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Qualitative Analysis of the Perspectives of Volunteer Reconstructive Surgeons on Participation in Task-Shifting Programs for Surgical-Capacity Building in Low-Resource Countries

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Abstract
Background Experts agree that the global burden of untreated surgical disease is disproportionately borne by the world's poorest. This is partly because of a severe shortage of surgical care providers. Several experts have emphasized the need to research solutions for surgical-capacity building in developing countries. Volunteer surgeons already contribute significantly to directly tackling surgical disease burden in developing countries. We qualitatively evaluated their interest in participating in task-shifting programs as a surgical capacity-building strategy.
Methods We conducted semi-structured interviews with surgeons familiar with delivery of surgical care in developing countries through their extensive volunteer experiences. The interviews followed a structured guide that centered on task shifting as a model for surgical capacity-building in developing countries. We analyzed the interview transcripts using established qualitative methods to identify themes relevant to the interest of volunteer surgeons to participate in task-shifting programs.
Results Most participants were open to involvement in task-shifting programs as a feasible way for surgical capacity-building in low-resource communities. However, they thought that surgical task shifting would need to be implemented with some important requisites. The most strongly emphasized condition was direct supervision of lower-skilled providers by fully trained surgeons.
Conclusions There is a favorable view regarding the involvement of surgeon volunteers in capacity-building efforts. Additionally, volunteer surgeons view task shifting as a feasible way to accomplish surgical capacity building in developing countries—provided that surgical tasks are assigned appropriately, and lower level providers are adequately supervised.

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Introduction

Recent work by the Burden of Surgical Disease Working Group estimates that surgical conditions comprise approximately 11 % of the total global disease burden. Experts suggest that surgical disease burden is likely higher in developing countries [1, 2]. It is also well established that many developing countries have a critical shortage of health care providers to attend to this high surgical disease burden [3–5]. These trends have pushed the topic of neglect of surgical disease in the developing world to the forefront of public health discourse [6–8]. Additionally, these trends have led to debates about how best to tackle the burden of surgical disease in developing countries with limited health care human resources [8–10].

Some experts have acknowledged that traditional avenues of training surgical care providers incur high cost, take considerable time, and are therefore not likely to keep up with the pace of need for surgical services in developing countries [9, 11]. As a result, there have been calls to embrace approaches such as task shifting that could safely circumvent some of the constraints of traditional surgical

training in building capacity [9]. Task shifting aims to optimize access to care through reorganizing the workforce. Specifically, it is the process of delegating appropriate health care tasks to a less specialized cadre of workers (including physician and nonphysician providers) to improve access to care [12].

Several surgeon volunteers with experience working in developing countries have commented that surgical task shifting is a common phenomenon in developing countries [9, 13, 14]. Moreover, there have been a few recent reports on the details of formal task-shifting programs and outcomes of patients in these programs. For example, a task-shifting program at the University of Niamey (Niger) enrolls general practitioners in surgical training for 1 year, after which they obtain a certificate to manage a number of surgical conditions [15]. In other examples, two countries in southeastern Africa, Malawi and Mozambique, have formal state-instituted task-shifting programs that train nonphysician clinicians to manage surgical obstetric cases at the district hospital level [16, 17]. Although comparative reports on patient outcomes are few, they generally indicate that patients under the care of nonspecialist physicians and nonphysician clinicians for specific conditions in these task-shifting programs fare just as well as their counterparts under the care of specialist physicians [15, 17, 18]. Thus, task shifting can be a cost-effective, expedient, safe way to improve surgical capacity in developing countries [16].

Volunteer surgeons currently contribute immensely to addressing surgical disease burden directly in developing countries [19]. Moreover, their extensive engagement in developing countries is an avenue for them to contribute to surgical capacity building. Encouragingly, some volunteer organizations have warmed to the concept of capacity building, and these organizations are usually involved in capacity building through contributions to the traditional training of local surgeons [20–22].

