Published in final edited form as:

Patient Educ Couns. 2015 March ; 98(3): 350–355. doi:10.1016/j.pec.2014.11.013.

Medical student socio-demographic characteristics and attitudes toward patient centered care: Do race, socioeconomic status and gender matter? A report from the Medical Student CHANGES study

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Abstract

Objective—To determine whether attitudes toward patient-centered care differed by socio-demographic characteristics (race, gender, socioeconomic status) among a cohort of 3191 first year Black and White medical students attending a stratified random sample of US medical schools.

Methods—This study used baseline data from *Medical Student CHANGES*, a large national longitudinal cohort study of medical students. Multiple logistic regression was used to assess the association of race, gender and SES with attitudes toward patient-centered care.

Results—Female gender and low SES were significant predictors of positive attitudes toward patient-centered care. Age was also a significant predictor of positive attitudes toward patient-centered care such that students older than the average age of US medical students had more

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Other disclosures: None.

Disclaimer: The views expressed in this article are those of the authors and do not necessarily represent the position or policy of the Department of Veterans Affairs.

Previous presentations: A previous version of this paper was presented as a poster at the 2012 NIH Science of Eliminating Health Disparities Summit, National Harbor, Maryland.

Appendix A. Supplementary data: Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.pec.2014.11.013>.

positive attitudes. Black versus white race was not associated with attitudes toward patient-centered care.

Conclusions—New medical students' attitudes toward patient-centered care may shape their response to curricula and the quality and style of care that they provide as physicians. Some students may be predisposed to attitudes that lead to both greater receptivity to curricula and the provision of higher-quality, more patient-centered care.

Practice implications—Medical school curricula with targeted messages about the benefits and value of patient-centered care, framed in ways that are consistent with the beliefs and world-view of medical students and the recruitment of a socioeconomically diverse sample of students into medical schools are vital for improved care.

Keywords

Medical education; Patient-centered care; Race; Gender; Socioeconomic status

1. Introduction

The physician–patient relationship is central to the delivery of high-quality care [1]. Lower interpersonal quality of care has been shown to impact patient satisfaction; biological, psychological and social outcomes; [2–6] the delivery of preventive care services [7–9], and patient adherence to treatment [9–12]. Poor quality physician–patient relationships may also contribute to health disparities [13–16] whereas care that focuses on building a personal relationship, communication, trust and empathy while emphasizing patient dignity and patient empowerment has been shown to improve health care for populations often marginalized from the health care system and hence, may aid in the elimination of health disparities [17]. Patient-centered care, as defined by the IOM provides “...care that is respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions” [18]. Its importance to health care delivery is well-documented. However, there has been little focus on the physician characteristics that are associated with the provision of this type of care. Historically, physicians have paid little attention to the influence of their own demographically based predispositions in their medical practice [19]. The medical literature also reflects the presumption that clinicians are neutral operators and are unaffected by personal variables [19]. While many studies have focused on the importance of the role that patient race, socioeconomic status (SES) and gender play in the physician–patient relationship [14,19–22], fewer studies have focused on the influence of physician race, SES and gender on attitudes toward patient centered care.

The studies that have focused on physician socio-demographic characteristics suggest that race concordant visits improve satisfaction for African American patients [20,23] and that female physicians exhibit more empathy than their male counterparts [24–26]. However, it is unclear whether and how these findings are related to provider's attitudes toward patient-centered care. Additionally, very little research has documented the impact of physician SES on the physician–patient relationship although it has been suggested that physicians from

lower SES backgrounds may be better equipped to care for patients who come from similar backgrounds [19].

Medical educators have recognized the importance of patient-centered care and its impact on the physician–patient relationship by instituting a variety of curricula to teach its tenets to medical students [2,27]. These curricula may be more effective by understanding the individual characteristics that are associated with attitudes about patient-centered care. Thus the premise of this study is to examine how attitudes that may influence uptake of these behaviors may be related to the social background of the future physician [19]. We examine the relationship between socio-demographic characteristics (race, gender and SES) and attitudes toward patient-centered care in a national sample of 3191 African American and White 1st year medical students.

