Until recently, surgery was ignored as an important aspect of global health, partially due to misconceptions about the global impact of surgery and the complexity and resource-intensive nature of surgical care.\textsuperscript{1,2} Although there is an increased awareness of the global surgical need, significant work is still needed to improve surgical care worldwide.\textsuperscript{12}

Surgically treatable conditions make up approximately 30\% of the total global burden of disease,\textsuperscript{33} and an estimated 5 billion people do not have adequate access to surgical care.\textsuperscript{24} Approximately 16.9 million people died in 2010 from surgically treatable conditions, and 77.2 million disability-adjusted life years are lost each year due to poor access to surgical care. This often leads to significant suffering during the most productive years of life. Additionally, the global burden of surgical disease disproportionately affects people in low- and middle-income countries (LMICs). The population in the 30\% lowest-income countries receive 3.5\% of worldwide surgical procedures each year, whereas the population in the 30\% highest-income countries receive almost 75\%.\textsuperscript{34} These statistics have a profound implication for the global economy, with a projected
The Lancet Commission on Global Surgery has defined the most basic surgical needs worldwide as the bellwether procedures: laparotomies, cesarean sections, and treatment of open fractures. With these defined needs, the surgical specialties most commonly associated with global surgery are general, trauma, orthopedics, and obstetrics and gynecology. However, at a time when the field of global surgery is evolving, other surgical specialties are advocating for themselves within the global surgery sphere. There is significant value in incorporating a global surgery perspective into every specialty, so that the standard of surgery worldwide can be raised beyond the most basic needs. Specific to global neurosurgery is that, oftentimes, if a medical center in an LMIC can provide neurosurgical care, their overall standard of care is raised. By having the capability to address neurosurgical needs, a center’s capacity for other surgical specialties, anesthesia care, ICU care, and nursing is increased, which has motivated work toward establishing neurosurgery (and other surgical subspecialties) in low-resource contexts.

A majority of global surgery work in LMICs has been focused on achieving short-term goals through interventions such as brief surgical missions and provision of resources. However, lack of access to surgery is an issue that requires more than clinical interventions; it requires training, teams, systems, and resources aimed at building capacity and working toward long-term results.

More recently, these sustainable interventions have increased, including individual teaching efforts and twinning between hospitals in high-income countries (HICs) and LMICs. Global surgery academic collaborations (GSACs) involve surgeons and perioperative health care providers (POHCPs) from HICs working with those in LMICs to build on clinical training, advance current knowledge through research, develop residency programs, and strengthen infrastructure for the provision of surgical care. Global surgery academic collaborations involve continuous collaborations, with some time spent working directly on the ground and the remaining time spent maintaining relationships via online communications and interactions.

Several models exist for participation in global surgery, ranging from provision of resources to online video conferences to long-term partnerships. Unfortunately, involvement in long-term global health endeavors (such as GSACs) can be difficult and inaccessible for surgeons and POHCPs. However, there is a need to increase surgical care based on a growing population with an increasing burden of noncommunicable diseases. A movement toward more global health partnerships can help achieve this, and given the increasing interest in global surgery, it is critical that involvement in GSACs is facilitated. We aimed to identify barriers to participation in GSACs for those in HICs and to propose solutions that can facilitate involvement. Our hope is that the results of this study can lead to increased involvement in GSACs and a scale-up in global surgery efforts.

Methods

Study Participants and Sample Size

Study participants included surgeons from multiple specialties (Fig. 1), anesthesiologists, other physicians, residents or fellows, and nurses from 20 academic medical institutions in the US, Canada, and Norway. Participants were recruited through convenience sampling. The majority of potential participants recruited were known by the senior author, and a small number were known by the first author. Of the 124 health care providers emailed, 86 agreed to do an interview. Of the 32 who did not agree to an interview, 23 did not respond to the email and the other 9 were unable to schedule a time to be interviewed during the data collection period. The remaining 6 people who responded to the email were not health care providers and were not included in this analysis.

