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The Impact of Participating in Surgical Trips to Low Income, Low Resource Countries on Professional Development of Plastic Surgery Trainees

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Abstract

Title: The impact of participating in surgical trips to low income, low resource countries on professional development of plastic surgery trainees. **Objective:** Global health initiatives have increased in popularity in recent years, yet international surgical volunteerism remains controversial. Though many U.S. residencies incorporate global health initiatives, there is no standardization of the role that surgical volunteerism plays in resident education. Our goal was to evaluate the impact of surgical volunteerism on former plastic surgery trainees during and after residency. **Methods:** An electronic survey was distributed to 35 graduates of the plastic surgery residency program at the University of Minnesota between 1991 and 2019. The survey included 28 yes/no questions and free responses. The response rate was 100% (n = 35). **Results:** 34 of 35 former graduates (97.1%) participated in at least one international surgical trip during residency. All participants had exposure to cleft surgery, and 82.4% reported a predominance of cleft cases. 23.5% of graduates have continued to perform cleft surgery as part of their practice, and 47.1% have continued to embark on surgical trips post-residency. Participants reported that volunteering on international surgical trips have made them more adaptable in the operating room (91.2%), gave them a better understanding of the challenges of poverty (97.1%), and helped them to provide better care for marginalized patients in low resource settings (70.6%). One hundred percent of participants reported that international surgical trips were an important part of their residency training (n = 34). **Conclusions:** International surgical volunteer work can provide an invaluable experience during training, and they should be offered by plastic surgery residency programs. Supporting resident involvement in surgical trips can have long term ramifications in their careers and commitment to helping the underserved.

Keywords

global health, global surgery, surgical trip, surgical mission, plastic surgery residency training

Background

Interest in global health among residents has been increasing in recent years.[1-4] International surgical volunteerism has become more common with increased healthcare needs of developing countries.[5] As a response, many programs have allowed trainees to participate in global health electives.[3] The number of institutions in the U.S. offering international surgical electives has risen from 3 in 2000 to 86 in 2015, yet there is no standardization in the role that global health plays in resident education.[6] Benefits of global health education and surgical trips during plastic surgery residency have been evaluated in previous studies and continue to remain a topic of discussion.[7-10]

While there is growing interest and expansion of global health initiatives, there has also been much criticism of international surgical volunteerism. "Surgical safari" is a term coined by Dr. Fernando Ortiz Monasterio to describe visiting surgeons who travel to perform cleft surgery and leave behind serious complications.[11,12] Common criticisms of surgical volunteer trips include lack of follow-up, surgeons operating

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outside of their scope, and residents operating without appropriate supervision.[11,13-15] Without proper follow up, management of post-operative complications falls upon local surgeons. Outcomes tracking can be challenging without proper infrastructure, leaving uncertainty in the long-term effects of surgical trips.[13] Some studies have cited higher complication rates with visiting surgeons compared to local surgeons when performing cleft operations.[11,16] It is difficult to assess whether this is due to lower quality care delivered by visiting surgeons or that patients in low income countries are predisposed to complications due to lack of nutritional optimization, presurgical appliances, or post-operative follow up.[16] Schneider et al described guidelines for plastic surgeons planning to perform cleft lip and palate surgeries abroad.[17,18] Others have also published recommendations that highlight the importance of integration of care with local surgeons as a fundamental part of an ethical international surgical trip.[19,20] Adhering to these guidelines may help ameliorate ethical concerns surrounding international surgical volunteerism.

Surgical volunteer trips can provide an opportunity for individuals to help those in need. They can help reduce the burden of disease for patients who would otherwise not have resources to receive surgical care. They can serve as valuable educational opportunities for residents to help underserved populations in low resource environments. Since the University of Minnesota plastic surgery training program began in 1991, all 35 graduates have been offered an opportunity to participate in a surgical volunteer trip during residency. Our goal was to evaluate the impact of supporting surgical trips during training for plastic surgery graduates. While it is equally important to understand the impact of international surgical volunteerism on host institutions in order to make a complete recommendation on the value of surgical volunteerism as a whole, this is outside of the scope of this study. We wish to focus on the perspective of former plastic surgery trainees. Further studies will be needed to investigate the impact of surgical volunteerism on host institutions.

Methods

A Google survey was distributed via email to 35 graduates of the plastic surgery residency program at the University of Minnesota between 1991 and 2019. The survey included 28 yes/no questions and free text responses (Supplemental Document 1). The surveys were collected via email and results analyzed using Microsoft Excel. Descriptive statistics including percentages, mean, and ranges were used to present the data. Free text responses were compiled into a spreadsheet and thematic analysis was performed to identify general themes that were common across multiple respondents. Statistical software was not utilized for this study.

To our knowledge, no validated survey currently exists to evaluate resident experiences on international surgical volunteer trips. This survey was therefore designed based upon American College of Graduate Medical Education (ACGME) core competencies and goals and objectives outlined for international surgical volunteer electives for plastic surgery residents at the University of Minnesota.[23] These core competencies include patient care, medical knowledge, interpersonal and communication skills, professionalism, and practiced based learning and improvement.[23] Similarly, qualitative data in the form of free text responses were also analyzed based upon ACGME core competencies.

