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Perceived Barriers to Career Advancement: Medical Students and Resident Physicians

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ABSTRACT

Background: The path to becoming a physician is challenging, with various barriers influencing medical student and resident physician residency and fellowship training career decisions. Studies comparing perceived obstacles at disparate training levels are limited and given these obstacles are dynamic, studies are frequently needed to evaluate perceived barriers to pursuing residency specialty or fellowship of interest for physician trainees.

Objective: To evaluate and compare perceived barriers to obtaining residency specialty or fellowship of choice for medical students and resident physicians, respectively.

Methods: A Likert scale survey assessing perceived barriers was administered via the listservs of medical schools and organizations in 2021. Differences in the Likert scale score mean between medical students and resident physicians were measured with student t-tests (2-sided).

Results: A total of 404 medical trainees participated (301 medical students and 103 resident physicians). Medical students indicated lack of opportunity to obtain alpha omega alpha membership as the most crucial perceived barrier (mean Likert scale score ± standard deviation, 4.01±1.97), followed by USMLE Step 1 score (3.92±1.89) and lack of home program in specialty/fellowship of interest (3.62±1.85). Similarly, resident physicians implicated the lack of a home program in a specialty/fellowship of interest as the most prominent barrier (3.48±1.78), followed by lack of connections/networking (3.17±1.50) and probability of matching (3.14±1.44).

Conclusions: The lack of a home program was an important barrier to pursuing a specialty or fellowship of choice for both medical students and resident physicians, respectively, and may have been heightened during the COVID-19 pandemic.

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INTRODUCTION

Recent survey-based studies have investigated various factors influencing medical students' career choices, including academic status, socioeconomic factors, and mentorship.[1,2] Perceived barriers to career advancement faced by resident physicians in comparison to medical students have yet to be elucidated. We aimed to evaluate and compare perceived barriers to attaining the desired residency specialty/fellowship of interest for both groups.

MATERIALS AND METHODS

Differences in perceived career barriers faced by United States (US)-based medical students and resident physicians were assessed using a Likert scale survey. Face validity was achieved through survey review by ten academic dermatology/psychiatry faculty members. Listservs of medical schools and organizations were utilized to distribute the survey through RedCap, an electronic data capture tool hosted at the University of California, Irvine (UCI).[3] Statistical analyses were conducted using Stata/SE 16.1. Differences in prevalence rates and means between groups were measured using Chi-squared tests and student t-tests (2-sided) for categorical variables and continuous variables, respectively. The UCI Institutional Review Board determined the study to be exempt status.

RESULTS

A total of 415 medical trainees accessed the survey (Table 1), with 404 submitted responses (301 medical students [61% 3rd/4th years] and 103 resident physicians of all training levels), and a survey response rate of 97.4% (surveys completed/surveys opened*100). Medical students indicated lack of opportunity to obtain alpha omega alpha (AOA) membership as the most crucial perceived barrier (mean Likert scale score ± standard deviation, 4.01±1.97), followed by USMLE Step 1 score (3.92±1.89), lack of home program in specialty/fellowship

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TABLE 1.