The final sample size was 86. Of the sample, 62 participants were involved in global medical or surgical academic collaborations (40 surgeons, 5 anesthesiologists, 11 additional physicians, 4 surgery residents, and 2 nurses). “Involvement” included a range of commitments to global health, but all of the participants in this category were people who had a current sustained commitment, rather than only past experience, and have focused their efforts on capacity building in global health and surgery. The remaining 24 participants were not involved in global health work (20 surgeons and 4 surgery fellows). Seventy percent of the sample was surgeons, whereas the remaining 30% was composed of anesthesiologists, other physicians, nurses, and residents or fellows. More than half (52%) of the surgeons in the overall sample were neurosurgeons. This was due to the fact that the senior author is a neurosurgeon and had more neurosurgery contacts to recruit for the study. However, the remaining 48% of surgeons in the sample came from a wide range of surgical specialties (Fig. 1).

Study Aim, Design, Setting, and Analysis

Between June 1 and August 1, 2015, in Toronto, Canada, P.N.F. conducted 86 semistructured interviews in person, over the phone, or over Skype, which was sufficient to reach data saturation. Questions were based on an interview guide and were intended to be open-ended to gain more in-depth responses. Demographic data, including age, sex, specialty, and number of years in practice, were collected. Sample interview questions are shown in Table 1. Interviews were 30 minutes on average and were audio-recorded and transcribed. Transcripts of the audio files were analyzed using thematic analysis. This included finding, examining, and recording patterns in the data. Themes were then determined inductively after coding and organizing the data. A theme constitutes an idea that is articulated by a significant number of the study participants. Numerical values and percentages are generally not used in qualitative studies; however, in this study, designated themes were mentioned by 50% or more of the respondents.

Ethics Approval and Consent

Each participant gave either written or oral informed consent to participate in the study. All data were de-identified and stored confidentially, and the recordings and

$20.3 trillion loss between 2015 and 2030 due to lack of access to surgical care. Of that estimate, $12.3 trillion will be lost from LMICs, leading to decreased development potential for those countries. The Lancet Commission on Global Surgery has defined the most basic surgical needs worldwide as the bellwether procedures: laparotomies, cesarean sections, and treatment of open fractures. With these defined needs, the surgical specialties most commonly associated with global surgery are general, trauma, orthopedics, and obstetrics and gynecology. However, at a time when the field of global surgery is evolving, other surgical specialties are advocating for themselves within the global surgery sphere. There is significant value in incorporating a global surgery perspective into every specialty, so that the standard of surgery worldwide can be raised beyond the most basic needs. Specific to global neurosurgery is that, oftentimes, if a medical center in an LMIC can provide neurosurgical care, their overall standard of care is raised. By having the capability to address neurosurgical needs, a center’s capacity for other surgical specialties, anesthesia care, ICU care, and nursing is increased, which has motivated work toward establishing neurosurgery (and other surgical subspecialties) in low-resource contexts.

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transcripts were kept in a secure location. The study was approved both by the research ethics board at the University Health Network in Toronto, Ontario, Canada, and by the institutional review board at the University of Texas at Austin.

Results

Findings from the study showed 3 major themes: individual, community, and system barriers. The barriers within each theme are explained below, with accompanying descriptive quotes that are representative of participants’ overall responses. A summary of the results has been included in Table 2.

Individual Barriers

Individual barriers are those that affect only the individual and/or that the individual imposes on themselves. Loss of Income

Study participants reported that the lost income while they are away is significant. They mentioned that this is often due to the need to take an unpaid leave of absence to travel as a part of GSACs. This poses a barrier because participants often have significant financial obligations in supporting themselves and their families.

Financially, I’ve always covered my own expenses, and the expenses tend not to be very onerous, but it’s actually the lost income for the time that you are away. It’s pretty significant.

— Cardiac surgeon, Canada

Family Commitments

Family commitments make it difficult to give time to GSACs. Participants reported difficulty in leaving their children for long periods of time. Additionally, having spouses who are concerned with the perceived dangers of traveling discourages involvement.

FIG. 1. Pie chart showing percentage of different surgical specialties represented by surgeons in the sample, not including other study participants. Fifty-two percent of the surgeons in the sample were neurosurgeons, followed by 7% general surgeons, 6% orthopedic surgeons, 6% surgical oncologists, and 4% cardiac surgeons. Breast surgeons, trauma surgeons, pediatric neurosurgeons, plastic surgeons, and pediatric thoracic surgeons were each represented as 3% of the surgeons in the sample. Thoracic surgeons, endocrine surgeons, ophthalmologists, vascular surgeons, plastic surgeons, and urologists were each represented as 1% of the surgeons in the sample. Seventy percent of the overall sample was surgeons, whereas the remaining 30% was composed of anesthesiologists, other physicians, nurses, and residents or fellows. Figure is available in color online only.
TABLE 1. Sample questions from interview guides

