Primary Care Residents in Teaching Health Centers: Their Intentions to Practice in Underserved Settings After Residency Training

Zohray Talib, MD, Mariellen Malloy Jewers, MIA, Julia H. Strasser, MPH, David K. Popiel, MD, MPH, Debora Goetz Goldberg, PhD, MBA, MHA, Candice Chen, MD, MPH, Hayden Kepley, PhD, Fitzhugh Mullan, MD, and Marsha Regenstein, PhD

Abstract

Purpose
To describe the residents who chose to train in teaching health centers (THCs), which are community-based ambulatory patient care sites that sponsor primary care residencies, and their intentions to practice in underserved settings.

Method
The authors surveyed all THC residents training in academic years 2013–2014, 2014–2015, and 2015–2016, comparing their demographic characteristics with data available for residents nationally, and examined THC residents' intentions to practice in underserved settings using logistic regression analysis.

Results
The overall survey response rate was 89% (1,031/1,153). THC resident respondents were similar to residents nationally in family medicine, geriatrics, internal medicine, obstetrics–gynecology, pediatrics, and psychiatry in terms of gender, age, race, and ethnicity. Twenty-nine percent (283) of respondents came from a rural background, and 46% (454) had an educationally and/or economically disadvantaged background. More than half of respondents (524; 55%) intended to practice in an underserved setting on completion of their training. Respondents were more likely to intend to practice in an underserved area if they came from a rural background (odds ratio 1.58; 95% confidence interval 1.08, 2.32) or disadvantaged background (odds ratio 2.81; 95% confidence interval 1.91, 4.13).

Conclusions
THCs attract residents from rural and/or disadvantaged backgrounds who seem to be more inclined to practice in underserved areas than those from more urban and economically advantaged roots. THC residents' intentions to practice in underserved areas indicate that primary care training programs sponsored by community-based ambulatory patient care sites represent a promising strategy to improve the health care workforce distribution in the United States.

The health care workforce in the United States is inadequate to meet the primary care needs of our nation. Despite widespread recognition of primary care practice as the backbone of population health, only 25% of all graduating residents in 2006–2008 chose a primary care specialty.[1] In 2010, less than one-third of all physicians practiced in primary care specialties, including family medicine, geriatrics, general pediatrics, and general internal medicine.[2] Also, too few graduating residents go on to practice in settings that are sorely in need of health care providers. From 2006 to 2015, only 24% of all residency graduates went on to practice in such underserved settings.[3] Studies of physician location provide evidence that physicians who complete their residency training in underserved settings are more likely to practice in these environments in the future.[4] However, historically, the U.S. graduate medical education (GME) system has not provided incentives for ambulatory patient care sites in underserved settings to sponsor residencies in primary care specialties or for hospitals to assign residents to primary care training sites in ambulatory community-based settings serving underserved populations.[5,6]

To address this shortfall, Section 5508 of the Affordable Care Act (ACA) established the Teaching Health Center Graduate Medical Education (THCGME) program under Part C of Title VII of the Public Health Service Act. The goal of the THCGME program is to increase the number of primary care residents and dentists training in community-based settings to improve the nation's access to well-trained primary care providers, particularly in underserved settings. To achieve this goal, the program provides funding directly to community-based clinical organizations to either expand or establish residencies in primary care specialties defined specifically as family medicine, geriatrics, internal medicine, obstetrics–gynecology, pediatrics, psychiatry, and dentistry.[7] The inclusion of psychiatry and dentistry reflects the long-standing need for primary medical, dental, and mental health care in community-based settings.[8] The THCGME program requires the applicant organization to be either a community-based ambulatory patient care center or a consortium with a community-based ambulatory patient care center as a primary partner. Examples of eligible sponsors mentioned in the ACA included federally qualified health centers (FQHCs), rural health centers, Indian Health Service providers, community-based mental health providers, and centers qualifying for Title X funding under the Public Health Service Act, thus highlighting the THCGME program's focus on underserved settings.[7]

Please see the end of this article for information about the authors.

Correspondence should be addressed to Mariellen Malloy Jewers, Milken Institute School of Public Health, Department of Health Policy & Management, George Washington University, 2175 K St., NW, Suite 500, Washington, DC 20037; telephone: (202) 994-4337; e-mail: mjewers@gwu.edu.