Plastic surgery trainees at the University of Minnesota are able to participate in 1-week international surgical volunteer electives during their PGY4-6 years. The curriculum is designed to provide a learning environment for the understanding of global surgery and its unique challenges operating in resource-limited environments. Through this experience, residents learn how to provide quality surgical care in impoverished environments where resources are scarce and cases are more complex due to delayed presentations. A full description of the goals and objectives for the international surgical volunteer elective can be referenced in Supplemental Document 2.

Results

Response rate was 100% (n = 35). Of these, 34 respondents (97.1%) participated in at least one surgical trip during residency, while one respondent (2.9%) did not. Of the 34 participants, 14 were women (41.2%), and 20 were men (58.8%). The average number of surgical trips taken during residency was 2.1 trips. The majority of residents participated in 2 surgical trips during their training (Figure 1).

Residents traveled to a variety of countries, and the location depended upon the geopolitical climate of the country of interest at the time, as well as the partnerships an institution had with different organizations. Peru, Guatemala, and Philippines were the most commonly visited countries as our faculty had well established relationships in place for over 30 years (Table 1).

Residents most frequently reported exposure to cleft surgery (100%), hand surgery (76.5%), and burn reconstruction (73.5%) (Figure 2). Other surgical cases included microtia, rhinoplasty, facial reanimation, facial reconstruction, brachial plexus, benign lesions, hernia, breast and general plastic, and reconstructive surgery. Cleft surgeries were the most predominant cases for 82.4% of participants. Twenty-four respondents (70.6%) reported working in a country where they felt they were working with indigenous peoples. When asked to report what percentage of patients treated were indigenous, estimates ranged from 60% to 100%.

Since graduating from residency, 8 respondents (23.5%) have continued to perform cleft surgery as part of their office practice, while 26 respondents (76.5%) reported they have not. Sixteen respondents (47.1%) have continued to embark

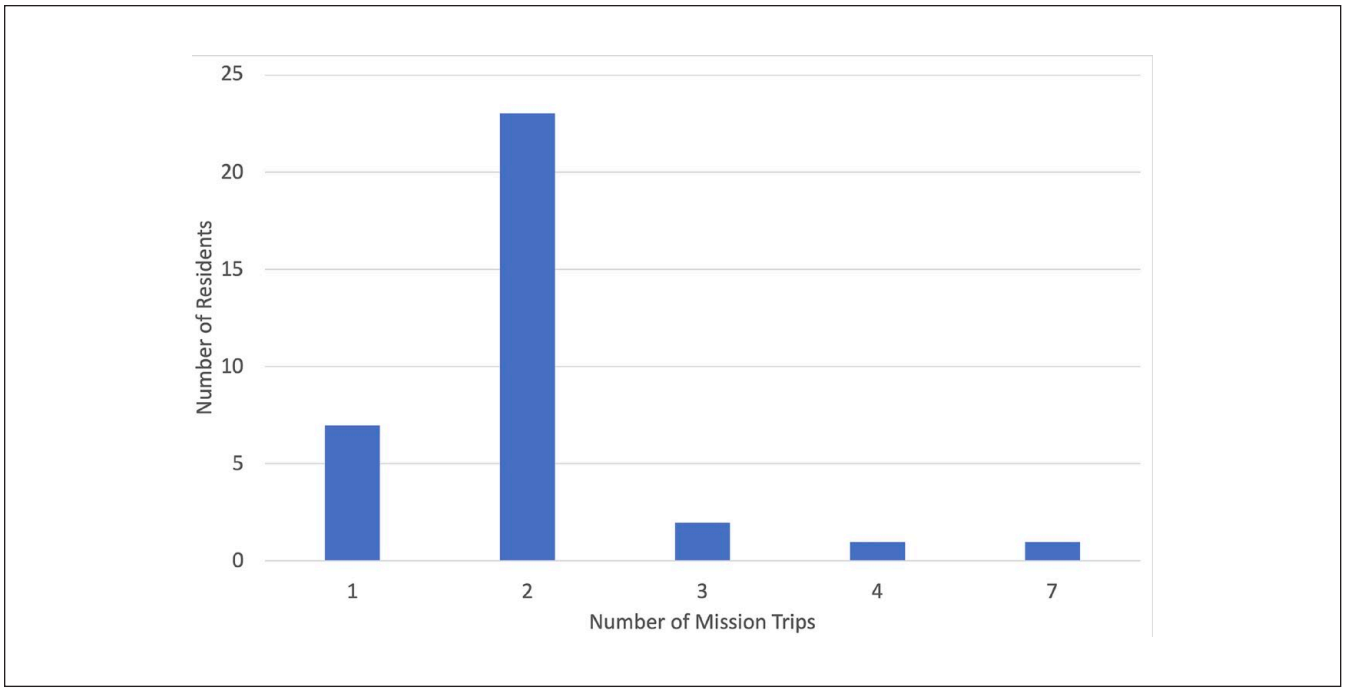

Figure 1. Number of mission trips participated in during residency.

Table 1. Countries Visited on Mission Trips During Residency.

Country	Number of missions
Peru	32
Guatemala	24
Philippines	6
India	4
Ecuador	2
Nepal	1
Bolivia	1

on surgical trips after graduating from residency and have embarked on a total of 134 trips to 22 different countries (Figures 3 and 4). Of those that have continued to participate in volunteer surgical trips, 50% of them have taken residents along with them.

