

How Consistent are International Rotations Between Plastic Surgery Training Programs?

Narainsai K. Reddy, MS
Daniel C. Sasson, BA
James R. Wester, BA
Arun K. Gosain, MD

Introduction: Institutional partnerships between plastic surgery residency programs in the United States and providers in low- and middle-income countries can serve as bilateral and longitudinal capacity-building relationships. In the United States, obtaining approval for international rotations by a home institution and national review committee is highly encouraged but not required before resident international engagement. Acquiring approval at the institutional level is the first step to allow trainees to participate in international rotations on elective time rather than on vacation time. National approval through the American Council of Graduate Medical Education and American Board of Plastic Surgery allows cases to count toward the resident's yearly case log.

Methods: All 101 integrated and independent plastic surgery program directors/coordinators were asked to participate. The survey identified the requirements and details of existing international rotations.

Results: In total, 57 programs responded (56% response rate) to the survey. An estimated 54% of all programs offered international rotations to their residents, and 94% of these programs obtained institutional approval. Additionally, 69% of these programs have received national approval.

Conclusions: Institutional requirements for programs to provide international rotations vary significantly across institutions, which results in disparate experiences for residents and poses potential risks to international partners. This study will help promote transparency regarding international rotation requirements and better equip faculty to enhance international rotations that cater to the needs of the institution, residents, and most importantly, the host countries. (*Plast Reconstr Surg Glob Open* 2023; 11:e4906; doi: [10.1097/GOX.0000000000004906](https://doi.org/10.1097/GOX.0000000000004906); Published online 5 April 2023.)

INTRODUCTION

Short-term experiences in global health are increasingly common aspects of resident education in the American Council of Graduate Medical Education (ACGME).^{1,2} While global health initiatives were primarily focused on communicable disease prevention and management in the late twentieth century, new arenas in global surgery and its subspecialties have emerged in recent decades.^{3,4} Plastic surgery residents in the United States have both the interest and opportunity to explore global health experiences during residency.^{5,6}

Hospitals in low-resource settings across the world have a well-documented history of inadequate access to surgical services due to limited surgical infrastructure as well as relatively few surgical specialists. "Global surgery" partnerships between academic institutions, nongovernmental organizations, and governmental organizations have attempted to address this challenge. However, with respect to academic institution collaborations, little data is available to the plastic surgery community regarding existing international partnerships. Although residency programs in plastic surgery may state that they allow their residents to participate in international rotations, the nature of this participation is highly variable. The least structured schedule is for residents to participate in international rotations as part of their vacation. However, this also offers the least protection to the resident, as they

Division of Plastic Surgery, Ann and Robert H. Lurie Children's Hospital, Chicago, Ill.

Received for publication January 24, 2023; accepted February 7, 2023.

Copyright © 2023 The Authors. Published by Wolters Kluwer Health, Inc. on behalf of The American Society of Plastic Surgeons. This is an open-access article distributed under the terms of the [Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 \(CCBY-NC-ND\)](https://creativecommons.org/licenses/by-nc-nd/4.0/), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal.

DOI: [10.1097/GOX.0000000000004906](https://doi.org/10.1097/GOX.0000000000004906)

Disclosure statements are at the end of this article, following the correspondence information.

Related Digital Media are available in the full-text version of the article on www.PRSGlobalOpen.com.

will not have liability insurance during the rotation, and their institution may not provide health insurance during this period. In order for a residency program to offer an international rotation that can be integrated into the curriculum without necessitating vacation time for participation, approval is required from the home institution's designated institutional officer, a signed program letter of agreement between the home institution (i.e. university or hospital system) and the rotation site must be obtained, and faculty at the rotation sites must meet the home institution's educational criteria.^{7,8} For rotations completed abroad to count toward a resident's yearly case log, approval is required from ACGME and the American Board of Plastic Surgery (ABPS).^{7,8}

Prior studies have been conducted to describe the present status of international rotations among integrated plastic surgery programs.^{9,10} However, the characteristics of these rotations including duration, approval status, and resident coverage have not been provided. The purpose of this study was to identify and characterize current global health partnerships among integrated and independent plastic surgery residency programs to better inform faculty incorporating international rotations into their curricula. For the purposes of this study, institutional approval refers to approval received from a program's designated institutional officer, and national approval refers to approval received from the ACGME and the ABPS.

