

Racial and Ethnic Minority Medical Students' Perceptions of and Interest in Careers in Academic Medicine

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Abstract

Purpose

To describe diverse medical students' perceptions of and interest in careers in academic medicine.

Method

In 2010, the authors invited students attending three national medical student conferences to respond to a survey and participate in six focus groups. The authors identified trends in data through bivariate analyses of the quantitative dataset and using a grounded theory approach in their analysis of focus group transcripts.

Results

The 601 survey respondents represented 103 U.S. medical schools. The majority

(72%) were in their first or second year; 34% were black and 17% were Hispanic. Many respondents (64%) expressed interest in careers in academic medicine; teaching and research were viewed as positive influences on that interest. However, black and Hispanic respondents felt they would have a harder time succeeding in academia. The 73 focus group participants (25% black, 29% Hispanic) described individual- and institutional-level challenges to academic medicine careers and offered recommendations. They desired deliberate and coordinated exposure to academic career paths, research training, clarification of the promotion process,

mentorship, protected time for faculty to provide teaching and research training, and an enhanced infrastructure to support diversity and inclusion.

Conclusions

Medical students expressed an early interest in academic medicine but lacked clarity about the career path. Black and Hispanic students' perceptions of having greater difficulty succeeding in academia may be an obstacle to engaging them in the prospective pool of academicians. Strategic and dedicated institutional resources are needed to encourage racial and ethnic minority medical students to explore careers in academic medicine.

Numerous studies have described efforts to assess racial and ethnic minority physicians' interest in careers in academic medicine and to address the obstacles that they may face.¹⁻⁶ Yet despite institution-level and broader federal efforts, there has been minimal growth in the representation of racial and ethnic minorities in the academic medicine workforce over the past decade.⁷ In 2010, 28.6% of the U.S. population self-identified as black or Hispanic; however, blacks and Hispanics constituted just 12.5% of physicians and 6.9% of medical school faculty.^{7,8} Given that

medical students serve as a major source of prospective faculty, understanding their views about academia may play an important role in identifying ways to increase racial and ethnic minority inclusion in the academic medicine workforce. Because of the limited number of studies probing the perceptions of trainees, however, relatively little is known about racial and ethnic minority medical students' interest in academia.⁹⁻¹¹

The limited research that exists indicates that female and MD-PhD students, but not students in racial and ethnic minority groups, are pursuing academic medicine as a career option.¹² This finding may be related to the creation of a more nurturing institutional climate through institutional, national, and federal workforce interventions for female and MD-PhD students.¹ Jeffe and colleagues¹² found that racial and ethnic minority medical students were less likely than their white counterparts to report an interest in pursuing academia on medical school entry and were more likely to report diminished intent on graduation.

Additionally, Andriole and colleagues¹³ found that among recent medical school graduates, being female or an MD-PhD program graduate was independently associated with a greater likelihood of full-time faculty appointment, whereas race and ethnicity were not. Little else is known about when, why, and how racial and ethnic minority medical students make their decisions about academia.^{1,9}

To contribute to the understanding of diverse medical students' perceptions of academia, we designed a mixed-methods study to explore their awareness of, interest in, and preparedness for pursuing careers in academic medicine. By recruiting participants at meetings of three national medical student organizations, we were able to collect substantial data from black and Hispanic students to allow for comparisons with other racial and ethnic groups.

Method

Given the lack of prior research on medical students' perceptions of academic medicine careers, we employed

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a triangulation mixed-methods design in which quantitative and qualitative data collection occurred simultaneously.¹⁴ The quantitative data collected via survey enabled the identification of trends by racial and ethnic identity, whereas the qualitative data collected via focus groups facilitated an in-depth exploration of sensitive content and a fuller discussion of possible interventions to address challenges. Our survey and our focus group discussion guide included complementary questions.

Using a convenience sampling strategy designed to allow for a high proportion of black and Hispanic respondents, we engaged medical students at the 2010 annual conferences of three medical student organizations: the Latino Medical Student Association (LMSA; March 4–7, Chicago, Illinois), the Student National Medical Association (SNMA; March 31–April 4, Chicago, Illinois), and the American Medical Association (AMA) Medical Student Section (June 10–12, Chicago, Illinois). All three organizations encourage membership irrespective of demographic characteristics, but the SNMA and the LMSA have significant proportions of black and Hispanic members, respectively. Moreover, our strategy facilitated the collection of candid data in a setting typically focused on personal and professional development—and perceptually “safer” and more culturally congruent than students’ own institutions. This latter point is particularly important given that some institutional climates are reported as not valuing or supporting racial and ethnic minorities.^{2,15–17}

Recruitment strategy

Prior to each conference, we sent e-mails to registrants announcing the study. Conference attendees received study materials (questionnaire, consent form, and focus group recruitment letter) in their conference bags. Additionally, the study was announced and study materials were disseminated during or after plenary and administrative voting sessions.