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The two distinguishing features of residencies funded by the THCGME program are that funding goes directly to the ambulatory patient care centers that sponsor the residencies—known as teaching health centers (THCs)—and that residents train in the primary care disciplines specified by the ACA. THC residencies are required to meet the same accreditation requirements as other programs, and they have no special admission criteria or curricular requirements. Differences in residents' training experiences in a THC residency compared with other residency programs are due to the different missions of the sponsors, the nature and needs of the patient populations, and the use of elective opportunities. By design, the THC residencies are expected to provide residents with more opportunities to care for underserved populations and to allow them to spend more of their discretionary time in community-focused activities.

As of academic year 2016–2017, THCGME funding supports 742 resident full-time equivalents in 59 THCs in 6 specialties: They include 37 residencies in family medicine; 8 in internal medicine; 4 in psychiatry; 3 each in dentistry, obstetrics–gynecology, and pediatrics; and 1 in geriatrics. Figure 1 provides the location of each THC residency by specialty. Some THCs expanded existing residency programs, whereas others established new programs. A majority of the 59 THCs are FQHCs or FQHC look-alikes, serving underserved communities.[9] Seven of every 10 THC residency training sites are located in federally designated high-need areas.[10]

To compare the intent of the ACA with the plans of residents training in a THC residency, we queried residents on their career plans following graduation. We also collected data on their socioeconomic and demographic characteristics and educational background to better understand who chooses to train in a THC residency. Here, we present descriptive statistics on THC residents' demographic and educational background characteristics and compare them with the characteristics of residents nationally, when possible.

Method

The data on THC residents that we present here came from resident surveys that were developed and fielded as part of a five-year independent evaluation of the THC initiative. Survey items were based on questions from previously validated surveys (including the Association of American Medical Colleges [AAMC] Matriculating Student Questionnaire and Graduation Questionnaire, the U.S. Department of Health and Human Services Student Financial Aid Guidelines for the Health Professions Programs Loans for Disadvantaged Students Program, and the National Health Service Corps Verification of Disadvantaged Background form) and from the Health Resources and Services Administration's THC performance reporting requirements.

We administered surveys to THC residents in three academic years (2013–2014, 2014–2015, and 2015–2016). Surveys were administered either online via Survey Monkey or on paper, depending on the individual THCGME program's preferences. Residents' participation was voluntary, and there was no penalty for nonresponse. Statements describing the study, use of the data, benefits and risks, and the voluntary nature of the survey were written on the first page of the survey, and consent was assumed if residents proceeded to answer the survey questions. The Office of Management and Budget approved the survey instruments and administration strategy, and the George Washington University Office of Human Research institutional review board deemed the study protocol to be exempt from review. The survey templates are available online at reginfo.gov.[11]

We did not use a sampling strategy because we were surveying the entire population of THC residents training in academic years 2013–2014, 2014–2015, and 2015–2016. A total of 1,153 unique residents were invited to complete the survey. We included all residents training at THCs irrespective of their funding source (i.e., whether they were funded by the THCGME program or by Medicare or Medicaid GME) because programs often do not differentiate specific positions

Figure 1 Map of the 59 teaching health center residency programs in the United States, by specialty and location, academic year 2016–2017.

by funding source. Given the high response rate (1,031; 89%), we assumed that nonresponse was random and not associated with a particular characteristic that would impact residents' responses.

We compared the demographic characteristics of THC residents, which we gathered from our survey, with characteristics of residents training in other family medicine, geriatrics, internal medicine, obstetrics–gynecology, pediatrics, and psychiatry programs in Accreditation Council for Graduate Medical Education (ACGME)-accredited residencies. We extracted these comparison data from published work by Brotherton and Etzel[12] and from the 2014–2015 ACGME Data Resource Book.[13] To compare residents' practice locations, including in underserved areas, we referred to the study by Chen et al[1] of high-needs specialties and to the 2016 edition of the AAMC's Report on Residents.[3] We used a logistic regression model to determine the extent to which age, gender, race, ethnicity, specialty, disadvantaged background, domestic or international medical school education, rural background, and veteran status influenced residents' intentions to practice in underserved areas. We present the results of the logistic regression analysis that are statistically significant ($P \leq .05$) as odds ratios (ORs) with 95% confidence intervals (CIs). THC survey data were analyzed using STATA statistical software, version 12.1 and 14.2 for Windows (StataCorp LP, College Landing, Texas).