METHODS

The study was exempted from full review by the Northwestern University Institutional Review Board. In November 2020, a 23-item Qualtrics survey (Provo, Utah) was sent to program directors and coordinators of ACGME-approved integrated and independent plastic surgery residency programs in the United States to assess the nature of international rotations offered to residents (See survey, Supplemental Digital Content 1, which displays a 23-item survey sent to plastic surgery residency program directors and coordinators assessing the nature of international rotations offered to residents. <http://links.lww.com/PRSGO/C475>).¹¹ All 101 institutions with active plastic surgery residency (integrated and/or independent) programs at the time of the study received an invitation to participate.

Demographic characteristics of each program were collected, including institution name, type of plastic surgery residency program (integrated versus independent), program length, and number of residents per class. Programs with institutionally approved rotations integrated into their curriculum were additionally surveyed regarding (1) characteristics of international rotations offered to residents, (2) institutional/national approval status and rotation sites, and (3) engagement level of residents with international rotations offered. Those without institutional approval were asked to describe the nature of international rotations offered that are not part of the core curriculum. Data were analyzed using SPSS Version 27 (Armonk, N.Y.).¹²

Takeaways

Question: Is there consistency among integrated and independent plastic surgery training programs in their current global health partnerships and resident requirements?

Findings: In total, 54% of all programs offered international rotations to their residents, and 94% of these programs obtained institutional approval. Additionally, 69% of these programs have received national approval.

Meaning: Institutional requirements for programs to provide international rotations vary significantly across institutions, which results in disparate experiences for residents and poses potential risks to international partners.

Descriptive and inferential statistics were utilized to describe the nature of international rotations offered across training programs.

RESULTS

Data on 57 programs were collected from program directors and/or coordinators yielding a 56% response rate. Of those surveyed, 63% of integrated and 41% of independent plastic surgery programs responded to the survey (Table 1). Of the responding institutions, five offered only independent plastic surgery programs, 35 offered only integrated plastic surgery programs, and 17 offered both.

Among the programs surveyed, 54% offered international rotations to their residents, and 94% of these programs received institutional approval (Fig. 1). Of the programs with institutionally approved rotations, 72% of these programs also received national approval. Of the 54% of programs that offered international rotation opportunities, 61% visited the same host site every year. Approximately 39% of programs surveyed have an institutional minimum requirement for duration of international rotations. Of these programs, the median minimum stay that institutions required to accredit international rotations was 10 days (IQR, 7–14). Similarly, 37% of programs surveyed set their own minimum for the number of days they allowed residents to partake in international rotations. The median minimum duration that programs set was 8 days (IQR, 7–14). An estimated 39% of programs surveyed set their own maximum number of days they allowed residents to partake in international rotations. The median maximum duration that programs set was 20.5 days (IQR, 14–30).

Table 1. Demographic Information of Residency Programs (n = 57)

Integrated plastic surgery residency programs [n (%)]	35 (61)
Average no. residents per class	2.5 ± 1.1
Independent residency programs [n (%)]	5 (9)
Average no. residents per class	3 ± 0
Institutions with both programs [n (%)]	17 (30)
Average no. integrated residents per class	1.7 ± 0.9
Average no. independent residents per class	3 ± 0