Questionnaires and consent forms were collected at predetermined locations as well as before and after sessions. Students were able to sign up to participate in a focus group by sending a message to an e-mail address provided in the study materials in their conference bags, by

indicating interest on clipboards passed around during plenary sessions and available at survey collection areas, or by approaching a study team member. Prospective focus group participants were asked to provide their medical school name, year of study, gender, race and ethnicity, and contact information. We randomly selected participants on the basis of these characteristics and contacted them via e-mail, text message, and/or telephone with the time and location of the focus group. As an incentive for participation, we entered participants’ names in a drawing for a \$250 gift certificate to be awarded at each conference.

This study was approved by the institutional review boards of the American Institute of Research (EX00133) and Montefiore Medical Center (10-02-032E).

Survey

Our survey questions were the same as or modified versions of questions on the 2010 Association of American Medical Colleges (AAMC) Medical School Graduation Questionnaire (GQ).¹⁸

Our survey asked students to use a five-point Likert-type scale to assess their level of satisfaction with opportunities during medical school to explore potential career choices (1 = very satisfied to 5 = very dissatisfied), their level of interest in academic medicine as a career (1 = very interested to 5 = very disinterested), and the influence of two factors—performing teaching and performing research—in determining their interest (1 = very positive to 5 = very negative). Given that career choice is influenced by positive or negative emotional encounters, we explored perceptions related to race and ethnicity by asking students to respond to the following statement: “Racial and ethnic minorities have a harder time succeeding in academic medicine.” Response options ranged from 1 = strongly agree to 5 = strongly disagree.

Students also responded to statements regarding the acquisition of professional skills using a five-point Likert scale (1 = strongly agree to 5 = strongly disagree): “I do not have sufficient guidance to develop a publishable research project,” “There are numerous opportunities at my institution for me to develop teaching

skills,” and “I know which personal activities and achievements are important to document for a career in academic medicine.”

Sociodemographic items included sex, race and ethnicity, school year, participation in a dual-degree program, interest in a primary care career, regional location of medical school, anticipated total education debt on completion of medical school, and preferred career role. For complete survey questions and accompanying scales, see Supplemental Digital Appendix 1 (<http://links.lww.com/ACADMED/A144>).

Focus groups

We held focus groups to conduct a more in-depth investigation of medical students’ interest and perceptions of challenges in pursuing careers in academic medicine, their career preparation activities, and their recommendations to facilitate diversity in the workforce. We used a structured set of questions designed by the research team, which included experts in medical student career counseling, medical education, and diversity research (see Supplemental Digital Appendix 2, <http://links.lww.com/ACADMED/A144>). At least two of us were present at each of the six focus groups. (Two focus groups were conducted at each conference.) The average focus group length was 50 minutes. Focus groups were audio-recorded and professionally transcribed.

Pilot testing

To refine our data collection instruments, we pilot tested the survey and focus group protocol with, respectively, 34 medical students and a mixed group of 10 medical students and residents at the LMSA Northeast Regional Conference (February 2010, New Haven, Connecticut). We made only minimal changes to the instruments based on this process. Also, to avoid duplicate surveys, we added a question asking whether the respondent had already completed the survey.

Data analysis

Quantitative data. We compared dependent quantitative variables across independent variables using chi-square analyses where appropriate for discrete variables. We calculated mean responses for quantitative variables (i.e., satisfaction with career development during medical school, teaching

opportunities, and research support) and compared them across racial and ethnic categories using ANOVA. We employed a level of statistical significance set at $P < .05$, recognizing that tests of statistical significance are approximations that serve as aids to interpretation and inference. We (K.Z., J.S., L.C.P.) used SPSS Version 17.0 (SPSS Inc., Chicago, Illinois) for the analyses.