Results

The overall response rate was 89% (1,031/1,153). The majority (912; 89%) of respondents trained in either family medicine or internal medicine (see Table 1). The five other primary care specialties represented the remaining 11% (119) of respondents. The mean age of respondents was 31 years old (959), and the largest age groups were 25–29 (470; 49%) and 30–34 years old (315; 33%) (see Table 2). Respondents were evenly split between females (485; 50%) and males (492; 50%). Most were white (550; 59%), with 29% (273) Asian and 7% (62) black/African American; 8% (79) identified as Hispanic or Latino, which was asked separately from race (see Table 2). Also, 28% (240) of respondents were international medical graduates, which we defined as having graduated from a medical school located outside the United States. Of respondents, 2% (18) were U.S. military veterans; 1% (11) reported being on active U.S. military duty or in the U.S. military reserves (see Table 2).

Table 1

Number of Residents Who Trained in Teaching Health Centers, by Primary Care Specialty, Academic Years 2013–2015

Primary care specialty	No.	%
Dentistry	34	3
Family medicine	691	67
Geriatrics	1	0.1
Internal medicine	221	22
Obstetrics–gynecology	18	2
Pediatrics	30	3
Psychiatry	36	4
All specialties	**1,031**	**100**

Roughly 3 of every 10 respondents (283; 29%) reported being from a rural background (see Table 3). Almost half of respondents (454; 46%) answered "yes" to at least one question suggesting an educationally and/or economically disadvantaged background. Nearly one-fifth (183; 19%) of respondents qualified for a needs-based educational scholarship, and 17% (164) reported being the first generation in their family to attend college. One of every seven respondents (144; 15%) was from a family whose income was less than 200% of the federal poverty level, and 18% (176) went to a high school where more than 30% of the students were eligible for free or reduced school lunch. When asked about their ability to interact with patients who speak languages other than English, 39% (381) of respondents indicated that they felt "competent and confident" providing care in at least one other language in addition to English, with about half (197) of those respondents describing some level of comfort providing care in Spanish (see Table 3).

More than half of respondents (524; 55%) intended to practice in an underserved setting on completion of their residency training. Within family medicine, two-thirds (417; 66%) of respondents intended to practice in an underserved area; within internal medicine, that number was one-third (68; 33%). Our logistic regression analysis indicated that, all else being equal, residency specialty and having a rural or an economically disadvantaged background were significantly associated with intention to practice in an underserved area ($P \leq .05$, see Table 4). A respondent from an economically disadvantaged background had more than double the odds of intending to practice in an underserved setting compared with respondents not from disadvantaged backgrounds (OR 2.81; CI 1.91, 4.13). The OR of intention to practice in an underserved area for residents from a rural background compared with that for residents not from a rural background was 1.58 (CI 1.08, 2.32). The odds of intention to practice in an underserved area were three times higher for respondents in family medicine compared with those in other specialties (OR 3.35; CI 2.39, 4.70).

Discussion

In this study, we described the residents who chose to train in THCs—that is, in residencies sponsored by community-based ambulatory patient care centers, the majority of which care for underserved populations—and examined THC residents' intentions to practice in underserved settings after graduation.

We expected THC residents to be similar to their peers entering family medicine, pediatrics, and internal medicine nationally, who tend to be female, older (nontraditional), and members of racial and ethnic minorities.[14–16] We found that THC residents were quite similar to these peers in terms of gender, age, race, and ethnicity (see Table 2). The proportion of THC residents who were international medical graduates fell just below the proportion nationwide (see Table 2). A notable exception was the proportion of THC residents who were American Indian/Alaskan Native, which was six times higher than among residents nationally.

Although no national data on the economic background of residents are available, surveys of medical students have indicated that only one-fifth are from families with incomes in the lowest three quintiles of all American families.[17] THCs, however, seem to disproportionately attract individuals

Table 2

Characteristics of Residents Who Trained in Teaching Health Centers (THCs), Academic Years 2013–2015, Compared With the Characteristics of Residents Nationally, Academic Year 2014–2015

Characteristic	% of THC residents	% of residents nationally[a]
Race	n = 935	n = 52,943
American Indian/Alaskan Native	1	0.2
Asian	29	30
Black or African American	7	7
Native Hawaiian or other Pacific Islander	0.6	0.1
White	59	54
Multiple races	4	3
Ethnicity	n = 959	n = 52,943
Latino/Hispanic	8	9
Gender	n = 977	n = 52,943
Female	50	55
Age group	n = 959	—
Younger than 25	0.2	—
25–29	49	—
30–34	33	—
35–39	11	—
40–44	5	—
45 or older	2	—
Age	n = 959	n = 29,074
Average	31	31
International or domestic (United States) medical school graduate	n = 873	n = 52,943
International medical school graduate	28	31
U.S. military service	n = 961	—
Active duty/Reservist	1	—
Veteran	2	—