<table>
<thead>
<tr>
<th>Participant Characteristic</th>
<th>Sample Questions</th>
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| Involved in global surgery | 1. What do you know about the global need for surgery?  
2. What do you think is the most effective way to address this need?  
3. Please describe your involvement in global surgery efforts, including global surgery academic collaborations.  
4. When did you begin your involvement and why?  
5. What do you see as obstacles to your involvement in global surgery academic collaborations?  
6. In what ways do you think these obstacles could be removed? |
| Not involved in global surgery | 1. What do you know about the global need for surgery?  
2. What do you think should be done to alleviate this need?  
3. Have you considered being involved in global surgery efforts, such as global surgery academic collaborations?  
4. What obstacles make it difficult to be involved in global surgery academic collaborations?  
5. What changes would need to be made to facilitate your involvement? |

So personally, I’m young. I have three young children. My wife did not sign on to this. She wants me to parent my children, so to leave them for a long period of time is a big deal for me.

— Anesthesiologist, Canada

Being Junior in One’s Career

Younger study participants stated that they were not heavily involved in GSACs because they believed that teaching and learning in low-resource settings requires significant confidence, credibility, and experience that they do not yet have. Additionally, junior faculty thought that they were pressured to focus on advancing their academic career and clinical reputations before becoming involved in GSACs. Participants who were older mentioned that they were content with when they started their involvement in GSACs, because they had freedom in their career and expertise in their field.

As a young surgeon, you don’t have the credibility or the confidence to go to places where the surgery you’re going to do is going to require you to be super flexible since they may not have all the equipment or technology you usually use to make a diagnosis.

— Neurosurgeon, USA

Feeling Greater Responsibility to Local Patients at Home Than to Those Abroad

Participants not involved in GSACs stated that they did not understand the need to help people abroad when there are many patients within their own country that need surgical care. Those involved in GSACs felt a responsibility to be available for their local patients, which limits their desire to make time for international work.

When I think about where I am best suited to help people, where I am of most value, I feel like there is a lot of work to do [in my own country]. I feel like there are lots of problems to solve here.

— Surgical oncologist, Canada

Skepticism About Whether Surgery Is a Major, Cost-Effective, Global Health Issue

Participants not involved in GSACs believed that surgery is not a global health priority. They were not convinced that global surgical interventions are helpful and wanted evidence of their efficacy. A common perception was that preventive medical and public health interventions are more cost-effective and impactful than surgery. There were concerns that without the basic requirements for surgery (i.e., sterile operating rooms, clean water), building surgical infrastructure is nearly impossible.

I’d like to know what the impact of teaching brain surgery is in countries where the most important health problems are fixed with a mosquito net and clean water.

— Neurosurgeon, Canada

Concerns Regarding the Ethics and Intentions of GSACs

Participants were concerned over whether GSACs actually helped develop surgery in LMICs or if involvement was just for personal satisfaction. They questioned whether GSACs could be more harmful than beneficial, and they did not want to infringe on other surgical practices abroad. Participants additionally stated that surgery in LMICs can be complicated with advanced clinical presentations, and there are often not enough resources to support successful surgical outcomes. There was hesitancy over teaching and doing second-best work without the proper resources, and there were concerns over the follow-up care that patients would receive after complex surgical care in LMICs.

It seems to be more beneficial for the people that are going to feel good about themselves than actually beneficial for the community that they are supposed to be helping. If I knew that I would go [to LMICs] and it would really, really make an impact, then I would definitely go, but right now, there’s no way of knowing what’s happening and what’s going on.

— Neurosurgeon, Canada

Concern for Physical and Emotional Well-Being When Traveling

Participants reported a fear of war and terrorism in politically unstable LMICs. They also worried about traveling to unsafe areas and/or areas with high rates of infectious diseases. There was concern over lack of access to safe water and food, as well as having to give up personal standards of hygiene to work in LMICs.

I have an education-based model that doesn’t work well in
a war zone, because the people you train or the people that you’re responsible for are put at risk. One of the first things is that there must be a stable local environment that we can work.

— Neurosurgeon, USA

Participants also mentioned emotional stress from seeing conditions abroad and feeling unable to make a measurable impact. There was also frustration stemming from the slow nature of establishing and continuing GSACs.