Qualitative data. A multidisciplinary team of investigators (L.P., E.L.R., J.S., L.C.P.) from primary care, non-primary care, and medical education were involved in coding the transcripts and analyzing the data using the grounded theory approach.¹⁹ Grounded theory is a methodology that involves iterative development of theories about what is occurring in the data as the data are collected. This process develops themes that emerge “from the ground” based on responses to the open-ended questions developed for the study. Broad codes were identified reflecting stakeholder responses to questions about factors shaping the decision to pursue careers in academic medicine. The four authors independently read and coded all of the transcripts to ensure between-coder comparisons and interrater reliability. They then met to discuss the common themes that they identified in the transcripts and generated a list of the themes that emerged most frequently in the transcripts. Discrepancies in coding were resolved by group consensus.

Results

Survey results

Approximately 1,500 medical students attended the three conferences. We collected 623 surveys, from which we eliminated 22 (3.5%) because of incomplete responses. Of the 601 respondents with complete surveys, 246 (41%) were male and 349 (58%) were female; 213 (35%) self-identified as white, 207 (34%) as black, 104 (17%) as Hispanic, and 67 (11%) as Asian (Table 1). Our sample included students from 103 U.S. medical schools. Most respondents were first-year ($n = 195$; 32%) or second-year ($n = 240$; 40%) students. About half ($n = 291$; 48%) expected to have more than \$150,000 in educational debt on completing medical school. Most respondents ($n = 499$; 83%) indicated they were in MD-granting programs, but 84 (14%) reported being in dual-degree

Table 1

Characteristics of Survey Respondents, Focus Group Participants, and Students Enrolled in U.S. Medical Schools, 2010

Characteristics	Survey respondents, n (% of 601)	Focus group respondents, n (% of 73)	Students enrolled in U.S. medical schools, n (% of 78,764)*
Gender: female	349 (58)	33 (45)	37,373 (47)
Racial/ethnic distribution[†]			
Hispanic/Latino	104 (17)	21 (29)	6,487 (8)
Black/African American	207 (34)	18 (25)	5,508 (7)
White	213 (35)	29 (40)	47,327 (60)
Asian/Pacific Islander	67 (11)	5 (7)	17,577 (22)
Other	10 (2)	0 (0)	755 (< 1)
Year of medical school			
First year	195 (32)	25 (34)	—
Second year	240 (40)	30 (41)	—
Third year	88 (15)	7 (10)	—
Fourth year and beyond	64 (11)	10 (14)	—
Geographic location of medical school			
Northeast	175 (29)	19 (26)	—
South	143 (24)	17 (23)	—
Central	199 (33)	21 (29)	—
West	55 (9)	16 (22)	—
Medical education debt > \$150,000	291 (48)	32 (44)	
Career role[‡]			
Academic role	346 (58)	60 (82)	—
Nonacademic role	199 (33)	8 (11)	—

*Data in this column are from the Association of American Medical Colleges.³² The total of 78,764 includes 3,543 (4%) non-U.S. students (e.g., foreign students, no response, citizenship unknown). The authors of this study did not assess citizenship.

[†]Students participating in this study's survey or focus groups could self-identify as members of more than one racial/ethnic group. The authors categorized students into one racial/ethnic category using the following coding scheme: if Hispanic/Latino, then Hispanic/Latino; otherwise, black/African American > white > Asian/Pacific Islander > “other.” “Other” indicates responses of American Indian or Alaska Native, “other,” or “unknown.”

[‡]Academic role indicates full-time university faculty or conducting clinical practice and teaching/research.

Nonacademic role indicates full-time clinical practice, employment by state or federal agency, medical/health care administration without practice, undecided, and “other.”

programs. Overall, more students reported interest in non-primary-care specialties ($n = 355$; 59%) than in primary care specialties ($n = 246$; 41%).

The majority of respondents ($n = 354$; 59%) were satisfied or very satisfied with the opportunities their medical school provided to pursue various career paths, and 383 (64%) were interested or very interested in pursuing a career in academic medicine (Table 2). With regard to career roles, 346 respondents (58%) preferred an academic role (i.e., full-time university faculty or clinical practice with teaching/research), whereas 199 (33%) preferred a nonacademic role (i.e., solely clinical practice, state or federal agency work, or medical/health care administration work; Table 1).

About half ($n = 304$; 51%) characterized the opportunity to perform research as a positive or very positive influence on their interest in academic medicine, and the majority ($n = 482$; 80%) viewed teaching as a positive or very positive influence.

