

When Global Becomes Virtual: A Survey of Virtual Global Health Education Activities During the COVID-19 Pandemic Among Pediatric Educators

Suet Kam Lam¹, MD, MPH, MS
 Jameel Winter², MD
 Kristin Van Genderen³, MD

Stephanie M. Laudén⁴, MD, CTropMed
 William Windsor, MPH
 Lisa Umphrey⁵, MD

ABSTRACT

Background During the COVID-19 pandemic, global health education activities were disrupted. Transitioning to virtual options has allowed educators and trainees to continue global health education and partnerships, though the acceptability and implementation of this transition is unknown.

Objective To evaluate current and planned virtual global health education activities (VGHEAs) of a group of US global health educators during the COVID-19 pandemic and to assess perceived benefits and challenges of VGHEAs.

Methods A cross-sectional study of pediatric faculty and trainees involved in global health education from 8 institutions in the United States were surveyed anonymously about their global health education activities in 2021. Authors used representative convenience sampling and invited at least 1 faculty member and 2 trainees from each institution in the Midwest Consortium of Global Child Health Educators.

Results All 8 institutions responded to the survey, with 38 faculty and trainee participants. Institutional implementation of virtual education activities was variable. Respondents reported that VGHEAs allowed them to maintain partnerships with low-middle income countries, though they noted that unreliable internet connections presented challenges. One program reported funding cuts to its global health program during the pandemic.

Conclusions The COVID-19 pandemic created challenges for global health education programs. Educators and trainees are interested in using potentially cost-saving VGHEAs to maintain international collaborations, continue global health education efforts, and even increase access to equitable educational activities despite pandemic disruptions.

Introduction

Global health (GH) medical education has undergone substantial shifts with teaching innovations fueled by best practices for adult learners.¹ Improved virtual platforms and increasingly available curricula have increased GH content access.

The COVID-19 pandemic created a unique situation in which distance learning became the “new normal,”² and GH track requirements necessitated adjustment.^{3,4} The concept of virtual global health education (GHE) is not new, with existing virtual predeparture preparedness and simulation programs.⁵⁻⁹ However, few studies examine faculty or trainee preferences for virtual GHE activities (VGHEAs), and a comprehensive report of virtual education offerings is lacking. Innovative VGHEAs could add to existing GH education curricula.

Educators from the Midwest Consortium of Global Child Health Educators (MWC)¹⁰ sought to assess the current landscape of VGHEAs. We hypothesized that

the pandemic created logistical challenges in GH education. Additionally, we hypothesized that VGHEAs offered activity continuity for GH educators and trainees, while also posing new challenges to GH engagement, resulting in new types of education activities not previously offered.

Methods

We conducted a cross-sectional survey in February 2021 (provided as online supplementary data). Using convenience sampling, we invited GH educators (ie, GH track and center directors) and trainees (residents and fellows) from 8 MWC institutions via email to complete a voluntary anonymous survey in REDCap (Vanderbilt University).

The authors created a de novo 71-question multiple-choice and free text response survey via an iterative process, as no prior surveys were available and pilot testing was not conducted. The goals of the survey were to collect GH program characteristics, understand existing GHE activities and pandemic-related shifts to VGHEAs, and identify barriers and facilitators to VGHEAs.

DOI: <http://dx.doi.org/10.4300/JGME-D-22-00259.1>

Editor's Note: The online version of this article contains the survey used in the study and further data.

TABLE 1
Demographic Characteristics of Respondents and Global Health Programs, Including Funding

Respondent and Global Health Program Characteristics	Overall Responses (N=38), n (%)
Respondent role ^a	
Clinician/physician	17 (45)
Resident or chief resident	15 (39)
Administrator of academic training/teaching program	8 (21)
Professor/lecturer	5 (13)
Researcher	2 (5)
Fellow	1 (3)
Specialty	
Pediatrics	35 (92)
Other (internal medicine-pediatrics, pediatric emergency medicine, general practice)	3 (8)
Institutional Funding Characteristics	Overall Responses (N=8), n (%)
Institution is currently involved in a global health partnership (Yes)	8 (100)
Global health administrative support person(s) available (Yes)	6 (75)
Institution provides direct funding for GH program (Yes)	7 (88)
For yes responses, funding programming allocation ^a (N=38)	
Education programs and activities at the home institution	7 (18)
Travel/electives for trainees	5 (13)
Refreshments for global health events	5 (13)
Travel/electives for faculty	4 (11)
Support for training supplies	4 (11)
Support for guest speakers (eg, honoraria)	4 (11)
Faculty salary support	2 (5)
Funding for research support (eg, seed grants)	2 (5)
Administrative salary support	1 (3)
COVID-19 pandemic effects on global health education program funding ^a	
Increased	1 (13)
Decreased	1 (13)
No change	7 (88)
I don't know	5 (63)

^a Multiple responses allowed.

