational and individual VL for newly arrived migrants and people living in prison: case studies from two European project (20 minutes – Pania Karnaki/ Igor Aloise/ Lara Tavoschi.)
3. Discussion based on 3 pre-defined questions directed to the speakers and a Q/A session involving the audience (30 minutes – Guglielmo Bonaccorsi/ Silvia Declich/Maurizio Marceca/Lara Tavoschi)

Specific Aims/Objectives and Component Parts

\* To increase the capacity and knowledge of delegates as to the importance of VL responsiveness

\* To present the latest information about vaccination coverage of PLP and NAM at European level

\* To present innovative approaches to address organisational and individual VL as developed within the EU co-funded AcToVax4NAM and the RISE-Vac projects.

\* To encourage discussion and dynamic exchange of opinions about the role of organisational and individual VL among the workshop participants

Key Questions To Address

\* How does organisational and individual vaccination literacy impact on the vaccination coverage of the target populations?

\* Which strategies and tools can be effective for increasing individual and organisational vaccination literacy?

\* What synergies can be built, and between which stakeholders, to promote organisational and individual vaccination literacy?

\* What lessons are learnt from the COVID-19 pandemic on how to promote organizational vaccine literacy and what is their potential for transferability?

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### Using the card (comfort ask relax distract) system for vaccination delivery: Review of tools, implementation approaches, and positive impact on vaccination safety and experiences

Anna Taddio<sup>1</sup>, Lucie Bucci<sup>2</sup>, Angelo Ilersich<sup>3</sup>

<sup>1</sup>University of Toronto 144 College Street, Toronto, Ontario, M5S 3M2 Canada, <sup>2</sup>Bucci-Hepworth Health Services Inc., Québec, Canada, <sup>3</sup>Brock University, Canada

Around the world, fear, pain and other immunization stress-related responses (e.g., dizziness, fainting) are common adverse reactions during vaccine injections, and contribute to needless suffering, complications, and dissatisfaction with care. Across the lifespan, concerns about such stress-related responses account for vaccine refusals in about 1 out of 10 individuals. There are effective interventions; yet they are not systematically incorporated into vaccination delivery systems.

The CARD (Comfort-Ask-Relax-Distract) system is a new vaccine delivery framework that was developed to address this knowledge-to-care gap. Developed from a 2015 Canadian clinical practice guideline endorsed by the World Health Organization (WHO), CARD incorporates evidence-based interventions before, during and after vaccination that together improve the safety of vaccination delivery and lead to more positive vaccination experiences in vaccine recipients, vaccinators and onlookers (e.g., parents, clinic staff). Interventions are included in each letter category (C-A-R-D) that address the psychological, biological and social factors contributing to an individuals risk of experiencing immunization stress-related responses. These interventions include increasing knowledge and preparedness, mitigating pain and fear, and promoting trusting relationships with vaccinators, which in turn, can have a positive impact on vaccination acceptance, compliance and confidence.

During the COVID-19 pandemic, priority funding was provided by the Public Health Agency of Canada to support creation of tools and implementation approaches that allow CARD to be integrated across diverse vaccination settings delivering vaccinations to children and adults, in order to support public COVID-19

vaccination. Both English and French tools were created and are freely available online for anyone to use.

The specific objectives of this workshop are to: 1) describe the importance of including patient experiences as a quality indicator of vaccination programs; 2) introduce the CARD system as a framework for providing vaccinations to an international public health audience; 3) share key CARD tools (e.g., child web game, training e-module) for implementation; and 4) describe implementation approaches used across diverse vaccination settings (mass clinics, pharmacies, hospitals, long-term care) and the successes achieved, in order to stimulate global interest and adoption.

There are 3 workshop speakers: Anna Taddio, Lucie Marisa Bucci, and Angelo Ilersich. Speakers will engage the audience with questions throughout the presentation to stimulate discussion. Videos and other tools will be demonstrated. The audience will be asked for feedback and to describe their needs to support broad implementation across health care settings.

Key questions that the workshop will address: Why are immunization stress-related responses important to track for vaccination delivery programs? How can the CARD system improve the safety of vaccination delivery and improve patient-centredness in health care delivery? What are the key CARD tools and how can they be feasibly integrated across diverse vaccination settings? What are the expected benefits of implementing CARD as a vaccination delivery framework?

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### Public health workforce in Indonesia: A dilemma between professional worker and way of life for health worker

**Background:** Public health as a joint effort to fulfill the right of citizens to live healthily and live long lives requires the involvement of all parties. However in Indonesia, this situation invites a lot of debate, about whether public health is a way of life that can be carried out by any profession (health), or a specific/specific job, or a profession that should only be done by those who are specially educated and trained in public health. Current Law No. 36/2014 said that public health worker in Indonesia is a specific work but in practice, it brings scattered workers and is no longer integrated as public health with a holistic view and interventions. **Objective:** This paper aimed to explore public health practices and invited dialogue among countries under WFPHA membership

**Method:** We will do a systematic literature review and develop a summary of public health workers and practices all over the world **Expected**

**Results:** Comparison of the main feature of public health among countries to developed contributions of the public health workforce to Indonesia and the rest of the world

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### International guidelines for controlling aerosol infections in dental services: which countries were prepared?