[a]National estimates for race, ethnicity, gender, and international or domestic medical school graduate for residents on duty in academic year 2014–2015 in family medicine, internal medicine, geriatrics, pediatrics, psychiatry, and obstetrics–gynecology specialties in programs accredited by the Accreditation Council for Graduation Medical Education that are sponsored by either universities or hospitals, as reported in Brotherton and Etzel.[12] National estimates for age are for postgraduate year one residents only from the Accreditation Council for Graduation Medical Education Data Resource Book 2014–2015.[13]

from higher-need populations. More than a third of THC residents expressed confidence in providing care in at least one language besides English. Nearly half reported coming from a disadvantaged background, and nearly a third came from a rural background. The THCGME program attracts residents from rural and disadvantaged backgrounds who seem to be more inclined to practice in underserved areas than those from more urban and economically advantaged roots.

THC residencies are situated in community-based settings, and residents tend to care for patients from underserved populations. As a result, residents are more likely to be comfortable and have greater confidence caring for these populations, which may explain their interest in working in underserved areas after graduation. If intention is a predictor of practice in this group, THC residents may be twice as likely as other primary care residents to practice in an underserved setting. Fifty-five percent of THC residents intended to practice in underserved areas compared with 24% of physicians who actually do.[3] The distribution of specialty training also possibly played a role in these outcomes—all THC residencies are in primary care specialties, but primary care specialties make up a much smaller share of all residency specialties nationally.[12] Moreover, the majority of THC residents are training in family medicine, and family physicians consistently outpace physicians in other primary care specialties in practicing in underserved areas.[3,18] However, specialty composition tells only part of the story. Training in a community-based residency might also influence residents' decisions—a much greater percentage of THC residents within family medicine and internal medicine noted their intention to practice in underserved areas compared with the practice patterns of physicians specializing in family medicine and internal medicine nationally.[3,18]

As we continue to collect employment and practice data on physicians who have completed THC residencies, we will be able to see the extent to which residents who express their intention to practice in an underserved area actually do practice there. A longitudinal study is under way to look at actual practice patterns of physicians trained in THCs after their residency completion. In the meantime, our findings here, like those from other studies, show that trainees from underserved backgrounds are more likely to report an intention to practice in underserved settings.[19,20]

The implications of a THCGME program that is successful are significant for the trajectory of GME training and for producing a workforce that is able to provide high-quality, cost-conscious care—a skill that residents can develop training in FQHCs or similar underserved settings where health care resources are often used judiciously both by design and out of necessity.[21] Prior research has shown that the context of residency training affects residents' practice patterns after graduation. Residents who train in settings that use more health services per patient, which tend to be inpatient based and specialty oriented, continue to practice this way years after graduation.[22] The opposite is also true, suggesting that THC residents, who train at community-based ambulatory patient sites, are more likely to become proficient in providing less expensive care. If GME funding for THCs stabilizes and gains recognition, it could not only expand the pool of physicians who are able to provide cost-conscious care but also become an attractive career track for mission-driven residents who

Table 3

Socioeconomic Characteristics of Residents Who Trained in Teaching Health Centers (THCs), Academic Years 2013–2015

Characteristic	% of THC residents
Rural background	n = 971
Rural background	29
Ability to provide care in languages other than English[a]	n = 967
At least one other language	39
Spanish	20
East Asian and Southeast Asian languages	5
Educationally and/or economically disadvantaged background	n = 985
Answered yes to any educational or economic background challenges	46
School district where 50% or less of graduates went on to college	16
First generation in their family to attend college	17
Family annual income < 200% of the federal poverty level	15
Family received public assistance	9
Qualified for a needs-based educational scholarship	19
High school with low average SAT/ACT scores	14
Diagnosed physical/mental impairment	0.7
English not primary language	6
High school with > 30% of students eligible for free/reduced lunch	18

Abbreviations: SAT indicates the Scholastic Achievement Test; ACT, American College Testing.
[a]The survey asked which language(s) respondents felt "competent and confident in providing safe and effective care to patients."

are motivated to care for the underserved and are keen to learn how to provide high-quality care with limited resources.

