

Global Health Education for Pediatric Residents: Trends, Training Experiences, and Career Choices

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abstract

BACKGROUND AND OBJECTIVES: Knowledge and skills related to global child health are increasingly recognized as important to the practice of pediatrics. However, little is known about the status and trends in global health (GH) education in US pediatric residency programs. Our aim was to measure trends in residents' exposure to GH training, their GH education assessments, and GH career plans.

METHODS: We analyzed GH-focused questions from national American Academy of Pediatrics surveys of graduating residents in 2008 and 2016. Logistic regression was used to estimate changes over time by using derived predicted values.

RESULTS: A total of 1100 graduating pediatric residents participated; response rates were 58.8% for 2008 and 56.0% for 2016. The percentage of residents reporting that their programs offered GH training grew from 59.1% in 2008 to 73.1% in 2016 ($P < .001$). The majority were somewhat likely, very likely, or definitely planning to work or volunteer in a low- or middle-income country after their residency (predicted value of 70.3% in 2008 and 69.4% in 2016; $P = .76$). Fourteen percent of respondents reported having completed an international elective in 2016; of those, 36.5% did not receive formal preparation before the experience, and 24.3% did not participate in debriefing sessions on return. Overall, 27.3% of respondents in 2016 reported excellent (8.8%) or very good (18.5%) GH training.

CONCLUSIONS: Although a substantial percentage of pediatric residents participate in international electives and plan to include GH activities in their careers, gaps remain, including suboptimal preparation and debriefing for GH electives.



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WHAT'S KNOWN ON THIS SUBJECT: A growing number of residency programs include educational activities focused on global health (GH) and comprise a diversity of GH topics and international electives.

WHAT THIS STUDY ADDS: Between 2008 and 2016, pediatric residents graduating in the US reported increased GH training opportunities, with the majority reporting GH-related career plans. Gaps remain in the coverage of core GH topics and in the preparation and debriefing for international experiences.

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Pediatricians in the United States are increasingly tasked with caring for children who have or are at risk for medical conditions that originate from global contexts. This is due to various factors that include demographics (eg, approximately one-fourth of the pediatric population in the United States, or 18 million children, were born in another country or have at least 1 parent who is an immigrant¹); socioeconomic and political dynamics (eg, 1 out of every 200 children in the world is a refugee or person who is displaced²); and the plain nature of communicable diseases that readily traverse national borders (eg, recent experiences with Zika virus and Enterovirus D68). As such, knowledge and skills related to global child health are important elements of training for US pediatricians.

Global health (GH) education for residents has been associated with improved medical knowledge,^{3–7} diagnostic skills,^{3–8} cultural sensitivity,^{5,8,9} patient communication,^{5,8} and capability to provide high-quality and cost-effective care.^{5,7,8} Residents in cross-cultural settings also report greater satisfaction with their training overall.^{4,7–9} There is evidence that trainees exposed to GH experiences are more likely to enter primary care medicine^{4,5} and to involve themselves in the care of families who are poor and of ethnic minorities during their careers.^{4,5,8,9}

Over the last 2 decades, US pediatric residency programs have responded to the growing need for GH training among medical students and residents.¹⁰ The first American Academy of Pediatrics (AAP) study of global child health education in 1995 estimated that 25% of pediatric residency programs offered GH elective training.¹¹ In 2006, another survey of residency programs found that 52% offered such training,¹² and in 2013–2014, 58% of programs offered international experiences.¹³

Correspondingly, 59% of pediatric residents who graduated in 2008 reported that their programs provided GH training.¹⁴

As GH educational activities have become more common, expert groups have developed best practices to maximize the likelihood that the education will be impactful, safe, and ethical.^{11,15,16} For example, formal preparation (eg, to strengthen cross-cultural sensitivity and teach basic safety skills for working abroad) and debriefing (eg, to assess for potential psychological effects that may result from profound experiences encountered during international electives) are routinely recommended. However, it is unclear how consistently these types of practices are implemented. In addition, information about how residents perceive the quality of GH training and the extent to which such training has informed their career choices is limited. In this study, we examine trends in GH training participation and career plans among national samples of graduating pediatric residents in 2008 and 2016. Using 2016 data, we also examine the perceived quality of preparation and interest in incorporating GH into their careers.

