Global neurosurgery

https://globalneurosurgery.org/

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Global Neurosurgery is defined as “the clinical and public health practice of neurosurgery with the primary purpose of ensuring safe, affordable and timely neurosurgical care to all who need it”. Since the Bogota Declaration in 2016, the global neurosurgical community has grown exponentially. Consequently, the World Federation of Neurosurgical Societies (WFNS) launched the Global Neurosurgery Committee (GNC) in 2019 during the International Conference on Recent Advance in Neurotraumatology (Peshawar, Pakistan). This committee serves as a coordinating body for all global neurosurgical efforts – aiming to promote collaboration and to discourage working in silos.

It is unknown whether efforts to expand access to neurosurgery worldwide have translated to an increase in global neurosurgery workforce, particularly in low- and middle-income country. The main objective of the study was to quantify the number and distribution of consultant neurosurgeons worldwide, while also identifying temporal and geographic trends in the neurosurgery workforce in different income levels and WHO regions, and analyzing what factors might contribute to the growth of a national workforce.

This study was a subanalysis of an electronic cross-sectional survey administered to participants identified through neurosurgery societies, personal contacts, and online searches of all 193 countries and 26 territories, independent states, and disputed regions as defined by the World Bank (WB) and United Nations between October 2022 and March 2023. Population-weighted statistics for the consultant neurosurgery workforce and resource availability were estimated, and linear regression analysis was conducted to identify correlations with growth in the workforce.

Data were obtained for 192 countries (99.5%) and 25 additional territories, states, and disputed regions (96.2%). One hundred seventy-seven respondents participated in the survey. There were an estimated 72,967 neurosurgeons worldwide, representing a global pooled density of 0.93 neurosurgeons per 100,000 people and a median country density of 0.44 neurosurgeons per 100,000 people. The authors found an increasing density of consultant neurosurgeons, from low-income countries (0.12 per 100,000 people), to lower-middle-income countries (LoMICs; 0.37), to upper-middle-income countries (UpMICs; 1.13), and high-income countries (2.44). The WHO African and Southeast Asia regions had the lowest pooled neurosurgeon density, while the Western Pacific region (WPR) had the highest density. There were 29 countries, 14 territories, and 1 independent state with no neurosurgeons. Neurosurgeons in countries with higher income-level designations had more frequent access to resources and equipment. The annual growth rates in workforce density were highest in LoMICs (26.0%) and UpMICs (21.3%), and the most rapid annual growth was in the Southeast Asia region (33.0%). Regression analysis revealed that an increasing population quartile, the Eastern Mediterranean region (relative to the WPR), the presence of a national neurosurgery society, increasing global development aid, and national gross domestic product were associated with relative growth in national neurosurgeon density.

The authors estimate a global consultant neurosurgeon workforce of nearly 73,000 neurosurgeons, with stark disparities in the density and growth of the workforce in different WB income-level groups and WHO regions. The presence of a neurosurgery society was correlated with the growth of the

workforce, and this study identified several regional targets for further intervention to expand access to neurosurgery [1].

Purpose

Bring together neurosurgeons from around the world to collectively address the unmet need for neurosurgical care.

Mission

To align and coordinate all global efforts to collectively address the unmet neurosurgical needs of our patients, whenever and wherever.

Vision

Universal access to neurosurgical care. Achieving health equity for all people worldwide who are affected by neurological diseases or need neurosurgical care.

Around the world today, low- and middle-income countries (LMICs) have not benefited from advancements in neurosurgery; most have minimal or even no neurosurgical capacity in their entire country.

•Awareness of Global Neurosurgery opportunities is limited in the EANS and a minority have had previous experiences with such activities.•Most training programs and job environments don't encourage participation in Global Neurosurgery and mentors are lacking.•However, most European neurosurgeons and trainees remain interested in Global Neurosurgery and are willing to participate.•Junior trainees is the group with the highest rate of interest for Global Neurosurgery.•Barriers exist that may limit participation in Global Neurosurgery, and funding is the most relevant [2]

Haglund and Fuller examined in broad strokes the different ways in which individuals, organizations, and universities engage in global neurosurgery to address the global challenges faced in many LMICs. Key strategies include surgical camps, educational programs, training programs, health system strengthening projects, health policy changes/development, and advocacy. Global neurosurgery has begun coalescing with large strides taken to develop a coherent voice for this work. This large-scale collaboration via multilateral, multinational engagement is the only true solution to the issues we face in global neurosurgery. Key players have begun to come together toward this ultimate solution, and the future of global neurosurgery is bright [3].