The THCGME program also has important implications for improving access to care in the United States, which has long faced a challenge in supplying adequate numbers of primary care providers for rural and underserved areas. GME training is recognized as both contributing to the problem and being part of the solution. The THCGME experience, if expanded, represents a model of funding residency training that could provide short-term and long-term improvements in access to care. In the short term, establishing training programs sponsored by community-based ambulatory patient sites in rural and underserved areas immediately expands the available workforce. In the long term, expanding primary care residencies and locating training in underserved communities seems to attract residents who graduate willing to provide primary care in these underserved areas.

Table 4

Logistic Regression Results for Statistically Significant Variables Associated With Residents' Intention to Practice in an Underserved Area Among Medical and Dental Residents Who Trained in Teaching Health Centers, Academic Years 2013–2015[a] (n = 744)

Variable	Odds ratio	Standard error	*Z*	*P* > |*z*|	95% confidence interval
Rural background	1.58*	0.31	2.34	.02	1.08, 2.32
Family medicine specialty	3.35**	0.58	6.99	.00	2.39, 4.70
Economically disadvantaged background	2.81**	0.55	5.26	.00	1.91, 4.13
Constant	0.27*	0.15	–2.42	.02	0.09, 0.78

[a]The * denotes that the coefficient is statistically significant at the .05 level, and ** denotes statistical significance at the .001 level. Independent variables in the logistic regression analysis that were not statistically significant at any conventional level and thus are not shown include gender, age, race, ethnicity (asked separately from race), veteran status, international medical school graduate, and educationally disadvantaged background. Family medicine specialty was coded as "1" and was compared with the five other primary care specialties (i.e., dentistry, internal medicine, obstetrics–gynecology, pediatrics, and geriatrics were coded as "0"). Economically disadvantaged background was considered yes if residents reported any one of the following: family annual income < 200% of the federal poverty line; family received public assistance; qualified for a needs-based educational scholarship; and high school with > 30% of students eligible for free/reduced lunch.

Our study had several limitations. First, even with the high survey response rate, the number of THC residents overall was relatively small. Nevertheless, the survey responses represented the demographic characteristics and intentions of the majority of the residents training in THCs in three academic years (2013–2014, 2014–2015, and 2015–2016). Second, the survey responses were self-reported and, as such, may be open to interpretation and subject to bias, including social desirability bias (e.g., to report higher language skills than would actually be certified on a standardized language exam). Although self-reported data do have this limitation, they also have the advantage of being a direct source of information about a resident's intention to practice in an underserved setting, rather than a proxy measure of that intention. Third, no single source of data about residents nationally is directly comparable to the THC data we presented here. For comparisons, we used the most recent and relevant data available for the resident population nationally. Finally, the THC data we presented here only described practice intentions, not experiences. Findings from surveys of physicians who have graduated from THC residencies will provide a more complete picture of where THC-trained physicians practice after completing their residency training.

Conclusions

Early findings from an analysis of the THCGME program tell us that residents trained in this program are similar to residents nationally, with the exception that THCs attract more residents from rural or disadvantaged backgrounds than other programs. Of particular relevance, THC residents receive training in all the required competencies of their discipline, and they also learn to care for underserved populations. Furthermore, THCs appear to be encouraging their residents to practice in underserved settings after graduation, indicating that primary care training programs sponsored by community-based ambulatory patient

care sites represent a promising strategy to improve the health care workforce distribution in the United States.

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Z. Talib is associate professor of medicine and of health policy and management, George Washington University School of Medicine & Health Sciences, Washington, DC.

M.M. Jewers is a doctoral candidate and research scientist, Department of Health Policy & Management, George Washington University Milken Institute School of Public Health, Washington, DC.

J.H. Strasser is a doctoral candidate and senior research associate, Department of Health Policy & Management, George Washington University Milken Institute School of Public Health, Washington, DC.

D.K. Popiel is assistant professor of medicine, George Washington University School of Medicine & Health Sciences, Washington, DC.

D.G. Goldberg is associate professor, Department of Health Administration and Policy, George Mason University, Fairfax, Virginia.

C. Chen is director, Division of Medicine and Dentistry, Health Resources and Services Administration, Rockville, Maryland.

H. Kepley is special assistant to the director, National Center for Health Workforce Analysis, Health Resources and Services Administration, Rockville, Maryland.

F. Mullan is a professor of health policy and management, Department of Health Policy & Management, George Washington University Milken Institute School of Public Health, a professor of pediatrics, George Washington University School of Medicine & Health Sciences, and codirector, George Washington University Health Workforce Institute, Washington, DC.

M. Regenstein is professor, Department of Health Policy & Management, George Washington University Milken Institute School of Public Health, Washington, DC.

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