Demographic Characteristics and Career Plans of First-Generation Medical Students at a Single Medical School in the United States

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Abstract

Introduction: Recruitment of first-generation medical students is essential to improving diversity and inclusion in US medical colleges. First-generation students offer unique experiential insights that foster empathy and cultural competency in the learning environment and improve health outcomes for patients. However, little is known about their demographic characteristics or career goals. It is important to identify these factors to provide insight on ways to better support first-generation students.

Methods: This exploratory pilot study aimed to describe background, demographic characteristics, and goals of students. We administered a secondary analysis of a quality improvement and health disparities survey to third-year medical students at a large, private medical school in Philadelphia, Pennsylvania. Measures included demographic information, interest in loan forgiveness programs, and other career goal items. We conducted χ^2 goodness-of-fit tests to examine differences by first-generation status.

Results: Thirteen percent of respondents identified as first-generation medical students (n=26). First-generation medical students were more likely to be male, aged 21-26 years, White, and non-Hispanic/Latino. First-generation students were significantly more likely to report wanting to care for underserved populations during their career and enter loan forgiveness programs, with Department of Education's Public Service Loan Forgiveness program most often cited.

Conclusion: This study provides an exploratory profile of characteristics of first-generation medical students and their career intentions. Our results suggests that enrollment of first-generation students may increase the number of physicians who are willing to serve underserved populations. However, first-generation students may also need more financial support through loan forgiveness programs which has important implications for medical education.

Background

First-generation college-graduate students are individuals whose parents did not complete a postsecondary undergraduate degree (ie, associates, bachelors, masters, or doctoral). First generation students offer significant benefits to medical education and health care[1,2] by bringing experiences and perspectives that may

more closely align with those of their patients, qualities that foster enhanced cultural competency and empathy.[1,2,4] Diverse health care teams result in better patient experiences,[5] improve health care delivery to underserved regions,[6] and help reduce health care disparities,[1,7] underscoring the importance of this population of student doctors. However, research involving first-generation medical students is lacking,[1] limiting their recruitment and career support. Understanding of first-generation medical students is inferred from a few qualitative studies and acceptance/matriculation data, which has found that first-generation undergraduate students are underrepresented within medical schools. While first-generation college students are known to be diverse in terms of gender, race/ethnicity, and socioeconomic status, the demographic composition of first-generation medical students is less clear. Previous data show that first-generation medical students have been predominantly non-Hispanic White, female, and over 23 years of age,[3] but it is unclear if first-generation medical students still share these characteristics.

Despite their crucial role in health care, first-generation medical students remain an understudied and disadvantaged minority in American medical colleges.[1] The most recently published data reports are over a decade old and report 20%-25% of medical students are first-generation.[8] The Association of American Medical colleges (AAMC) is working to update these statistics and in 2018 added a first-generation indicator to their medical school application service.[9] However, preliminary data estimates only 14.6% of allopathic medical school matriculants were first-generation in 2021-2022.[10] To increase first-generation students' admission to medical school and better support this vital group of future physicians, improved research efforts are necessary to define first-generation medical students' demographic backgrounds and career goals.

Therefore, the purpose of this study is to describe first-generation students' (1) demographic backgrounds; (2) career intentions; and (3) interest in loan forgiveness programs singularly and compared to their peers among third-year medical students at a private, urban medical school. Findings from this work will provide understanding of first-generation medical students to assist medical colleges in prioritizing, recruiting, and supporting first-generation matriculants.

Methods

This study is a secondary analysis of a quality improvement and health disparities survey administered to third-year students at a large, private medical school in Philadelphia, Pennsylvania. The survey was distributed to 211 students at completion of their family medicine clerkship from November 2019–November 2020 and included demographic characteristics, health disparities, and career goal items. Respondents were excluded if missing data on key study measures. This study was granted IRB exemption from review by the Thomas Jefferson University Institutional Review Board.

Measures

The primary outcome measure was first-generation medical student status using the question:

"You are considered a "first-generation medical student" if neither of your parents (or legal guardians) completed a four-year college education in the United States or abroad. Are you a first-generation medical student?"