Demographic Characteristics of Survey Participations in the United States

	Medical Students (n=301)	Resident Physicians (n=103)	*P* value
Gender, n (%)	--	--	0.467
Cisgender Female	199 (66.1)	60 (58.3)	--
Cisgender Male	93 (30.9)	42 (40.8)	--
Genderqueer	2 (0.7)	0 (0)	--
Decline to Answer	5 (1.7)	1 (1.0)	--
Other[a]	2 (0.7)	0 (0)	--
Sexual Orientation, n (%)	--	--	0.062
Heterosexual	245 (81.7)	94 (91.3)	--
Gay	6 (2.0)	5 (4.9)	--
Lesbian	2 (0.7)	1 (1.0)	--
Bisexual	25 (8.3)	2 (1.9)	--
Queer	6 (2.0)	0 (0)	--
Asexual	2 (0.7)	1 (1.0)	--
Pansexual	4 (1.3)	0 (0)	--
Decline to Answer/blank	11 (3.7)	0 (0)	--
Specialty of Interest, n (%)	--	--	<0.001
Internal Medicine	43 (14.3)	17 (16.5)	--
Dermatology	36 (12.0)	26 (25.2)	--
Emergency Medicine	25 (8.3)	7 (6.8)	--
Family Medicine	28 (9.3)	8 (7.8)	--
Pediatrics	22 (7.3)	7 (6.8)	--
General Surgery	19 (6.3)	5 (4.9)	--
Obstetrics/Gynecology	22 (7.3)	3 (2.9)	--
Psychiatry	15 (5.0)	3 (2.9)	--
Radiology	5 (1.7)	11 (10.7)	--
Ophthalmology/Otolaryngology/ Plastic Surgery	16 (5.3)	2 (1.9)	--
Anesthesiology	10 (3.3)	4 (3.9)	--
Other[b]	60 (19.9)	10 (9.7)	--
Race, n (%)			
Caucasian or White	183 (60.8)	58 (56.3)	0.423
Black or African American	17 (5.7)	6 (5.8)	0.947
Asian	87 (28.9)	42 (40.8)	0.026
Native Hawaiian or Other Pacific Islander	4 (1.3)	4 (3.9)	0.108
American Indian or Alaskan Native	6 (2.0)	0 (0)	0.149
Other Race	12 (4.0)	1 (1.0)	0.134
Decline to Answer	12 (4.0)	2 (1.9)	0.327
Ethnicity, n (%)	--	--	0.841
Not Hispanic or Latino	264 (90.4)	92 (91.1)	--
Hispanic or Latino	28 (9.6)	9 (8.9)	--
Year in Training, n (%)	--	--	<0.001
Resident Physician	--	103 (100)	--
MS3-MS4c	183 (60.8)	--	--
MS1-MS2	104 (34.6)	--	--
MD/PhD or MD/Master's Student	9 (3.0)	--	--
Post-Graduate Research Fellow	5 (1.7)	--	--
Degree Type, n (%)	--	--	<0.001
Doctor of Medicine (MD)	198 (65.8)	64 (62.1)	--
Doctor of Osteopathic Medicine (DO)	100 (33.2)	29 (28.2)	--
Foreign Medical Graduate	3 (1.0)	10 (9.7)	--
Geographic Location, n (%)	--	--	<0.001
Northeast	13 (4.3)	19 (18.5)	--
Midwest	27 (9.0)	5 (4.9)	--
South	90 (29.9)	20 (19.4)	--
West	94 (31.2)	40 (38.8)	--
Northwest	27 (9.0)	0 (0)	--
Southwest	50 (16.6)	19 (18.5)	--

[a]Transgender female (n=0), transgender male (n=1), gender nonconforming (n=1), gender fluid (n=0), gender expansive (n=0), gender non-binary (n=0); [b]Neurologic surgery (n=1), neurology (n=14), orthopedic surgery (n=9), pathology (n=11), physical medicine and rehabilitation (n=9), thoracic surgery/vascular surgery (n=3), urology (n=3), other (n=7), unsure (n=13); [c]Includes student research fellows. *MS*, Medical Student. Statistically significant values are bolded.

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TABLE 2.