We were interested in examining African American student's attitudes toward patient-centered care given the body of work that has shown that provider-patient racial concordance is of particular salience for African American patients such that African American patients who see an African American provider are more likely to report greater satisfaction, feelings of respect and more participatory interactions—all important elements of patient-centered care [22,28]. Given these findings, we thought it important to focus on documenting if attitudes toward patient-centered care among African American first year medical students exist so that future studies may seek to understand if these attitudes in medical school translate to behaviors in African American clinicians.

2. Methods

2.1. Data source

This study uses baseline data collected as part of *Medical Student Cognitive Habits and Growth Evaluation Study* (CHANGES), a large longitudinal study of student experiences among first year medical students who matriculated in US medical schools in the fall of 2010 [29]. For detailed study protocol information, please refer to Supplemental Digital Content 1. Briefly, we sampled medical students using a stratified multistage sampling design. In the first stage, we sampled 49 medical schools from strata of public and private schools in six regions of the country. Roughly equivalent proportions of schools were selected from each stratum to ensure representativeness of the sample by region and public status. Within strata, we sampled specific schools using a sampling proportional to class size methodology [30] to focus sampling on the schools training higher proportions of students and increase sample sizes for subsequent analyses.

In the second stage, we recruited first year students from the selected schools using a combination of three strategies: (1) emails of students interested in participating in the study obtained through a question included as part of the Association of American Medical Colleges (AAMC) Matriculating Student Questionnaire, a voluntary annual survey sent to all students entering medical school; (2) a list of first year medical students (incomplete) purchased from an American Medical Association (AMA) licensed vendor; and (3) referral (i.e. snowball) sampling through recruited survey respondents. Ascertained students were invited to participate in the CHANGES study via email and/or regular mail. Those who

consented completed an extensive online survey questionnaire, and were randomized to complete various implicit attitude tests (e.g. race, sexuality, obesity). The University of Minnesota, Yale University, and Mayo Clinic Internal Review Boards approved the study. All students who completed the survey received a \$50 incentive for participation.

2.2. Study sample

Between October 2010 and January of 2011, a total of 4732 first year medical students completed the baseline survey representing 81% of the 5823 students invited to participate in the study and 54% of all 8594 first year students enrolled at the 49 sampled schools (see Figure, Supplemental Digital Content 2, for participant recruitment flowchart). Our overall response rate was comparable to other published studies of medical students [31,32]. The demographic characteristics of students in our sample were similar to the demographics of all students who enrolled in medical schools in 2010, as reported by the AAMC (see Table, Supplemental Digital Content 3, for a comparison of CHANGES sample and the AAMC reported student characteristics).

2.3. Study measures

2.3.1. Dependent variable—We used the mean score of 6 items from the *Health Beliefs Attitudes Survey* (HBAS) [33] as a measure of attitudes toward patient-centered care (Cronbach's alpha = 0.78). The HBAS was developed by a nationally recognized group of experts in the field of cultural competency [34]. The HBAS consists of 15 items, scored on a 6-point Likert-type scale. Crosson and colleagues [33] established reliability of the HBAS instrument in first year medical students [33]. For our study, we used the 6 items that specifically measure components of patient-centered care. Example items include: “Physicians should ask patients for their opinions about the illness”, “understanding patients' opinions about their illness helps physicians provide better care.”; and “physicians should ask their patients what they believe is the cause of their illness.” Table 1 presents means and standard deviations for each of the items in the HBAS measuring patient-centered care. Given the skewed distribution of the mean scores, we created a mean scale score. We created a dichotomous variable for HBAS based on a previous study of first year medical students that found that HBAS scores ranged from 4.88 to 5.45 on a six point scale [33]. Given the skewed distribution of students with scores between 5 and 7, we dichotomized such that someone with less positive attitudes toward patient-centered care scored between a 1 and 5.99 on the HBAS and an individual with positive attitudes or a high score scored between 6 and 7 [33].

2.3.2. Independent variables—Race was collected through self-report. Students identified their race from the following choices: American Indian/Alaskan Native, East Asian, South Asian, African American, Native Hawaiian/Pacific Islander or White. Respondents who identified with multiple racial/ethnic groups were categorized into just one of those groups in the following order: African American, Hispanic, South Asian, East Asian, and White. For example, all participants who marked “African American” were categorized as African American.

These analyses focus on medical students who identified as White or African American.

Gender was collected for each student through self-report. Those indicating “other” ($n = 5$) were excluded from our analyses.

