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DIVERSITY IN MEDICAL EDUCATION: STUDENTS' EXPERIENCES AND ATTITUDES

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Background

Racial and ethnic disparities in health care have been well documented by the Institute of Medicine's 2002 comprehensive report, *Unequal Treatment*.¹ Among its recommendations, it suggests, "increasing the proportion of underrepresented U.S. racial and ethnic minorities among health professionals," and integrating "cross-cultural curricula ... early into the training of future healthcare providers." Both recommendations benefit from enrollment of a diverse student body in medical schools. The AAMC amicus brief to the Supreme Court in the University of Michigan's affirmative action case in February of 2003 emphasizes this point, arguing that the value of student body diversity in creating culturally competent physicians provides a compelling reason for considering race in medical school admissions.

This position is supported by social science research. As the Executive Director of AERA, Dr. Levine, notes of the Supreme Court's decision this summer upholding consideration of race in university admissions,

"the Court today has recognized the substantial body of social science research that outlines the benefits of a diverse learning environment for university communities and for an increasingly multicultural workforce. We are heartened that the Court sees the importance of racially integrated education for the benefit of all. The social science data are powerful, and we are pleased that research could weigh in."²

Dr. Levine is referring to several recent empirical studies showing that a racially diverse student body can be an effective educational tool in and of itself. Gurin has termed this structural diversity. In a study of the impact of racial/ethnic diversity at the University of Michigan on all groups of Michigan undergraduates, Gurin (1999) examined the impact of cross-racial interaction and exposure to diverse ideas and information on students' "active thinking." Gurin found that students, particularly white students, who reported higher levels of exposure to diverse ideas and people, were significantly more likely to show growth in their "active thinking processes," or increases in measures of "complex thinking" and "social/historical thinking." Students who reported greater exposure to diversity were also more likely to report higher levels of "intellectual engagement" and motivation.³ Chang(1999) , analyzing a national longitudinal database of college graduates, found that both socializing with someone of another racial group and discussing racial/ethnic issues in and out of class had a significant positive effect on students' intellectual and social self-concept, satisfaction with college, and chances of graduating in four years. He also showed that when there is a diverse student body, the environment enhances the chances that students will socialize across racial groups and discuss racial issues, which in turn improves students' educational experiences. Other studies have also found educational benefits associated with interacting across racial lines. In a longitudinal study of white and African American students who entered 28 selective colleges and universities in the fall of 1976 and the fall of 1989, Bowen and Bok (1998) found that white students who knew well two or more black students were much more satisfied with the whole of their college experience than were those with fewer interactions. More recently, Terenzini et al. (2001) found that the level of classroom diversity had a small but statistically significant effect on students' reported gains in problem-solving and group work skills.

Fewer studies investigate the role of school and classroom diversity on graduate students' professional development. One study of 1,800 law students at Harvard University and University of Michigan found that the majority of the students indicated that their exposure to racial and ethnic diversity at law school significantly affected their views of the U.S. criminal justice system, civil rights and conditions in various social and economic institutions.⁴ Likewise, an interview survey of medical students at Harvard and the University of California, San Francisco, found that medical students strongly supported affirmative action in medical school admissions and noted that a diverse student body enhanced their ability to provide medical services in a diverse society.⁵ In a recent JAMA article, the President of the AAMC, Dr. Jordan Cohen, argued that racial and ethnic diversity in medical education is indispensable in helping future physicians achieve the cultural competencies needed to treat an increasingly diverse society.⁶

Purpose and Significance

Our goal is to extend the research on the effects of a diverse student body at the college level into the domain of medical education. This study explores the impact of diversity on medical students. Across a set of three campuses with varying degrees of diversity, it examines the effect of student body diversity and school supported diversity experiences on students' self-reported knowledge attitudes and behaviors about care of patients from diverse backgrounds.

Changing demographics provide a compelling need for a physician workforce prepared to practice across the cultural and racial spectrum. This study contributes to our knowledge of medical students' preparedness to work in diverse settings and the educational role of diversity for this preparation. It goes beyond existing studies as it focuses on a spectrum of educational experiences specific to medical education and applies a quasi-experimental design to examine a more varied set of schools.