With regard to the preparations necessary for academia, only 202 respondents (34%) agreed or strongly agreed that they knew which personal activities and achievements are needed for a career in academia, 278 (46%) agreed or strongly agreed that they had numerous opportunities to develop their teaching skills at their institution, and 309 (51%) disagreed or strongly disagreed that they did not have sufficient guidance to develop a publishable research project

Table 2
Responses of 601 Medical Students to a 2010 Survey About Perceptions of and Interest in Academic Medicine as a Career and Career Development Opportunities

Survey item	Responses by rating, no. (% of 601)*		
	1 or 2	3	4 or 5
How satisfied are you with the level of career development support you received during medical school?†	354 (59)	154 (26)	81 (14)
How interested are you in academic medicine as a career?‡	383 (64)	115 (19)	91 (15)
Rate the following factors' influence on your interest in a career in academic medicine§			
Performing research	304 (51)	103 (17)	185 (31)
Performing teaching	482 (80)	67 (11)	42 (7)
Choose the best response for the interest/attitude and support statements¶			
I know which personal activities and achievements are important to document for a career in academic medicine	202 (34)	156 (26)	238 (40)
There are numerous opportunities at my institution for me to develop teaching skills	278 (46)	163 (27)	157 (26)
I don't have sufficient guidance to develop a publishable research project	152 (25)	138 (23)	309 (51)
Racial and ethnic minorities have a harder time succeeding in academic medicine	239 (40)	156 (26)	202 (33)

* See individual item footnotes for rating scales. The survey instrument is available as Supplemental Digital Appendix 1 (<http://links.lww.com/ACADMED/A144>).

† Response options: 1 = very satisfied, 2 = satisfied, 3 = neutral, 4 = dissatisfied, 5 = very dissatisfied.

‡ Response options: 1 = very interested, 2 = interested, 3 = neutral, 4 = disinterested, 5 = very disinterested.

§ Response options: 1 = very positive, 2 = positive, 3 = unsure, 4 = negative, 5 = very negative.

¶ Response options: 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly disagree.

(Table 2). There were no significant statistical differences in preparedness by racial/ethnic category (Table 3).

Overall, 239 (40%) of the respondents agreed that and 156 (26%) were neutral as to whether racial and ethnic minorities have a harder time succeeding in academic medicine careers. Only 37 (18%) of the white and 16 (24%) of the Asian respondents agreed or strongly agreed with this statement, compared with 125 (61%) of the black and 57 (55%) of the Hispanic respondents (chi-square analysis, $P < .001$).

Interest and activities by respondent characteristics. We found no statistically significant differences when comparing race and ethnicity, gender, medical education debt, geographic location of medical school, or type of educational program by interest in academic medicine (interested or very interested) or preferred career role (academic or nonacademic). However, compared with respondents who were interested in primary care specialties, those who were interested in non-primary-care

specialties were significantly more likely to be concurrently interested in academic medicine (non-primary care = 72% versus primary care = 54%; chi-square analysis, $P < .001$) and to prefer an academic role (non-primary care = 70% versus primary care = 53%; chi-square analysis, $P < .001$).

Perceived career opportunities and interest by race/ethnicity. By ANOVA, we found no significant differences by racial and ethnic categories for the following items: satisfaction with medical school opportunities to explore potential career choices; interest in academic medicine careers; the influence of performing research or performing teaching on interest in pursuing academia; knowing which personal activities and achievements to document for a career in academic medicine; availability of opportunities at respondent's institution to develop teaching skills; and level of guidance to develop a publishable research project (Table 3). As noted above, black and Hispanic respondents were statistically more likely than white or Asian

respondents to agree with the statement "Racial and ethnic minorities have a harder time succeeding in academic medicine."

Focus group findings

Approximately 105 students volunteered to participate in a focus group. We contacted 90 of them, and 73 participated in one of the six focus groups (7–18 participants each). Participants' demographic characteristics are described in Table 1.

Based on the content analysis, themes fell under four broad categories—perceived challenges in pursuing an academic medicine career, perspectives on confronting perceived challenges, academic medicine career preparation activities, and recommendations to facilitate diversity.

Perceived challenges in pursuing an academic medicine career. Themes in this category included lack of information on academic medicine as a career option, lack of competency to perform scholarly research, and obstacles in the promotion process.

Lack of information on academic medicine as a career option. Some students felt they lacked an understanding of the process for pursuing academic careers, whereas others described the process as "secretive." Participants suggested that a simple definition of academic medicine or introducing the career option during college could address the lack of transparency of—and stimulate interest in—academia.