METHODS

Sample and Survey Administration

Each year, the AAP collects data from national samples of 1000 graduating (third-year) pediatric residents during and after their last months of training (May to September).¹⁷ We analyzed data from GH-focused questions that were added to the 2008¹⁴ and 2016 surveys. Residents were randomly selected from an AAP database that includes residents from all accredited US pediatric programs. Survey requests were alternated between mail and e-mail until the resident responded or until a total of 8 requests were attempted. The initial mailing in the 2016 survey

included a \$2.00 incentive, whereas the 2008 survey included none.

Survey Instrument

The AAP Annual Survey of Graduating Residents in 2008 and 2016 contained additional questions focused on GH training experiences during residency and anticipated future plans to work in low- or middle-income countries (LMICs).¹⁴ The 2008 survey included 12 questions on GH, and the 2016 survey included 26 questions. The latter survey included questions not included in 2008 regarding expected types of GH careers planned by the graduating residents (ie, GH work in clinical service, education, advocacy, and/or research). Also, 3 GH education topics were added to the 2016 survey, namely socioeconomic determinants of global child health, public health programs in developing countries, and health care delivery systems in developing countries. The authors selected these topics on the basis of learning objectives covered in residency programs that were identified to have model GH curricula.¹⁸

The authors developed and reviewed all 2016 GH questions and pilot tested the questions among a random sample of graduating residents in March 2016 (23 of 100 residents completed the survey). The AAP Institutional Review Board approved the surveys.

Data Analysis

Trends: 2008 vs 2016

We used χ^2 tests to compare 2008 and 2016 responses to demographic characteristics, whether their programs offered GH training, and whether they received training on key GH issues. In logistic regression models, we separately estimated the following dependent variables: (1) participation in formal GH training and/or electives during residency (yes versus no); (2) the importance of GH training and/or

experience in choosing a residency program (dichotomized by using the following 2 methods: [a] essential or very important versus somewhat important or unimportant and [b] essential, very important, or somewhat important versus unimportant); and (3) postresidency plans to work and/or volunteer in an LMIC (dichotomized as either [a] definite plans, very likely, or somewhat likely to seek a short- or long-term position versus unlikely or definitely not and [b] definitely or very likely versus somewhat likely, unlikely, or definitely not). In each of these 5 models, we controlled for variables that may influence the outcomes on the basis of previous studies¹⁴ and variables that may have changed across survey years, including sex (female or male), marital status (yes or no), having children (yes or no), race and ethnicity (white, Asian American, minority, or other), international medical school graduate (IMG) status (yes or no), large program size (no: <20 residents per class; yes: ≥20 residents per class), educational debt adjusted for inflation by using the yearly Consumer Price Index to convert 2008 dollars to 2016 dollars and dichotomized by the 2016 median (<\$180 000 or ≥\$180 000), and future clinical practice goals (in primary care, in a subspecialty, in both primary care and a subspecialty, or as a hospitalist). In an attempt to provide a more intuitive alternative to odds ratios,¹⁹ we present predicted values (PVs) for each outcome for each survey year. We generated these values by conducting multivariable analyses in which we held the independent variables listed above at their respective sample means. The PVs represent the covariate-adjusted percentages of respondents reporting each outcome by survey year, thus providing the independent effect of survey year for each of the 5 outcomes.

2016 GH Experiences and Plans

We conducted χ^2 analyses to examine if program size is associated with (1) training in 6 GH topics (yes versus no) and (2) the perceived quality of preparation for GH activities (excellent or very good versus good, fair, or poor). We also tested the relationship between (1) the receipt of training in 6 GH topics and (2) the perceived quality of preparation for GH activities.