Method

Instrumentation. A 55-item questionnaire was designed to investigate medical students' experiences with diversity prior to attending medical school, their structurally supported formal and informal experiences while attending medical school, and their attitudes and beliefs about the role of diversity in the medical school environment and society generally. Items were adapted from existing undergraduate surveys both to capitalize on their validity and for comparative purposes. Because of the wide variation in students' field (clerkship) experiences, the survey also asked students to describe the diversity encountered in their interactions with clinical faculty and patients.

Procedures. The questionnaire was administered to rising fourth-year students at three medical schools located in urban settings in California. Schools varied in their public or private status, the number of students, and percentage of underrepresented minorities (URM) enrolled. One school (School A) averages 168 students in each class and had 25.5% of its students classified as URM in 2001. The second school (School B) has an average class size of 156 students and had a URM enrollment of 15.8% in 2001. The third medical school (School C) is the smallest school with an average class size of 73. It enrolls 7.7% URM students and is the only private school. All three schools participate in a consortium of California medical schools that jointly develop and administer a common objective standardized clinical examination to fourth-year

students each year. Students at the three schools completed the questionnaire on the day they took their exam. Human subjects approval for the study was obtained from each school's IRB, with two schools receiving exemptions and the school with the largest URM enrollment requiring active consent by students. The resulting sample included 101 students from School A who granted consent (12 denied it and 57 failed to return the form), 187 students in School B, and 153 students in School C for a total of 441.

Analysis. Data were recoded so that negatively worded items were scored to be pro-diversity. Interaction and attitude items were factor analyzed to determine whether they could be summed to represent a single construct. Based on these analyses, 10 constructs were developed. Their means, standard deviations, and internal consistency reliabilities for the resulting scores are shown in Table 1 below.

Table 1: Diversity-related Constructs

Item Content	Number of Items	Mean	Standard deviation	Reliability
Diversity experiences prior to medical school				
Ethnic composition of neighborhood, college, and college friendships	3	119.51	51.64	.54
Interaction with people from diverse backgrounds prior to medical school	4	8.46	1.92	.60
Diversity experiences in medical school				
Exposure to minority faculty	3	4.59	1.93	.80
Exposure to minority patients	1	55.62	23.18	na
Informal academically sponsored interactions with individuals from diverse backgrounds	7	13.62	3.32	.59
Informal interactions with individuals from diverse backgrounds outside of school	2	3.36	1.75	.62
Attitudes about diversity				
Benefits of diversity in medical school	6	9.75	2.61	.88
Attitude about affirmative action in medical school	8	24.60	4.34	.81
Attitude about results of differences	8	27.75	4.48	.78
Attitude about role of conflict	4	13.41	3.41	.66

Two analyses were conducted to examine the relationship between diversity in medical school and students' experiences and attitudes toward diversity and the effect of medical school experiences on students' attitudes. First, one-way ANOVAs were conducted to examine the difference between schools. Then variables were regressed sequentially on attitudes to examine their relative influence, which is tested by estimating changes in R^2 .

Results

Differences in Students' Experiences and Attitudes by School. Comparing the three medical schools on their students' experiences prior to attending medical school, there were no significant differences in students' interactions with individuals from diverse backgrounds (i.e., people of color, with different religious beliefs, gay/lesbian/bisexual individuals, or people with disabilities). On average, however, students in School A had fewer interactions with whites. Similarly, a significant difference was found between schools in the composition of the neighborhoods where

they grew up and the composition of the friends they had in college. More students in School A grew up in neighborhoods that were mixed or mostly of color (50%) than did students in Schools B (30%) and C (34.6%). These differences were mirrored in the composition of students' friendships in college with 77.8% of students from School A indicating that half or more of their friends were people of color in comparison to 56.5% of students in School B and 57.7% of students in School C. There are no significant differences in students' interaction with individuals from diverse backgrounds, across groups, prior to attending medical school. Some differences in the amount of interaction with specific groups were noted. On a 4-point scale of interaction (0 = none, 1 = little, 2 = some, 3 = substantial) School A students mean interaction with whites (2.66) was lower than that of the other students in the other schools (2.89 and 2.83). School B students indicated significantly more interaction with gays or lesbians (1.97) than did students in the other two schools (1.67 and 1.77, respectively).

The number of lecturers, clinical supervisors or residents they interacted with who were people of color did not differ by school, but the percentage of patients of color students saw differed significantly. School C students reported that 67.1% of the patients they saw were people of color compared to 55% for students in School A and 45.9% for students in School B.

