The Effects of Student Demographic Characteristics in a Primary Care Encounter: a Randomized Experiment

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J Gen Intern Med 36(2):552–4
DOI: 10.1007/s11606-020-05681-w
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INTRODUCTION

In academic and community settings, medical students regularly see multiple patients per day on primary care clerkships.¹ Physician demographic features have been shown to influence perceptions of care,^{2,3} but it is unclear if these findings extend to medical students. Additionally, there are many reports from the medical student perspective about discrimination by patients,⁴ but few probes of the public itself for underlying biases against groups of medical students.

Considering these gaps, we aimed to characterize how potential patients perceived medical students with varied demographic characteristics.

METHODS

Sample Population

This study consisted of adults in the USA over 18 years old who were registered as task-completers on Amazon's Mechanical Turk website (AMT, <https://www.mturk.com>). AMT is an online labor marketplace where individuals can anonymously complete surveys and has been utilized to study public perceptions of medical students and physicians. A previous work provides a more in-depth discussion on the validity of the sample.^{5,6}

A survey was created in Qualtrics (www.qualtrics.com). The survey included one experimental treatment in which respondents were randomized to view one of four scenarios. Respondents were asked to imagine they were at a doctor's office for an annual visit then were shown a photo of either a Black female, Black male, White female, or White male in the same pose and same white coat and told they were going to be seen by this medical student in addition to a doctor. They were then asked if

they would be willing to be seen by the student, their comfort on 10-point Likert scales ("Most Uncomfortable" to "Most Comfortable") with the student performing an interview and exam (including separate question about the GU exam),⁵ and whether they believed the student was licensed, would keep information confidential, and how many years of education he or she had.

Responses were compared across those randomized to Female versus Male and Black versus White student scenarios and between those who did and did not have racial or sex concordance with the student in their assigned scenario. Chi-square tests and one-way analysis of variance or Welch's test were used to assess the significance of relationships between categorical variables and to compare numeric data across nominal categories, respectively. All analyses were conducted in R (version 3.4.1, <https://cran.r-project.org/>).

RESULTS

There were 1349/1424 (94.7%) surveys completed with a quality question answered correctly. The sample was 53% male ($n = 715$) and had an average age of 34 years (SD 10.7). The majority had health insurance (79.4%, $n = 1071$) and saw a doctor 2.8 times (SD 4.6) per year. There were no clinically substantial differences in age, education, income, region of residence, or health insurance status between respondents randomized to any of the scenarios.

Respondents randomized to a female scenario were more likely to agree to be seen than those randomized to a male scenario (95.6% vs. 91.6%, $p < 0.01$), which was driven by female respondents (96.7% vs. 90.3%, $p < 0.01$; Table 1). Regardless of sex, respondents randomized to a female scenario were 4 to 10 percentage points more comfortable with components of the encounter than those randomized to a male scenario ($p < 0.05$). There were no associations between comfort and randomization to a White or Black scenario, though Black respondents were less likely than White respondents to agree to be seen by any medical student (88.8% vs. 95.5%, $p < 0.001$).

There were no clinically significant differences in beliefs about student licensing, confidentiality, or educational experience (Table 2) between those randomized to Black versus White or Female versus Male scenarios.

Received December 24, 2019
Revised December 24, 2019
Accepted January 23, 2020
Published online February 19, 2020

Table 1 Comfort with Seeing a Medical Student Based on Medical Student-Respondent Racial or Gender Concordance with Experimental Scenario