I think the huge thing lacking is if you're interested, this is how you do it. I feel like there are tons of information out there ... if you want to be a surgeon do this ... but if you want to teach future physicians or if you want to do academic medicine there is no then do this. It seems all very secretive to me. (Female student, white)

Lack of competency to perform scholarly research. Students viewed certain competencies related to research as critical to success in academia. Some felt that not having conducted research in undergraduate training, lacking mastery of statistics, and being inexperienced in publishing research would present professional challenges. Other challenges they described included

Table 3

Mean Ratings of 601 Medical Students, by Racial/Ethnic Identity, 2010 Survey on Interest in and Perceptions of Academic Medicine Careers and Career Development Opportunities

Items*	Mean ratings by racial/ethnic identity [†]					P value [‡]
	Hispanic/Latino (n = 104)	Black/African American (n = 207)	White (n = 213)	Asian/Pacific Islander (n = 67)	Other (n = 10)	
Satisfaction with level of career development support during medical school [§]	2.78	2.45	2.65	2.49	2.60	.210
Interest in academic medicine as a career [¶]	2.35	2.65	2.47	2.36	2.20	.274
Influence of performing research on career interest ^{**}	2.48	2.86	2.89	2.96	3.10	.155
Influence of performing teaching on career interest ^{**}	1.87	1.89	1.90	2.07	1.80	.847
Knowledge of activities and achievements that are important to document for a career in academic medicine ^{††}	3.13	3.16	3.14	2.82	3.60	.189
Numerous opportunities at institution to develop teaching skills ^{††}	2.87	2.60	2.81	2.75	3.40	.082
Insufficient guidance to develop a publishable research project ^{††}	3.57	3.28	3.37	3.39	3.60	.342
Racial and ethnic minorities have a harder time succeeding in academic medicine ^{††}	2.53	2.44	3.55	3.42	2.70	.000

*For complete wording of survey items, see Table 2.

[†]See individual item footnotes for rating scales. Students could self-identify as members of more than one racial/ethnic group. The authors categorized respondents into one racial/ethnic category using the following coding scheme: if Hispanic/Latino, then Hispanic/Latino; otherwise, black/African American > white > Asian/Pacific Islander > "other." "Other" indicates responses of American Indian or Alaska Native, "other," or "unknown."

[‡]Mean responses by self-identified racial/ethnic categories were compared by ANOVA; level of statistical significance was set at $P < .05$.

[§]Response options: 1 = very satisfied, 2 = satisfied, 3 = neutral, 4 = dissatisfied, 5 = very dissatisfied.

[¶]Response options: 1 = very interested, 2 = interested, 3 = neutral, 4 = disinterested, 5 = very disinterested.

^{**}Response options: 1 = very positive, 2 = positive, 3 = unsure, 4 = negative, 5 = very negative.

^{††}Response options: 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, 5 = strongly disagree.

lack of familiarity with institutional review board processes and insufficient institutional infrastructure to support research despite cultural expectations for faculty and students to produce publications.

I think the particular obstacle for me will be how stringent the institution is on their publication requirements. You have some places that really do follow publish or perish. (Male student, black)

For me, the pressure to constantly publish is something that I don't know if I want that kind of stress in my life, and I feel like they may take away from my clinical practice and the reason I went into medicine. (Female student, Hispanic)

Obstacles in the promotion process. Perceptions of academic medicine's culture and environment presented another category of challenges. Several participants commented on obstacles in the promotion process, including a lack of transparency regarding policies, lengthy time to achieve tenure, and the existence of "a good old boys club." Others were concerned that activities such as teaching, mentoring, and

community service would not be valued in the promotion process.

If I'm there for 10 years looking for tenure, I have to sit in front of these three guys and ... they are nothing like me, don't know where I'm from nor have the same background. I mean we have similar interests but we don't have similar goals per se. I have to sit there ... and they say whether or not I receive tenure, whether my family will have stability, or permission to be considered part of their clique or organization. ... I don't like that. (Male student, Hispanic)

Research is more highly valued than community service and I think a lot of people of color want to do something like community service or give back. So if there was a way to better quantify the impact that they were having or sort of have some promotion based on community service or things like that, that might also serve to encourage more people to think about academic medicine because they don't feel that internal tension of like do I do community service or focus on getting tenured. (Female student, black)

I think women are still struggling to get those higher level positions like being

professors or getting tenured, being head of research labs and things like that. It's definitely something that still needs to be worked on and promoted. It's very frustrating. (Female student, Hispanic)

Perspectives on confronting perceived challenges. A number of themes emerged from participants' reflections on how to address perceived challenges. Some students believed that the academic medicine culture would change as older faculty departed. Others mentioned overcoming barriers by gaining research and teaching experience during medical school and residency, socializing more with colleagues within and outside their specialty department, and identifying mentors. Some felt they would have to take a stand when others speak negatively about race or ethnicity.