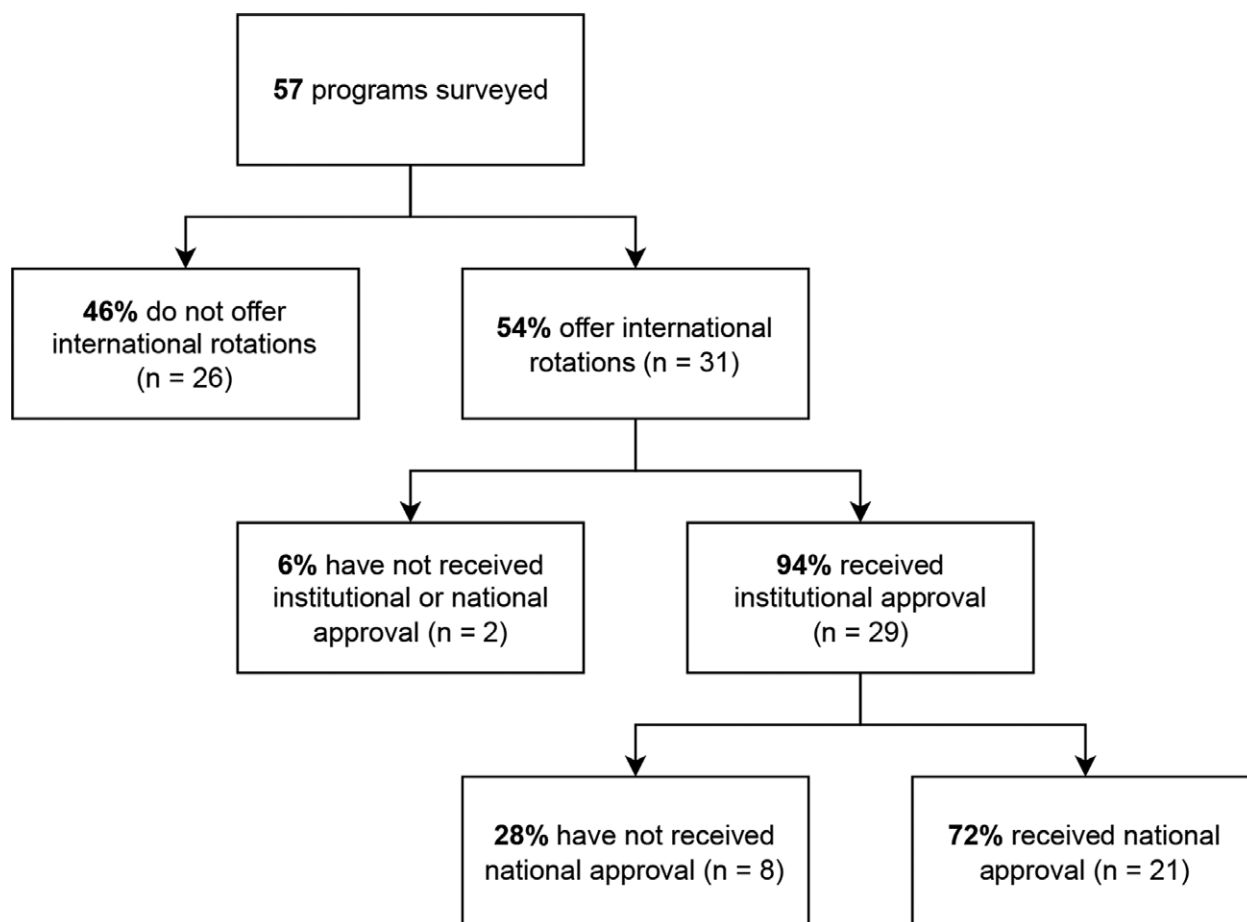


Fig. 1. Breakdown of program international rotation approval.

Among integrated programs, 40% of residents who participated in international rotations thus far were post-graduate year (PGY) 5 and 6 (Table 2). Approximately 17% of participating residents were junior residents (PGY 1–3). In independent programs, 69% of participating residents were in their third year, whereas no first-year residents participated. In the five years before the COVID-19 pandemic, for those programs that offer international rotations, an average of 1.5 residents per year participated in international rotations. Approximately one resident per class participated in international rotations before graduation.

Among the programs with national approval, 33% of all nationally approved rotations were in India, Guatemala, and Kenya; a total of 17 different countries contained rotation sites that received approval (Table 3). Among all the programs with rotations without national approval, 31% of all rotations were in Vietnam and Peru; a total of 13 different countries contained rotation sites without national approval. Of these 13 countries, two countries (Haiti and Vietnam) had rotation sites that received national approval by other residency programs.

In terms of coverage offered to residents during international rotations, 68% of all programs offered salary, 58% offered health insurance, 53% offered malpractice insurance, 46% covered travel expenses,

and 18% of programs offered no coverage (Table 4). Approximately 7% offered another unspecified type of coverage.

DISCUSSION

Plastic surgery applicants have demonstrated a growing interest in global health and a desire to pursue international rotations during residency.^{1,2,13–15} Residency programs are encouraged to obtain institutional and national approval before residents participating in international electives. Institutional approvals are mediated by the home institution, with this approval allowing residents to receive funding and participate in international experiences as part of elective time. Without institutional approval, residents would have to participate in international electives during their vacation time. National approval, on the other hand, is regulated by the ACGME and the ABPS. National approval allows students to count cases performed during international rotations towards their annual case log. Additionally, institutional and national approval both help in formalizing bilateral partnerships with LMIC hosts, allowing for rotations to also promote capacity building efforts at host institutions. Because institutional and national approval are not required for international rotations, significant variability

