Review Article

Building global surgical workforce capacity through academic partnerships

Zineb Bentounsi[1], Anisa Nazir[2,3]

[1]Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences (NDORMS), University of Oxford, Oxford, UK; [2]Royal College of Surgeons in Ireland, Dublin, Ireland; [3]Graduate Certificate in Global Surgical Care Program, Branch of International Surgery, University of British Columbia, Vancouver, BC, Canada

Contributions: (I) Conception and design: All authors; (II) Administrative support: All authors; (III) Provision of study materials or patients: All authors; (IV) Collection and assembly of data: All authors; (V) Data analysis and interpretation: All authors; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

Correspondence to: Zineb Bentounsi. NDORMS, Botnar Center, Old Road, Oxford, OX3 7LD, UK. Email: zbent258@gmail.com.

Abstract: Nearly 5 billion of the world's growing population lacks access to safe, accessible and equitable surgical care. It results in millions of disabilities and death due to common diseases treated surgically. The severe shortage of the surgical workforce, as well as the unequal distribution of providers in urban, compared with rural areas, is a challenge faced by many communities. Global surgery academic partnerships between institutions in high-income countries (HICs) and low-middle income countries have played an essential role in developing surgical workforce capacity. There is also an increased interest from students and trainees in HICs to partake in international training opportunities. However, not all partnerships are equal and sometimes raise critical ethical concerns. Various recommendations have been made to define and create equitable, sustainable and ethical collaborations that focus on the priorities of the low-middle-income country (LMIC) institutions and trainees. In this article, we review some of the academic partnerships that exist and other training models that provide sustainable and accessible education and resources for mutual learning between surgical trainees from both high-income and low-middle income countries. There is an overwhelming need for high-income and low-income institutions to work together to create equitable and ethical partnerships and build a workforce to provide safe and accessible surgery for all.

Keywords: Academic partnerships; global surgery; medical ethics; surgical education; developing countries

Received: 13 August 2020; Accepted: 31 August 2020; Published: 25 September 2020.

doi: 10.21037/jphe-20-88

View this article at: http://dx.doi.org/10.21037/jphe-20-88

Introduction

The Lancet Commission on Global Surgery in 2015 prioritised sustainable academic collaborations and surgical training of the workforce in low-middle-income countries (LMICs) to address inequitable access to surgery, responsible for one-third of the global burden of disease (1). Traditionally, academic partnerships involve international collaborations between institutions in high-income countries (HICs), resulting in "surgical missions" that aim to build surgical capacity and leave the local populations at a disadvantage and open for unethical exploitation despite best intentions. However, examples of sustainable collaborations exist that are based on mutual interests and are models for future programs. There is a continued need for sustainable and ethical academic partnerships to provide education for the broader workforce, design a relevant curriculum for local and visiting trainees, and change the main academic stakeholder hub from HICs to low-income countries. With the drastically changing workforce during the current pandemic and the challenges it presents, it is imperative to collaborate sustainably and equitably, keeping in mind, mutual benefit for trainees and academic institutions in HICs and LMICs.

Academic partnerships to support postgraduate programs in surgery

Many academic partnerships aim to increase the number of surgeons in LMICs such as the collaboration between College of Surgeons in East, Central and Southern Africa (COSECSA) and Royal College of Surgeons in Ireland (RCSI). COSECSA was established in 1999 as a non-profit body to provide surgical training in East, Central and Southern Africa by harnessing and sharing resources and opportunities for training among countries. It provides internationally recognised surgical qualifications in Orthopaedics, Paediatric Orthopaedics, ENT, Urology, Paediatric Surgery, Neurosurgery, Cardiothoracic Surgery, Plastic Surgery and General Surgery (2). Since 2008, RCSI has collaborated with COSECSA to help to rewrite the curricula, develop the first Objective Standardised Clinical Exam (OSCE), run its examination for membership and fellowship, develop an e-learning platform and other administrative tasks (3). This collaboration between a professional body from a high-income country and a professional body from low and middle-income countries has been key to train and retain surgical workforce within East, Central and Southern Africa; 85.1% of surgical graduates were retained in the country they trained in and, 88.3% were retained within the region (4). Academic partnerships should design training programs that are based locally to mitigate the risk of brain drain and provide affordable access to surgical education to trainees

Surgery as part of human resources for health capacity building programs

Surgery is a team exercise, and surgeons alone cannot operate; they need the assistance of many health professionals, including anesthetists and nurses. Training programs that focus only on surgeons risk creating a mismatch of competencies between surgeons and the rest of the operating team, limiting the impact of the training on surgical capacity and patient care. Academic collaborations that aim to improve the overall workforce training have a better chance of creating a significant impact on patient care while strengthening the healthcare system. For instance, the Rwanda Human Resources for Health Programme (HRH Programme), a programme led by the Government of Rwanda between 2012 and 2019, aims to train a diverse and competent workforce (5).