Using SAS software, version 9.4 (SAS Institute Inc), we summarized descriptive data using frequencies for dichotomous and categorical variables and measures of central tendency for continuous variables. We obtained ethical board approval from the Colorado Multiple Institution Review Board and participant consent.

Results

All 8 MWC institutions responded, with at least 1 GH educator and 2 trainees from each site. After excluding 2 incomplete surveys, we included 38 responses. Resident and chief resident physicians comprised 39% of respondents (15 of 38; TABLE 1). We combined faculty and trainee respondents, as

there was no statistical difference between their responses.

GH education fund spending was affected by the pandemic. Pre-pandemic, most GH programs reported receiving funding (88%, 7 of 8) and administrative support (75%, 6 of 8). Most programs (75%, 6 of 8) saw no change in funding support during the pandemic; however, one program experienced decreased support while another reported increased support. Most funding was spent on GH programming and education at the home institution, followed by travel or elective support for trainees (TABLE 1).

TABLE 2 characterizes faculty and trainee interest in educational, clinical, and research-related VGHEAs and the landscape of virtual and in-person activities

TABLE 2
Respondent Interest in VGHEAs During Different Timepoints of the COVID-19 Pandemic

	Ongoing Before Pandemic, n (%)	New Since Pandemic, n (%)	Plan to Implement in Next 6 Months, n (%)	Interested but No Current Plan to Implement, n (%)	Not Interested in Implementing, n (%)	Total
Education						
Trainees have online access to GH educational materials or curricula created by my institution (simulation cases, etc)	15 (100)	0 (0)	0 (0)	0 (0)	0 (0)	15
Trainees have <i>in-person</i> access to GH course lectures, grand rounds, case discussions, or journal clubs	15 (100)	0 (0)	0 (0)	0 (0)	0 (0)	15
Trainees have <i>virtual</i> access to GH course lectures, grand rounds, case discussions, or journal clubs	6 (40)	9 (60)	0 (0)	0 (0)	0 (0)	15
My institution hosts <i>in-person</i> GH conferences, meetings, predeparture trainings, workshops, or round table discussions	15 (100)	0 (0)	0 (0)	0 (0)	0 (0)	15
My institution hosts <i>virtual</i> GH conferences, meetings, predeparture trainings, workshops, or round table discussions	3 (20)	12 (80)	0 (0)	0 (0)	0 (0)	15
Trainees from my GH partner institution(s) have online access to GH educational materials or curricula created by my institution (simulation cases, etc)	8 (33)	0 (0)	1 (4)	14 (58)	1 (4)	24
My institution hosts GH conferences, meetings, predeparture trainings, workshops, or round table discussions for my GH partner institution(s)	4 (17)	3 (13)	1 (4)	15 (63)	1 (4)	24
Joint virtual didactic medical education sessions, trainee audience: trainees from my institution's GH partner site(s) prepare/deliver a joint education session	0 (0)	5 (21)	4 (17)	15 (63)	0 (0)	24
Clinical						
Local <i>in-person</i> GH experiences (eg, engagement during electives, rotations, or longer placements with partner organizations within my institution's catchment area)	13 (86)	1 (7)	0 (0)	1 (7)	0 (0)	15
Local <i>virtual</i> GH experiences (eg, engagement during electives, rotations, or longer placements with partner organizations within my institution's catchment area)	4 (26)	7 (47)	2 (13)	1 (7)	1 (7)	15
Domestic <i>in-person</i> GH experiences (eg, engagement during electives, rotations, or longer placements with partner organization)	11 (73)	1 (7)	0 (0)	3 (20)	0 (0)	15
Domestic <i>virtual</i> GH experiences (eg, engagement during electives, rotations, or longer placements with partner organizations outside of my institution's catchment area but within the same country)	5 (33)	5 (33)	1 (7)	3 (20)	1 (7)	15