Thirty-one respondents (91.2%) felt that working on volunteer surgical trips has made them more flexible in the operating room when their favorite instrumentation is not available. Thirty-three respondents (97.1%) reported a better understanding of the challenges of poverty in developing countries. Twenty-four respondents (70.6%) reported that working on a surgical trip helped them to gain a better understanding of how to better provide care to marginalized patients in low resource settings, while 10 respondents (29.4%) reported that it did not. When asked in what way the experiences were useful, responses included learning to be more adaptable in the operating room, being more cost efficient with limited resources, and adjusting operative plans and post-operative instructions to accommodate patients who did not have access to transportation and were unlikely to follow up. One respondent reported that they were "more aware that people may not follow up, so using absorbable sutures, providing detailed instructions or therapy tips for hand patients became very important," in addition to "simplifying aftercare instructions and minimizing supply needs to make it easier for patients." One other respondent suggested that the skills developed on mission trips improved their ability to care for marginalized patients in the U.S such as homeless patients, those from different cultural backgrounds or without health insurance.

Nineteen respondents (55.9%) reported that working on a surgical volunteer trip changed their impression of the role of foreign policy or foreign aid to help other countries. When asked in what way, 38.2% of respondents described a sentiment of gratefulness for the resources available in the U.S., better understanding the needs of poorer countries, and a need for education of local health care teams. One respondent wrote how "there is an American arrogance that manifests itself as an attitude that the U.S. knows what is best for countries without having any sense of the nation's history, form of governance, civil rights or lack thereof, or even the state of the basic human condition." Two respondents (5.9%) reported that much of the aid did not appear to reach those in most need, likely due to corruption. One respondent reported that "many of the people and countries would not see the care nor the resources that are available in the U.S. without foreign help." Three respondents (8.8%) suggested the need for education of local health care providers as "education

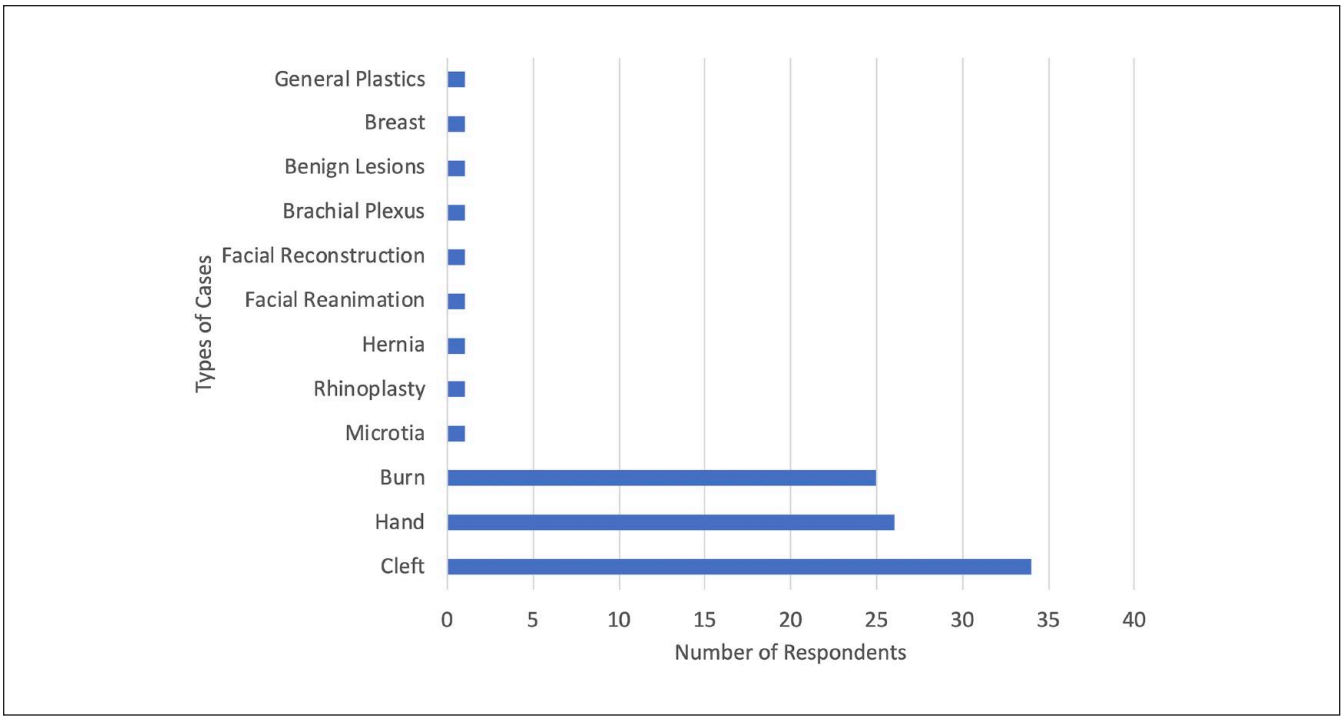

Figure 2. Types of cases performed by respondents.