We developed 7 logistic regression models to examine the association of participation in a GH elective with resident career plans, specifically (1) plans to incorporate GH into their careers (yes versus no) and the likelihood of incorporating the following components into their careers: (2) GH clinical work in international settings, (3) GH clinical work in domestic settings (eg, a refugee or immigrant health clinic), (4) GH education in international settings, (5) GH education in domestic settings, (6) GH advocacy, and (7) GH research (2–7 were dichotomized as very likely or somewhat likely versus neutral, unlikely, or very unlikely). On the basis of previous work,¹⁴ we hypothesized that resident characteristics would be associated with their career plans and that residents who participated in a GH elective would be more interested in incorporating GH into their careers. Adjusted odds ratios (aORs) and 95% confidence intervals (CIs) are presented for each of the 7 models.

Nonresponse Bias

We assessed nonresponse bias for the 2 surveys on the basis of age and sex, which were available in the AAP administrative database. Respondents were compared with nonrespondents by using a *t* test for age and a χ^2 test for sex.

The number of cases in each statistical analysis varied slightly because of missing values for specific questions. Data were analyzed with

IBM SPSS Statistics 24 (IBM SPSS Statistics, IBM Corporation) and Stata 12 (Stata Corp, College Station, TX).

RESULTS

For the 2 survey years combined, a total of 1100 graduating pediatric residents responded (55.0%). Adjusted response rates were 58.8% (545 of 927 residents) for 2008 and 56.0% (555 of 991 residents) for 2016, and they did not vary significantly by survey year ($P = .22$). No age or sex differences were found between the respondents and nonrespondents for both years combined ($P = .67$ and $P = .38$, respectively). Residents from 170 different training programs responded in 2008, and residents from 163 programs responded in 2016. Residents were included in the analytic sample if they answered at least 1 GH question for each year ($N = 535$ for 2008; $N = 551$ for 2016).

Demographic characteristics of the residents for 2008 and 2016 are presented in Table 1. There were no significant differences in aggregate data across survey years for most characteristics. Compared with those in 2008, the respondents in 2016 were less likely to be women (75.9% and 68.8%, respectively; $P < .01$). A higher proportion of respondents in 2016 were from large residency programs (41.8% and 48.8%; $P < .05$) and had debts of at least \$180 000 (32.6% vs 51.0%; $P < .001$), which is consistent with findings from other studies in which increases in program size²⁰ and educational debt over this period are reported.¹⁷

Trends in GH Training: 2008 vs 2016

Survey questions and responses are shown in Table 2. The percentage of residents who reported that their programs included GH training significantly increased from 59.1% in 2008 to 73.1% in 2016 ($P < .001$). Similarly, more residents reported

TABLE 1 Characteristics of Resident Respondents in 2008 and 2016

Characteristics	2008, <i>N</i> = 535	2016, <i>N</i> = 551
	%	%
Female sex	75.9	68.8 ^a
Married	71.0	74.2
Has children	33.7	30.9
Race and ethnicity		
White and non-Hispanic	62.6	60.8
Asian American or Pacific Islander	19.7	17.2
Minority (African American, Hispanic, or American Indian)	13.7	17.2
Other	3.9	4.9
IMG	20.8	18.8
Educational debt (including spouse) ≥\$180 000	32.6	51.0 ^a
Large residency program, class size ≥20 residents	41.8	48.8 ^a
Future clinical practice goal		
Primary care practice	43.2	40.1
Subspecialty practice or both primary and subspecialty practice	45.5	45.1
Hospitalist	11.4	14.8
Questions only asked in 2016		
Grew up in a bilingual or multilingual family	—	32.3
Proficient in language other than English	—	42.6
Born in the United States	—	77.2
Resident, mother, and/or father born outside the United States	—	44.6

—, variables not collected in year 2008.

^a Indicates a statistically significant difference ($P < .05$) between the 2008 and 2016 surveys.

receipt of training on key GH topics between 2008 and 2016.