TABLE 2
 Respondent Interest in VGHEAs During Different Timepoints of the COVID-19 Pandemic (continued)

	Ongoing Before Pandemic, n (%)	New Since Pandemic, n (%)	Plan to Implement in Next 6 Months, n (%)	Interested but No Current Plan to Implement, n (%)	Not Interested in Implementing, n (%)	Total
International <i>in-person</i> GH experiences (eg, engagement during electives, rotations, or longer placements with partner organizations outside of my institution)	14 (93)	0 (0)	0 (0)	1 (7)	0 (0)	15
International <i>virtual</i> GH experiences (eg, engagement during electives, rotations, or longer placements with partner organizations outside of my institution)	5 (33)	1 (7)	3 (20)	6 (40)	0 (0)	15
My institution hosts trainees from outside my institution <i>virtually</i>	4 (27)	1 (7)	2 (13)	5 (33)	3 (20)	15
Virtual ward rounding; trainees/faculty from partner sites attend each other's clinical rounds by video conference (eg, Zoom, FaceTime, WhatsApp, Skype, etc)	0 (0)	3 (13)	0 (0)	15 (65)	5 (21)	23
Research						
Twinning (eg, collaborative trainee scholarly projects in which trainees are matched to a peer at a GH partner site to facilitate completion of required trainee project(s))	3 (13)	0 (0)	0 (0)	20 (87)	0 (0)	23
Joint research opportunities (eg, literature reviews, project proposals, IRB submissions, abstracts, presentations, manuscripts, etc)	11 (48)	1 (4)	0 (0)	11 (48)	0 (0)	23

Abbreviations: GH; global health; IRB, institutional review board.

over time. The number of respondents ranged from 15 to 24 for each question. We found an increase in VGHEA utilization and development during the pandemic. Fifteen respondents reported that trainees had online access to GHE materials and curricula pre-pandemic, yet many (80%, 12 of 15) reported creating and expanding virtual content. Among 24 respondents who reported on virtual joint didactic medical education sessions with GH partners, 38% (9) created these sessions since the pandemic began or reported a plan to do so, while 63% (15) indicated interest without a plan.

Respondents reported transitioning to clinical VGHEAs within their community (60%, 9 of 15) or to domestic sites within US borders (40%, 6 of 15) during the COVID-19 pandemic. Only 27% (4 of 15) of respondents reported moving toward an international VGHEA, while 40% (6 of 15) indicated interest without a plan. Few respondents reported instituting virtual ward rounding with partner sites (13%, 3 of 23) or hosting trainees from a partner institution virtually (7%, 1 of 15) during the pandemic, despite significant interest in these activities. Similarly, despite high interest in virtual research opportunities (87%, 20 of 24), only one institution implemented this.

Lastly, participants identified the greatest benefits and challenges in VGHEA implementation (online supplementary data). The most commonly mentioned benefit was leveraging VGHEAs to maintain existing GH relationships (25%, 7 of 28). Other benefits of VGHEAs included: increased access to GH content (18%, 5 of 28); increased trainee participation (18%, 5 of 28); laying a foundation for future VGHEAs (14%, 4 of 28); promoting career advancement (7%, 2 of 28); and providing safer educational endeavors during the pandemic (7%, 2 of 28). Only one respondent (4%) described VGHEAs as a cost-effective GHE option.

The greatest barrier was a lack of reliable internet access in the United States and abroad (25%, 7 of 28). Additional challenges were a lack of knowledge or skills in developing VGHEAs (18%, 5 of 28) and adequate time for activities (13%, 4 of 28). Respondents acknowledged the challenges surrounding “Zoom fatigue,” virtual logistics, and the need for additional faculty time and support.