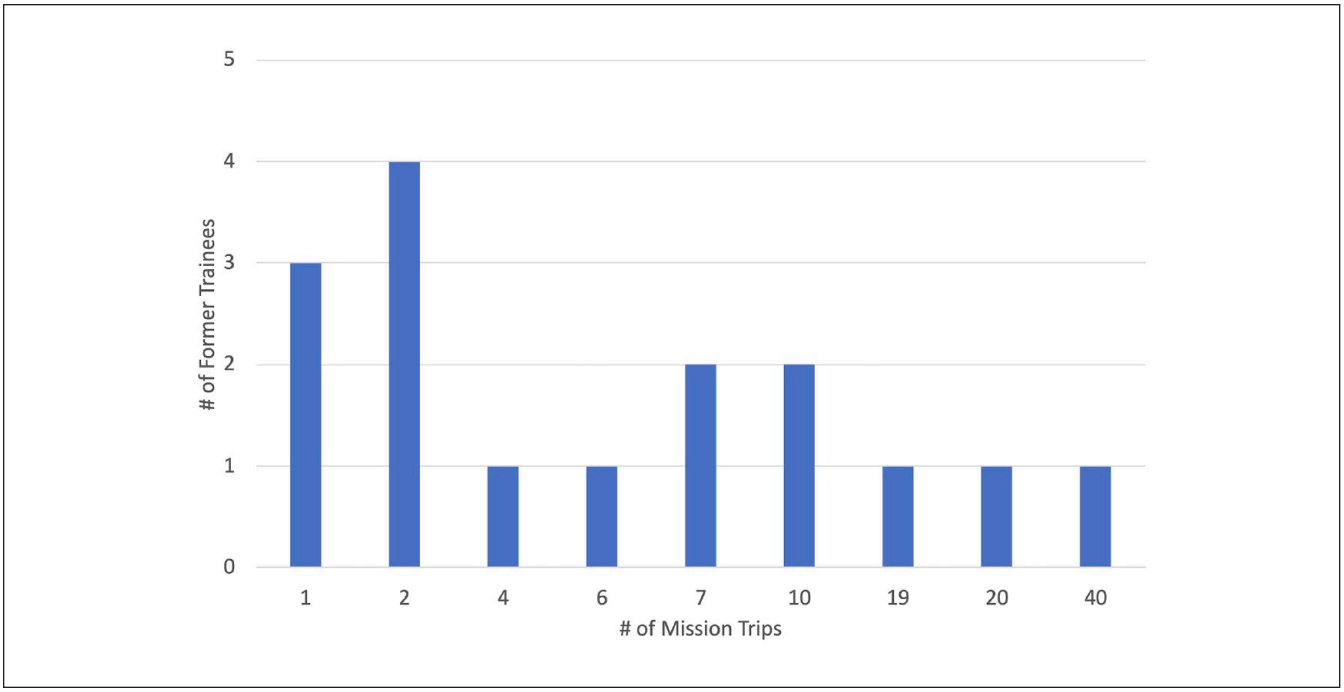

Figure 3. Number of missions completed by former trainees after graduation.

empowers the underserved population, promotes continuity of care and has lasting effects once the mission workers have left." Nineteen respondents (55.9%) reported that local surgeons appeared to be learning from their work, while 15 respondents (44.1%) did not have this impression. Thirty respondents (88.2%) reported that other local health care personnel (non-surgeons) improved their knowledge or the health care in their community as a result of the surgical trip.