Thiago Nascimento<sup>1</sup>

<sup>1</sup>Secretaria de Saúde Pública do Rio Grande do Norte (SESAP-RN), Brazil

Bioaerosols are frequently present in the dentistry routine activities and represent a risk for a series of infectious diseases, such as influenza, tuberculosis, varicella, and COVID-19. Aiming at health security in dental services, important measures were highlighted in international recommendations. To verify the existence of universal standards in dental practice around the world, airborne infection control guidelines, developed before the year 2020, adopted by 29 countries based on 8 requirements for protection against dental aerosols were reviewed. A score of 0 and 1 (presence and absence, respectively) was adopted for the analysis of the following protocol items: (1) heating and ventilation system (HVAC), (2) mask, (3) respirator (N95 OR PFF2), (4) rubber dam, (5) antiseptic mouthwash, (6) high suction system, (7) physical barriers for equipment/furniture protection, and (8) disinfection of waterlines. Among the protocols, only 5 obtained the maximum score. Only the use of a surgical mask was present in all recommendations. In a general way, there was no international consensus on measures to prevent airborne infection. The evidence regarding the risk of aerosol infections in dental services, the context of the pandemic faced worldwide, calls for a standardization of the norms related to airborne infection control guidelines in the clinical area where dental procedures will be performed.

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### Bringing greater accuracy to Europe's healthcare systems: the unexploited potential of Next generation sequencing and biomarker testing in the role of public health

Ruggero Maria<sup>1</sup>, Sarah Garner<sup>2</sup>, Ruth Lopert<sup>3</sup>, France Dube<sup>4</sup>, Bettina Ryll<sup>5</sup>

<sup>1</sup>Alliance Against Cancer, Italy, <sup>2</sup>World Health Organization, Denmark,

<sup>3</sup>Organisation for Economic Co-operation and Development (OECD), France,

<sup>4</sup>AstraZeneca, United States, <sup>5</sup>Melanoma Patient Network Europe, Sweden

Rapid and continuing advances in biomarker testing are not being matched by take-up in health systems, and this is hampering both patient care and innovation. It also risks costing health systems the opportunity to make their services more efficient and, over time, more economical. The potential that public health genomics has brought to biomarker testing in diagnosis, prediction and research is being realised, pre-eminently in many cancers, but also in an ever-wider range of conditions. But development is impeded by data deficiencies, and lack of policy alignment on standards, approval and reimbursement. Europe should already have in place a guarantee of universal access to a minimum suite of biomarker tests and should be planning for an optimum testing scenario with a wider range of biomarker tests integrated into a more sophisticated health system articulated around personalised medicine. Improving healthcare and winning advantages for Europe's industrial competitiveness and innovation require an appropriate policy framework – starting with an update to outdated recommendations. **Impact:** 1. This directly supports activities in two Flagships of the European Beating Cancer plan: Flagship 6 on 'The new "Cancer Diagnostic and Treatment for All" initiative and Flagship 7 on "Genomic for Public Health", 2. Short-term effects of the session will be to raise awareness in the community on the need of building such cancer lifespan continuum and provide a new conceptual health paradigm for cancer prevention, diagnosis and treatment, 3. Medium-term efforts will be made to define how the new paradigm can fit and be integrated into the healthcare systems of the member states. Large capacity building and knowledge transfer initiatives will be needed for this. 4. The target population of this session in principle includes all stakeholders directly or indirectly concerned in creating the cancer lifespan initiative: cancer healthcare professionals and researchers, cancer patients, citizens and cancer healthcare policy makers. Their experience will provide guidelines and recommendations for further fine-tuning and/or research towards an evidence based cancer lifespan continuum.

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### Moving towards a cross-border cooperation in public health: local evidence and experiences

Marleen Struβ<sup>1</sup>, Julia Winkler<sup>2</sup>, Adriana Pérez Fortis<sup>3</sup>, Bettina Menne<sup>4</sup>, Alvisé Forcellini<sup>5</sup>

<sup>1</sup>euPrevent, A Het Overloot 2, 6411 TE Heerlen, The Netherlands,

<sup>2</sup>'Healthacross initiative' of Lower Austria (AT), Pöhlten, Austria,

<sup>3</sup>Aletta Jacobs School of Public Health, University of Groningen, The

Netherlands, <sup>4</sup>World, "WHO Regional Office for Europe, European Office for

Investment for Health and Development, Ospedale SS. Giovanni e Paolo,

Corridioio S. Domenico, 1st fl., 6777 Castello, 30122 Venice, Italy, <sup>5</sup>World

Health Organization, Castello 2956, Italy

The WHO European Programme of Work (2020-2025) emphasizes the importance of "supporting local living environments that enable health and well-being", and identifies the WHO Regions for Health Network as an instrument to achieve this goal.

One of the key issues the Network has been working on in recent years, has been the cross-border cooperation amongst regions and countries, particularly in light of the COVID-19 pandemic, which has shown that health threats do not stop at national borders. Different responses amongst cross-border regions, based on national policies in terms of Public Health and Social Measures (PHSM), may even weaken their effectiveness.