It just seems like anyone’s efforts are just like a drop in the ocean, which then becomes overwhelming and hard to know if any individual can actually make a difference.

— General surgeon, Canada

Community Barriers

Community barriers are those that are based on interactions between surgeons and POHCPs in an academic or medical institution.

Insufficient Mentorship and Early Exposure to Global Surgery During Training

Participants said that it would have been significantly easier to incorporate GSACs into their careers if they had early exposure during training, and that without mentors, it was difficult to know how to become involved in GSACs and what that involvement entailed. There are structural limitations on how training programs are incentivized to involve their trainees in such work, even though the value of this work for trainees is immense. Additionally, participants pointed out that mentors provided inspiration for involvement in global surgical work.

I think definitely when you start early, it just becomes easier to make it a part of your life perspective. The more you see it, the more you are able to distinguish whether or not it’s something for you.

— Pediatric neurosurgeon, Canada

Lack of Support From Colleagues

Participants felt discouraged by their colleagues when doing global surgical work. Although they are not directly told to discontinue their involvement, there is a notion among their colleagues that involvement in GSACs is not difficult and is synonymous with a vacation. Participants felt that their practice partners are not aware of the importance of GSACs, and some are unwilling to cover call while their colleagues travel as a part of these collaborations.

I think not all of your colleagues really appreciate what you’re doing. Some people think you’re just going on a glorified holiday in a new part of the world, so that’s a challenge as well.

— Pediatric thoracic surgeon, Canada

System Barriers

System barriers are those that are related to hospital, institution, funding, or government infrastructure.

TABLE 2. Barriers and possible solutions to increase involvement in GSACs

<table>
<thead>
<tr>
<th>Category</th>
<th>Barriers</th>
<th>Possible Solutions</th>
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<tbody>
<tr>
<td>Individual</td>
<td>Loss of income</td>
<td>Income support through new payment plans</td>
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<tr>
<td></td>
<td>Family commitments</td>
<td>Providing time for global surgery work outside of vacation time</td>
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<td></td>
<td>Junior in career</td>
<td>Options for academic advancement through global surgery work</td>
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<tr>
<td></td>
<td>Responsibility to local patients</td>
<td>Ensuring adequate coverage for local patients while others in a department engage in GSACs</td>
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<td></td>
<td>Skepticism about global surgery</td>
<td>More education on global surgery, including in medical schools, residencies, and grand rounds</td>
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<tr>
<td></td>
<td>Unclear ethics and intentions</td>
<td>Improved guidance and planning prior to travel for GSACs</td>
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<tr>
<td></td>
<td>Concerns for physical and emotional well-being</td>
<td></td>
</tr>
<tr>
<td>Community</td>
<td>Insufficient mentorship and early exposure</td>
<td>Global surgery options during training; increased mentorship from those already involved</td>
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<tr>
<td></td>
<td>Lack of support from colleagues</td>
<td>Flexible scheduling and job sharing</td>
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<tr>
<td>System</td>
<td>Minimal time</td>
<td>Dedicated academic time for global surgery work</td>
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<tr>
<td></td>
<td>Poor academic recognition</td>
<td>Creation of an academic promotion track in global surgery</td>
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<tr>
<td></td>
<td>Minimal awareness of opportunities</td>
<td>Increased publicity around GSACs; centralized data bank of global surgery efforts; global surgery department heads</td>
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<tr>
<td></td>
<td>Insufficient administrative support</td>
<td>Paid administrative positions dedicated to organizing GSACs</td>
</tr>
<tr>
<td></td>
<td>Lack of funding and political support</td>
<td>Increased scholarly work to legitimize global surgery; increased availability of grants from funding agencies; contributions from national surgery organizations</td>
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</table>

TABLE 2. Barriers and possible solutions to increase involvement in GSACs
Minimal Time

Participants mentioned a lack of time for involvement in GSACs. They pointed out that they often use their vacation time to travel for GSACs, which creates professional and personal strain. Due to the academic responsibilities of surgeons and POHCPs at their own institutions, participants reported difficulty in being able to pause activities, such as research and teaching, to become involved in GSACs. Those who hold significant administrative roles mentioned that stepping away from their administrative duties for long periods of time could rarely be done. The amount of time participants currently spend on GSACs is less than what they would consider ideal.