I think for the gender and ethnicity barrier ... that's just going to have to be something that is constantly pinpointed. Anytime anybody says something about someone's gender, ethnicity, sexuality, you don't let it slide because whenever people let it slide that becomes the barrier that is allowed. (Male student, Hispanic)

Academic medicine career preparation activities. Two themes emerged in this category: mentored teaching, research, and leadership experiences throughout training; and career development resources.

Mentored teaching, research, and leadership experiences throughout training. Participants shared a number of prior professional experiences that they felt had facilitated their interest in academia, including teaching other medical students, participating in clerkships outside their institution, and working with mentors and advisors. They also viewed summer research programs and research opportunities available during high school and college as career facilitators. They mentioned that the reassurance they received through their interactions with excited and passionate academicians who were teaching and conducting research had helped motivate them to consider careers in academic medicine.

Just hearing people excited about holding academic positions, hearing program directors on residency trails saying I wouldn't trade my job for the world, I love what I do, I love teaching residents, I love teaching students, faculty and attendings. (Male student, black)

Career development resources. Participants felt that they needed education about academic medicine career development resources, including information about grants, potential mentors, presentation opportunities, and workshops on creating a curriculum vitae and conducting research. They noted that additional career development can be attained through assistantships during undergraduate studies or in medical school during the summer months, participating in the medical school accreditation process, sitting on the admission committee, or partaking in curriculum development. One participant suggested informing even premedical students about academic medicine careers, whereas another commented on the lack of academic medicine career interest groups in medical schools.

After your MCAT, I know you start getting a lot of mail so maybe that would be a good time ... to get more information about other degree programs and academic medicine. (Male student, Hispanic)

For every specialty, there's like a professional organization but like for academic medicine, I don't think there's

a professional organization nationwide. And because of that, I don't think that in the medical schools there are academic medicine interest groups like in medicine for instance. (Male student, Hispanic)

Recommendations to facilitate diversity. Themes in this category included heightening awareness of the lack of diversity in academia, evaluating promotion and tenure, linking pipeline programs, and increasing institutional resource support.

Heightening awareness of the lack of diversity in academia. Whereas some students felt that diversity in academia would eventually occur over time, others recommended enhanced and multifaceted efforts to promote diversity. Their recommendations included increasing incentives and financial support for academicians, improving efforts to facilitate promotion of diverse faculty, and developing innovative strategies to further transform the culture of academic medicine. One participant commented on the effect of faculty diversity on students' career choices:

Seeing a person who looks like you in that position makes a goal like that much more achievable because you might face similar obstacles. And I know in our school, I have never seen a professor of color so I would never—it just makes it like one more obstacle or one more thing in your way like you're not sure of—why aren't they there? (Female student, black)

Evaluating promotion and tenure. Participants considered promotion and tenure as areas where more awareness, exposure, and transparency are needed. They recommended examining the glass ceiling, promoting junior faculty earlier, and addressing “cultural taxation”—that is, minority faculty assuming a greater service workload than their counterparts. Students acknowledged that such transformation efforts require the support of deans and department chairs as well as faculty actively recruiting and mentoring diverse medical students. They recommended enhancing partnerships between medical schools and professional organizations (e.g., SNMA, LMSA, AMA) with the aim of providing additional professional development opportunities to students and residents.

In academic medicine, actually, your advancement, tenure, promotion, salary and ... even your sense of success, it's

dependent on other people and your superiors or your seniors. And so that's a challenge. (Male student, black)

Linking pipeline programs. Linking efforts across all levels of medical education, from premedical education to faculty development, was perceived as critical to efforts to increase diversity in academic medicine. Students felt that linked pipeline programs should focus on expanding recruitment and enhancing mentorship, especially of racial and ethnic minority students and trainees. Another outcome of these efforts, they suggested, would be to increase the possibility that minority students would be encouraged by the presence of other minorities during their training.

Latinos in general that go into medicine aren't prepared for a career in medicine from birth. A lot of other people start the process early on. They have mentors early on so they already know their options. I don't think I would have been receptive of an academic career because I was just trying to get through undergrad and hopefully make it to medical school. (Male student, Hispanic)

Institutional resource support. Efforts to further transform the culture and environment of academic medicine would involve increasing support for various institutional resources. For example, students felt that institutions needed to provide better infrastructure to aid medical students in participating in research-related activities and to address workload issues for faculty.