Socioeconomic status can be challenging to conceptualize for this population given that we are assessing SES during a transitional time in these students' lives. Family income (i.e. the socioeconomic standing they experienced growing up) is more likely to have shaped the students' attitudes than current income [35], and is therefore used as a categorical measure of SES for these analyses. Family income was categorized into three groups: low SES was defined as a family income of less than \$49,999, middle SES was defined as \$50,000-\$99,999 and high SES was defined as \$100,000 or more [36].

2.3.3. Covariates—In full models we controlled for self-reported age, which was dichotomized into those 24 and younger (mean age of 1st year medical students in the U.S. and in our cohort) [37]. The age of 24 was chosen because it is the average age of a first year medical student in the United States as well as the mean age for our cohort of first year medical students. Age was included as a covariate because a previous study determined that age was correlated significantly with patient-centered attitudes among first year medical students such that older students were more in agreement with the importance of patient-centered care beliefs [33].

2.4. Statistical analysis

Descriptive statistics were used to characterize the sample and explore the bivariate relationship between socio-demographic characteristics and attitudes toward patient care. Statistical significance was determined using simple *t*-tests and Pearson chi-square tests.

We used logistic regression to model the relationships between race, SES, gender and the dichotomized measure of attitudes toward patient-centered care adjusted for student age. Given the potential for non-additive effects of membership in socially disadvantaged groups, we also examined potential interaction effects between race, gender and SES on attitudes toward patient-centered care.

We performed all analyses using SPSS PASW® Statistics 21. Given the complex stratified two-stage cluster sample design of the *CHANGES* survey, statistical analyses were weighted to account for this sampling design with the standard design weights for the respondents at a specific school upweighted to match the class size.

3. Results

3.1. Sample characteristics

Frequencies and summary statistics for sample characteristics were calculated for both African American and White students. Characteristics of the participants are presented in Table 2. There were a total of 3191 students in our sample and of these, 2890 were White and 301 were African American. African American students differed from their White counterparts in terms of gender, SES, and age. Women comprised 48% of White students and 66% of African American students. Nearly a quarter (23%) of White students were classified as low income, while slightly more than half (52%) of African American students

were classified as such. Nearly three-quarters (72%) of White students and 65% of African American students were between the ages of 18 and 24.

3.2. Medical student attitudes toward patient-centered care

We used simple chi-square tests to assess whether race, gender and SES are associated with attitudes toward patient-centered care. We found that there is a marginally significant association between race and attitudes toward patient-centered care ($p = 0.058$). However, there was a statistically significant association between gender and attitudes toward patient-centered care ($p = 0.000$). There is also a statistically significant association between SES and attitudes toward patient-centered care ($p = 0.046$) (Table 3).

Results of the logistic regression analyses are shown in Table 4. We first assessed only main effects for race, gender, and SES on attitudes toward patient-centered care. In this model, the effect of race was not a significant predictor of attitudes toward patient-care as it was in the simple bivariate analysis discussed immediately above. Women were more likely to have positive attitudes toward patient-centered care compared to their male counterparts [Adjusted odds ratio (95% CI) = 1.45 (1.25–1.67), $p = 0.001$]. Students from a low SES family income were more likely to have positive attitudes toward patient-centered care [1.20 (1.18–1.48), $p < 0.05$]. After including age as a covariate in Model 2, female students continued to be more likely to have positive attitudes toward patient-centered care [1.27 (1.08–1.50), $p < 0.001$] and low income students were 1.25 more likely [1.24 (1.19–1.42), $p < 0.05$]. In Model 2, we also found that age was a significant predictor of attitudes toward patient-centered care such that students older than the age of average US medical students (24 or older) are 1.27 times more likely to have positive attitudes toward patient-centered care [1.27 (1.08–1.50), $p < 0.01$].

We tested interaction effects between each pair of socio-demographic variables (models 3–5) but none of these interactions were statistically significant.

4. Discussion and conclusion

4.1. Discussion

While much attention has been paid to increasing physician's awareness of the role that a patient's race, SES and gender play in health care, few studies have explored how the socio-demographic characteristics of health care providers affect their attitudes toward patient care. Patient-centered care is considered fundamental to cultural competence and theoretically has the potential to reduce racial/ethnic disparities in health care quality, because it directly addresses many of the hypothesized mechanisms by which a patient's race/ethnicity may affect clinician behaviors [38]. Among a sample of African American and White first year medical students, student gender and SES (but not race), were related to attitudes toward patient-centered care.