The HRH Programme is a collaboration between the Government of Rwanda, a low-income country (LIC), and 22 academic institutions in the United States of America (USA), a high-income country (HIC). As a result of the collaboration, postgraduate programmes for physicians were either started or reinforced in several specialities including General Surgery, Obstetrics and Gynaecology, Neurosurgery, Orthopaedic Surgery and Anaesthesiology. Alongside these, several qualifications for nurses were also established, including a Masters of Science in Nursing with specialisation in perioperative care. The program's sustainability lies in the recruitment of the best Rwandese students upon graduation as faculty to gradually replace the visiting faculty.

Academic partnerships to support team-based task shifting

Other collaborations have decided to support another part of the surgical workforce. In a context of a critical shortage of physicians, task shifting—the process by which a task is delegated to a less specialised health worker—has been implemented in surgical care by several LMICs. As a result, anaesthesia may be provided by Non-Physician Anaesthesia Providers (NPAP), and surgery may be performed by Non-Physician Clinicians (NPC) (6). Task shifting in surgery has resulted in a lot of debate in academic literature. Some authors raised concerns about the safety of this practice while others saw an opportunity to fill the HRH gap and reduce patients waiting time (7,8). While task shifting was started as a temporary solution, many countries have been employing NPCs for decades (9). As a result, task shifting is often poorly regulated and the training non standardised (10). Also, NPCs have very few opportunities for continuous learning after their initial training. Therefore, some academic partnerships decided to focus on improving the training of NPCs. One of these is SURG-Africa, an academic collaboration between three HIC universities and three institutions in Malawi, Zambia and Tanzania. SURG-Africa aims to match NPAP, NPC and nurses who provide surgery in district hospitals with mentors who are surgeons working in the central hospitals to which they refer patients (11). The mentors visit district hospitals regularly and provide in-service training. The local aspect of this mentorship programme ensures it is targeted to the specific context and needs of the surgical workforce. Moreover, mentoring the three cadres (i.e., NPAP, NPC and nurses) strengthens teamwork, promotes task-sharing and improves the overall surgical capacity of district hospitals. The three HIC partners in collaboration

with the Ministries of Health (MoH) manage the project with the idea that if proven successful this supervision model will then be scaled up and maintained by the MoH after the departure of the HIC partners. Team-based approach with collective input and shared responsibility results in similar patient outcomes compared with patient care provided by trained experts (12). It improves access to care as it utilizes already available human resources and provides opportunities for HIC partners to get involved in global surgery projects through education and training.

Challenges of academic partnerships

Designing a curriculum based on local needs

The main challenge in academic partnerships for education and training is to define the curriculum. Often, with the best intentions, HIC partners want to share the avant-garde or top-notch surgical techniques with the LMIC partners. The typical example has been of laparoscopic surgery: while it is common practice in most HIC, it is still rarely performed in sub-Saharan Africa. Though, the lack of trained personnel, not cost, is the biggest challenge to laparoscopic utilization in LMICs (13,14). Evidence shows that minimally invasive techniques are beneficial in a low-resource setting, where there is often poor sanitation, fewer hospital beds, higher rates of post-operative complications such as bleeding and surgical site infections (13).

To meet the population's needs in the context of a shortage in the health workforce, surgeons in LMICs need to perform a large number of operations quickly but also safely with fewer complications and less hospital stay. The surgical education curriculum can be tailored for each setting, depending on the health systems and requirements of the patient population. It can also include minimally invasive techniques such as laparoscopic surgery in places where it is feasible to introduce. The surgical curriculum can entail low-cost, standardized training programs and innovative equipment that HIC partners can help develop. It would open new doors for inventions originating from LMICs, for LMICs, as well as opportunities for academic partnerships to share these ideas with. LMIC partners are best positioned to know exactly what skills they need to improve and whom they would like to acquire it from.