Discussion

Our survey of GH educators and trainees at GH programs highlights key considerations in the development and implementation of VGHEAs. It uncovers important benefits of VGHEAs that align with GH and education principles. The most frequently cited

benefit was the ability to maintain existing GH partnerships during the pandemic, a well-established education priority.¹¹ Respondents expressed interest in increasing virtual access to GHE activities and resources for low-middle income (LMIC) partners, a need persistently identified in high-income country (HIC)-LMIC collaborations.^{12,13} VGHEAs may offer new opportunities to increase bidirectionality and decrease inequities in global North-South partnerships, a key tenet of ethical GH practices.^{14,15} The most frequently cited challenges to VGHEAs included unreliable internet access and a perceived lack of knowledge and skills in facilitating VGHEAs. These findings agree with previously reported barriers, where LMIC participants struggled with connectivity issues and a need for training.¹⁶

Adequate funding is critical for maintaining GHE programming. GH experiences are associated with increased clinical/teaching/research skills, awareness of health systems issues and costs, and continued work with vulnerable populations at home.^{11,17,18} Most programs reported no change in funding. VGHEAs may be a lower-cost option in pursuing GHE activities and reallocating scarce funds away from HIC travel logistics and toward LMIC partners’ needs (stable internet connections and faculty development).¹⁹

Our findings have implications for US and international trainees. Respondent trainees indicated interest in pursuing virtual local or domestic GH electives (eg, refugee health, Indian Health Service). Such “glocal” electives may allow for hybrid in-person and virtual formats and offer an alternative to international rotations. Benefits of VGHEAs for international trainees who experience peer-to-peer learning with faculty mentorship include improved understanding of health systems, increased communication and collaboration skills, more interest in local volunteering and international electives, and even increased interest in less popular specialties. These outcomes may even alleviate health care workforce issues in HIC.^{20,21}

Limitations of this study include the cross-sectional design and respondent homogeneity. Due to convenience sampling and voluntary responses, the sample size and responses to some questions were small. We were unable to calculate an individual-level response rate, as we did not have access to the specific number of participants at all MWC sites. While this may contribute to response bias, we chose a population active in GHE programming. This provides valuable baseline data during the COVID-19 pandemic, which will help guide future study and planning for VGHEAs.

Conclusions

Our survey of GHE trainees and faculty identified a significant change from traditional GH education activities to VGHEAs due to pandemic-related disruptions. Trainees and educators are interested in VGHEAs, which have their advantages and challenges in successful implementation.