Time, it’s a big commitment. Since starting this, I have no free time. My vacations are missions, which I do little of. So the amount of involvement I have in extracurricular [university] activities is zero right now, and in terms of home vacation time, it’s been hard.

— Plastic surgeon, Canada

Insufficient Academic Recognition and Institutional Support

Participants reported the lack of a promotion track that recognizes global surgery as an important academic endeavor. There is no career value or incentive to be involved in GSACs. This deters surgeons and POHCPs from wanting to engage in global surgery work, and also prevents them from devoting time to GSACs due to having to fulfill their other academic requirements (i.e., research, teaching).

All of the work I have done and still do is academically, on paper, of extremely little value in terms of my development in the department and professionally.

— Neurosurgeon, Canada

Participants also felt frustrated that institutions use GSACs for advertisement but do not support the work academically.

This is not a holiday project. It has to have academic merit, and it needs to be part of our institution’s strategic model. It must be mainstream. It needs to be recognized as a priority and not just as an advertising point or a bullet point on a promotional slide.

— Anesthesiologist, Canada

Minimal Awareness of Opportunities to Participate

Participants reported difficulty in accessing information about current projects and international work related to GSACs. Participants also stated that it was difficult to find ways to get involved in global surgery or to find out what work is being done unless someone approached them directly.

There is just a lack of awareness of the opportunities that exist and the mechanisms that can be put in place to help these surgeons get to regions of the world to assist in global outreach.

— Pediatric neurosurgeon, Canada

Insufficient Administrative Support and Organization

Participants reported having to organize their own trips abroad, including for all members of their team. This meant doing paperwork for international travel, organizing schedules and flights, coordinating with the institution abroad, and other work. Additionally, participants mentioned dealing with unnecessary hospital bureaucracy. Also, a lack of communication and organization limits their ability to coordinate with others who are also involved in GSACs.

One of the biggest [barriers] is that [surgeons and POHCPs] just don’t know how to do it. They feel like they are going to spend a lot of energy figuring out how to arrange travel and do they have to bring sterile gloves and all of these questions that would result in them not knowing what to do, and that uncertainty, I think, is as much of a barrier as anything else.

— Neurosurgeon, USA

Lack of Funding and Political Support

Surgeons and POHCPs reported a low availability of funding for GSACs. There are minimal grants available and minimal funding through chairs and endowments. Some had to use their own money to cover expenses, and others needed to aggressively pursue funding from their departments. Participants pointed out that having adequate funding is crucial to the success and continuity of GSACs. They also mentioned frustration with how their institutions publicize their global work for better hospital ratings, but do not contribute funding. Participants additionally reported the need for more political will and government support to back global surgery.

There’s tons of money for research and basic science, but they need to have unrestricted funding for charitable work and have long-term goals for deliverables—goals that are five or ten years out—because you’re not going to be able to do grant funding and then produce something in a year.

— Anesthesiologist, Canada

Discussion

Most of the currently available published work on barriers to involvement in global health is generally editorials about personal experiences. For example, Palazuelos and Dhillon reported encountering a “global health tax” during their careers due to the lack of academic recognition of global health work. In this editorial confirms the funding and structural barriers that inhibit development of global surgeons in the academic arena. However, it also points out the significant effort by students and residents to develop global surgery opportunities, as well as the unique opportunity for global surgeons to learn and share knowledge with their other academic colleagues.
The points that both Palazuelos and Dhillon and Calland et al. make, similar to other editorials, are consistent with the findings of our study and provide a basis for understanding the results.\(^7,27\) Fortunately, many of the barriers found in our study can be addressed to help increase involvement in GSACs and other global surgery capacity-building efforts. Although not much research is available on the practical issues related to involvement, we drew suggestions from participants’ responses and have emphasized the mechanisms by which we can move beyond current limitations in the system toward solutions. A summary of these suggestions has been included in Table 2.

**Addressing Individual Barriers**

Income loss, sometimes referred to as the “global health tax,” is a barrier for those involved in GSACs.\(^27\) Calland et al. also point out the significant cost to global surgeons involved in long-term efforts, as well as the cost to academic institutions were they to support global surgery work.\(^7\) However, there is a need to provide income support for those participating in GSACs, either by partially covering income or by modifying payment plans. Fee-for-service payment plans cause difficulties for surgeons and POHCPs, because time spent abroad for GSACs generally means lost income.\(^22\) Possibilities could include institutions providing partial income coverage or practice partners helping cover for their colleagues who are abroad doing global surgery work.