		Agree to be seen, % yes (n)		Interview comfort, mean (SD)		Exam comfort, mean (SD)		GU comfort, mean (SD)	
		C	D	C	D	C	D	C	D
Racial concordance	Aggregated respondents (n = 1349)	92.6 (523)	95.1 (740)	7.07 (2.2)	6.89 (2.2)	7.52 (1.8)	7.34 (2.1)	5.62 (2.8)	5.54 (2.7)
	Black respondents (n = 117)	91.7 (55)	86.0 (49)	6.47 (2.3)	6.6 (2.7)	6.90 (1.7)	7.34 (2.3)	4.68 (2.5)	5.49 (3.0)
	White respondents (n = 977)	95.5 (468)	95.5 (465)	7.15 (2.1)	7.10 (2.1)	7.60 (1.9)	7.55 (1.9)	5.67 (2.6)	5.73 (2.8)
Gender concordance	Aggregated respondents (n = 1349)	94.7 (646)	92.5 (617)	7.01 (2.1)	6.92 (2.3)	7.45 (1.8)	7.36 (2.1)	5.66 (2.7)	5.48 (2.8)
	Female respondents (n = 634)	96.9 (313)**	90.3 (281)	7.35 (2.1)***	6.72 (2.3)	7.70 (1.9)***	6.99 (2.1)	5.98 (2.9)***	4.77 (2.8)
	Male respondents (n = 715)	92.8 (333)	94.4 (336)	6.70 (2.1)	7.10 (2.2)*	7.25 (1.8)	7.69 (2.9)**	5.38 (2.5)	6.09 (2.7)***

C concordance with scenario, D discordance with scenario

* < 0.05 ** < 0.01

*** < 0.001

DISCUSSION

Both male and female respondents randomized to a female scenario reported being more comfortable being interviewed and examined than those randomized to a male scenario. Moreover, female respondents randomized to a female scenario

were significantly more likely to agree to be seen compared with those randomized to the male scenario. There was no difference in comfort or willingness to be seen based on randomization to scenarios containing a Black or White student; however, Black respondents, compared with White respondents, were less comfortable seeing any student.

Table 2 Perceptions of Responsibilities and Education Based on Medical-Student Race or Gender Concordance with Experimental Scenario

		Student has license?, % yes (n)		Student will keep information confidential?, % yes (n)		Years of education above high school?, years (SD)		Years of medical education?, years (SD)		Years of patient experience?, years (SD)	
		C	D	C	D	C	D	C	D	C	D
Racial concordance	Aggregated respondents (n = 1349)	51.1 (281)	48.6 (388)	96.4 (530)	94.7 (757)	6.13 (2.90)	5.95 (3.07)	2.89 (1.63)	2.85 (1.56)	1.14 (1.24)	1.16 (1.26)
	Black respondents (n = 117)	65.0 (39)	57.9 (33)	93.3 (56)	87.7 (50)	6.70 (4.41)	6.33 (3.73)	3.13 (1.92)	2.77 (1.73)	1.38 (.99)	1.05 (0.87)
	White respondents (n = 977)	49.4 (242)	46.8 (228)	93.9 (460)	96.1 (468)	6.06 (2.65)	5.96 (2.8)	2.86 (1.59)	2.79 (1.46)	1.11 (1.26)	1.06 (1.66)
Gender concordance	Aggregated respondents (n = 1349)	50.1 (342)	49.0 (327)	95.7 (653)	95.1 (634)	6.09 (3.20)	5.95 (2.78)	2.84 (1.53)	2.89 (1.65)	1.14 (1.25)	1.16 (1.62)
	Female respondents (n = 634)	48.0 (155)	47.3 (147)	94.7 (306)	91.6 (285)	5.84 (2.98)	6.31 (3.03)*	2.66 (1.38)	3.05 (1.81)**	1.05 (1.14)	1.19 (2.06)
	Male respondents (n = 715)	52.1 (187)	50.6 (180)	93.3 (335)	91.6 (285)	6.32 (3.30)**	5.63 (2.51)	3.01 (1.63)*	2.74 (1.48)	1.23 (1.35)	1.13 (1.11)

C concordance with scenario, D discordance with scenario

* < 0.05

** < 0.01

This exploratory study suggests the need for future work exploring patient perceptions of students in clinical settings as further understanding may improve both patient experience and education for student groups already at risk of feeling stereotyped.

Acknowledgments: The authors would like to thank Dr. Beth Bierer for her conversations about how to best go about researching issues in medical education and Dr. Michael Rothberg for his research mentorship.

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Funding Information This study was financially supported by a CGEA grant from the AAMC—AAMC Central Group on Educational Affairs Mini-Grant.

Compliance with Ethical Standards:

Conflict of Interest: The authors declare that they do not have a conflict of interest.

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