The importance of cooperation across border is not only relevant in the framework of pandemic preparedness and responses, but in many other fields: healthcare cooperation, emergency medical care, medico-social cooperation and increasingly, for health prevention and promotion. All have shown to be beneficial to population health when developed at the subnational level across border regions.

Consequently, the aim of this workshop is to adopt a broader perspective to cross-border cooperation, which should move beyond the 'traditional' healthcare perspective, to involve a wider spectrum of actors: public health authorities, local authorities, and academic institutions. There is a need to jointly build a new and common understanding on these issues, for a truly pan-European outlook that uses an equity lens to address the challenges of health and wellbeing promotion in border regions.

The Keynote speech will be given by the Coordinator of the WHO Europe Regions for Health Network, Dr. Bettina Menne. Subsequently, 3-4 well-established health experts and networks for cross-border cooperation will take the floor with short presentations (5 min) in order to present their 'business case' and value. The

presentations will be followed by a short round table discussion to highlight the role and strengths health networks can bring to regions in order to improve cross-border cooperation in public health. KEY QUESTION TO BE ADDRESSED What are the advantages, and how can we jointly promote a public health approach for cross-border health cooperation?

Moderator:

Alvise Forcellini, Consultant, WHO Regional Office for Europe

Speakers:

Bettina Maria Menne, Coordinator of the healthy settings program, WHO Regional Office for Europe

Julia Winkler, EU Project Manager, Lower Austria / Healthacross

Michele Calabro', Director, EUREGHA – European Regional and Local Health Authorities

Brigitte Van der Zanden, Director, EuPrevent/ Meuse–Rhine Euroregion

Adriana Perez Fortis, Scientific coordinator, Cross-border Institute of Healthcare Systems and Prevention (CBI), Aletta Jacobs School of Public Health, University of Groningen / University of Oldenburg

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### What is the mandate of public health professionals in practice? making our mark for the public's health

Maria Neira<sup>1</sup>, Michael Marmot<sup>2</sup>, Emma Te-Patu<sup>1</sup>, John Coggon<sup>1</sup>, Brigit Toebes<sup>3</sup>, Ominia Omrani<sup>1</sup>, Farhang Tahzib<sup>1</sup>

<sup>1</sup>World Health Organisation, Geneva Switzerland, <sup>2</sup>UCL Institute of Health Equity, United Kingdom, <sup>3</sup>University of Groningen Netherlands

In a world in turmoil, with ongoing challenges for the public's and the planet's health, it is crucial for public health professionals to reflect on who they are, on their profession's moral mandates, and to clearly assess and understand the reality of the public health challenges in these times. This is essential if we are to be, and feel, empowered to lead and support actions to promote and protect the public's health.

The climate emergency, the COVID-19 pandemic, the growing spread of NCDs, and other public health challenges have demonstrated the importance of public health and a professional workforce and systems to protect and promote the health of people and the planet. There are wide variations in understandings of what public health is, how it finds its mandate, and what then the role of public health professionals can and should be. Is public health just science, or does it have a mandate around social reform? If and how should we be advocates for health and social justice? There have been challenges to public health leadership to "regain courage and purpose" and "wider ambitions", that "the field's future lies in reclaiming parts of the past that it willingly abandoned", and the need for "thinking anew on the paradigms of health, harm and disease", be "the science of social justice" and sow new seeds which are necessary now to deal with the problems that define the public's health.

The purpose of the session is to bring together public health leaders and thinkers to reflect and consult on these critical questions from different perspectives, with a particular focus on the Climate Emergency as a case study. This will include Dr Maria Neira, Director of the Public Health, Environment and Social Determinants of Health Department of the World Health Organization, Professor Sir Michael Marmot, Director of the UCL Institute of Health Equity, Professor Toebes, senior legal scholar on global health law, Dr Emma Rawson Te-Patu, the first Indigenous President Elect of the World Federation of Public Health Association, Professor John Coggon, distinguished public health ethico-legal scholar, and Dr Omnia El Omrani, the CoP 27 Presidential youth envoy. The dialogue will be facilitated by Farhang Tahzib.

Aims

\* To examine the diversity in understandings of the mandates of public health and their implications for practice

\* To consider the Climate Emergency, and the roles, responsibilities, and opportunities for public health practitioners

\* Consider ethico-legal perspectives and insights from indigenous knowledge systems to inform the dialogue

Key questions

\* What is public health and the role of public health professionals? Is public health just science? If and how should public health practitioners 'be political', 'be advocates' and engage with political processes and social reform?

\* How do different world views inform and impact practice?

\* Why is public health "a global thing" and what are the implications for the "organised efforts of society"?