After controlling for resident characteristics (ie, female sex, being married, having children, race and ethnicity, being an IMG, educational debt, being in a large residency program, and future clinical practice goals), similar proportions of residents in 2008 and 2016 reported participation in formal GH training and/or electives (either domestic or international) during their residency (PV 17.3% [95% CI: 13.7%–20.9%] in 2008; PV 21.0% [95% CI: 17.3%–24.8%] in 2016; $P = .15$). Fewer respondents reported that the availability of GH training was essential or very important in choosing a residency program (PV 21.4% [95% CI: 17.5%–25.3%] for 2008; PV 15.5% [95% CI: 12.2%–18.8%] for 2016; $P < .05$), with one-half reporting GH training to be at least somewhat important in residency program selection (PV 59.2% [95% CI: 54.6%–63.9%] in 2008; PV 50.4% [95% CI: 45.8%–55.0%] in 2016; $P < .01$).

More than two-thirds of graduating residents in both 2008 and 2016 had some plans (were at least somewhat likely) to work or volunteer in LMICs (PV 70.3% [95% CI: 66.0%–74.7%] in 2008; PV 69.4% [95% CI: 65.1%–73.6%] in 2016; $P = .76$). Fewer residents in 2016 stated that they had strong plans (definite plans or were very likely) to do so (PV 34.4% [95% CI: 29.9%–38.9%] in 2008; PV 26.3% [95% CI: 22.3%–30.3%] in 2016; $P < .01$).

2016 GH Training Experiences and Career Plans

Among all respondents in 2016, 13.5% (74 of 547) completed an international GH elective, and 7.0% (38 of 546) completed a domestic GH elective (eg, refugee and/or immigrant health). Of the respondents who completed an international elective ($n = 74$), 63.5% reported receiving formal preparation before the experience, 75.7% participated in a debriefing session on return, 77.0% reported that the elective helped define and prepare them for their career paths,

and 87.8% reported that it increased their desire to pursue a career involving GH (Table 2).

Among all respondents in 2016, 59.1% indicated that they received training in socioeconomic determinants of GH, 54.8% indicated that they received training in public health programs in LMICs, and 44.5% indicated that they received training in health care delivery systems in LMICs (Table 2). One-fourth (25.5%) received training on all 6 GH topics, and residents from large programs were more likely than those in smaller programs to report training on all topics (31.3% vs 19.9%; $P < .01$). Overall, 27.3% of the respondents in 2016 reported excellent (8.8%) or very good (18.5%) preparation for global child health activities (Table 2). Residents from large programs were more likely than residents from smaller programs to report excellent or very good preparedness (34.7% vs 20.1%, $P < .001$). Those who received training on all six GH topics were also more likely than residents who received less training to report such preparedness (50.0% vs 19.1%, $P < .001$).

In 2016, 42% of all respondents and 82.6% of those who completed a GH elective planned to incorporate GH into their careers ($P < .001$; Fig 1). Of the respondents who completed a GH elective, most planned to incorporate clinical GH work into their careers in an international setting; approximately one-half planned to engage in GH education, advocacy, or clinical GH work in domestic settings; and almost one-fourth planned to pursue GH-focused research. All career-specific GH plans were significantly higher among residents who participated in a GH elective ($P < .001$).

In multivariable analyses (Table 3), trainees who completed a GH elective (aOR: 9.61; 95% CI: 5.19–17.78), were IMGs (aOR: 2.06; 95% CI: 1.15–3.70), and did not have children