In this study, we evaluated the interest of volunteer surgeons in participating in surgical capacity building through task shifting. We conducted in-depth interviews on the subject of task shifting with volunteer surgeons who have experience providing care in developing countries. We then qualitatively analyzed the interview transcripts to identify their perspectives on the qualities of task-shifting programs that would encourage their participation.

Materials and methods

Grounded theory is a method used in qualitative studies to generate theory from systematic data analysis [23]. The advantage of this method is that it enables one to form new theories on an under researched topic that can be tested in subsequent studies. In this study, we used grounded theory to enable us to generate themes that can form the basis of future studies on the relations between volunteer surgeons and task-shifting programs for surgical capacity building.

We selected the study participants based on their extensive volunteer experience providing surgical care in developing countries. This is a widely used sampling method in qualitative studies known as purposeful criterion sampling [24]. We contacted the chief medical officer (CMO) of a U.S. based volunteer organization who provided us with a list of surgeons who volunteered with the organization in several developing countries. With the permission of the CMO, we contacted volunteer surgeons by electronic mail to request their participation in the study.

We conducted semi-structured interviews on the subject of surgical task shifting. The interviews were designed to allow participants freedom to provide elaborate answers. Although each interview provided information-rich transcripts, we continued with interviews until we reached information saturation. Information saturation occurs when investigators do not gain additional information from newly sampled participants [25]. We did not offer any incentives for participation, and we obtained human subjects exemption from our institutional review board.

We interviewed 11 volunteer reconstructive surgeons with a mean interview duration of 36.6 minutes (range 20.1–50.7 min). Interviews were conducted based on a standard interview guide that was provided to participants in advance. The semi-structured nature of the interview allowed the interviewer to digress from the interview guide to pursue relevant themes thoroughly. All interviews were conducted by the lead investigator (O.A.) and recorded on a digital device with the permission of study participants. A research assistant transcribed the interviews verbatim, and the interviewer (O.A.) verified the accuracy of the transcriptions.

Two members of the study team (O.A., C.J.P.) with Masters' level training in qualitative methods undertook analysis of the interview transcripts. First, these two individuals independently developed preliminary coding schemes after analyzing the same three interview transcripts. Coding schemes categorize and group a participant's responses based on the study themes they address. The investigators then met to discuss preliminary coding schemes. Areas of convergence and divergence were identified, and the investigators agreed on a jointly developed intermediate coding scheme. The intermediate coding scheme was applied to an additional three transcripts to confirm its comprehensiveness. Further adjustments to themes and codes were made as necessary. The final comprehensive coding scheme was then applied to all interview transcripts.

Results

Eleven volunteer surgeons participated in the study (Table 1). All of the participants interviewed were reconstructive surgeons who care for orofacial clefts, burns, and hand conditions. There were eight male and three female participants. Ten of the participants have active surgical practices, and one is retired but remains active in volunteer work. Among the actively practicing surgeons, seven are based in the United States and three outside the United States. Participants had, on average, volunteered in seven countries (Table 1). Most study participants worked with multiple volunteer organizations. In our analysis, we identified 22 codes under four broad thematic categories.

Theme 1: task shifting and alternate capacity-building models

There were two broad schools of thought on task shifting as a surgical capacity-building model in developing nations (Table 2). One group believed that delegation of tasks to lower skilled providers is not an optimal solution, and that other capacity-building models should be pursued. The other group maintained that task-shifting programs are a viable option for surgical capacity building, and they offered perspectives on requisites of such programs that would increase their motivation to participate.