Creating ethical partnerships

Often academic partnerships are funded by the HIC partners, which creates an imbalance of power in their favour. To mitigate this imbalance, it is essential to follow ethical principles while designing the partnership. The American Surgical Association Working Group on Academic Global Surgery (15) suggested six ethical principles:

(I) Local priority: the needs of the local surgeons and patients should take precedence;
(II) Resources: the collaboration should not destabilise existing programmes;
(III) Clinical care: visiting and local surgeons should design a plan for the management of complications and long-term follow-up;
(IV) Capacity building: minimise the risk of brain drain, avoid emphasis on costly technology, tailor the training to the needs of the LMIC community, give priority to local surgeons instead of visiting surgeons;
(V) Research: it should be collaborative and obey rules of fair authorship;
(VI) General: visiting surgeons should adhere to the same standards for clinical care, education, and research that they would adhere to at home.

Academic partnerships based in HICs

On the other hand, many HIC institutions have also developed academic global surgery training pathways and electives, also known as "international health electives" (IHE), for residents in response to the high interest in global surgery. There are perceived benefits for HIC trainees as participation in global surgery rotations during residency training may be associated with increased care for underserved populations in clinical practice in HICs either due to high motivation of trainees or exposure working in underserved populations (16). However, academic partnerships between HIC and LMIC programs that provide surgical training, research and global surgery education tend to also be disproportionate, encouraging "fly-in, fly-out missions", usually due to scarce economic and academic resources and a lack of structured global surgery curriculum. Global surgery training curriculum for residents in HICs requires not only a focus on clinical expertise but also interpersonal skills including communication, leadership, teaching, ethics, and health advocacy; placing importance on needs of the underserved populations (17). The program also needs to prioritise learning objectives of trainees in LMICs because they are at a disadvantage when foreign trainees arrive. Programs

such as the Brigham and Women's Global Health Equity Residency in General Surgery are commendable as the program emphasises mentorship, equitable approaches to research and commitment to the long-term longitudinal partnership to improve surgical care delivery (18).

Other academic global surgery programs such as the University of British Columbia's (UBC) Master's program in Global Surgery and the Harvard University's Program in Global Surgery and Social Change provide education to surgical trainees from various parts of the world, focusing on applied learning in the development of health systems and program planning in low resource settings (19,20). These programs cater to trainees in both HIC and LMICs as the priority is on strengthening systems and promoting research. However, funding and travel is a practical hurdle for trainees in LMICs, especially in in-person programs. Also, the current global health crisis has highlighted the opportunities for global partnerships and the interdependence of health care systems around the world (21). With challenges posed by in-person education during the COVID-19 pandemic, programs like UBC's Masters of Global Surgical Care are already ahead of the curve, providing relevant and accessible education to trainees using the virtual platform. Similarly, surgical curriculums and low-cost simulations made for trainees in HICs can be shared with LMICs and vice-versa.

Towards new hubs of global surgery training

Fundamentally though, the central hub of global surgery education and research should change from organisations and institutions in HICs to LMICs. LMIC based global surgery programs and institutions should pilot global surgery education and research for HIC "visiting" and local trainees. The surgical training bodies in LMICs need to be empowered, such as COSECSA, not only financially but with innovation, research and mentorship. Sustainable collaboratives can ensure the trainees receive good quality and accessible education that builds the workforce in places with a dire need of skilled surgical workforce. For that, clear communication of goals and expectations, two-way mentorship, and redefined academic and career priorities of trainees and institutions from HIC are required (22,23). For instance, it could be in the form of placing more academic value in the mentorship of surgical trainees from HIC institutions by academic surgeons in LMICs, making way for bilateral collaboration.

Conclusions

Academic partnerships in global surgery between institutions in HICs and LMICs provide distinct opportunities for surgical trainees, organisations, and consequently, the under-resourced populations they serve. Sustainable and mutually beneficial academic partnerships based on ethical principles allow for shared innovation leading to capacity building, improved health systems and access to safe, surgical care. Future academic partnerships must be designed thoughtfully and ethically to cultivate a new generation of global surgery leaders, but at the same time, build and retain the surgical workforce in LMICs.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the Guest Editor (Dominique Vervoort) for the series "Global Surgery" published in *Journal of Public Health and Emergency*. The article has undergone external peer review.

Conflicts of Interest: Both authors have completed the ICMJE uniform disclosure form (available at: http://dx.doi.org/10.21037/jphe-20-88). The series "Global Surgery" was commissioned by the editorial office without any funding or sponsorship. ZB reports that she is a former employee of SURG-Africa. AN has no other conflicts of interest to declare.