TABLE 2 GH Survey Questions and Responses in 2008 and 2016

Question	2008, <i>N</i> = 534 ^a	2016, <i>N</i> = 550 ^a
	% (<i>n</i>)	% (<i>n</i>)
Did your residency program include international and/or GH training? (Yes)	59.1 (311)	73.1 (402) ^b
Did you participate in international and/or GH training during your residency? (Yes)	17.7 (93)	22.9 (125) ^{b,c}
If yes (<i>n</i> = 125)		
Did you participate in a domestic GH elective (eg, refugee or immigrant health clinic)? (Yes)	—	30.6 (38)
Did you participate in an international GH elective? (Yes)	—	59.2 (74)
If yes (<i>n</i> = 74)		
Before your international GH elective, did you participate in formal preparation? (Yes)	—	63.5 (47)
After your international GH elective, did you participate in a debriefing session?	—	75.7 (56)
How strongly do you agree or disagree that your international GH elective helped define and prepare you for your career path?		
Strongly disagree	—	1.4 (1)
Disagree	—	4.1 (3)
Neutral	—	17.6 (13)
Agree	—	41.9 (31)
Strongly agree	—	35.1 (26)
How strongly do you agree or disagree that your international GH elective increased your desire to pursue a career that allows for you to work on GH issues?		
Strongly disagree	—	1.4 (1)
Disagree	—	1.4 (1)
Neutral	—	9.5 (7)
Agree	—	41.9 (31)
Strongly agree	—	45.9 (34)
During residency, did you participate in a GH track or pathway? (Yes)	—	5.7 (31)
During your residency, did you receive education or training on any of the following topics in international health and/or GH? (Yes)		
Health care of children who are immigrants or refugees and their families	54.1 (284)	66.0 (361) ^b
Epidemiology of infant and child mortality in developing countries	43.8 (232)	55.1 (301) ^b
Ethical issues in working or volunteering in developing countries	26.9 (142)	44.0 (240) ^b
Socioeconomic determinants of global child health	—	59.1 (322)
Public health programs in developing countries (eg, prevention of infectious disease and health promotion)	—	54.8 (299)
Health care delivery systems in developing countries	—	44.5 (243)
How important was the presence or absence of the international and/or GH training or experience during residency in choosing a residency program?		
Essential or very important	22.4 (119)	16.8 (92) ^b
Somewhat important	35.7 (190)	33.3 (183)
Unimportant	41.9 (223)	49.9 (274)
Do you plan to work or volunteer in a developing country in the future?		
Definite plans or very likely to work in a long-term position after graduation	9.2 (49)	5.5 (30)
Somewhat likely to seek a long-term position	2.6 (14)	3.9 (21)
Very likely to seek short-term volunteer opportunities only	24.9 (133)	21.8 (118)
Somewhat likely to seek short-term volunteer opportunities only	30.5 (163)	36.7 (199)
Unlikely or definitely not	32.8 (175)	32.1 (174)
Do you plan to incorporate GH into your career? (Yes)	—	42.3 (229)
If yes (<i>n</i> = 229), how likely are you to incorporate the following components of GH into your career? (Very or somewhat likely)		
Clinical work in international setting	—	76.2 (173)
Clinical work in domestic setting (eg, refugee and/or immigrant health clinic)	—	52.4 (119)
Education in international setting (eg, health care workers and lay providers)	—	57.5 (130)
Education in domestic setting (eg, resident education on GH)	—	47.3 (107)
Advocacy	—	56.2 (127)
Research	—	27.0 (61)
Overall, how would you rate your residency in preparing you for global child health activities?		
Poor	—	11.0 (60)
Fair	—	28.3 (155)
Good	—	33.5 (183)
Very good	—	18.5 (101)
Excellent	—	8.8 (48)

—, not applicable.

^a The number of cases for each question varied slightly because of missing values for specific questions.^b *P* < .05 in the bivariate analysis of the differences between the 2008 and 2016 results.^c The difference between 2008 and 2016 was significant at *P* < .05 for bivariate analysis, but after controlling for resident characteristics (ie, female sex, being married, having children, race and ethnicity, being an IMG, educational debt, being in a large residency program, and future clinical practice goals), the difference did not reach statistical significance (*P* = .15).