Table 2. Characteristics of Residents Participating in International Rotations

Average 5-year history of residents participating per year (pre-COVID)	1.5 ± 1.3
Integrated plastic surgery residency programs	0.2 ± 0.4
Independent residency programs	1.7 ± 1.2
Institutions with both programs	1.4 ± 1.4
Average 5-year history of residents per class participating before graduation (Pre-COVID)	1.0 ± 0.8
Integrated plastic surgery residency programs	0.2 ± 0.4
Independent residency programs	1.1 ± 0.8
Institutions with both programs	0.9 ± 0.7
Postgraduate year participation	
Integrated plastic surgery residency programs (n = 35)	
PGY-1	2
PGY-2	2
PGY-3	4
PGY-4	7
PGY-5	9
PGY-6	14
PGY-7 or above	0
Independent residency programs (n = 5)	
First year	0
Second year	1
Third year	0
Institutions with both programs (n = 17)	
PGY-1	1
PGY-2	0
PGY-3	0
PGY-4 or independent first year	2
PGY-5 or independent second year	6
PGY-6 or independent third year	14
PGY-7 or above	1

exists with respect to requirements and coverage for residents. The purpose of this article is to characterize existing international elective opportunities for plastic surgery residents.

Of international electives included in this analysis, 61% did not have a minimum duration for international experience. Of the remaining 39%, the minimum duration requirement ranged from 5 to 90 days. Overall, 51% of programs surveyed have been successful in getting institutional approval for their international rotations. On the other hand, 37% of programs surveyed have received both institutional and national approval for their rotations. Obtaining institutional approval for international rotations enables residents to receive the appropriate coverage abroad.^{7,8} Additionally, obtaining national approval enables residents to count cases abroad toward their yearly case log. For international partner sites, institutional and national approval facilitates a formalized bilateral partnership that can promote longitudinal capacity building. Residency programs may view rotations as beneficial to residents and even as an opportunity to appear more attractive to applicants by making these opportunities more accessible and integrated into the curriculum.^{16,17} However, the variability among institutions in the United States and proportion that have obtained

Table 3. Rotation Sites by National Approval Status

Host Country	Approved (n)	Unapproved (n)
Africa		
Kenya	3	
Togo	1	
Egypt	1	
Madagascar	1	
Malawi		1
Zambia		1
Gabon		1
Asia		
India	3	
China	2	
Vietnam	2	3
Thailand	1	
Myanmar	1	
South Korea		1
Taiwan		1
Europe		
Moldova	1	
Romania	1	
Sweden	1	
North America		
Guatemala	3	
Haiti	2	1
Nicaragua	1	
Mexico		1
Dominican Republic		1
South America		
Colombia	2	
Bolivia	1	
Peru		2
Ecuador		1
Paraguay		1
Guyana		1

Table 4. Program Requirements and Coverage Offered Abroad (n = 57)

Characteristic	n (%)
Programs with required international rotations	
Integrated plastic surgery residency programs	3 (5)
Independent residency programs	0
Institutions with both programs	0
Coverage offered by Institutions	
None	10 (18)
Health insurance	33 (58)
Malpractice insurance	30 (53)
Salary	39 (68)
Travel expenses	26 (46)
Other	4 (7)

national approval may shortchange international partners who would benefit from a greater continuity of international engagement that considers their unique needs and challenges.

Our study underscores the variability among plastic surgery residency programs regarding the nature of international rotations. Nayar et al have previously described how the state of international rotations in plastic surgery

training has changed since 2013.⁹ The number of programs that offer approved rotations as part of their curriculum has increased by nearly 10% in 7 years, as shown by our data.⁹ While this now represents half of the surveyed programs that offer international rotations, the remaining programs without approval are unable to offer rotations as part of the official training curriculum. Residents may often be required to take vacation time if they would like to participate in international rotations without institutional approval. While offering vacation-based participation to residents may work to increase international engagement, residents are often responsible for obtaining their own insurance, salary, and travel coverage.^{9,14} Certain coverage such as malpractice insurance at the destination location must be taken care of at least at the level of the residency program in most cases. Standardizing coverage and instituting robust policies will help offset some of the challenges with implementing international rotations regardless of approval status. However, in order to appropriately offer coverage to residents, there must be a funding source that can provide this whether that comes from the residency program, institution, or an external source. Providing this will be a challenge, particularly for rotations that do not have approval. A previous study that provided a breakdown of costs found that resident salary and benefits to be about \$14,000 for a 2-month rotation.¹⁸

The downstream effects are felt by international partners who may receive inconsistent short-term engagement from US-based programs without long-term bilateral benefit. These vacation-based rotations may only engage if residents have an interest to do so, which may not be the case every year. This often hinders the fostering of meaningful sustainability at host sites and poses risks to international partners such as creating a dependency on foreign aid or disenfranchisement with the local health system.¹⁹ In order to prioritize the needs of international partners, the benefits of immediate relief should be weighed against the risks to host countries before offering international rotations to residents. This would enable programs to responsibly facilitate international engagement by residents and faculty that would result in sustainable capacity building.