\* In light of the above considerations, the dialogue will explore the question around the role of public health professionals in tackling the Climate Emergency as the

case study

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### Gender, power and privilege: Opportunities and challenges for women leading in a world of turmoil

Flávia Virginio<sup>1</sup>, Flavia Senkubuge<sup>2</sup>, Maria Caro<sup>3</sup>, Raquel Bennet<sup>4</sup>, Vina HuLamm<sup>5</sup>

<sup>1</sup>Women in Global Health - Brazil Butantan Foundation/Institute Av. Vital Brazil, 1500 - Butantã - São Paulo, SP, Brazil Brazil, <sup>2</sup>Faculty of Health Sciences, Women in Global Health, University of Pretoria, South Africa,

<sup>3</sup>Women in Global Health, Fundación Gedyt, Buenos Aires, Argentina,

<sup>4</sup>Women in Global Health Brazil, <sup>5</sup>American Public Health Association 800 I Street, N.W. Washington, D.C. 20001 United States

The covid-19 pandemic hit a grossly unequal world and has deepened inequality both within and between countries, especially in terms of gender. In this context, data reveals that women have been the majority at the forefront and also the most affected by the pandemic inside the health care sector. Women represent the majority of healthcare workers across the globe. Although women represent the majority of healthcare workers across the globe and account for 67 percent of the professionals in the field (who, 2022), they remain clustered into job positions that are of lower status and lower pay. Only 25% of decision-making roles are represented by women. A July 2022 report from women in global health estimated that at least 6 million women are working either in unpaid and/or grossly underpaid positions within health systems. Given this context, we must challenge the status quo and ensure there is both fairness and justice in how benefits, power, resources and responsibilities are equally distributed between women and men (paho, 2022). During these times of great transition and continuous change globally, it becomes even more pressing to acknowledge the issues women face and address the place where women stand within these processes.

This world leadership dialogue presents an opportunity for all of us to come together and jointly learn from the experiences of women of different backgrounds who are leading change across the global health sector. Wgh and apha will be inviting three women from diverse backgrounds for a fireside chat to share experiences on their respective health career paths, as well as reflections on the challenges they are facing inside the public health field in a post-covid world. The panelists will also provide solutions to overcoming gender barriers and other challenges that women usually face as women health professionals in a world of turmoil. Audience members will be encouraged to participate in the discussion and have time to pose questions to the esteemed panelists at the end.

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### Eliminating HPV globally: from strategy to implementation

Daniel Kelly<sup>1</sup>, Monica Geingos<sup>2</sup>, Joan Benson<sup>3</sup>, Bettina Borisch<sup>4</sup>

<sup>1</sup>European Cancer Organization, United Kingdom, <sup>2</sup>Joint United Nations Programme on HIV/AIDS (UNAIDS) Special Advocate for Young Women and Adolescent Girls, Namibia, <sup>3</sup>MSD Executive Director Global Policy and Strategy, United States, <sup>4</sup>World Federation of Public Health Associations, Switzerland

Few diseases reflect global inequalities as much as cervical cancer. Of the estimated 342,000 deaths from cervical cancer in 2020, about 90% of these occur in low- and middle-income countries. Moreover, women living with HIV are six times more likely to develop cervical cancer compared to women without HIV, and globally the contribution of HIV to cervical cancer falls disproportionately on younger women.

A large majority of cervical cancer (more than 95%) is due to the human papillomavirus (HPV). Cervical cancer is the fourth most common form of cancer among women worldwide but it is preventable and curable, if detected early and managed effectively. HPV additionally causes anal, penile, oropharyngeal, vulval, vaginal and other cancers. At least 10%, and possibly up to 40%, of cancers caused by human papillomavirus are in men. Men who have sex with men are at particular risk.

The global coverage of the first dose of HPV vaccine in girls is only 15% and the COVID-19 pandemic fueled the largest continued backslide in vaccination and screening. While in high-income countries people can be vaccinated against HPV and women have access to regular screening and treatment, this is not the reality in LICs and LMICs. Moreover, males are currently excluded from most HPV vaccination programs. Gender-neutral vaccination would protect woman and men and accelerate the elimination of cervical cancer.

WHO has developed an aspirational strategy to eliminate cervical cancer as a public health problem, aiming to increase HPV vaccination to 90%, twice-lifetime

cervical screening to 70%, and treatment of pre-invasive lesions and invasive cancer to 90%. In line with the strategy as well as Europe's Beating Cancer Plan, this World Leadership Dialogue will provide a platform for health leaders from governments, UN agencies, the private sector, civil society, and patients to share progress and challenges toward eliminating all HPV-related cancers.

Objectives: Highlight progress towards the WHO's 90-70-90 cervical cancer elimination goals

Discuss the determinants of health that limit women's access to health services, screening and treatment, starting from the real experience of some countries Consider the merits of gender-neutral HPV vaccination

Create a sense of urgency to direct policy decisions toward concrete actions to prevent and treat HPV-related diseases and to increase investments to scale access to these tools.

Key questions: Health leaders will listen to and discuss with the communities and policy makers to define the best approaches and leverages to implement concrete actions based on WHO global strategy to prevent and treat HPV locally and worldwide; and to facilitate intersectoral collaborations to achieve this common goal.