Every year, an estimated 22.6 million patients suffer from neurological disorders or injuries that warrant the expertise of a neurosurgeon, of whom 13.8 million require surgery. Traumatic brain injury, stroke-related conditions, tumors, hydrocephalus, and epilepsy constitute the majority of essential neurosurgical care worldwide. Approximately 23,300 additional neurosurgeons are needed to address more than 5 million essential neurosurgical cases-all in low- and middle-income countries-that go unmet each year. There exists a gross disparity in the allocation of the surgical workforce, leaving large geographic treatment gaps, particularly in Africa and Southeast Asia.

Each year, more than 5 million individuals suffering from treatable neurosurgical conditions will never undergo therapeutic surgical intervention. Populations in Africa and Southeast Asia, where the proportion of neurosurgeons to neurosurgical disease is critically low, are especially at risk. Increasing access to essential neurosurgical care in low- and middle-income countries via neurosurgical workforce expansion as part of surgical system strengthening is necessary to prevent severe disability and death for millions with neurological disease [4)].

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Global health is the health of populations in a global context; it has been defined as “the area of study, research and practice that places a priority on improving health and achieving equity in health for all people worldwide”.

Problems that transcend national borders or have a global political and economic impact are often emphasized.

Thus, global health is about worldwide health improvement, reduction of disparities, and protection against global threats that disregard national borders.

Global health is not to be confused with international health, which is defined as the branch of public health focusing on developing nations and foreign aid efforts by industrialized countries.

Global health can be measured as a function of various global diseases and their prevalence in the world and threat to decrease life in the present day.

The predominant agency associated with global health (and international health) is the World Health Organization (WHO). Other important agencies impacting global health include UNICEF, World Food Programme, and the World Bank. The United Nations has also played a part with declaration of the Millennium Development Goals and the more recent Sustainable Development Goals.

Ravindra et al., discuss the unmet needs for neurosurgical care around the world and some of the innovative work being done to address this need. The growing demonstration of surgical innovation and cost-effective technology represents an opportunity within neurosurgery to achieve the goal of making surgical care more accessible to the global population [5)]

Globally, the lack of access to basic surgical care causes 3 times as much deaths as HIV/AIDS, tuberculosis, and malaria combined. The magnitude of this unmet need has been described recently, and the numbers are startling. Major shifts in global health agenda have highlighted access to essential and emergency surgery as a high priority. A broad examination of the current global neurosurgical efforts to improve access has revealed some strengths, particularly in the realm of

training; however, the demand grossly outstrips the supply; most people in low-income countries do not have access to basic surgical care, either due to lack of availability or affordability. Projects that help create a robust and resilient health system within low- and middle-income countries require urgent implementation. In this context, concurrent scale-up of human resources, investments in capacity building, local data collection, and analysis for accurate assessment are essential. In addition, through process of collaboration and consensus building within the neurosurgical community, a unified voice of neurosurgery is necessary to effectively advocate for all those who need neurosurgical care wherever, whenever [6].

Recommended Literature

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Narrative Reviews

Global neurosurgery seeks to provide quality neurosurgical health care worldwide and faces challenges because of historical, socioeconomic, and political factors. To address the shortfall of essential neurosurgical procedures worldwide, dyads between established neurosurgical and developing centers have been established. Concerns have been raised about their effectiveness and ability to sustain capacity development. Successful partnerships involve multiple stakeholders, extended timelines, and twinning programs.

Lippa et al. outlines initiatives and challenges within the neurosurgical community. The narrative review aims to provide a practical tool for colleagues embarking on clinical partnerships, the Engagements and assets, Capacity, Operative autonomy, Sustainability, and scalability (ECOSystem) of care. To create the ECOSystem of care in global neurosurgery, the authors had multiple online discussions regarding important points in the practical tool. All developed tiers were expanded based on logistics, clinical, and educational aspects. An online search was performed from August to November 2023 to highlight global neurosurgery partnerships and link them to tiers of the ECOSystem. The ECOSystem of care involves 5 tiers: Tiers 0 (foundation), 1 (essential), 2 (complexity), 3 (autonomy), and 4 (final). A nonexhaustive list of 16 neurosurgical partnerships was created and serves as a reference for using the ECOSystem. Personal experiences from the authors through their partnerships were also captured. They propose a tiered approach for capacity building that provides structured guidance for establishing neurosurgical partnerships with the ECOSystem of

care. Clinical partnerships in global neurosurgery aim to build autonomy, enabling independent provision of quality healthcare services [7)]

1)
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