In general, smaller residency programs offered fewer institutionally approved international rotations compared with larger programs. With multiple factors contributing, this phenomenon may stem from the strain created on the domestic plastic surgery resident workforce by those who travel abroad.⁹ Programs and institutions seem to recognize that within plastic surgery, there are fewer residents per class compared with other specialties, making it difficult to leave the home institution for an extended period of time without straining the hospital workforce. Noting from the results that this opportunity is offered mainly to the senior residents, it is further impractical to place the domestic burden on junior residents. A possible solution is an exchange program where similar level residents exchange positions for some period. Although this poses other challenges, it has the potential to offset this workforce issue. Residents on away rotations are generally less efficient, given the short amount of time to learn a new system and people they must work with. However,

exchange programs have been successful in the past and have existed for decades.

The duration of engagement by plastic surgery residency programs, as denoted by their rotation requirements, may not necessarily result in long-term capacity building in host countries by way of longitudinal and consistent engagement. This is evidenced by the fact that less than two-thirds of programs that offer international rotation opportunities visit the same site every year. Programs must find a balance in delivering an enriching educational experience to residents while considering the risks engagement could pose to international partners. Additionally, although it is not possible for all institutions to establish longer rotations, it is important to recognize that the problem with the variability among institutions is that it stems from satisfying institutions' rotation duration requirements over catering to the unique needs of international partners. Increasing transparency, collaboration, and uniformity between programs will help promote appreciation for what may be beneficial to international partners. For prospective rotations seeking approval, working and compromising to align the goals and needs of the program, institution, and most importantly, international partners will help support stronger international rotations and bring programs closer to offering programs that are approved by the home institutions, and eventually national approval by the ACGME and the ABPS.

In considering the national approval status of international rotations, the proportion of programs that received national approval for international rotations was 12%, as shown by Nayar et al.⁹ Our study shows that this statistic has increased to 37% of programs within 7 years. Regardless, there is still a large gap in programs that have not received national approval for their rotations. It appears that many programs have established relationships with international partners that have not yet received accreditation. From the resident perspective, achieving national approval enables them to count cases completed abroad towards their yearly case log. This may not only benefit the residents but serve to incentivize consistent, yearly engagement by trainees. Additionally, given that cross-cultural partnerships already exist for many programs, achieving the appropriate accreditation would enable further institutional and national support and validation that would make international engagement successful, worthwhile, and beneficial to international partners. It is important to note that there is no one size fits all for these types of rotations because there are differences in healthcare qualifications, logistics, and patient costs. However, transparency and collaboration among plastic surgery programs regarding approved international rotations will help develop multi-institutional partnerships, clarify different programs' success in implementing rotations, and uncover solutions to collaborate with international partners to address logistical challenges. Creating a relative sense of uniformity among institutions would not only be beneficial in holding residency programs accountable but also in ensuring that residency programs have equal opportunities to participate in global health assuming they can maintain a certain level of agreed upon requirements. Indeed, a database

of approved international rotations has been developed by the authors and published on the American Council of Academic Plastic Surgeons website.^{6,20} Further efforts to continue developing this database will greatly benefit programs seeking to incorporate international rotations. Lessons can be learned from other specialties such as general surgery. A previous study approached designing a global surgery elective in a very systematic way by first surveying residents on interest and creating a business plan that outlined the goals, budget, and methods for implementation.¹⁸ By involving both residents and faculty, potential sites were identified, and a fact-finding trip was done to understand host site capacity, local surgeons' goals and needs, and potential successes and pitfalls of a rotation. With thorough investigation beforehand, this example shows how an international rotation can be successfully implemented and sustained.

A limitation in the study includes lack of data that measure resident outcomes after international rotations at different stages of their training and careers, along with the impact on partner sites abroad. Additionally, assessing qualitative feedback and preconceived notions of residents who have attended and are planning to attend international rotations along with international partners would better inform programs in designing the most fulfilling experience while showing more appreciation for what is beneficial to international partners.