When considering the formal instructional experiences for learning about culture and health, students reported a range of experiences by school. Schools differed significantly in the amount of direct instruction their students reported (chi square = 9.34, $p < .05$). The percentage of students reporting no direct instruction showed the greatest variation (School A 10.4%, School B 8.2%, School C 3.6%). No differences were found on the percentage of students learning another language (overall average = 49.3%) or in the number of voluntary activities related to culture and health that students chose to participate in with the mean number of activities being 2.83 at School A and 2.65 and 2.64 at Schools B and C. Responses on individual activities by school are shown below.

Table 2: Types of Culturally Related Instruction by School

Type of Instruction	School A	School B	School C
Elective on minority health	16.7%	20.0%	2.9%
Workshop on cultural awareness	62.5%	70.0%	86.9%
Direct instruction on characteristic values, cultural or health beliefs of different racial/ethnic groups	88.5%	85.3%	92.7%
Direct instruction on skills for exploring individual patient's socio-cultural perspectives	79.2%	77.1%	85.4%
Learned another language	58.9%	44.7%	52.6%
Participated in an ethnic/racial student organization	57.3%	40.0%	44.5%
Volunteered in an underserved setting	87.5%	91.2%	77.4%

Examining the type and number of interactions students had with peers around diversity, we first factor analyzed students' responses on the 10 -item set. This analysis resulted in a two-factor solution with two items (dined with someone of a different ethnic background and worked on a project with a multi-cultural group) loading on one factor we labeled friendship and seven items involving informal interactions loading on a

second factor. One-way ANOVA's on these variables were both significant at $p < .000$ (Friendship: $F_{2/394} = 224.34$; Interaction: $F_{2/343} = 62.92$). Post-hoc analyses show that students at School B indicate significantly fewer friendship interactions with individuals from different backgrounds (mean = 1.88 compared to 4.36 at School C and 4.60 at School A; scale 0 = never, 2 = rarely, 4 = occasionally, 6 = often). On the other hand, students at School B (mean = 15.43) indicated significantly more informal instructional interactions with peers from diverse backgrounds than did students at either School A (mean = 12.18) or School C (mean = 11.88 (scale: 0 = never, 6 = rarely, 12 = occasionally, 18 = often)).

Finally we compared schools on students attitudes about the benefits of diversity in medical school, and on their attitudes toward the need for affirmative action, the impact of differences, and the need for conflict and coalition building in a democracy. Differences in students' attitudes by school were highly significant on all four variables. Students at School C (mean = 8.27), which had the least diversity in its student body, were less likely than those at Schools A and B to value diversity in their medical school experience (both means = 9.42). Likewise students at School C were less convinced (mean = 23.12) that institutions needed to actively recruit and support minorities in faculty positions or as students. School A (mean = 24.45) while significantly more supportive of affirmative action than School C, was significantly less supportive than students at School B (mean = 25.87). In contrast, School B (mean = 8.07) was significantly less likely to perceive social problems resulting from differences (e.g., "*A person's racial background in this society does not interfere with achieving what he or she wants to achieve.*" reverse coded) than either Schools A or C (mean = 18.53 and 18.15, respectively). Finally, students at School B (mean = 13.79) were significantly more likely than those at Schools A or C to value conflict as a part of the democratic process (mean = 13.13 and 13.12, respectively).

Influence of prior experiences and medical school experiences on attitudes. Work at the undergraduate level suggests that college experiences with diversity influence attitudes about diversity. We examined this influence for medical students using sequential regression analyses. Because the experience of diversity in college has been found to be important, we first entered the ethnic composition of their friends in college and a summary variable of their prior experience with diverse groups to control for this prior experience. Then we entered their medical school exposure (i.e., number of patients and faculty of color), formal experiences (i.e., direct and voluntary instruction), and informal interactions (i.e., interactions and friendship). These variables were entered as blocks into four separate regression analyses to predict students' beliefs about the benefits of diversity in medical school, their support for affirmative actions, their perception of the difficulties resulting from differences, and the value they placed on conflict in a democracy. The statistics for the final model for each variable is shown in Table 3 below.