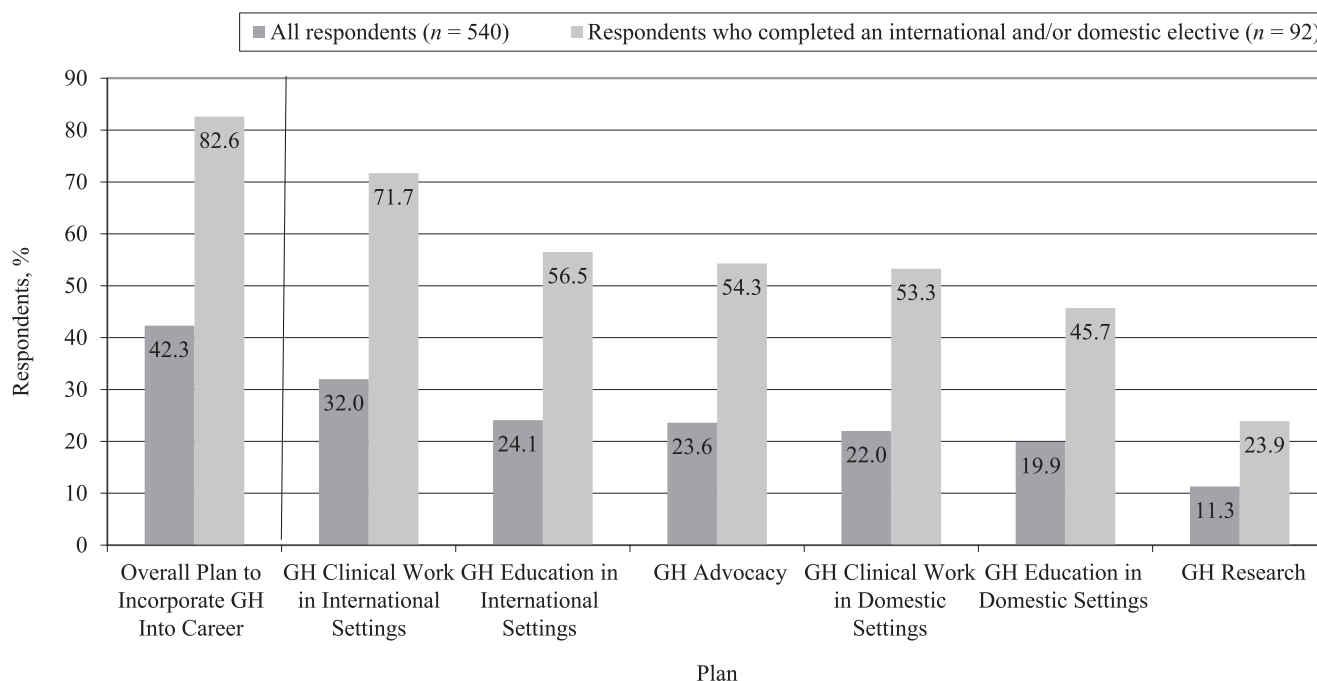


FIGURE 1

Proportion of graduating residents in 2016 with overall plans to incorporate GH into their careers and plans to incorporate different aspects of GH into their careers among all respondents and those who completed an international or domestic elective during their residency. The proportion includes residents in 2016 reporting that they are very likely or likely to have plans to incorporate specific aspects of GH into their careers. All comparisons between total respondents with those who completed a GH elective are significantly different at $P < .001$.

(aOR: 1.63; 95% CI: 1.01–2.63) were more likely to plan to incorporate GH into their careers ($P < .05$). Participation in a GH elective was associated with all types of career plans to incorporate GH. Having children was associated with a lower likelihood of incorporating clinical work in international settings, but it was not associated with plans to conduct GH work in domestic settings or in education, advocacy, or research. IMGs were associated with GH education in both international (aOR: 2.91; 95% CI: 1.52–5.56) and domestic (aOR: 2.00; 95% CI: 1.03–3.89) settings and with GH research (aOR: 3.35; 95% CI: 1.51–7.46). Finally, respondents going into subspecialty practice were predominantly represented among those planning to conduct GH research.

