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Assessing the economic burden of TBI - a proposed strategy and preliminary results

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Global collaborations(Global Parallel session), Lehar 3, October 7, 2025, 5:20 PM - 6:50 PM

Traumatic brain injury (TBI) remains a leading cause of morbidity and mortality across the globe. There has been a significant push towards improving the care delivered to the patients suffering from TBI – improving pre-hospital care, rapid transfer to a neurosurgical unit, TBI directed management, and rehabilitation. The economic burden managing a patient with TBI (with or without extra-cranial injuries) often are unknown due to the different phases of care and the prolonged treatment duration from the time of presentation to discharge. In this study, the authors aimed to develop a questionnaire that would allow assessment of the economic burden of TBI in each location.

Methods

University Teaching Hospital (UTH), Lusaka, Zambia was identified to understand the economic burden of managing a TBI. As it is the main tertiary centre for all neurosurgical referrals, it was chosen as the centre for assessment of the TBI burden. Multiple discussions were carried out to prepare a questionnaire for collection of data from time of presentation to UTH and first outpatient follow up. This project was carried out with collaboration between Global Surgery Policy Unit, London school of Economics and University of Cambridge NIHR group.

Results

Since 2011 to 2021, a registry of all patients with TBI was created in Singapore. A detailed analysis of the costs incurred from time of presentation to the time of discharge will be carried out based on the interventions and procedures. A similar registry was set up on ORION platform for analysis of patients with TBI that presented at UTH.

Conclusions

Understanding the economic burden of TBI is important to highlight the impact of the disease in any country. By following the processes outlined in this project, we can provide an insight into the costs incurred in managing a patient with TBI.

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Universal Microsurgical Skills Training Lab In A Resource-limited Setting: How To Do It?

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Global collaborations(Global Parallel session), Lehar 3, October 7, 2025, 5:20 PM - 6:50 PM

Currently, there is no set approach to acquiring initial microsurgical skills, as there are increasing regulations for intraoperative learning. There is a growing trend for the use of three-dimensional (3D) printed and virtual reality (VR) models and realistic simulators with an ever-growing similarity to real objects in terms of haptic feedback and physical appearance. However, they are often costly, not fit for long-term use, and difficult to acquire in low-income countries. They also require technical knowledge and practical skills, as well as additional costs for 3D printers and consumables. Therefore, we designed a universal low-budget training lab that may serve as a fundamental ground for microsurgical exercises.

Methods

The essential setup of the universal microsurgical skills training lab consists of a basic microsurgical kit (microscissors and forceps), three sizes of hypodermic needles (18G, 21G, 27G), grapes, oranges, tomatoes, and chicken wings. A smartphone camera or a USB digital microscope is used for magnification. A bag of crystalloid solution, a pair of plastic gloves and 4/0 sutures may be used for dural opening and closure training. Additionally, one may purchase micro-sutures, color additives, and peripheral line cannulas for bypass training. The models may be placed on a wooden board covered with plastic and fixed to the aforementioned with pins.

Results

This universal microsurgical training lab permits training in microsurgical skills similar to the ones one needs for dural opening and closure, tumor dissection and removal, as well as Sylvian and interhemispheric fissure and arachnoid dissection. With additional low-budget consumables, bypass training is also possible.

Conclusions

Everyday microsurgical training is required to achieve a satisfactory skill level to increase steadiness of hand and confidence in oneself. The low-budget universal training set we are proposing may ensure the possibility for more professionals to practice and improve their microsurgical skills.

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Hospitalization and Mortality Secondary to Spontaneous Subarachnoid Hemorrhage in the Brazilian Pediatric Population, 2011-2022

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Improving outcomes after perinatal bleeding (Pediatric Parallel Session), Lehar 2, October 7, 2025, 5:20 PM - 6:50 PM

Spontaneous subarachnoid hemorrhage (sSAH) is a rare event in children, comprising 1.4-4.6% of total cases, although the impact of morbidity and mortality may be as significant as in adults. Nevertheless, there are few epidemiologic studies on this topic, especially in low- and middle-income countries, and the actual incidence of sSAH in children is not well defined. In this study, we investigated the hospitalization and mortality coefficients due to sSAH in children in Brazil, from 2011 to 2022, which could put further insights of the disease's epidemiology.

Methods

We used publicly available data from the Brazilian Ministry of Health databases of Mortality Information System and Hospitalization Information System. The numbers of children under 15 years old were retrieved from the Brazilian Institute of Geography and Statistics (IBGE) census. The hospitalization and mortality coefficients were calculated by dividing the absolute number of incomes and deaths related to sSAH by the respective population in each year per 1,000,000 children. For the whole period, we considered the middle year population (2016.5) and the average number of events of the studied period. Differences in mean values for the specific years of covid-19 pandemics (2020 and 2021) were tested. Temporal trends were analyzed by means of linear regression models.
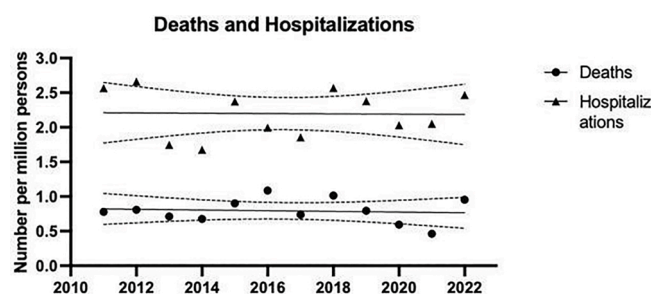
Results

We identified a sSAH hospitalization coefficient of 2.206/1,000,000 children (95%CI: 2.205-2.208) and sSAH mortality rate of 0.7961/1,000,000 children (95%CI: 0.7960-0.7962). During the years of covid-19 pandemics, the means values of hospitalization and mortality were lower, with statistical significance for mortality $p=0.03$. However, the overall trends for hospitalization and mortality coefficients remained stable for hospitalization and mortality coefficients ($F<0.01$, $p=0.94$ and $F=0.11$, $p=0.75$, respectively) in the entire period.

Conclusions

sSAH is uncommon in childhood and is frequently underreported. Population-based studies may help establishing more accurate data on the impact of the disease in the pediatric population.

Optional Image

Deaths and Hospitalizations