Most academic physicians are busy to the point where sometimes the medical student gets put on the backburner. I think networks need to be formed, a team effort. So the burden is not all on one academic physician to take care of 10 students and still do what he wants to do. (Male student, black)

Discussion

Our study builds on prior work on racial and ethnic diversity in the academic medicine workforce.^{2,4-6,9,11,17} Sixty-four percent of the medical students who responded to our survey, regardless of race or ethnicity, indicated interest in a career in academic medicine. They characterized performing teaching and research, activities central to academia, as positive influences on their interest. Through in-depth discussions in our focus groups, we found that students

desire earlier exposure and opportunities to participate in academia. They recommended transparency with regard to gaining access to and succeeding in an academic role (e.g., the promotion process, tenure), enhanced instruction on conducting scholarly research, and increased mentorship. At the institutional level, they recommended providing greater support for faculty to assist medical students in developing fundamental teaching and research skills and employing a multifaceted approach to expand diversity in the academic medicine workforce. In addition, future research can investigate the perception among black and Hispanic respondents that “Racial and ethnic minorities have a harder time succeeding in academic medicine.”

Our survey used a modified version of question 23 on the 2010 AAMC GQ¹⁸ to assess our respondents’ interest in a career as academic medicine faculty. A greater proportion of our sample of students—the majority of whom were in their first two years of medical school—reported such a career interest (57.6%) than did respondents to the similar question 22 on the 2010 AAMC Matriculating Student Questionnaire (MSQ; 10.3%)²⁰ or question 23 on the 2010 GQ (43.1%).¹⁸ Recent research has shown that career preference for a full-time faculty position on the GQ is predictive of actually being appointed to such a position.¹³ However, unlike Jeffe et al,¹² we did not find differences in academic medicine career interest by race and ethnicity. Our survey sample differed from that of Jeffe et al¹² in numerous ways, however; for example, ours had greater proportions of female respondents, of black and Hispanic respondents, and of respondents with medical education debt greater than \$150,000. Also, students in our sample were attending national conferences that offer workshops on professional development, health policy, and community activism. Students who attend these conferences may have different personal and professional aspirations than their peers who do not attend, and these aspirations may be more congruent with the pursuit of academia. For federal agencies and private organizations engaged in promoting racial and ethnic diversity in the academic medicine workforce, our study highlights an important subsection of the medical student population on

which to focus resources in efforts to facilitate a larger prospective pool of diverse academic faculty.

Although nearly two-thirds of survey participants reported satisfaction with medical school opportunities to explore potential career choices, they also desired greater information on academia and how to succeed along that career path. In the focus groups, several students reported not knowing how to define an academic medicine career and commented that they found academia to be “secretive,” especially with regard to completing scholarly research and understanding the promotion process. Regarding the promotions process, students were most concerned with achieving tenure and lacked a general appreciation of promotion criteria or of nontenure lines (e.g., serving as a volunteer faculty member). Medical students gain significant exposure to specialty choices (e.g., internal medicine, pediatrics, surgery) during their training through clerkships, special electives, and specialty groups, and other opportunities that help prepare them for the Match. There are also numerous research fellowships for medical students designed to help them build a foundation in research (e.g., programs offered by the Doris Duke Charitable Foundation²¹ and the Howard Hughes Medical Institute²²). However, our findings support the development of programs that explicitly promote academic medicine careers through cultivating interests in service, administration, leadership, and teaching. It is unclear to what extent medical schools have “explicit” academic medicine clerkships, special electives, or specialty groups. Well-established programming exists at the national level (e.g., Executive Leadership in Academic Medicine [ELAM]²³ and AAMC Minority Faculty Career Development Seminar [MinFAC]²⁴) and institution level (e.g., Northeast Minority Faculty Development Consortium²⁵) to sustain and promote junior to senior faculty along an academic medicine track, but similar efforts have not been reported for medical students. Furthermore, the potential benefit of students participating in these faculty-focused efforts is unclear.