Our finding of more positive patient-centered attitudes among lower SES students may result from low-income students' experience of the privilege gap in medicine [39]. In 2011, the median family income of American medical students was just over \$100,000 [40], compared to the U.S. median household income, which was \$51,324 [41]. The unfortunate

consequence of this is that patients sometimes struggle to be understood by well-meaning but ultimately privileged doctors who sometimes cannot relate to patients from other backgrounds [39]. Our findings suggest that students from higher income groups tend to have less favorable attitudes toward patient-centered care in comparison to their lower income counterparts (although it should be noted that these differences are fairly small). Thus, it is important that medical educators continue to incorporate a curriculum that directly encourages favorable attitudes toward patient-centered care. Such interventions should make explicit the notion that high-quality care is patient-centered [21].

Our findings regarding gender differences are consistent with a body of research showing that women physicians have, overall, higher quality interpersonal processes of care including longer visits, more positive statements, more partnership statements, more questions, and warmer non-verbal behavior including smiling and nodding more than male physicians [42,43]. Over the past few years, the number of female medical students has continued to increase with women comprising 47.0% of all first year medical school students in the 2010–2011 school year [44]. Our findings suggest that the increasing enrollment of women into medicine might lead to greater patient-centered care, although it is unknown whether these gender differences will persist beyond the first year of medical school.

While many studies have documented the positive effects of racially concordant care [15,16,22,23], medical student race was not a significant predictor of attitudes toward patient-centered care in our sample. It is possible that the positive impact of racial concordance on the physician–patient relationship works through different channels than patient-centered attitudes. For instance, the racially concordant care literature suggests that the actions and behaviors of African American physicians are what provide satisfactory care for African American patients [15,16,20,23]. Our study measured attitudes rather than behavior. Measuring if and how students put patient-centered care principles into action versus what they think about them may yield deeper understanding of the effect of race.

This study had several limitations. First, we were unable to ascertain and invite all first year medical students in the school sample, creating potential sample bias. Second, this particular study is derived from a sample of first year medical students, a longitudinal study is necessary to assess whether these differences in attitudes toward patient-centered care persist throughout medical school. While CHANGES is longitudinal, these data were not yet available at the time of analyses. Third, the differences between the groups were small and it is unclear if they will translate into clinically meaningful outcome differences between gender and SES groups. Finally, it is important to note that we measured attitudes rather than behaviors. Socio-demographic differences may play a larger role in behaviors that exhibit patient-centeredness.

4.2. Conclusion

While much attention has been paid to increasing physician's awareness of the role that a patients' race, SES and gender play in health care, few studies have explored how the socio-demographic characteristics of health care providers affect the care they deliver. We found that medical student socioeconomic status and gender had a significant impact on attitudes

toward patient-centered care, such that female medical students and medical students from a low -middle income SES background (less than \$10,000 to \$74,999 annually) have more positive attitudes toward patient-centered care than their male and upper class counterparts, respectively. We also found that medical students who are older than the average age of US medical students (24) have more positive attitudes toward patient-centered care. There were no race differences in attitudes toward patient-centered care nor were interaction effects measuring the combined effects of race, gender and SES on patient-centered care significant. To our knowledge, this study is the first to document how medical student attitudes toward patient-centered care vary by race and SES.

4.3. Practice implications

Taking a patient-centered approach to providing health care is an important part of providing quality care and the elimination of health disparities [46,22]. The findings of our study show that students from low SES backgrounds, female students, and older students have more positive attitudes toward patient-centered care in their first year of medical school than those who are high SES, male, and younger. Because these attitudes were evaluated early in students' medical training, future studies should seek to examine whether these differences persist throughout medical training. In the meantime, medical schools might consider implementing curricula that assess where each student is at with respect to their particular beliefs around patient-centered care. This might be helpful in developing coursework and curricula that is able to work from that point rather than assuming all students are on the same page. If future research shows that attitudes worsen over the four years, consideration of SES, gender and age might be considered in both medical school admission decisions and in curricular design.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

Dr. Hardeman acknowledges the support of the Veterans Affairs Associated Health Postdoctoral Fellowship Training Program.

Funding/support: Support for this research was provided by the National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health under award number R01 HL085631.