Family commitments are difficult to balance with global surgery work,\(^27\) particularly for younger participants. Having older children, a supportive spouse,\(^4\) and a stable family life more easily allows surgeons and POHCPs to commit time for global surgery work. It may be possible to create options for participants to take their family with them when traveling. Additionally, not forcing participants to use vacation time for GSACs will allow them to use vacations to honor family commitments.

Many participants have legitimate fears about terrorism, war, illness, hygiene, and general safety.\(^15,21\) It is important to provide education and preparation to address the practical concerns of those involved or those showing interest, especially trainees.\(^8\) This could mean adequate planning and pretravel information sessions to reduce anxiety. It is also important to manage participants’ expectations about what the short- and long-term goals are, what is likely to be accomplished within a specified time period, what the schedule will be, what conditions might be at the destination, and other concerns.\(^3\)

Surgeons and POHCPs not involved in GSACs believed that there are more important global health issues than surgery, including preventive medicine, infectious disease, public health infrastructure, and systemic issues, such as war and government corruption. They also thought that surgery is not cost-effective enough to warrant participation in GSACs. Coupled with concerns over the intentions of participants in GSACs, these perceptions often lead to a lack of support for global surgery work. Although systemic issues increase the difficulty of making surgical care available, focusing solely on those issues will not eliminate the need to address lack of access to surgical care. More education about the global burden of surgical disease and how GSACs are addressing this issue could help remedy the perceptions that prevent surgeons and POHCPs from getting involved or from supporting their colleagues’ work. Specifically, data on the global surgical need as well as data on outcomes of global surgery interventions such as GSACs can work toward combating skepticism toward global surgery. These data could be disseminated as published research, but can also be shared in conferences, grand rounds, and other venues with audiences that include surgical health care providers.

**Addressing Community Barriers**

Surgeons and POHCPs reported a concern for leaving their practice to do international work, both due to feeling responsible for their patients and due to lack of support from colleagues. Flexible scheduling is needed,\(^22\) which can be difficult in surgical careers.\(^7\) Additionally, current knowledge and attitudes of surgeons and their teams do not reflect the contributions they could make to global surgery through facilitating GSACs, including through support of a colleague’s practice while they are away doing global surgery work. Everyone in a shared practice, department, hospital, and/or institution should be in agreement on the importance of global surgery to their overall mission.\(^11\)

Surgeons and POHCPs believed that being advanced in their careers is conducive to involvement in GSACs due to their increased confidence, credibility, and experience. There should be a focus on encouraging and facilitating the involvement of junior surgeons, because the next generation of physicians is showing increased interest in global health.\(^7,26\) Involvement in GSACs could also become an option for surgical residencies, and reforms should look at ways to incentivize residency programs to allow trainees and young faculty to benefit from global surgery experiences.\(^7\) Additionally, senior surgeons and POHCPs who are involved in GSACs should take on a mentorship role for trainees or junior faculty who show interest.\(^8,31\)

This can help build confidence and increase experience, as well as show younger participants how to implement global surgery in their careers. Currently, those involved in global surgery tend to have more developed careers, but to increase involvement in GSACs, it is necessary for more surgeons and POHCPs to get involved earlier.\(^7\)

**Addressing System Barriers**

Lack of time is a significant barrier for involvement in GSACs; these activities require extended travel, which detracts from academic and administrative duties.\(^7\) Whereas surgeons receive set time for research, conferences, and other academic activities, those involved in GSACs are often forced to use vacation time.\(^7,27\) If the hospital or academic institution makes global surgery a priority, time can be allotted for work related to GSACs. As surgeons and POHCPs develop their careers, they are generally pushed into choosing a particular career track.\(^22,26\) There is a need to create an academic promotion track based on global surgical work.\(^7,15,27\) Better academic recognition of global surgery would allow surgeons to dedicate more time to GSACs. Additionally, a standardized academic track can encourage more research in global surgery,\(^11\) which would increase the legitimacy and quality of GSACs.\(^7\)
There is minimal awareness of GSACs and their importance, which leads to a lack of holistic support for surgery as an important global health intervention. Increased awareness of GSACs could improve participation, overall recognition, and access to funding. It may be useful to have an accessible centralized website and/or database listing those who are involved in GSACs around the world, their specialties, their institutions, and their current and planned work. The website could also include a list of institutions in LMICs and other countries that have a surgical need and explain what that need is. Having a leader for global surgery in each department or academic institution will also allow easy access to information regarding GSACs and can streamline the process for those interested in becoming involved. 