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### The BRICS' contribution to developing a public health-oriented model of vaccine production and distribution

Rosana Campos<sup>1</sup>, Sanjay Rai<sup>2</sup>, Zijian Feng<sup>3</sup>, Glenda Gary<sup>4</sup>

<sup>1</sup>Brazilian Association of Collective Health (ABRASCO), Brazil, <sup>2</sup>Indian Public Health Association, India, <sup>3</sup>Chinese Preventive Medicine Association, China, <sup>4</sup>South African Medical Research Council (SAMRC), South Africa

Doubtless, access to vaccines is an important issue, as highlighted by the failure to assure universal and equitable access to Covid-19 vaccines. Indeed, this failure relates to the lack of vaccine capacity, shortage and the hoarding of vaccines in developed countries. In March 2022, the BRICS Vaccine Research and Development Centre has been launched to strengthen global preparedness and responses to future pandemics, the establishment of which is an important attempt by BRICS countries to contribute to the global public good by ensuring that countries of the world have equitable access to vaccines.

Solutions to solve the immunization problems are similar globally, with vaccines being a critical component. In this sense, it is important to discuss how the public health associations of the BRICS countries, which have the capacity of producing vaccines, and the World Federation of Public Health Associations can contribute to promoting equitable access to vaccines.

The mechanism of cooperation between BRICS public health associations started in 2015 with a workshop on disease prevention and control at the 14th Congress of WFPHA. This WLD session is a continuation of this good cooperation among BRICS member associations. In the meanwhile, a WLD session during the 17th World Congress on Public Health will be a great opportunity for the public health community to know the opportunities and challenges of integration between public health systems and policies and vaccine development and production in the Global South. Furthermore, building high-quality partnerships and deepening BRICS cooperation mechanisms in the field of public health is also one of the key objectives of this WLD session.

For these reasons, we present this proposal for a WLD session to discuss the opportunities and challenges for a public health-oriented model of vaccine development, production and distribution that contributes to promoting health equity.

Specific aims/objectives and component parts: Present the vaccine contributions to global public health from Brazil, India, China and South Africa

Discuss how to promote equitable access to vaccines

1. Key questions that the dialogue will address: What are the challenges to promoting equal world access to vaccines, considering the contribution of the BRICS countries?

2. How to strengthen the cooperation mechanism established by BRICS countries in regard to public health, in general, and equitable access to vaccines, in particular?

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### Spotlight on Cardiovascular CARDIO-vascular risk Stratification, Management And Refining Treatment

Natasha Muscat<sup>1</sup>, Stefania Boccia<sup>2</sup>, Gabriella Pravettoni<sup>3</sup>, Aoiffe O'Brien<sup>4</sup>, Alessandra Moretti<sup>5</sup>

<sup>1</sup>World Health Organisation (WHO), Denmark, <sup>2</sup>Università Cattolica del Sacro Cuore (UCSC), Italy, <sup>3</sup>European Institute of Oncology, Italy, <sup>4</sup>Novartis, Switzerland, <sup>5</sup>European Parliament, Belgium

Despite remarkable therapeutic advances in medicine, CVDs remain the major cause of morbidity and mortality, affecting millions of individuals in Europe and worldwide. There is therefore an urgent need for better solutions at all levels of cardiac care and public health.

The term 'cardiovascular disease continuum' was coined to describe the chain of events from exposure to cardiovascular risk factors to atherosclerosis and end-stage heart disease. It is increasingly recognised that early detection and maintenance of risk factor levels, along with interventions in the chain of cardio-metabolic risk continuum, can be more effective than the current approach of detecting and controlling disease. The silent onset of CVDs in many asymptomatic individuals, however, made early risk detection in medical practice impossible.

The session aims to create a framework for the understanding of the complex interplay of factors influencing early diagnosis of CVD. Thus, enabling the detection of development and progression of CVDs at much earlier stages.

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### Genomes Over a Lifetime (GOAL): An innovative approach to personalized patient empowerment through early diagnosis and treatment for cancer patients and rare disease

Gennaro Ciliberto<sup>1</sup>, Rosa Giuliani<sup>2,3</sup>, Marzia Zambon<sup>4</sup>, Ciarán Nicholl<sup>5</sup>, Allona McCloy<sup>6</sup>

<sup>1</sup>Istituto di Ricovero e Cura a Carattere Scientifico (IRCCS), Istituto Nazionale Tumori Regina Elena, Italy, <sup>2</sup>European Society of Medical Oncology (ESMO), Italy, <sup>3</sup>European Society of Medical Oncology, The Clatterbridge Cancer Centre, Liverpool, United Kingdom, <sup>4</sup>Europa Donna, Switzerland, <sup>5</sup>Unit of Health, JRC, European Commission, Belgium, <sup>6</sup>Oncology Policy EUCan

In the EU, the "portrait" of healthcare has undergone many changes down the years, with many adaptations as the EU has evolved. The role of patients has become much more significant as they have gained greater knowledge; there have been giant leaps in innovation, while societal changes and issues (such as the ageing population) have led to different priorities. Today's portrait of healthcare features many perspectives, schools of thought and approaches coming from different stakeholders, different Member States and even different regions within those Member States. One thing that has become very clear is that a one-size-fits-all approach to treatment is outmoded, wasteful and often counterproductive to the health of patients. This includes, in these days of increasing co-morbidities, treating one disease separately, rather than looking at the patient's health issues as a whole. Meanwhile, citizens are being bombarded with often contradictory messages regarding what is "good" or "bad" for them, often in a patronising manner, while the realities of extremely effective preventative measures are often obscured, with a lack of emphasis on screening and early diagnosis.