Dr. Hardeman was additionally supported by the NHLBI Supplement to Promote Diversity in Health Related Research of the NIH under award number 3 R01 HL085631-02S2.

Ethical approval: This research study was approved by the human subjects Institutional Review Boards of the University of Minnesota (IRB no. 0905S66901, approved 6/5/2009) and Mayo Clinic (IRB no. 13-004612, approved 7/13/2013).

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Table 1

Items from Health Beliefs Attitude Scale (HBAS) measuring patient-centered care.

Item	Mean (SD)
Physicians should ask patients for their opinions about the illness	6.11 (1.02)
Understanding patients' opinions about their illness helps physicians provide better care	5.51 (1.30)
Physicians should ask their patients what they believe is the cause of their illness	5.86 (1.18)
Patients may lose confidence in physician if physician asks their opinion about their illness or problem	2.62 (1.38)
Physicians should learn about their patients' cultural perspective	6.44 (.883)
Physicians should ask their patients why they think their illness has occurred	5.76 (1.29)

Table 2

Characteristics of the study sample stratified by race.

	White (<i>n</i> = 2890)	African American (<i>n</i> = 301)	
Gender			<i>P</i> = 0.000
Female	1390 (48%)	198 (66%)	
Male	1517 (52%)	103 (34%)	
Family income			<i>P</i> = 0.000
Low income	618 (23%)	145 (52%)	
Middle income	1501 (55%)	105 (38%)	
Upper income	588 (22%)	29 (10%)	
Age			<i>P</i> = 0.017
18–24	2085 (72%)	195 (65%)	
25–35 or older	811 (28%)	104 (35%)	

Table 3

Pearson's Chi-square of attitudes toward patient-centered care by race, gender and SES.

	Low HBAS N(%)	High HBAS N(%)	P-value
Race	130 (43.3)	170 (56.7)	0.058
African American	1413 (48.6)	1497 (51.4)	
White			
Gender	688 (43.3)	900 (56.7)	0.000
Female	853 (52.7)	764 (47.3)	
Male			
Family income	186 (43.9)	238 (56.1)	0.046
Low income	330 (46.9)	374 (53.1)	
Middle income	909 (48.9)	948 (51.5)	
Upper income			

Table 4
Logistic regression predicting attitudes toward patient-centered care by medical student socio-demographic characteristics.

	Model 1		Model 2		Model 3		Model 4		Model 5	
	Exp(B)	95% CI for Exp(B)	Exp(B)	95% CI for Exp(B)	Exp(B)	95% CI for Exp(B)	Exp(B)	95% CI for Exp(B)	Exp(B)	95% CI for Exp(B)
Race ^a	1.10	0.853 to 1.43	1.04	0.803 to 1.35	1.09	0.717 to 1.66	1.09	0.740 to 1.63	1.07	0.826 to 1.39
Gender ^b	1.45***	1.25 to 1.67	1.39***	1.20 to 1.61	1.46***	1.26 to 1.70	1.46***	1.26 to 1.69	1.46***	1.21 to 1.75
Family income ^c	1.20*	1.18 to 1.48	1.24*	1.19 to 1.42	1.25*	1.20 to 1.45	1.12	0.982 to 1.44	1.11	0.977 to 1.35
Low		0.913 to 1.29	1.04	0.877 to 1.25	1.07	0.899 to 1.28	1.09	0.909 to 1.31	1.17	0.915 to 1.48
Middle										
Age ^d			1.27**	1.08 to 1.50	1.26**	1.07 to 1.49	1.27**	1.08 to 1.29	1.27**	1.07 to 1.49
Race × gender ^e					0.988	0.586 to 1.66				
African American × female										
Race × family income ^f							1.12	0.611 to 2.02		
African American × low SES							0.814	0.424 to 1.56		
African American × middle SES										
Gender × family income ^g									1.36	0.885 to 2.10
Gender × low SES									1.27	0.590 to 1.18
Gender × middle SES										

Estimates are weighted to account for probability of selection, stratification, and clustering.

* $P < 0.05$.

** $P < 0.01$.

*** $P < 0.001$.

^aReference group is white.

^bReference group is male.

^cReference group is upper income.

^dReference group younger than 24.

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^eReference group is white × male.
^fReference group is white × high SES.
^gReference group is male × high SES.