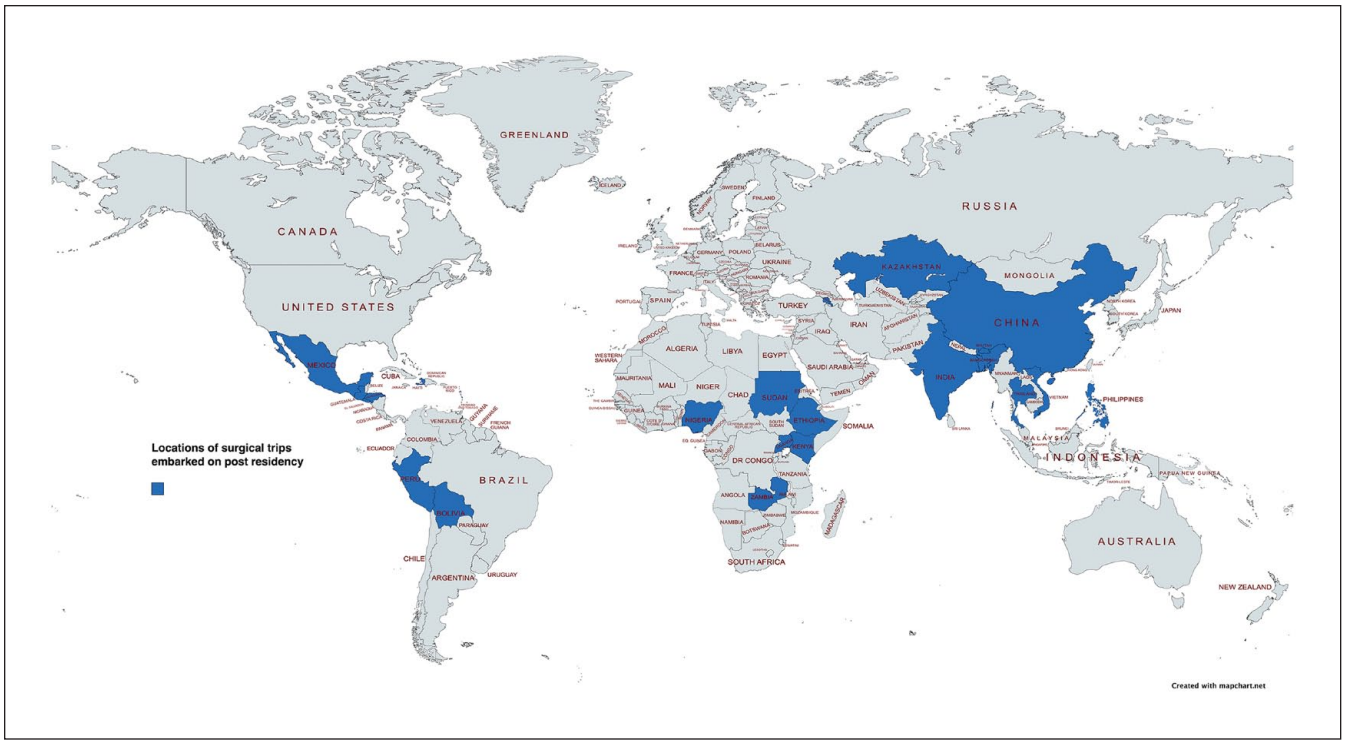

Figure 4. Locations of surgical trips embarked on post residency.

All 34 participants (100%) reported that surgical trips were an important part of their training. When asked to rank the level of importance on a score of 1 to 5, where 5 was defined as high, 26 respondents ranked a score of 5 (76.5%), 6 respondents ranked a score of 4 (17.6%), and 2 respondents ranked a score of 3 (5.9%).

When asked about the main reason for wanting to go on an international surgical volunteer trip during residency, responses included a desire to improve cleft skills (38.2%) and desire to work in another country (44.1%). Other responses included a desire to help the underserved, build confidence and independence, gain exposure to medical care outside of the U.S., and learn about the culture of another country (17.6%). Six respondents (17.6%) reported that the most important quality gained from the trip was an improvement in surgical skills, while 28 respondents (82.4%) reported an opportunity to work in another country and experience another culture. All 34 participants (100%) reported that working on a surgical volunteer trip improved them as a surgeon. When asked in what ways, responses included developing confidence, independence, and adaptability as a surgeon in and outside of the operating room, practicing teamwork, empathy, cultural competency, and being less wasteful with resources. Two respondents reported that they "learned to function without all of the tools and technology that facilitate operating and making diagnostic decisions," and "relied much heavier on physical and clinical exam skills than imaging and test results." One respondent reported that the trips helped them in "thinking outside of the box. There are many equivalent ways to achieve a good outcome," so it became necessary to "be able to adjust to operative curveballs," and "know how to do more with less." Others touched on the longer lasting impacts of volunteer surgical trips. One respondent wrote, "though I would say the experience was a great surgical skills practice due to the sheer volume of surgeries within a short period of time, the most valuable lesson was the humanitarian work of helping those who have zero resources. It was an unforgettable experience." Another reported that the trips helped them "care more thoughtfully for impoverished or marginalized populations here in the U.S." One respondent stated, "it broadened my view of my role as a health care provider in a way none of my years of school or training ever could," and, "as a practicing surgeon, it has allowed me to become more innovative and compassionate in all of my daily life."

Discussion

Overall, the results of this study reflect a lasting positive impact of surgical volunteer trips on resident education with regard to personal and professional development. At the University of Minnesota, short term international surgical volunteer trips lasting 1 to 2 weeks were regularly offered to residents and strongly encouraged. A stipend was provided to all residents and the time away was considered academic leave. All but one of our graduates participated in a surgical

volunteer trip during residency, and all participants unanimously reported that surgical volunteer trips were an important part of their residency training. About half of former residents have gone on to continue volunteering on international surgical trips, though we believe that this will increase in upcoming years. Many of those who did not participate in surgical trips after residency tended to be more recent graduates. We suspect some have not had enough time in their practice, experience, and resources to embark on such activities, which was further hampered by the COVID-19 pandemic that limited international travel and halted surgical trips as a whole. Guidelines for safe resumption of surgical trips during the pandemic have since been outlined.21 We suspect a great proportion of our graduates continue to participate in surgical volunteer trips for several reasons. When recruiting potential residents, we demonstrate our international surgical opportunities as a strength of our program as we have multiple attendings who are passionate about this work. This may result in a selection bias for residents at our training program who desire to develop their interest in surgical volunteerism. Secondly, we suspect that going on more than one surgical volunteer trip during residency may help increase resident tendency to continue participating in surgical trips after graduation. At our program, former graduates participated in an average of 2.1 trips during residency. Since our staff tended to return to the same hospitals with each annual surgical trip, residents often had an opportunity to return to the same location for multiple trips. This may have allowed them to witness the lasting impacts of their work, like seeing patients they operated on from prior trips, or the fact that there remains an overwhelming need for pro bono surgical care for marginalized and impoverished patients. Lastly, and arguably the most valuable quality is the presence of strong mentorship. Residents learn most of what they know from their attendings. Having mentors who share their deep passion for global humanitarian work and caring for underserved populations may inspire residents to develop those same compassionate goals. Therefore, we believe that offering international surgical volunteer trips though residency programs encourages graduates to continue volunteering post-residency and inspires future residents to do the same. Our graduates have gone on to establish long term relationships for surgical volunteer work in 22 different countries. This encompasses 17 new countries that were not originally offered during residency, further expanding access to care in low income countries.