The session will focus on the role of public health to tackle cancer among young women and the role of the EU Beating Cancer plan as well as the European Health Data Space to tackle this.

Marzia Zambon, Executive Director, Europa Donna

Ciarán Nicholl, Health Of unit, JRC, European Commission

Rosa Giuliani, Director of Public Policy, European Society of Medical Oncology, The Clatterbridge Cancer Centre, Liverpool, United Kingdom

Gennaro Ciliberto, Scientific Director, IRCCS, Istituto Nazionale Tumori "Regina Elena, Rome, Italy

Allona McCloy, Executive Director, Oncology Policy EUCan, MSD

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### Driving Resilient Pediatric Immunization Programs Globally

Viorica Verdaga<sup>1</sup>, Susana Esposito<sup>2</sup>, Lucia Oliveira<sup>3</sup>, Ahmed Ouma<sup>4</sup>, Michael Moore<sup>5</sup>, Marta Lomazzi<sup>6</sup>

<sup>1</sup>UNICEF, United States, <sup>2</sup>Specialization School in Pediatrics, Department of Medicine and Surgery, Pietro Barilla Children's Hospital, University of Parma, Parma, Italy, <sup>3</sup>PAHO, United States, <sup>4</sup>CDC Afro, Ethiopia, <sup>5</sup>World Federation of Public Health Associations, Australia, <sup>6</sup>World Federation of Public Health Associations, Switzerland

Vaccination is one of the most powerful and cost-effective tools in the history of public health, with important health, economic and social benefits. Pediatric vaccinations help protect children and adults from serious, preventable, and sometimes life-threatening diseases and are a key contributor to support global health security. Globally, vaccination coverage has stagnated at around 85 percent from 2011 to 2019, with some regions reaching excellent results.

However, since the onset of the COVID-19 pandemic, global childhood vaccinations have experienced the largest sustained decline in 30 years. Globally, in 2021 alone,

25 million children did not receive routine vaccinations against diseases such as measles, causing preventable epidemics. This rate plummeted in 2020 and 2021 during the pandemic, particularly in low- and middle-income countries: of the 18 million children who did not receive a single dose of DTP in 2021, the highest number live in India, Nigeria, Indonesia, Ethiopia and the Philippines. Data collected by WHO and UNICEF show that the percentage of children who received three doses of the diphtheria, tetanus and pertussis (DTP3) vaccine declined by 5% between 2019 and 2021, to 81% worldwide. These figures are extremely alarming because DTP3 is considered an indicator of overall vaccine coverage and broader healthcare access; if children are missing these vaccinations, they are probably also missing preventive care visits and crucial vaccinations for many other diseases. If this downward trend continues, we can expect to see a continued increase in cases, outbreaks, and deaths from diseases that are completely preventable.

Conflicts worldwide and related population displacement are placing additional pressures on health systems and exacerbating disruptions to routine immunization programs. To date, the war in Ukraine had led to at least 5.6 million refugees being hosted in EU countries. This has resulted in an increased threat of vaccine-preventable disease outbreaks in the region.

We live in a world where health systems are constantly facing threats and preventing the spread of vaccine preventable diseases is a key component of global health security. Recent pressures on the health system and geopolitical conflicts underscore the need for resilient immunization programs which are able to withstand major shocks and disruptions, quickly adapt to changing circumstances, and maintain high vaccine uptake and acceptance over time. Prioritizing immunization as an essential health service and ensuring pediatric immunization programs are resilient in the face of current and new threats is of the utmost important to ensure populations are healthy.

Goal: Engage health leaders from governments, public health authorities, communities, and advocacy groups to discuss how to build resilient pediatric immunization systems through effective monitoring, communication, legislation, funding, and crisis-preparedness planning.

Objectives: Highlight progress in pediatric vaccination and discuss the impact of COVID-19 and other external factors on vaccine coverage rates

Utilize real-life experiences from select countries to discuss barriers and opportunities to developing resilient immunization systems and ensuring health system strengthening. Create a sense of urgency to drive policy decisions that support resilient immunization systems and concrete crisis preparedness plans globally to ensure efficient pediatric immunization programs.

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### **Equitable access to vaccines: Contributions from the Global South**

Huichuan Yang<sup>1</sup>, Rajinder Suri<sup>2</sup>, Shu Xiang<sup>3</sup>, Andrew Wong<sup>4</sup>, Morena Makhoana<sup>5</sup>, Sunil Gairola<sup>6</sup>, Weining Meng<sup>7</sup>, Adriansjah Azhari<sup>8</sup>, Tiago Moraes<sup>9</sup>, Venkatraman Hariharan<sup>10</sup>, Youngran Park<sup>11</sup>

<sup>1</sup>China National Biotec Group (Sinopharm CNBG), China, <sup>2</sup>Developing Countries Vaccine Manufacturers Network, India, <sup>3</sup>China National Biotec Group Company Limited, China, <sup>4</sup>Walvax Biotechnology Co., Ltd., China, <sup>5</sup>Biovac, South Africa, <sup>6</sup>Serum Institute of India Pvt, Ltd., India, <sup>7</sup>Sinovac Life Science Co., Ltd., China, <sup>8</sup>Biofarma Indonesia, Indonesia, <sup>9</sup>Instituto Butantan, Brazil, <sup>10</sup>Bharat Biotech, India, <sup>11</sup>Eu Biologics, Republic of Korea

A brief outline of the overall WLD

Doubtless, access to vaccines is an important issue, as highlighted by the failure to assure universal and equitable access to Covid-19 vaccines. Indeed, this failure relates to the concentration of vaccine producers in countries in the Global North and the patent-led business model they adopt.