We coded answers yes or no. Demographic measures included sex (male, female), race (White, non-White), Hispanic/Latino Ethnicity (yes, no), and age in years (21-26, 27-39).

We coded plans to care for an underserved population and/or work in an underserved area as yes, no, or undecided. We coded plans to participate in research and/or work in academic medicine as yes or no. Interest in student loan forgiveness program was coded yes, no, or undecided. Those who replied yes were asked to select the type(s) of program(s) they intend to participate in: Department of Education's Public Service Loan Forgiveness, National Health Service Corp, Indian Health Service Corp, Armed Services, Uniformed Service,

state loan forgiveness program, hospital program, private loan forgiveness program, or other.

Data Analysis

We conducted data analyses using Stata version 14. We calculated descriptive statistics, sample size, and percentages for all variables. Chi-square goodness-of-fit tests were conducted to examine differences in demographic measures, career goals, and interest in loan forgiveness programs by first-generation status.

Results

Sample Characteristics and Demographic Factors

Table 1 describes the demographic factors of the sample overall and by first-generation status (N=195). Respondents were predominately female (53%, n=104), ages 21-26 years (77.4%, n=151), White (66%, n=128), and non-Hispanic/Latino (94%, n=183). Twenty-six identified as first-generation medical students (13%). First-generation students were mostly male (58%; n=15), ages 21-26 (69%, n=18), White (62%, n=16), and non-Hispanic/Latino (92%, n=24).

First-Generation Student Career Plans

First-generation students were significantly more likely to report wanting to care for underserved populations (35%, n=9 vs 21%, n=35, *P*=.05; Table 1). Though not statistically significant, first-generation students were more likely to report plans to work in an underserved area (27%, n=7 vs 18%, n=30), conduct research (62%, n=16 vs 53%, n=90), and work in academic medicine (50%, n=13 vs 37%, n=62; Table 1).

Interest in Loan Forgiveness Programs

First-generation students were significantly more likely to report intent to enter a loan forgiveness program (31%, n=8 vs 12%, n=20, *P*=.002; Table 1). Respondents indicated interest in four types of loan forgiveness programs: Public Service Loan Forgiveness (75%, n=21), hospital programs (14%, n=4), state loan forgiveness programs (4%, n=1) and other (7%, n=2; Table 2).

Discussion

First-generation medical students are an understudied minority that offer unique experiences to increase diversity among health care providers[1,2,4] and improve patient outcomes.[5–7] In this study, we aimed to explore the profiles of first-generation medical students to provide medical colleges with a framework for recruiting, mentoring, and providing key resources for first-generation matriculants.

Thirteen percent of respondents identified as first-generation, lower than expected from published data.[8] Our results reflect declining first-generation medical student enrollment since 1992,[8] and may indicate poor recruitment despite AAMC commitment to increasing diversity in medical education.[11] However, these statistics are difficult to compare as first-generation medical students are inconsistently defined using some or all of the following criteria: a person whose parents have not attained an associate degree or higher,[9] attained a 4-year degree,[12] or attended medical school.[4] A common definition for first-generation medical students is necessary to produce more relevant and useful data.

Intent to work with underserved populations and enter loan forgiveness programs were significantly associated with first-generation status. These interests are complimentary, as many loan forgiveness programs offer educational debt relief in exchange for work serving an underserved population.[13,14] Given critical physician staffing disparities concentrated in underserved areas across the country and alarming projections of future physician shortage,[15] these results suggest that first-generation medical students are more valuable to health

care than previously imagined. To increase recruitment of first-generation medical students and begin closing the gap in health disparities for patients in underserved areas, a break from traditional medical school admission processes is required. Consideration of more holistic admissions criteria such as applicant's life experience, trends in overall academic performance, and the humanistic value they will bring to the profession must replace unethical and useless considerations such as one's "legacy" status.[16]

Efforts to recruit and support first-generation medical students should not end at admission. At our urban, private, medical school, first-generation students were more interested in loan-forgiveness programs and having career goals related to addressing health disparities than other students. Our results support the call to action for medical schools to create mentorship opportunities for first-generation medical students geared to their specific interests and needs.[1,2,4] Information sessions and academic advising regarding loan forgiveness program requirements and ways to work with underserved populations will prepare students to make informed choices about residency and future career opportunities. Nevertheless, it is important to consider that as first-generation undergraduates are more likely to come from lower-income households,[3] our findings may be confounded by financial need. Future researchers should consider earning-potential and debt load when examining the intersectionality of first-generation status, career intentions, and interest in loan forgiveness programs.