While development of technical skill is often thought of as a motivator for resident participation in surgical trips, the more valuable take away long term seems to be the unique opportunity to learn from and care for patients from another culture. Surgical trips allow residents to gain a concentrated exposure to procedures that they encounter less frequently at their home program.[22] This can help to reinforce learning to understand the nuances of technically complex procedures such as cleft lip and palate repairs. When asked the main reason for wanting to go on a surgical trip during residency, 44% of respondents expressed an interest in improving their cleft skills, while 38% expressed a desire to work in another country. However, when asked to reflect back on their career, the majority of respondents (82%) stated that the most important thing they gained from participating in a surgical trip was working in another culture, while 17% felt that it was the improvement in their surgical skills. Exposure to different cultures aligns with the emphasis that many programs place on cross-cultural training, bridging a gap in resident education.

Participation in surgical trips also helps residents to fulfill the 6 core competencies outlined by the ACGME.[23] Some core competencies can be difficult to structure into a traditional residency, leading to low levels of resident confidence in these skills.[24] It is also increasingly recognized that cultural competency and humility are integral to physicians in training, however, many programs incorporate little to no cross-cultural training despite emphasizing their importance.[25] Global health initiatives could serve as opportunities to begin bridging this gap in graduate medical education. Several studies have cited increased cultural competency, collaboration, and professionalism in residents who have participated in volunteer surgical trips.[26,27] A survey of plastic surgery attendings also noted that after a surgical trip, residents displayed significantly increased professionalism as well as increased technical skill and management of medical resources.[8] These practical and intangible skills gathered from surgical trips are consistent with our survey results of our former residents. The majority of respondents reported they developed increased flexibility in the operating room and a better understanding of how to provide care to marginalized patients in low resource settings. Respondents also reported improved teamwork and resourcefulness and commented on how global surgical trips broadened their perspective of their professional role as a healthcare provider and helped them to develop compassion and empathy for their patients.

Burnout in residency training and in ones career once in practice may also be partially addressed with volunteer surgical trips. There is evidence to suggest that providing relief in resource-limited settings can combat feelings of burnout.[7] In a study of 36 healthcare workers participating in short-term volunteer trips, post-trip burnout indicators of personal achievement, depersonalization, and emotional exhaustion improved compared with pre-trip values.[23] Impressively, these indicators continued to improve even 6 months after the volunteer experience.[23] Burnout continues to be a significant issue in residency training, especially in the field of surgery where up to 75% of residents meet criteria for burnout characterized by emotional exhaustion, depersonalization, and low sense of personal achievement.[7] Exposure to surgical volunteerism offers an "escape hatch" from typical clinical stressors, including the administrative work that is often

cited as one of the biggest contributors to resident burnout.[28] Surgical trips tend to foster the development of attributes that are protective against burnout such as resiliency, flexibility, gratitude, and resourcefulness.[7] While we did not directly assess resiliency or gratitude in our survey, these attributes were common themes identified within the free text responses. Reflecting on their experience, one respondent wrote that they realized that they received more from the experience than they gave: "As a surgeon, you see the changes you make for a child and their family. The changes these children make in the life of the surgeon are the most long lasting and profound effects of these trips."

As discussed previously, there are many valid ethical criticisms to surgical trips that center around lack of follow up and physicians operating outside of their scope of practice.[11,14,15,29] While some surgical trips were ultimately labeled as surgical safaris, we agree with the sentiment that many of these trips were launched by well-intentioned physicians and philanthropists responding to a clinical deficit.[16] There are many barriers to care for cleft lip and palate patients, the most commonly reported ones include travel costs, lack of awareness, and lack of financial support.[16,30] Low income countries each have a different set of barriers and reasons for an inefficient care system, but as described by Dr. Bermúdez, the most common reason is the lack of organization, not the lack of skilled physicians or professionals.[16,31] There is a need to provide organizational bases to help cleft patients, acquire much needed resources, and motivate the local medical and nonmedical professionals toward a team approach to help cleft patients, and this takes time to establish.[19,31,32] In his letter response to the editorial written by Dr. Dupuis, entitled "Humanitarian Missions in the Third World: A Polite Dissent," Dr. Bermúdez states that "education is more than teaching a surgical technique or its modification."[14,31] Our survey results fully support this claim. At the University of Minnesota, we emphasize to our residents the importance of volunteering ethically and sustainably. Attending physicians taking residents on surgical trips continue to return to the same countries and hospitals year after year, developing strong long-term relationships with host countries. Effort is made to involve local surgeons to help to educate them on plastic surgical procedures and appropriate follow up care. There are systems in place for close communication between host physicians and the volunteer surgical team in the event that there are post-operative questions or complications requiring intervention. Surgeons do not operate outside of their scope of practice, and residents are appropriately supervised in the operating room. In this way, we believe we are able to mitigate some of the risks and criticisms of surgical volunteerism while also putting forth an effort to provide free surgical care for impoverished and underserved patients in third world countries. An example of educational goals and objectives for the plastic surgery international rotation at the University of Minnesota can be referenced in Supplemental Document 2.