In this sense, the existence of vaccine producers in countries in the Global South, some of them state-owned and not profit seekers, may represent a way to increase production and contribute to a fairer distribution.

Of course, these producers face many challenges in accomplishing a significant role in the global arena, including research and innovation capabilities, industrial infrastructure, financial sufficiency and stability, and trade opportunities and constraints related to competence and international agreements.

Vaccine producers are adopting different strategies to face the challenges, including strengthening collaboration. They articulated the Developing Countries Vaccine Manufacturers Network (DCVMN), a voluntary public health-driven alliance of vaccine manufacturers from developing countries, firmly engaged in research, development, manufacturing and supply of high-quality vaccines that are accessible to protect people against known and emerging infectious diseases globally.

A WLD session during the 17th World Congress on Public Health would be an

excellent opportunity for the public health community to know the current and potential DCVMN initiatives. Furthermore, it would provide a space to reinforce, among the manufacturers, the values of public health as universality, equality, and sustainability of health and health care.

For these reasons, we present this proposal for a WLD session to discuss the opportunities and challenges for a vaccine development, production and distribution model that contributes to promoting health equity.

Specific aims/objectives and component parts: Present the experience of vaccine manufacturers from the DCVMN. Discuss the contributions of DCVMN to promote equitable access to vaccines

Key questions that the dialogue will address: What are the challenges to developing, producing and distributing vaccines by public health-driven manufacturers based in the Global South? How can these manufacturers contribute to promoting equal world access to vaccines?

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### **The public health impact of innovations in vaccine technology**

Glenda Gray<sup>1</sup>, Hamilton Bennett<sup>2</sup>, Walter Ricciardi<sup>3</sup>

<sup>1</sup>South African Medical Research Council, Cape Town, South Africa, <sup>2</sup>Vaccine Access and Partnerships at Moderna, United States, <sup>3</sup>Università Cattolica del Sacro Cuore, Rome, Italy

COVID-19 has broadly worsened existing disparities in health in our society. Whilst the pandemic has generally had a negative impact on public health, it has also been an important opportunity to gain key insights on how to address health inequalities at a global level. In this World Leadership Dialogue, world-renowned experts will provide an overview of how through evolving our public health strategies alongside advances in science and technology, we have gained important insights on how to prepare for and manage future pandemics. Providing equal access to advances in health technology and effective public health programs will be critical components to reducing future inequalities in care across the globe.

Professor Walter Ricciardi will chair the session. Professor Glenda Gray will provide an overview of the key drivers of health disparities and the importance of addressing these gaps. She will also provide examples of what current disparities look like, through HIV and COVID-19 as examples. The actions required to eliminate these disparities will also be discussed, along with reflecting on the key lessons learned from the COVID-19 pandemic. This will include an overview of the global need to provide equitable access to vaccines and the sharing of technology to facilitate vaccine manufacturing in low- and middle-income countries, along with the inclusion of participants from these nations in global clinical studies of emerging interventions.

Following on from this, Hamilton Bennett will review the potential role that new technologies, including mRNA technology, could play in addressing specific health disparities and ensuring pandemic preparedness for the future. She will also provide an overview of the recent advancements in characterizing pathogens of concern and identifying public health threats before they emerge. The urgency of shortened timelines between pathogen emergence and the approval of medical countermeasures will also be discussed along with the importance of access to new technology in facilitating future pandemic preparedness.

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### **Approaches to increasing health equity**

Hyewon Lee<sup>1</sup>, John Gannon<sup>2</sup>, Deborah Walker<sup>3</sup>, Adrian Patu<sup>4</sup>, Leanne Coombe<sup>5</sup>, Vina Hulamm<sup>6</sup>, Alessandro Berionni<sup>7</sup>, Soyce Shirinde<sup>8</sup>

<sup>1</sup>Chair of WFPHA Oral Health Working Group, <sup>2</sup>Chair of WFPHA Tobacco Control Working Group, <sup>3</sup>Chair of WFPHA Women, Adolescent and Children's Health Working Group, <sup>4</sup>co-Chair of WFPHA Indigenous Working Group, <sup>5</sup>co-Chair of WFPHA Professionals Education and Training Working Group, <sup>6</sup>co-Chair of WFPHA Global Health Equity and Digital Technology Working Group, <sup>7</sup>Chair of WFPHA Students and Young Professionals Working Group, <sup>8</sup>member of WFPHA Environmental Health Working Group

Health is a fundamental human right, so every human being should be able to attain her full potential for health and well-being. Notwithstanding, most human beings do not have the conditions to enjoy this right. Health conditions vary significantly across population groups. Indeed, health inequities are a major ethical problem worldwide.