References

1. Mehta NB, Hull AL, Young JB, Stoller JK. Just imagine: new paradigms for medical education. *Acad Med.* 2013;88(10):1418-1423. doi:10.1097/ACM.0b013e3182a36a07
2. Woolliscroft JO. Innovation in response to the COVID-19 pandemic crisis. *Acad Med.* 2020;95(8):1140-1142. doi:10.1097/ACM.0000000000003402
3. Weine S, Bosland M, Rao C, et al. Global health education amidst COVID-19: disruptions and opportunities. *Ann Glob Heal.* 2021;87(1):12. doi:10.5334/aogh.3088
4. Conway JH, Machoian RG, Olsen CW. Beyond summer 2020: safety abroad in a recovering world (opinion). Inside Higher Ed. Accessed November 23, 2022. <https://www.insidehighered.com/views/2020/05/12/issues-concerning-overseas-travel-international-educators-must-consider-coming>
5. Batra M, Pitt MB, St Clair NE, et al. Global health and pediatric education: opportunities and challenges. *Adv Pediatr.* 2018;65(1):71-87. doi:10.1016/j.yapd.2018.04.009
6. Bensman RS, Slusher TM, Butteris SM, et al. Creating online training for procedures in global health with PEARLS (Procedural Education for Adaptation to Resource-Limited Settings). *Am J Trop Med Hyg.* 2017;97(5):1285-1288. doi:10.4269/ajtmh.16-0936
7. Butteris SM, Gladding SP, Eppich W, et al. Simulation Use for Global Away Rotations (SUGAR): preparing residents for emotional challenges abroad—a multicenter study. *Acad Pediatr.* 2014;14(5):533-541. doi:10.1016/j.acap.2014.05.004
8. Lepard JR, Akbari SHA, Haji F, et al. The initial experience of InterSurgeon: an online platform to facilitate global neurosurgical partnerships. *Neurosurg Focus.* 2020;48(3):e15. doi:10.3171/2019.12.FOCUS19859
9. Pitt MB, Gladding SP, Butteris SM. Using simulation for global health preparation. *Pediatrics.* 2016;137(5):e20154500. doi:10.1542/peds.2015-4500
10. St Clair N, Fischer P, Hagen S, et al. Midwest Consortium of Global Child Health Educators: local collaboration to strengthen global education. *Ann Glob Heal.* 2014;80(3):178. doi:10.1016/J.AOGH.2014.08.058
11. Russ CM, Tran T, Silverman M, et al. A study of global health elective outcomes: a pediatric residency experience. *Glob Pediatr Heal.* 2017;4:2333794X16683806. doi:10.1177/2333794X16683806
12. Rees CA, Keating EM, Dearden KA, et al. Improving pediatric academic global health collaborative research and agenda setting: a mixed-methods study. *Am J Trop Med Hyg.* 2020;102(3):649-657. doi:10.4269/ajtmh.19-0555
13. Umphrey L, Passi G, Windsor W, et al. Perceived roles, benefits and barriers of virtual global health partnership initiatives: a cross-sectional exploratory study. *Glob Health Res Policy.* 2022;7(1):11. doi:10.1186/s41256-022-00244-4
14. Steenhoff AP, Crouse HL, Lukolyo H, et al. Partnerships for global child health. *Pediatrics.* 2017;140(4):e20163823. doi:10.1542/PEDS.2016-3823
15. McHenry MS, Tam RP, Nafiseh AA, et al. Global health partnerships during the COVID-19 pandemic: perspectives and insights from international partners. *Am J Trop Med Hyg.* 2021;105(2):407-412. doi:10.4269/ajtmh.21-0156
16. Keynejad RC. Global health partnership for student peer-to-peer psychiatry e-learning: lessons learned. *Global Health.* 2016;12(1):82. doi:10.1186/S12992-016-0221-5
17. Lanys A, Krikler G, Spitzer RF. The impact of a global health elective on CanMEDS competencies and future practice. *Hum Resour Health.* 2020;18(1):6. doi:10.1186/s12960-020-0447-4
18. Lu PM, Park EE, Rabin TL, et al. Impact of global health electives on US medical residents: a systematic review. *Ann Glob Heal.* 2018;84(4):692-703. doi:10.29024/aogh.2379
19. Jiang LG, Greenwald PW, Alfonzo MJ, et al. An international virtual classroom: the emergency department experience at Weill Cornell Medicine and Weill Bugando Medical Center in Tanzania. *Glob Health Sci Pract.* 2021;9(3):690-697. doi: 10.9745/GHSP-D-21-00005
20. Samuels H, Rojas-Luengas V, Zereshkian A, et al. Evaluation of the effectiveness of the Global Medical Student Partnership program in undergraduate medical education. *Can Med Educ J.* 2020;11(6):e90-e98. doi:10.36834/CMEJ.69339
21. Keynejad R, Garratt E, Adem G, et al. Improved attitudes to psychiatry: a global mental health peer-to-peer e-learning partnership. *Acad Psychiatry.* 2016;40(4):659-666. doi:10.1007/s40596-014-0206-8



Suet Kam Lam, MD, MPH, MS, is Assistant Professor of Pediatrics, Co-Director of World Medicine Pathway, Department

of Primary Care Pediatrics, Cleveland Clinic Lerner College of Medicine, Case Western Reserve University School of Medicine; **Jameel Winter, MD**, is Assistant Professor of Pediatrics, University of Minnesota Medical School; **Kristin Van Genderen, MD**, is Assistant Professor of Pediatrics, Northwestern University Feinberg School of Medicine; **Stephanie M. Lauden, MD, CTropMed**, is Visiting Associate Professor of Pediatrics, University of Colorado School of Medicine; **William Windsor, MPH**, is Research Assistant, Colorado School of Public Health, Center for Global Health; and **Lisa Umphrey, MD**, is Assistant Professor of Pediatrics, University of Colorado School of Medicine.

Funding: The authors report no external funding source for this study.

Conflict of interest: The authors declare they have no competing interests.

The authors would like to thank Midwest Consortium for Global Child Health Educators and all who participated in the survey.

Corresponding author: Suet Kam Lam, MD, MPH, MS, Cleveland Clinic Lerner College of Medicine, Case Western Reserve University School of Medicine, suet.lam@case.edu, Twitter @DrKamLam

Received March 28, 2022; revisions received June 24, 2022, and December 2, 2022; accepted December 6, 2022.