Over the last 31 years we have included multiple specialties on our surgical volunteer trips, including Oral and Maxillofacial Surgery residents and attendings, General Surgery residents and attendings, anesthesiologists, nurse anesthetists, nurses, medical school, undergraduate and high school students, speech therapists, audiologists, and hand therapists. Since some of these other groups of residents, students and specialties were not included in all of our trips as consistently, they were not included in our survey. The senior author feels their experiences often also had a significant impact on their lives and outlook. As one of our Swiss based anesthesiologist stated at the end of a trip: "This was the most meaningful week of my life." We believe surgical trips may similarly serve an important role in the training of other specialties as it did for the plastic surgery residents in our program.

Given the nature of this retrospective survey-based study, its limitations lie inherently in its design. The survey is not validated, there are no comparator groups, and it lacks the perspective of host institutions. To our knowledge, no validated survey instrument currently exists that evaluates resident experiences on international surgical volunteer trips. Our survey therefore was designed based upon ACGME core competencies and goals and objectives for international surgical electives for residents. Responses from former graduates are prone to response bias as the survey was sent out by our senior author and the responses were unblinded, thus participants may have tended to respond more positively toward their experiences. Additionally, the survey responses are primarily subjective and lack objective measurements for how participation in surgical volunteer trips have effected change. A comparator group would be helpful to evaluate resident experiences before and after participation in a surgical volunteer trip, however due to the retrospective nature of this study, this is difficult to assess. The purpose of this study was to evaluate the effect of participation in international surgical volunteer trips on former plastic surgery trainees at the University of Minnesota. Our results indicate an overall positive effect for former trainees, however our recommendation to offer surgical volunteer electives in plastic surgery training programs is not complete without fully understanding the perspective from host institutions. Again, due to the retrospective nature of this study as well as the high level of heterogeneity in trip locations, this is difficult to assess for the purposes of this study. However, we do not discount its importance and our future studies will take the perspective of host institutions into account.

Conclusion

Surgical trips can provide an invaluable experience during residency. Not only does it provide an opportunity to care for underserved populations, but it also helps to develop skills and competencies that are important for resident

education and success as a surgeon. Working in low income, low resource environments helps residents develop skills such as adaptability in the operating room, economic use of resources, team work, as well as judgment and clinical decision making. Caring for underserved populations can help residents strengthen their cultural competency, compassion, and empathy, which can translate to better care for impoverished and marginalized populations in the U.S. and abroad. Offering surgical trips to residents can inspire them to continue participating in trips post-graduation, and this may also inspire future residents as well. Supporting resident involvement in surgical trips can have long term ramifications in their careers and commitment to helping the underserved. We suspect that caring for an underserved population and having appreciation for the resources available in the U.S. may help protect against physician burnout, though further studies looking specifically at markers of wellness and burnout in surgical trip participants would be interesting to explore further. Additional studies are needed to evaluate the effect of surgical volunteerism on host institutions.

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Supplemental Material

Supplemental material for this article is available online.