Table 1 Characteristics of study participants ($n = 11$)

Characteristic	No.
Sex (M/F)	8/3
Years in practice	22.8 (9–34)
Board certification	
Plastic/reconstructive surgery	11
Otolaryngology	1
General surgery	2
Multiple certifications[a]	3
Practice type	
Private	8
Academic	2
Retired	1
Practice location	
North America[b]	8
Europe	1
Australia/New Zealand	1
South America	1
Asia	–
Africa	–
Countries visited per surgeon[c]	6.8 (3–12)
Volunteer with multiple (≥2) SVOs	7

SVOs surgery volunteer organizations

[a] Multiple certifications include plastic surgery and one of two other disciplines: otolaryngology or general surgery

[b] North American participants who practice in the United States

[c] Examples of countries visited by volunteers: Bangladesh, Brazil, China, Columbia, Ecuador, Ghana, Haiti, Honduras, Lao PDR, Malawi, Mali, Myanmar, Nicaragua, Peru, South Africa, Tonga, Vietnam, Zambia

Participants in the first group favored capacity-building models that identified local individuals whose backgrounds included formal technical and clinical training (physicians with surgical experience). Once identified, these individuals would be provided with focused surgical training as needed, supported by volunteer organizations. This training could occur in their country or at foreign academic institutions. After training, the individual becomes the hub for surgical services in their community and receives clinical and logistical support from volunteer partners. A small number of surgeons in this group discussed embedding fully trained providers from donor nations in host countries. These individuals would serve as anchors of longitudinal surgical capacity-building efforts. Participants believed that these approaches offered several advantages over task shifting. Specifically, they believed that a more skilled, highly trained individual surgeon at the hub could train others locally. Additionally, he or she could conduct internal outreach programs independent of volunteer organizations.

The second group of participants believed that task shifting was a viable option. Most of them equated task shifting with the use of physician extenders in the United States. They noted that task shifting should ideally begin with site-specific analysis to understand the existing educational system and level of training of nonphysician providers. This process would allow identification and inventory of paramedical and nonmedical personnel within the labor force who could be utilized in task-shifting efforts. Moreover, they highlighted several conditions comparable to standards for physician extenders in the United States that would heighten their motivation to participate in task-shifting programs. These conditions included the necessity for sound credentialing and certification processes for lower-skilled surgical care providers. The overarching theme was to create and ensure a competence-based system. Lastly, task shifting would clearly have to occur under the existing legal confines and constraints of host nations.

Theme 2: ethical concerns with task shifting in surgical-capacity building

Participants discussed several ethical concerns surrounding surgical task shifting. All participants agreed that an ethical imperative exists to minimize neglect of surgical disease. As part of this imperative, participants thought more

Table 2 Summary of participant perspectives on approaches to surgical capacity building and the rationale for volunteer surgeon participation

Perspectives on task shifting
Task shifting is an approach to capacity building that is akin to the use of physician extenders in the United States. Hence, capacity-building programs that apply this approach would ideally have similar components to ensure quality care. The vital components and other considerations include the following.
Mechanism for supervision of nonspecialist and nonphysician providers by fully trained specialists.
Mechanisms for regulating the scope of tasks allocated to nonspecialist and nonphysician surgical providers.
Credentialing and certification processes to designate qualified nonspecialist and nonphysician surgical providers.
As a result of their superior clinical background, shifting surgical tasks to general practitioners and nonspecialist physicians may be a better option for ensuring quality care.
The ultimate goal of capacity building, by whichever approach, must be provision of quality care that is equivalent to that available in advantaged nations
Alternatives to task shifting
Volunteer organizations play a role supporting local fully trained surgeons through collaboration and knowledge exchange.
Fully trained local surgeons are then the hub and focus of surgical capacity building, collaborating with volunteer organizations to provide education and training to local candidates in traditional surgical training.
Volunteer organizations deploy long-term volunteers to lend support with education and training for local candidates in traditional surgical training.
Perspectives on volunteer surgeons and organizations engaging in surgical capacity-building efforts
To avoid further neglect of the significant burden of disease in developing countries, the exploration of various approaches to surgical capacity building, including task shifting, is a moral imperative.
To enhance their ability to contribute comprehensively to capacity-building efforts, volunteer organizations may need to adapt their operations for better efficiency.
Collaborate with other volunteer organizations to improve efficiency of resource allocation.
Collaborate with organizations across disciplines to improve the comprehensiveness of their contributions.
Consider central organization for better coordination of outreach efforts.
In addition to engagement with local community stakeholders, engage public sector officials and policymakers who are crucial to the feasibility of surgical capacity building.

efforts, including task shifting, should be directed to address low-complexity clinical conditions that if neglected can have catastrophic effects on quality of life. They expressed that these ethical concerns would engender reluctance to participate in task-shifting programs.