There is a lack of understanding of the personal and professional factors that contribute to medical students’ pursuit of careers in academia. We found students’

interest to stem from a desire to facilitate the success of others and to engage in scholarly teaching, research, and community-based activities. Jeffe et al¹² indicate that “medical school experiences may have a positive impact on women’s interest in academic medicine careers but a negative impact on underrepresented minority students’ interest in academic medicine careers.” However, little prior research attempts to describe those experiences. In our study, focus group participants felt the general lack of diverse faculty and diverse mentors, the inability of diverse faculty to be promoted, and insufficient institutional efforts to address cultural issues such as the “glass ceiling” and “cultural tax” deterred some people from pursuing careers in academia.²⁶ These themes have been similarly reported by black and Hispanic faculty and women faculty when asked about barriers to facilitating diverse faculty.^{27–31}

Among U.S. medical school enrollees in 2010, there were more black and Hispanic women (n = 6,674) than black and Hispanic men (n = 5,321).³² Our findings do not conflate an interaction between gender and race and ethnicity as our sample of focus group participants had a slightly greater proportion of black and Hispanic male than black and Hispanic female participants. The comments quoted in this article demonstrate that minority men and women have similar perceptions. Future studies should describe medical student perceptions by gender. It is unclear whether the perceptions shared in our focus group were based on participants’ impressions of academia as set forth by faculty, their own personal readings and interpretations, or other influences.

The students in our focus groups described specific obstacles to pursuing academia and suggested ways to overcome them. Overall, they reported a lack of awareness of academic medicine and the various career paths. Efforts to increase academic medicine faculty diversity, like MinFAC and ELAM, should be expanded or replicated to target medical students. Our respondents felt that raising some level of awareness among high school and college students would further facilitate diversity efforts. Existing national programs (e.g., Aspiring Docs³³ and the Summer Medical and Dental Education Program³⁴) and

institution-based programs (e.g., Einstein Hispanic Center of Excellence's Bronx Science and Health Opportunities Partnership [BxSHOP] Network³⁵) are examples of structures that could be adapted to broaden awareness of academic medicine careers among premedical students. Moreover, diverse medical students could be trained to teach in these programs, which may offer them valuable teaching experience and heighten premedical students' awareness of diverse academic role models.

A perceived "secrecy" surrounding academic medicine careers may serve as a barrier to ensuring that racial and ethnic minority students will consider and eventually serve as full-time, part-time, or volunteer faculty. Students expressed concern about the notion of a "good old boys club" and generational differences. Heightened networking and academic socialization skills that facilitate building relationships with colleagues in academia can prepare students to overcome these barriers. Establishing a relationship with a mentor with common interests can help ensure that a student will explore and participate in teaching, research, and other relevant scholarly activities.³⁶ Access to diverse faculty in particular may alleviate perceptions that racial and ethnic minority faculty are not included or promoted at the institution. Various professional development groups of the AAMC (e.g., Group on Diversity and Inclusion, Group on Student Affairs, and Group on Faculty Affairs) can help identify and train diverse faculty to network with and mentor racial and ethnic minority students.³⁷

Strengths and limitations

This study's strengths include a mixed-methods design that provided a detailed description of medical students' interest in and perceptions of academic medicine careers. To the best of our knowledge, it captures the perceptions of the largest cross-section of racial and ethnic minorities in a study probing interest in careers in academic medicine to date.

In terms of limitations, this study used a convenience sample with a twofold self-selection bias: self-selection of students to attend certain national medical student conferences, and self-selection to participate in the study. Our sample

of survey respondents and focus group participants, in comparison to the larger medical student community in the United States, may reflect students with a greater interest in career development, networking, and facilitating change through organized efforts. Our sample may also differ from the conference attendees who did not participate (e.g., appreciation of careers in academic medicine versus disinterest in academia, present for whole conference versus a segment of conference and therefore unavailable). Our subset of survey respondents may overrepresent students interested in academic medicine as evidenced by the greater percentage reporting an interest than the percentages of matriculating and graduating medical students reporting interest on the AAMC MSQ and GQ, respectively. However, addressing the concerns of this group may allow for the development of focused interventions to maintain such students' interest in academic medicine careers and enable them to spread awareness of academia among classmates at their institutions.

Conclusions

Our sample of medical students attending national medical student conferences represents a subsection of the medical student population with a high level of interest in academic medicine careers, regardless of racial or ethnic identity. However, a significant proportion of the students, particularly black and Hispanic students, felt that it would be more difficult for them than for some of their peers to succeed in academic medicine. The students in our sample need additional relevant experience and information on career paths and success in academic medicine. In particular, they desire transparency, mentorship, training in research and teaching, opportunities to perform community-based research and educational scholarship, and greater institutional commitment to increasing the diversity of the academic medicine workforce. Our findings may help support federal and other organizational resource allocation to promote diverse medical students' interest in and preparation for academic medicine careers. Additional efforts are needed to develop, implement, and evaluate programs that promote diverse medical students' interest in academia with

the goal of diversifying the academic medicine workforce.

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