References

1. Association of American Medical Colleges. 2010 GQ medical school graduation questionnaire, all schools summary report. Published 2010. Accessed July 23, 2021. https://docplayer.net/7369062-Gq-medical-school-graduation-questionnaire-all-schools-summary-report-final.html.
2. Disston AR, Martinez-Diaz GJ, Raju S, et al. The international orthopaedic health elective at the University of California at San Francisco: the eight-year experience. *J Bone Joint Surg Am*. 2009;91:2999-3004.
3. Thompson MJ, Huntington MK, Hunt DD, Pinsky LE, Brodie JJ. Educational effects of international health electives on U.S. and Canadian medical students and residents: a literature review. *Acad Med*. 2003;78:342-347.
4. Aziz SR, Ziccardi VB, Chuang SK. Survey of residents who have participated in humanitarian medical missions. *J Oral Maxillofac Surg*. 2012;70:e147-e157.
5. Moon W, Perry H, Baek RM. Is international volunteer surgery for cleft lip and cleft palate a cost-effective and justifiable intervention? A case study from East Asia. *World J Surg*. 2012;36:2819-2830.
6. Sobral FA, Bowder AN, Smith L, et al. Current status of international experiences in general surgery residency programs in the United States. *Springerplus*. 2016;5:586.
7. Sosland R, Smith JA. Benefits of an international volunteer experience in residency training. *Curr Bladder Dysfunct Rep*. 2020;15:219-224. doi:10.1007/s11884-020-00595-z
8. Simmons BJ, Gishen KE, Dalsania RM, Thaller SR. An evaluation of the value of plastic surgery mission trips in resident education by attending physicians. *J Craniofac Surg*. 2015;26(4):1091-1094. doi:10.1097/SCS.0000000000001554
9. Yao CA, Swanson J, McCullough M, et al. The medical mission and modern core competency training: a 10-year follow-up of resident experiences in global plastic surgery. *Plast Reconstr Surg*. 2016;138(3):531e-538e. doi:10.1097/PRS.0000000000002484
10. Noland SS, Lee GK. Plastic surgery residency graduate outcomes: a 43-year experience at a single institution and the first "integrated" training program in the United States. *Ann Plast Surg*. 2012;68:404-409.
11. Schoenbrunner AR, Kelley KD, Buckstaff T, et al. Description of Mexican cleft surgeons' experience with foreign surgical volunteer missions in Mexico. *Ann Plast Surg*. 2018;80(Suppl 5):S257-S260. doi:10.1097/SAP.0000000000001386
12. Micoló I. Nacimiento, desarrollo y consolidación de la atención del paciente con labio y paladar hendidos en el Hospital General de México. La Clínica de LPH. *Cir Plast*. 2004;14:75-82.
13. Hendriks TCC, Botman M, Rahmee CNS, et al. Impact of short-term reconstructive surgical missions: a systematic review. *BMJ Glob Health*. 2019;4(2):e001176. doi:10.1136/bmjgh-2018-001176
14. Dupuis CC. Humanitarian missions in the third world: a polite dissent. *Plast Reconstr Surg*. 2004;113(1):433-435. doi:10.1097/01.PRS.0000097680.73556.A3
15. Schoenbrunner AR, McIntyre JK, Nthumba P, et al. Ethical dilemmas in global plastic surgery: Divergent perspectives of local and visiting surgeons. *Plast Reconstr Surg*. 2022;149(4):789e-799e. doi:10.1097/PRS.0000000000008957
16. Kantar RS, Cammarata MJ, Rifkin WJ, et al. Foundation-based cleft care in developing countries. *Plast Reconstr Surg*. 2019;143(4):1165-1178. doi:10.1097/PRS.0000000000005416
17. Schneider WJ, Politis GD, Gosain AK, et al. Volunteers in plastic surgery guidelines for providing surgical care for children in the less developed world. *Plast Reconstr Surg*. 2011;127(6):2477-2486. doi:10.1097/PRS.0b013e3182131d2a
18. Schneider WJ, Migliori MR, Gosain AK, Gregory G, Flick R. Volunteers in plastic surgery guidelines for providing surgical care for children in the less developed world: Part II. Ethical

considerations. *Plast Reconstr Surg*. 2011;128(3):216e-222e. doi:10.1097/PRS.0b013e31822213b4
19. Figus A, Fioramonti P, Morselli P, Scuderi N. Interplast Italy: A 20-year plastic and reconstructive surgery humanitarian experience in developing countries. *Plast Reconstr Surg*. 2009;124:1340-1348.
20. Haskell A, Rovinsky D, Brown HK, Coughlin RR. The University of California at San Francisco international orthopaedic elective. *Clin Orthop Relat Res*. 2002;396: 12-18.
21. Mañón VA, Tran A, Sifri ZC, Aziz SR. Resuming dental and craniomaxillofacial surgical missions during the COVID-19 pandemic: guidelines and recommendations. *Craniomaxillofac Trauma Reconstr*. 2021;14(4):289-298. doi:10.1177/1943387520983125
22. Esquibel BM, O'Heron CT, Arnold EJ, Kallies KJ, Jarman BT. International surgery electives during general surgery residency: a 9-year experience at an independent academic center. *J Surg Educ*. 2018;75:e234-e239.
23. Campbell C, Campbell D, Krier D, et al. Reduction in burnout may be a benefit for short-term medical mission volunteers. *Ment Health Religion Cult*. 2009;12:627-637.
24. Tapia NM, Milewicz A, Whitney SE, Liang MK, Braxton CC. Identifying and eliminating deficiencies in the general surgery resident core competency curriculum. *JAMA Surg*. 2014;149:514-518.
25. Park ER, Betancourt JR, Kim MK, et al. Mixed messages: residents' experiences learning cross-cultural care. *Acad Med*. 2005;80:874-880.
26. Klaristenfeld DD, Chupp M, Cioffi WG, White RE. An international volunteer program for general surgery residents at Brown Medical School: the Tenwek Hospital Africa experience. *J Am Coll Surg*. 2008;207:125-128.
27. Ozgediz D, Wang J, Jayaraman S. Surgical training and global health: initial results of a 5-year partnership with a surgical training program in a low-income country. *Arch Surg*. 2008;143:860-865.
28. Iserson KV. Clinician burnout: global medicine as a possible prevention and treatment strategy. *Mayo Clin Proc*. 2018;93:121.
29. Robinson OG. Humanitarian missions in the third world. *Plast Reconstr Surg*. 2006;117(3):1040-1041. doi:10.1097/01.prs.0000201209.96919.91
30. Massenburg BB, Jenny HE, Saluja S, et al. Barriers to cleft lip and palate repair around the world. *J Craniofac Surg*. 2016;27:1741-1745.
31. Bermúdez LE. Humanitarian missions in the third world. *Plast Reconstr Surg*. 2004;114(6):1687-1689. doi:10.1097/01.PRS.0000141485.83476.89
32. Patel PB, Hoyler M, Maine R, et al. An opportunity for diagonal development in global surgery: cleft lip and palate care in resource-limited settings. *Plast Surg Int*. 2012;2012:892437. doi:10.1155/2012/892437