Table 3: Model Statistics for Four Regression Analyses

Model	Significant Betas in final model	R ²	F	df	sig
Benefits of diversity in medical education	Voluntary course work Informal interactions	.109	3.273	8/214	.002
Affirmative action	Faculty of diversity % Diverse patients Informal interactions	.163	4.616	8/190	.000
Impact diversity in society	% Diverse patients Informal interactions Social interactions	.429	8.649	8/92	.000
Value of conflict	Informal interactions	.053	1.32	8/189	.236

Change in R² was significant for each block of variables entering the equation in the prediction of students' beliefs about the benefits of diversity in medical school. In the final model only the coefficients for involvement in voluntary cultural instructional activities (t = 2.052, p = .041) and informal instructional interactions (t = 3.411, p = .001) were significant. Change in R² was significant only for the blocks that include the instructional variables and informal interactions, yet the final model results in significant coefficients for the number of diverse faculty (t = -2.237, p = .026), percent of minority patients seen (t = 2.289, p = .023), and informal interactions (t = 3.973, p = .000) with voluntary course work almost reaching significance (t = 1.844, p = .067). In the model predicting students' attitudes about the impact of diversity on society more broadly, model accounted for almost 43% of the variance. The change in R² was significant only for the blocks that include exposure to faculty and patients of color and to informal interactions and friendships. Coefficients that were significant in the final modes include patients (t = 4.017, p = .000), informal instructional interactions (t = -4.273, p = .000) and outside informal interactions (t = 5.996, p = .000). The final model accounts for a very small proportion of the variance in students' beliefs about the value of conflict in a democracy. Only informal instructional interactions contributed significantly when all variables were entered (t = 2.359, p = .019).

Conclusions

These results suggest that students' experiences with diversity varies among schools. Differences in the student, faculty and patient populations contribute to these differences and influence students educational experiences and attitudes about diversity and health. These findings are in line with the few studies examining the influence of diversity on students in professional schools, namely that students in medical schools value diversity in their classmates and find both the academic experiences and their abilities to work with patients from differing backgrounds enhanced by this diversity. Like studies at the undergraduate level, students from more diverse schools value diversity more than do those from less diverse schools, although students' beliefs about broader social issues is less clearly related to diversity in the school setting. Aspects of diversity that influence this value include the diversity of the student's neighborhood and college friendships an prior to attending medical school.

Once in medical school, being taught by faculty from diverse backgrounds has a mixed influence on attitudes. A finding that may suggest that the nature of the

interaction with faculty of color may be more important than the number of faculty of color students interact with. In considering these results it should be noted the number of faculty of color is relatively small and doesn't differ significantly between institutions. Formal educational experiences serving individuals from culturally different backgrounds and informal educational opportunities to interact with peers from diverse background and independent socializing were more often significant and more consistent in their contribution to students' beliefs.

This valuing of diversity in their medical school experiences does not appear to extend to students' attitudes toward affirmative action in educational institutions and the value of conflict in a democracy. Perhaps these broader social attitudes have been developed by the time students enter medical school. Only informal instructional interactions appears to both influence students' support for affirmative action and their valuing conflict. In fact only informal instructional interactions positively influences all attitude outcomes. A variable not studied elsewhere, percentage of patients who are people of color, strongly influences both beliefs about affirmative action and attitudes toward impact of diversity on society more broadly.

In summary, these findings suggest that medical students' attitudes about culture and health and their perspectives on societal issues related to diversity are influenced by their medical school experiences. Most important is the influence that informal interactions in instructional contexts appear to have in shaping these beliefs. The opportunity for such interactions need to be included in the curriculum. Likewise attention to the nature of these interactions and those involving both faculty and patients of color need further investigation to understand their influence.

¹Institute of Medicine. Unequal treatment: Confronting racial and ethnic disparities in healthcare. *National Academy Press*,

² Levine, FJ (2003). AERA News at www.aera.net

³ Gurin P, Dey EL, Hurtado S, Gurin G. Diversity and higher education: Theory and impact on educational outcomes. *Harvard Educational Review*. 2002.

⁴ Orfield, G. & Whitley, D. (2001). Diversity and legal education: Student experiences in leading law schools. In Orfield, Gary, Ed., *Diversity Challenged: Evidence on the Impact of Affirmative Action*. Cambridge, Harvard Education Publishing Group, 2001. p143-174. See UD 034 365. 33p

⁵ Whitley D K. Educational benefits of diversity in medical school. *Acad. Med.*, 78. 2003 (in press).

⁶ Cohen J J. The consequences of premature abandonment of affirmative action in medical school admissions. *JAMA*. 2003..