Ethical Statement: Both authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

References

1. Meara JG, Leather AJM, Hagander L, et al. Global Surgery 2030: evidence and solutions for achieving health, welfare, and economic development. Lancet 2015;386:569-624.
2. What is COSECSA. 2020. Available online: http://www.cosecsa.org/about/what-cosecsa. Accessed June 11th, 2020.
3. RCSI/COSECSA Collaboration Programme. 2020. Available online: https://www.rcsi.com/surgery/global-surgery/our-work/cosecsa
4. Hutch A, Bekele A, O'Flynn E, et al. The Brain Drain Myth: Retention of Specialist Surgical Graduates in East, Central and Southern Africa, 1974-2013. World J Surg 2017;41:3046-53.
5. Cancedda C, Cotton P, Shema J, et al. Health Professional Training and Capacity Strengthening Through International Academic Partnerships: The First Five Years of the Human Resources for Health Program in Rwanda. Int J Health Policy Manag 2018;7:1024-39.
6. Gajewski J, Pittalis C, Lavy C, et al. Anesthesia Capacity of District-Level Hospitals in Malawi, Tanzania, and Zambia: A Mixed-Methods Study. Anesth Analg 2020;130:845-53.
7. Federspiel F, Mukhopadhyay S, Milsom PJ, et al. Global surgical, obstetric, and anesthetic task shifting: A systematic literature review. Surgery 2018;164:553-8.
8. Ashton CW, Aiken A, Duffie D. Physician Assistants--a solution to wait times in Canada? Healthc Manage Forum 2007;20:38-42.
9. Galukande M, Kaggwa S, Sekimpi P, et al. Use of surgical task shifting to scale up essential surgical services: a feasibility analysis at facility level in Uganda. BMC Health Serv Res 2013;13:292.
10. van Heemskerken P, Broekhuizen H, Gajewski J, et al. Barriers to surgery performed by non-physician clinicians in sub-Saharan Africa-a scoping review. Hum Resour Health 2020;18:51.
11. Pittalis C, Brugha R, Crispino G, et al. Evaluation of a surgical supervision model in three African countries-protocol for a prospective mixed-methods controlled pilot trial. Pilot Feasibility Stud 2019;5:25.
12. Robertson FC, Esene IN, Kolias AG, et al. Global Perspectives on Task Shifting and Task Sharing in Neurosurgery. World Neurosurg X 2019;6:100060.
13. Robertson F, Mutabazi Z, Kyamanywa P, et al. Laparoscopy in Rwanda: A National Assessment of Utilization, Demands, and Perceived Challenges. World J Surg 2019;43:339-45.
14. Chao TE, Mandigo M, Opoku-Anane J, et al. Systematic review of laparoscopic surgery in low- and middle-income countries: benefits, challenges, and strategies. Surg Endosc 2016;30:1-10.
15. Brook D, Hollier LH Jr. Review of "Academic Partnerships in Global Surgery" by Debas H et al in Ann Surg 271: 460-469, 2020. J Craniofac Surg 2020. [Epub ahead of print].
16. Kauffmann RM, Neuzil K, Koch R, et al. Global Surgery Electives: A Strategy to Improve Care to Domestic Underserved Populations? J Surg Res 2020;255:247-54.
17. Goecke ME, Kanashiro J, Kyamanywa P, et al. Using CanMEDS to guide international health electives: an enriching experience in Uganda defined for a Canadian surgery resident. Can J Surg 2008;51:289-95.
18. Swain JD, Matousek AC, Scott JW, et al. Training Surgical Residents for a Career in Academic Global Surgery: A Novel Training Model. J Surg Educ 2015;72:e104-e110.
19. Master of Global Surgical Care (MGSC) | Branch for International Surgical Care. 2020. Available online: https://internationalsurgery.med.ubc.ca/masters-program/
20. Program in Global Surgery and Social Change | Harvard Medical School. 2020. Available online: https://www.pgssc.org
21. Martin AN, Petroze RT. Academic global surgery and COVID-19: Turning impediments into opportunities. Am J Surg 2020;220:53-4.
22. Boum Ii Y, Burns BF, Siedner M, et al. Advancing equitable global health research partnerships in Africa. BMJ Glob Health 2018;3:e000868.
23. Rickard J, Ntirenganya F, Ntakiyiruta G, et al. Global Health in the 21st Century: Equity in Surgical Training Partnerships. J Surg Educ 2019;76:9-13.

doi: 10.21037/jphe-20-88
Cite this article as: Bentounsi Z, Nazir A. Building global surgical workforce capacity through academic partnerships. J Public Health Emerg 2020;4:20.