All participants were specialized reconstructive surgeons. Uniformly, they expressed concerns and exhibited reluctance about delegating complex procedures to less skilled providers. However, participants recommended objective gradation of the complexity of surgical tasks. This would allow task-shifting efforts to be focused on procedures that require less technical skill and clinical acumen (Table 2). A common suggestion of this scale of complexity included débridement and split-thickness skin grafting for acute burn injuries (straightforward), release and grafting of burn scar contractures (also straightforward), and cleft lip or palate procedures (complex). Participants again stipulated that a supervisory infrastructure would be mandatory. Supervision would be mandatory because even technically simple operations can occasionally deviate from the expected course. Furthermore, supervision would ensure that lower-skilled providers do not operate beyond the bounds of their ability and credentials.

A few participants suggested limiting training in surgical task-shifting programs to nonspecialist physicians only. They expressed concern that nonphysician providers would be disadvantaged by their lack of traditional clinical training, and that this condition would not be adequately addressed through surgical task-shifting training. They worried that a clinical knowledge gap might result in poorer and potentially dangerous outcomes for patients under the care of nonphysician providers who may exceed the narrow scope of their abilities.

Theme 3: expanding the service philosophy of surgical volunteer organizations

Several volunteer organizations have added educational components to their agenda of service to indigent patients, and these efforts have been widely supported (Table 2). Additionally, participants expressed interest in participation in longitudinal education and training programs in host nations. They suggest that volunteer organizations are equipped to engage in building up human resources capacity and should do so. Specifically, volunteer organizations should be involved in creating and disseminating successful models for their participation in sustainable

capacity-building programs. Two participants proposed the idea of definitively replacing the service model of volunteer organizations with purely educational and training models. These models would push volunteer organizations to be more focused on surgical capacity building. Two other participants suggested that volunteer organizations should go beyond grassroots involvement with local communities and engage public sector officials and policymakers. They thought this would enhance the legitimacy and uptake of capacity-building contributions from volunteer organizations.

Theme 4: enhancing surgical volunteer organization operations for surgical capacity building

All participants acknowledged the inefficiencies of volunteer organizations working as independent entities, in "silos" as described by some. A number of participants suggested that volunteer organizations consolidate efforts across organizations and clinical disciplines to build comprehensive service and capacity-building models (Table 2). Such consolidation would require an overarching coordinating entity. This entity would be particularly effective if it had clout with volunteer organizations, such as a professional association. Participants thought that central organization would ensure improved efficiency through maximizing existing resources and avoiding redundancy at intervention sites. This cooperation could take the form of planning committees to develop longitudinal objectives, standardize modes of operation, information sharing, and sharing of material resources.

Participants also suggested that partnerships could involve volunteer organizations in other disciplines. Such cross-specialty partnerships would ensure that volunteer organizations are able to make comprehensive contributions to capacity-building efforts in a coordinated manner. Two of the participants pointed out that the enhanced comprehensiveness and improved efficiency of volunteer organizations would also have the beneficial effect of improving services for patients with more complex conditions that require multidisciplinary care and long-term follow-up.

Discussion

Surgery volunteer organizations have an extensive history in developing world communities. Their interventions over time have largely been direct provision of surgical care to patients [19]. However with the appeal in development circles for a focus on capacity building in humanitarian aid efforts, some volunteer organizations have chosen different approaches to contribute to local surgical capacity building [20–22]. For example, Zbar et al. [20] and Corlew [21] reported on the process of training a reconstructive surgeon in Nepal with substantial contributions from a Western-based volunteer organization. In another example, the Australia–New Zealand chapter of the multinational volunteer organization Interplast, described its contributions to establishing a sustainable cleft lip and palate care program in Laos with local providers and the Ministry of Health as partners [22].