DISCUSSION

This is the first report of trends in GH education in which national

surveys of graduating pediatric residents are used. It is also the first national survey to report on resident perceptions of GH education, domestic GH training experiences, and plans to incorporate various aspects of GH into future careers. Overall, this analysis shows continued growth in GH education and interest in GH careers among pediatric residents, and highlights areas of resident education that need improvement.

This study reveals increasing exposure to education on the health care of children who are immigrants and/or refugees. Among residents who participated in GH training, almost one third reported participating in a domestic GH elective. These results are consistent with those from a recent 2014 survey in which 48.5% of pediatric residency programs were reported to include domestic-based GH experiences.¹³ Finally, our survey revealed that 1 in 5 respondents intend to conduct

GH clinical and educational work within the United States. The large number of programs that are focused on the care of children who are immigrants and/or refugees as a part of GH education may reflect an understanding that a common set of skills can be transferable to work serving vulnerable families in other countries and cultural settings.²¹

IMGs represented 18% of residents in this study who graduated in 2016, and they currently make up approximately one-fourth of practicing physicians in the United States.²² In this study, we found that IMGs had 3 times the odds of planning to incorporate GH education and research into their careers compared with US medical school graduates. IMGs may have a desire to contribute to health care in the countries in which they completed medical training²³ by serving in emergency relief camps after natural disasters, assisting efforts to upgrade hospitals and medical schools, supporting new

TABLE 3 Resident Characteristics Associated With Plans to Incorporate GH Into Career

	All Residents in 2016 (n = 492), aOR (95% CI)							
	Plan to Incorporate GH Into Career				Very Likely or Likely to Incorporate Global Health Aspects Into Career			
	GH Clinical Work in International Setting	GH Clinical Work in Domestic Setting	GH Education in International Setting	GH Education in Domestic Setting	GH Advocacy	GH Research		
Female sex	0.83 (0.53–1.29)	0.73 (0.46–1.16)	0.65 (0.39–1.07)	0.76 (0.45–1.28)	0.88 (0.53–1.47)	1.37 (0.70–2.70)		
Married	0.85 (0.53–1.37)	0.98 (0.59–1.63)	0.89 (0.52–1.54)	1.12 (0.64–1.99)	0.87 (0.50–1.51)	0.92 (0.44–1.93)		
No children	1.63 (1.01–2.63)*	1.88 (1.10–3.19)*	1.57 (0.88–2.80)	1.50 (0.82–2.74)	1.07 (0.61–1.86)	0.76 (0.37–1.56)		
Race and ethnicity								
White and non-Hispanic	Reference	Reference	Reference	Reference	Reference	Reference		
Asian American or Pacific Islander	1.02 (0.58–1.79)	1.09 (0.60–1.99)	1.02 (0.53–1.96)	2.39 (1.26–4.53)*	1.22 (0.63–2.37)	0.45 (0.16–1.24)		
Minority (African American, Hispanic, or American Indian)	1.23 (0.71–2.13)	1.47 (0.82–2.63)	1.30 (0.69–2.46)	1.86 (0.97–3.58)	2.17 (1.19–3.97)*	1.44 (0.66–3.17)		
Other	1.88 (0.70–5.04)	2.39 (0.89–6.45)	2.91 (1.06–7.96)*	2.52 (0.89–7.18)	3.61 (1.34–9.76)*	2.33 (0.75–7.27)		
IMG	2.06 (1.15–3.70)*	1.72 (0.93–3.20)	2.91 (1.52–5.56)**	2.00 (1.03–3.89)*	1.48 (0.78–2.83)	3.35 (1.51–7.46)**		
Educational debt (including spouse)	1.17 (0.77–1.78)	1.16 (0.73–1.83)	1.06 (0.64–1.75)	1.23 (0.72–2.07)	0.94 (0.57–1.55)	1.00 (0.51–1.97)		
≥\$180,000								
Large residency program, class size ≥20	0.78 (0.51–1.18)	0.73 (0.47–1.16)	0.79 (0.48–1.31)	0.96 (0.57–1.61)	0.75 (0.46–1.24)	0.72 (0.37–1.40)		
Clinical practice goal								
Primary care practice	Reference	Reference	Reference	Reference	Reference	Reference		
Subspecialty practice or both primary and subspecialty care practice	1.24 (0.79–1.95)	1.62 (1.00–2.64)*	1.64 (0.96–2.79)	1.37 (0.79–2.38)	0.96 (0.57–1.61)	3.08 (1.46–6.51)**		
Hospitalist	1.01 (0.54–1.86)	1.32 (0.68–2.56)	1.08 (0.51–2.30)	1.19 (0.55–2.55)	0.85 (0.41–1.77)	2.00 (0.71–5.63)		
Participated in international or domestic GH elective	9.61 (5.19–17.78)**	8.38 (4.82–14.58)**	7.16 (4.13–12.40)**	5.01 (2.88–8.72)**	6.91 (4.01–11.92)**	4.20 (2.12–8.29)**		