Strengths and Limitations

The greatest strength of this pilot study is its focus on first-generation medical students, an understudied population in medical education. Limitations include cross-sectional design, small sample size, and the limited survey items regarding student debt load and socioeconomic background. However, this study points to the need for future large-scale studies to test the potential links between first-generation medical students and their interest in loan forgiveness programs and working in underserved areas.

Conclusion

This study is an early investigation of first-generation medical students' demographic characteristics and career plans that may inform educational programming for recruitment and mentorship. Future research should identify first-generation students' characteristics at public and private institutions, allopathic and osteopathic programs, and historically Black colleges and universities.

Tables and Figures

Table 1. Sample Demographic Characteristics and Career Plans Overall and by First-Generation Student Status (N=195)

	Total (N=195)	First generation student status Yes (n=26)	No (n=169)	χ² and *P* value
		n (%)		
Sex				χ²(1)=1.47, *P*=.29
Female	104 (53.3)	11 (42.3)	93 (55.0)	
Male	91 (46.7)	15 (57.7)	76 (45.0)	
Age				χ²(1)=1.56, *P*=.32
21 – 26 years	151 (77.4)	18 (69.2)	133 (78.7)	
27 – 39 years	44 (22.6)	8 (30.8)	36 (21.3)	
Race				χ²(1)=0.22, *P*=.66
White	129 (65.6)	16 (61.5)	112 (66.3)	
Non-White	67 (34.4)	10 (38.5)	57 (33.7)	
Hispanic, Latinx, or Spanish ethnicity				χ²(1)=0.12, *P*=.66
No	183 (93.8)	24 (92.3)	159 (94.1)	
Yes	12 (6.2)	2 (7.7)	10 (5.9)	
Plan to work in underserved area				χ²(2)=1.25, *P*=.51
Yes	37 (19.0)	7 (26.9)	30 (17.8)	
No	52 (26.7)	6 (23.1)	46 (27.2)	
Undecided	106 (54.4)	13 (50.0)	93 (55.0)	
Plan to care for underserved population				**χ²(2)=5.66, *P*=.05***
Yes	44 (22.6)	9 (34.6)	35 (20.7)	
No	49 (25.1)	9 (34.6)	40 (23.7)	
Undecided	102 (52.3)	8 (30.8)	94 (55.6)	
Plan to enter loan forgiveness program				**χ²(2)=11.63, *P*=.002***
Yes	28 (14.4)	8 (30.8)	20 (11.8)	
No	92 (47.2)	5 (19.2)	87 (51.5)	
Undecided	75 (38.5)	13 (50.0)	62 (36.7)	
Plan to participate in research during career				χ²(1)=0.62, *P*=.53
Yes	106 (54.4)	16 (61.5)	90 (53.3)	
No	89 (45.6)	10 (38.5)	79 (46.7)	
Plan to participate in academic medicine/faculty during career				χ²(1)=1.69, *P*=.20
Yes	75 (38.5)	13 (50.00)	62 (36.7)	
No	120 (61.5)	13 (50.00)	107 (63.3)	

Table 2. Type of Loan Forgiveness Program Respondent Plans to Participate (N=28)

Loan forgiveness program	n (%)
Department of Education's Public Service Loan Forgiveness (PSLF)	21 (75.0)
National Health Service Corp	0 (0.0)
Indian Health Service Corp	0 (0.0)
Armed Services (Navy, Army, Air Force)	0 (0.0)
Uniformed Service (CDC, HHS)	0 (0.0)
State loan forgiveness program	1 (3.6)
Hospital program (eg, sign-on bonus)	4 (14.3)
Private loan forgiveness program	0 (0.0)
Other[a]	2 (7.1)

Abbreviations: CDC, Centers for Disease Control and Prevention; HHS, US Department of Health and Human Services.
[a] Other selected, but no specific program described.

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