Health inequities have increased due, in part, to the Covid-19 pandemic. People in more vulnerable social situations, or Black and Indigenous people, have experienced higher rates of Covid-19 cases and deaths. In Africa, in 2018, the Infant Mortality Rate was 52 per 1,000 live births, more than seven times higher than in Europe, where it was 7 per 1,000 live births.

In 2022, while nearly half of the world population (3.3 billion people) lived below the poverty line on \$5.50 a day, billionaire wealth experienced the most significant increase in history, with the top 10 wealthiest men in the world having doubled their fortunes.

In this context, promoting health equity must be the principal commitment of any organisation active in the health field. Health equity is officially a priority of the United Nations and all States who signed the Agenda 2030 - Sustainable Development Goals. It is also part of the World Federation of Public Health Organisations (WFPHA) mission.

Considering these recent setbacks in health equity, the approaches to promote it must be rethought. Maybe it is time to move away from the aid and charity-based model, focused on controlling diseases and patients in poor populations, to a technical-political approach that seeks to overcome inequities through interventions in the social process of health determination, including the public and communities as permanent partners in organising services with people, rather than for people. How to make this move?

This World Leadership Dialogue session aims to discuss this general question, focusing on the role and strategies that the WFPHA can accomplish. Members and chairs of its eight working groups - Tobacco Control; Women, Adolescents & Children; Public Health Professionals Education & Training; Indigenous People, Students & Young Professionals; Environmental Health; Digital Technology; and Oral Health - will share their experiences and reflect about specific questions such as:

- How can a more representative and diversified international community be created to improve global health equity?
  - o How to involve historically minority groups and perspectives from the global south in the Public Health field?
  - o What is health equity from the Indigenous Peoples' perspective?
  - o How can youth voices be equally involved and represented worldwide?
- What should Public Health do to be prepared to deal with climate change impacts?
- How to ensure Public Health trainees gain the required competencies to promote equity and health equity in their practice?
- How are WFPHA workgroups collaborating to promote health and health equity?
  - o What are the future opportunities for collaborations within the WFPHA?
  - o What are the opportunities for collaborations external to the WFPHA?

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### Immunisation for All Ages in an Evolving Pandemic: Building Resilience, Capacity, Confidence and Vigilance

Jane Barratt<sup>1</sup>, Michael Moore<sup>2</sup> Gonçalo Sousa Pinto<sup>3</sup>, Martha Rebour, David Sinclair<sup>4</sup>

<sup>1</sup> International Federation of Ageing, <sup>2</sup>Immunisation Task Force, World Federation of Public Health Associations, <sup>3</sup>Practice Development and Transformation, International Pharmaceutical Federation, <sup>4</sup> International Longevity Centre

This session conducted by the Immunisation for All Ages (IFAA) initiative, which is funded and supported by Pfizer, will examine the impact of vaccination across all stages of life, its role in prevention and healthy ageing, and how health systems can build resilience, capacity, confidence and vigilance in order for all eligible populations to be able to access the vaccines they need.

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### Peripheral arterial disease - in Slovakia a matter of general practitioners

Katarina Dostalova<sup>1</sup>, Peter Makara<sup>2</sup>, Sona Wimmerova, Katarina Gazdikova<sup>1</sup>, Maria Bartusova, Stefania Moricova<sup>1</sup>

<sup>1</sup>Slovak Medical University, Bratislava, Slovakia, <sup>2</sup>Slovak Society of General Practice, Bratislava, Slovakia

**Background:** The diagnosis of peripheral arterial disease is determined by measurement of ankle-brachial index (ABI) - simple, highly sensitive, specific, fulfilling the WHO criteria for screening method. Slovak Angiological Society and Slovak Society of General Practice studied if ABI measurement would be beneficial in screening and could be performed by general practitioners.

**Methods:** Slovak Angiological Society and Slovak Society of General Practice acted responsibly when considering the introduction of screening. First of all we started by analysing epidemiological studies. This led to a decision to conduct a pilot study: 24 general practitioners from all regions of Slovakia under supervision of angiologists assessed 2207 consecutive patients over 60 years old.

**Results:** 67.4% of patients had a normal ABI (0.9-1.2), 9.4% of patients had

decreased ABI (<0.9) and 23.2% of patients had increased ABI (> 1.2). Patients with decreased ABI have significantly increased risk of myocardial infarction and stroke. Decreased ABI is more often in men, smokers, diabetics, suffering from high blood pressure, dyslipidaemia. This is our target group, patients in whom adherence to preventive measures and lifestyle changes introduced by general practitioner can lead to improvement of health and prognosis.

**Conclusions:** In 2016, the possibility of ABI measurement was included in the preventive check-up. In the same year, 3,886 amputations were performed in Slovakia. It is a challenge to evaluate the benefit of this measure over time. General practitioners determine the dominant way and rate of health care. Differential diagnosis of lower limb pain is their daily agenda in which ABI measurement can be effective. ABI test is a similar and cheap tool for the non-invasive assessment of PAD, expands the basic diagnostics and helps to clarify the cardio-vascular risk and risk of amputation.

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