Comparison of Resident Physicians to Medical Students Responses- Likert Scale Score Results			
Likert Scale Score, Mean±SD	**Medical Students (n=301)**	**Resident Physicians (n=103)**	***P* value**
Personal/Familial Obligations	2.57±1.38	2.29±1.34	0.078
Financial Status	2.53±1.42	2.17±1.29	0.028
Available Opportunities at Medical School/Residency Program	3.00±1.50	3.06±1.58*	0.723
USMLE Step 1 Score	3.92±1.89*	3.08±1.53*	<0.001
Lack of Opportunity to Obtain Alpha Omega Alpha Membership	4.01±1.97*	2.84±1.81	<0.001
Lack of Opportunity to Obtain Multiple Honors, Awards, Scholarships, or Distinctions	2.99±1.54	2.52±1.30	0.006
Third-Year Clerkship Grades	3.58±1.95*	2.36±1.16	<0.001
Obtaining Specialty Specific Letters of Recommendation	3.57±1.87	2.68±1.29	<0.001
Obtaining Multiple Peer-Reviewed Research Publications	3.58±1.65*	2.95±1.41	<0.001
Obtaining Multiple Posters/Presentations	3.36±1.71	2.83±1.41	0.005
Lack of Opportunity to Participate in Multiple Volunteer Experiences	2.18±1.26	2.10±1.01	0.544
Probability of Matching	3.38±1.63	3.14±1.44*	0.175
Internalized and/or Social Perceptions of the Field	2.89±1.50	2.49±1.38	0.016
Specialty's Perception of URM Students	3.11±1.93	2.39±1.73	<0.001
Specialty's Perception of SGM Students	3.09±1.99	2.47±1.80	0.005
Racial/Ethnic Background	2.32±1.53	2.12±1.32	0.235
Sexual Orientation and/or Gender Identity	2.25±1.54	1.87±1.33	0.028
Lack of Home Program in Specialty/Fellowship of Interest	3.62±1.85*	3.48±1.78*	0.506
Obtaining Mentorship	3.01±1.56	2.77±1.45	0.172
Lack of Diversity in Specialty/Fellowship of Interest	2.71±1.63	2.43±1.48	0.118
Lack of Connections/Networking Opportunities	3.23±1.54	3.17±1.50*	0.719

URM, Underrepresented in Medicine, SGM, Sexual and Gender Minority
Statistically significant values are bolded
Likert scale: 1= "Strongly Disagree," 2 = "Disagree,"3 ="Neutral," 4 = "Agree," 5= "Strongly Agree," 6 = "N/A"
*Top 5 barriers

of interest (3.62±1.85), third-year clerkship grades (3.58±1.95), and obtaining multiple peer-reviewed research publications (3.58±1.65). Alternatively, resident physicians implicated the lack of a home program in a specialty/fellowship of interest as the most notable barrier (3.48±1.78), followed by lack of connections/networking (3.17±1.50), probability of matching (3.14±1.44), USMLE Step 1 score (3.08±1.52), and available opportunities at their program (3.06±1.58; Table 2).

DISCUSSION

Our results revealed that medical students and residents find the lack of a home program at the medical school/residency training site as a notable barrier for all residencies/fellowships of interest. Interestingly, it was the highest self-reported barrier for residents (3.48±1.78) and one of the top five barriers for medical students (3.62±1.85). To date, this perceived barrier to obtaining a residency specialty or fellowship of choice has not been properly addressed in the literature at either the medical student or resident trainee level. Lack of a home program may have emerged as a prominent barrier as a sequela of the pandemic. During the pandemic, away rotations were limited, conferences were held virtually, and opportunities for in-person networking were limited, further challenging individuals lacking a home program.

Identifying local residency and fellowship programs to serve as proxy home programs is one potential solution to improve access to mentors, research, and networking opportunities.[4] Moreover, increased transparency from residency and fellowship programs regarding selection factors would promote equity for candidates without a home program.

Another prominent barrier for medical students and resident trainees alike was the Step 1 scores. The implementation of pass/fail scoring may address the consequential hindrance imparted by board exams. While AOA status was reported as a major obstacle for medical students, the recent 2020 National Resident Matching Program survey of program directors demonstrated a lower emphasis on AOA status compared to other factors, such as board exams.[5]

Study limitations include cross-sectional design and the potential for response bias.

CONCLUSIONS

Our study provides updated insights into perceived barriers to career advancement, as assessed from a large sample of medical students and residents from diverse specialties. Additional studies are needed to further assess perceptions of specific underrepresented groups. Community initiatives and programs are needed to address obstacles, with follow-up measures to evaluate program utility and increase accountability.

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DISCLOSURES

The authors have no conflicts of interest to declare.

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