

# Global Surgery Research: An Overview and the Role of Medical Students and Surgical Trainees in Advancing Global Surgery Research in LMICs

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## Letter to the Editor

### The Importance of Global Surgery Research

Global surgery research systematically investigates various facets of surgical care delivery, access, outcomes, and innovative solutions specifically tailored to low- and middle-income countries (LMICs) and disaster areas. Its scope involves in-depth examinations of the burden of surgical diseases, identification of barriers impeding access to care, development of sustainable strategies, evaluation of health systems, and promotion of equitable and effective surgical interventions.<sup>1</sup> By addressing the substantial burden of surgical diseases borne by LMICs, despite their limited healthcare workforce and infrastructural capacities, global surgery research plays a pivotal role in enhancing surgical care and outcomes in these regions.<sup>2,3</sup> It achieves this by identifying key challenges, proposing innovative solutions, evaluating intervention effectiveness, addressing region-specific hurdles, and advancing global health equity.<sup>4</sup> Given the unfortunate negative impact of surgical care on the environment, sustainability is at the core of global surgery research. Sustainable surgical care ensures that interventions benefit patients, minimize negative environmental impacts, and support long-term viability.<sup>5</sup> Medical students and surgical trainees can significantly contribute to global surgery research, helping address the pressing needs of LMIC populations,<sup>6,7</sup> hence, it is imperative to provide an overview of global surgery research and explore the avenues through which medical students and surgical trainees can make meaningful contributions to this critical field.

### Research Priorities in Global Surgery

Global surgery research is pivotal in driving progress and fostering innovation in healthcare, particularly within LMICs.<sup>4</sup> Research priorities form the foundational pillars upon which transformative advancements are built, paving the way for surgical care improvements and equitable health outcomes. Core areas of inquiry help generate evidence-based insights and strategic interventions that address the unique challenges LMICs face in global surgery. Some key research priorities in global surgery include the following:

- Assessing surgical disease burden in LMICs, including incidence, prevalence, and environmental impact of surgical care.
- Identifying barriers to accessing surgical care: financial, geographic, and cultural factors.
- Developing sustainable solutions to overcome barriers to accessible surgical care.
- Strengthening health systems and improving surgical care delivery in LMICs with sustainable practices.
- Evaluating the impact of surgical education and training programs in LMICs, enhancing sustainability education.
- Developing low-cost, high-impact surgical innovations aligned with sustainability for LMICs.

### Medical Students and Surgical Trainees Can Contribute to Global Surgery Research

Medical students and surgical trainees in LMICs can make valuable contributions to global surgery research, despite being early in their careers. Some ways in which they can get involved include:

#### 1. Participating in research projects led by experienced researchers in global surgery

Collaborating with seasoned researchers allows students to gain hands-on experience and contribute to ongoing studies in the field. Medical students and trainees can seek opportunities to collaborate with established researchers who are already leading projects in the field of global surgery. Seasoned researchers could benefit from involving medical students in research by gaining fresh perspectives, increasing productivity through task delegation, facilitating knowledge transfer and mentorship opportunities, and expanding their professional network.

#### 2. Developing their research projects in collaboration with local partners in LMICs

Working closely with local partners fosters a deeper understanding of the specific healthcare challenges and needs in LMICs, leading to impactful research initiatives. Students can connect with local healthcare professionals, institutions, or non-

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Editor: Francisco J. Bonilla-Escobar

Student Editors: Mohamed Hoosen

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Copyeditor: L V Simhachalam Kutikuppala

Proofreader: Amy Phelan

Layout Editor: Ana Maria Morales

Submission: Apr 5, 2022

Revisions: Jun 22, 2023

Responses: Jun 23, 2023

Acceptance: Aug 5, 2023

Publication: Sep 18, 2023

Process: Peer-reviewed

governmental organizations (NGOs) in LMICs to identify research areas of mutual interest. Collaborating with local partners ensures the research aligns with the specific needs and priorities of the LMICs, increasing its relevance and impact.

### 3. Conducting literature reviews and meta-analyses to synthesize existing research in global surgery

By reviewing existing research in global surgery, students can synthesize and analyze available information, identifying knowledge gaps and potential areas for further investigation. Medical students and trainees can undertake comprehensive reviews of existing literature related to global surgery. They can summarize and analyze the findings from multiple studies, identify gaps in knowledge, and propose research questions or areas that require further investigation.

### 4. Collecting and analyzing data in LMICs, for example, by conducting surveys or interviews with patients and healthcare providers

Students can engage in primary data collection by conducting surveys or interviews with patients and healthcare providers, helping to generate new insights and evidence. Once the data is collected, students can assist with data analysis, interpretation, and drawing meaningful conclusions.

### 5. Disseminating research findings through academic publications, conference presentations, and social media

Sharing research outcomes through academic publications, conference presentations, and social media platforms raises awareness, promotes collaboration, and contributes to the broader global surgery community.

### Challenges and Opportunities

Global surgery research in LMICs face several challenges, including limited human, infrastructural and financial resources, sociopolitical instability, language and cultural barriers, and

inadequate political engagement. Medical students and surgical trainees must be mindful of these challenges and work collaboratively with local partners to overcome them and mitigate their impact.

Medical students and surgical trainees are presented with unique opportunities to contribute significantly to the field of global surgery research. These opportunities are facilitated through various global surgery interest groups, such as the Association of Future African Neurosurgeons (AFAN), the International Student Surgical Network (InciSioN), the Association of Future African Cardiothoracic surgeons (AFAC), the African Research Society (ARS), and the Evidence-Based Scientific Consortium (EBASC), among others. These interest groups serve as platforms for medical students and surgical trainees in LMICs to cultivate their interest in global surgery research and foster the development of indispensable skills and experiences essential for their future careers and contributions to the field of global surgery. Additionally, numerous institutions within LMICs and the African continent offer research fellowships specifically dedicated to global surgery.<sup>8</sup> By engaging in these research fellowships, medical students and surgical trainees can actively participate in hands-on global surgery projects, while simultaneously expanding their knowledge and expertise in the realm of global surgery research.

### Conclusion

Global surgery research is an important area of study that aims to improve access to safe and effective surgical care for patients in LMICs. Medical students and surgical trainees can contribute by participating in research projects, collaborating with local partners, conducting literature reviews, collecting data, and disseminating findings. Despite challenges, there are opportunities to make a positive impact and develop valuable skills. Their involvement is essential for addressing healthcare disparities and promoting sustainable and equitable access to surgical care.

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**Acknowledgments**

None.

**Conflict of Interest Statement & Funding**

The Authors have no funding, financial relationships or conflicts of interest to disclose.

**Author Contributions**

Conceptualization, Writing - Original Draft, Writing - Review Editing: YZ.

**Cite as**

Zolo Y. Global Surgery Research: An Overview and the Role of Medical Students and Surgical Trainees in Advancing Global Surgery Research in LMICs. *Int J Med Stud.* 2023 Jul-Sep;11(3):243-45.

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ISSN 2076-6327

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