CONCLUSIONS

International rotations are electives that senior residents often have as an opportunity to look forward to over the course of their training. Our study shows that nearly half of the plastic surgery residents in each graduating class had participated in a rotation before graduation, indicating significant interest in global health. However, the high degree of variability in international rotations across programs may pose risks to international partners, revealing the importance of greater collaboration and transparency across programs. Ultimately, we must align the interests of trainees, institutions, and host countries to establish a *sustainable* model for global surgery training within plastic surgery.

Daniel C. Sasson, BA

Division of Plastic Surgery
Lurie Children's Hospital
225 E. Chicago Ave., Box 93
Chicago, IL 60611

E-mail: daniel.sasson@northwestern.edu

DISCLOSURES

The authors have no financial interest to declare in relation to the content of this article.

ACKNOWLEDGMENTS

Informed consent was obtained from all individual participants included in the study. All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national)

and with the Helsinki Declaration of 1975, as revised in 2008 (5). Informed consent was obtained from all patients for being included in the study.

REFERENCES

1. Johnston PF, Scholer A, Bailey JA, et al. Exploring residents' interest and career aspirations in global surgery. *J Surg Res.* 2018;228:112–117.
2. Powell AC, Casey K, Liewehr DJ, et al. Results of a national survey of surgical resident interest in international experience, electives, and volunteerism. *J Am Coll Surg.* 2009;208:304–312.
3. Dare AJ, Grimes CE, Gillies R, et al. Global surgery: defining an emerging global health field. *Lancet.* 2014;384:2245–2247.
4. Quene TM, Bust L, Louw J, et al. Global surgery is an essential component of global health. *Surgeon.* 2022;20:9–15.
5. 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;138:531e–538e.
6. Reddy NK, Sasson DC, Wester JR, et al. Participation in global health: a database of international rotations by plastic surgery programs. *J Craniofac Surg.* 2022;33:1267–1269.
7. Accreditation Council for Graduate Medical Education. Criteria for Approved International Rotations. Available at http://www.acgme.org/Portals/0/PFAssets/ProgramResources/360_PS_Criteria_for_Approved_International_Rotations.pdf. Published online May 2019. Accessed January 11, 2021.
8. Mackay DR. Obtaining accreditation council for graduate medical education approval for international rotations during plastic surgery residency training. *J Craniofac Surg.* 2015;26:1086–1087.
9. Nayar HS, Salyapongse AN, Mount DL, et al. The current state of global surgery training in plastic surgery residency. *Plast Reconstr Surg.* 2015;136:830e–837e.
10. Ho T, Bentz M, Brzeziński M, et al. The present status of global mission trips in plastic surgery residency programs. *J Craniofac Surg.* 2015;26:1088–1090.
11. Qualtrics XM// The Leading Experience Management Software. Available at <https://www.qualtrics.com/>. Accessed October 22, 2021.
12. IBM Corp. *IBM SPSS Statistics.* IBM Corp; 2020.
13. Powell AC, Mueller C, Kingham P, et al. International experience, electives, and volunteerism in surgical training: a survey of resident interest. *J Am Coll Surg.* 2007;205:162–168.
14. Cheung M, Healy JM, Hall MR, et al. Assessing interest and barriers for resident and faculty involvement in global surgery. *J Surg Educ.* 2018;75:49–57.
15. Reddy NK, Applebaum SA, Wester JR, et al. How important are dedicated research years and global health to applicants in plastic surgery? *Plast Reconstr Surg Glob Open.* 2022;10:e4262.
16. Atashroo DA, Luan A, Vyas KS, et al. What makes a plastic surgery residency program attractive? An applicant's perspective. *Plast Reconstr Surg.* 2015;136:189–196.
17. Zuo KJ, Retrouvey H, Wanzel KR. Factors that affect medical students' perception and impression of a plastic surgery program: the role of elective rotations and interviews. *Ann Plast Surg.* 2019;82:224–228.
18. Hoehn RS, Davis BR, Huber NL, et al. A systematic approach to developing a global surgery elective. *J Surg Educ.* 2015;72:e15–e20.
19. Decamp M. Scrutinizing global short-term medical outreach. *Hastings Cent Rep.* 2007;37:21–23.
20. ACAPS Global Health. American Council of Academic Plastic Surgeons. Available at <https://acaplasticsurgeons.org/global-health/>. Accessed February 20, 2021.