To help the surgical community better understand what GSACs are and to notify others of opportunities to become involved, there could be public reflection meetings after an individual or group returns from travel and GSAC-related work. Increased publicity around details of GSACs and their progress could also help garner political, donor, and institutional support. Additionally, as increasing research is done on GSACs, hosting research symposia and conferences specific to global surgery will help improve the view of this work as a significant scholarly endeavor, which could help legitimize the distribution of grant money for long-term global surgery projects (https://www.fic.nih.gov/FUNDING/pages/fogarty-funding-opps.aspx).

For those who want to work in global surgery, the field is disorganized—in terms of lost opportunity costs for participants—so reforms should explore how to improve the general organization of efforts. The lack of administrative support can be addressed by creating administrative paid positions that would take on the role of organizing and planning work related to GSACs. This could significantly ease the process of getting involved in GSACs so that more surgeons and POHCPs will want to participate. Additionally, hospitals and institutions can work to decrease bureaucratic administrative barriers, such as extensive, irrelevant paperwork.

A systematic approach is also necessary to reduce the confusion that arises from the lack of communication and organization among all surgeons and POHCPs involved in GSACs. Guidelines are needed so that the process is more streamlined and so that complete program development would not be necessary for every GSAC and related work abroad. Communication can also improve the networking and availability of information for all participants in GSACs.

As mentioned by study participants, funding is also a major barrier to global surgery work, such that there is no regular source of funding for these efforts. Currently, individuals must insistently encourage their colleagues, departments, and/or hospitals to engage in and to contribute to global surgery work. Some funds come through grants from the National Institutes of Health and other major funding organizations; through departments that have prioritized global surgery; from endowed chairs; and often times from individuals’ own pockets. A possible source of funding that has been less explored is national surgery organization, such as the American College of Surgeons. Some of these organizations have dedicated portions of their mission to global surgery (for example, Operation Giving Back) and, given their more centralized role in surgical care, have the capacity to orient their members toward that mission. Disseminating more data and research on the effectiveness of global surgery interventions such as GSACs can potentially increase funding toward such efforts.

Study Limitations

Qualitative research is not as familiar to the medical and surgical field. It involves generating themes without the exactitude of quantitative research. However, it holds significant value in the details that can be extracted from participants’ responses and the depth at which each theme can be understood beyond quantitative data.

Due to convenience sampling, there is slightly larger representation in the sample from one locality. Qualitative research is also more difficult to replicate, and thematic analysis can limit the generalizability of the data. However, the large sample size was used to help decrease bias and address these limitations, and although the findings are less generalizable, they can be transferred to other settings and used for future quantitative studies to better understand the impact of each of these barriers and their potential solutions.

Conclusions

We were able to identify several barriers to participation in GSACs that stem from individual, community, and system-based sources. Fortunately, there are concrete ways to address these barriers to increase participation in global surgery efforts, including through education, publicity, academic recognition, income coverage, administrative support, and institutional prioritization. If changes are implemented and more surgeons and POHCPs become involved in GSACs, this could lead to a necessary scale-up of global surgery efforts.

Future studies are needed to further characterize these barriers, and to look at the mechanisms that can address these barriers and the effectiveness of suggested methods in increasing involvement in sustainable global surgery efforts. Future studies could also address barriers to global surgery work from the perspective of hospital administrators, financial officers, and other institutional priority decision makers. Finally, to build on the investigation of barriers from the perspective of those in HICs, a similar study should be done to look at barriers to GSACs from the perspective of those in LMICs.

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References


Disclosures
The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

Author Contributions
Conception and design: both authors. Acquisition of data: Fallah. Analysis and interpretation of data: Fallah. Drafting the article: Fallah. Critically revising the article: both authors. Approved the final version of the manuscript on behalf of both authors: Bernstein. Administrative/technical/material support: Bernstein. Study supervision: Bernstein.

Supplemental Information
Previous Presentations
 Portions of this work were shared as a podium presentation at the Bethune Round Table Meeting in Halifax, Nova Scotia, Canada, on June 3, 2016.

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