* $P \leq .05$

** $P < .01$.

specialty residency and fellowship training, and/or fostering research and development.²⁴ More research is needed to better understand the involvement of IMGs in GH, including how best to support IMGs who are uniquely poised to conduct GH work.

The respondents' low rating of GH residency-training quality suggests that programs might be lacking in either resources for or prioritization of GH education in their residency curricula. Eleven percent of respondents rated their preparation for GH activities as poor, and only 26% received training on all 6 GH topics queried. Smaller programs may require greater resources to support residents' needs to prepare for GH work, as is described in a recent survey of pediatric residency programs.¹³

Preparation and debriefing have long been promoted as essential components of GH training to ensure responsible practices, the safety of participants, and respect for partner hosts.^{11,25,26} More than one-third of residents completing an international elective did not receive formal preparation before their international experiences, and one-fourth did not participate in debriefing sessions on return. This reveals gaps in the quality and consistency of GH training across residency programs.

A growing number of resources have been developed to support the development and implementation of meaningful, safe, and ethical GH curricula in residency programs. For example, the American Board of Pediatrics Global Health Task Force recently created an implementation guidebook for program directors²⁷ that includes experiences and lessons learned from experts in GH education and best-evidence approaches to ensure ethical GH experiences. Also, in their reports,^{28,29} GH experts outline strategies to support GH education in pediatric departments, develop successful international

partnerships, and ensure ethical implementations.²⁵

Our results should be interpreted while considering the study's strengths and limitations. Data were self-reported, and the overall response rates were moderate (55%), although they were similar to those in other large surveys of pediatricians.³⁰ Details about GH training, such as how residents were exposed to GH topics, were not assessed. In addition, the 2008 survey did not contain the full set of GH-related questions that were included in the 2016 study. Finally, it is possible that we are overreporting GH interest and participation because of self-selection bias; however, the GH questions were nested within the larger AAP survey on resident training, career goals, and job-search experiences. The strengths of this study include its large, national samples and its data collection over an extended time frame, which allowed for comparisons between

residents who graduated in 2008 and 2016.

CONCLUSIONS

Pediatric residency programs endeavor to prepare the next generation of pediatricians to skillfully care for children from diverse cultural backgrounds and resource settings. In this study, we find that a growing proportion of US pediatric graduates are exposed to GH training during their residency, and many of them plan to incorporate GH into their careers. However, gaps in training remain, with some residents conducting international electives without formal preparation or debriefing and with many lacking exposure to core GH topics during their residency. Future efforts are needed to ensure that US pediatric residency programs promote the development of globally minded and competent pediatricians with the skills and perspectives to effectively

improve child health in their globally interconnected communities.

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ABBREVIATIONS

AAP: American Academy of Pediatrics
aOR: adjusted odds ratio
CI: confidence interval
GH: global health
IMG: international medical school graduate
LMIC: low- or middle-income country
PV: predicted value

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