Some experts have argued that the magnitude of need for surgical care providers in developing countries warrants more expedient means to address the growing need for surgical services [9, 11, 16, 26, 27]. In essence, volunteer surgeons may need to contribute to surgical capacity-building efforts through expedient approaches such as task shifting. Hence, in this study, we qualitatively examined the perspectives of volunteer surgeons on participating in task-shifting programs as a means of surgical capacity building in developing countries.

Although some participants acknowledged coming across task shifting in their experience in developing countries, most had not thought of it as a formal approach to surgical capacity building. However, our findings indicate that a majority of the participants considered surgical task shifting to be a feasible and ethically sound capacity-building model—provided certain requisites were in place. To put these requisites in context, several participants drew parallels between task shifting and use of physician extenders in the United States. The relevance of this association is that study participants were largely eager to avoid past criticisms leveled at volunteer organizations, such as allowing trainees to operate unsupervised [28]. Furthermore, participants were intent on ensuring that any surgical capacity-building program in which they participated was ethically sound and provided access to care comparable to that available in their home countries. One of the requisites participants strongly emphasized was the need for supervision by fully trained surgeons. They also proposed objective gradation of task difficulty with the goal of allocating cases appropriate to the skill level of lower-skilled providers. Certification and credentialing processes were strongly emphasized to ensure minimum but acceptable competence requirements for quality control purposes.

Notably, several of these requisites that study participants highlighted are already components of existing task-shifting programs. For example, the recently launched Nigerien task-shifting program described by Sani et al. [15] includes oversight of the general practitioner (GP) surgical providers by fully trained surgeons, obstetricians, and anesthesiologists. Concerning the issue of certification and credentialing, task-shifting programs in Niger, Malawi, and Mozambique, to mention a few: all have formal

processes to designate qualified providers [15–17]. Also, role delineation for non-surgeon and nonphysician surgical care providers is generally well established in existing task-shifting programs. Nonphysician surgical providers in Malawi, known as clinical officers, and surgical technicians (translated) in Mozambique are trained to manage surgical obstetric emergencies [16, 17]. In Niger, GP surgical providers are trained with a curriculum developed by the Ministry of Health to treat specific common surgical conditions that can safely be managed in district hospitals [15].

Based on the arguments made by global surgery workforce experts and the endorsements task shifting has received from entities such as the World Health Organization, task shifting is likely to become an increasingly applied approach for surgical capacity building in developing countries [9, 11, 12, 26, 29]. The implication for volunteer organizations is that they will have to consider participating in task-shifting programs if they are to continue contributing to surgical capacity-building efforts. Participants in this study demonstrated that volunteer surgeons could be motivated to participate in task-shifting programs. It just required that uncompromised requisites (similar to those for the sanctioned use of physician extenders in the United States) be in place to ensure quality care and outcomes equivalent to those achieved in advantaged nations. Although few, the reports that describe existing task-shifting programs demonstrate that most requisites highlighted by study participants are already commonplace in these programs [15–17].

Finally, the next vital question is if and how host-nation providers, health care institutions, and health officials want volunteer surgeons involved in surgical capacity building through task shifting. In the same way that this study has enlisted the perspectives of volunteer surgeons, the perspectives of host-nation stakeholders regarding the role of volunteer surgeons in task-shifting programs must also be enlisted. However, examining the perspectives of host-nation stakeholders warrants a different study altogether because the questions would be fundamentally different from those posed in this study. In the meantime, as study participants also suggested, volunteer organizations should work on making their operations in developing countries adaptable to various approaches to capacity building, including task shifting. There should be no debate about the need to focus on surgical capacity building, however. Volunteer organizations must evolve to contribute to new approaches in the capacity-building endeavor, including task shifting.

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