

Perceptions of Bias in Medical Education Curriculum at Two Schools of Medicine

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ABSTRACT

Purpose. To investigate if there was bias, or the perception of bias, in medical education curriculum and other issues by students in two private schools of medicine.

Method. Over 540 students were surveyed in two private schools of medicine: Institution X was predominantly European-American (E-A) and Institution Y was predominantly African-American (A-A). Students marked level of agreement/disagreement to survey items which were then assigned strengths to generate descriptive statistics. Item mean scores were analyzed to generate descriptive statistics and to compare item results.

Results. Majority race students in each school were more positive regarding culture and policies and less likely to discern bias in curriculum and lectures than minority populations. A significant percentage of students perceived biased comments from lecturers/students and agreed medical students were **not** less biased than other students. Institution X E-As were less likely to agree society ignores racism/bias than Institution Y E-As. Institution X A-As were twice as likely to scrutinize more closely references to race/ethnicity than other students. They also agreed more strongly that their subsequent performance suffers when bias is perceived when in the minority in a school than when constituting the majority race.

Conclusions. Minority students in an institution, no matter their race and ethnicity, tend to be less comfortable and more sensitive regarding their status as minorities and this manifests itself in greater perceptions of potentially biased curriculum. Students do not perceive they are treated equitably and have much different perspectives regarding biases than the majority race.

The healthcare differential for minorities in the United States, that is, the twin issues of the overall lower quality of individual health and the disparity of healthcare, is a serious medical and social issue. There are a number of economic, political, cultural and sociological causes for this gap that have spawned a myriad of research studies. As revealed in an Institute of Medicine study in 2003, minorities often receive lower quality healthcare than Whites due to the subconscious racial biases of many physicians.¹ One overarching remedy to counter such biases that was recommended in the Institute of Medicine's report was to increase the number of African-American physicians to care for underserved communities as a direct relationship has been established between the color of the attending physician, the patient's response to that physician and, ultimately, the particular care that patient receives.²

In order to increase the numbers of African-American physicians, there must be a concomitant increase in the number of African Americans admitted to and graduated from our nation's medical schools. Unfortunately, the number of African-American medical students has remained low both in real numbers and as a percentage of the populations in medical schools. Reasons accounting for the low numbers of Black medical students have included unequal educational opportunities, reduction in affirmative action programs, and bias in testing, admissions and organizational structure that have impacted recruiting, admitting and retaining African-American medical students.³

Institutional culture appears to influence retention of minorities. Once admitted to a medical school at which Whites are the dominant demographic race, underrepresented minorities at times feel isolated, particularly given the paucity of role models and same-race peers and mentors with whom they could interact. Institutional changes were identified in a study by 10 of 11 of those queried as the number one issue to increase the recruitment and retention of minority medical and science students. Researchers at Duke University found evidence that biases affecting the behavior of physicians were seen, and possibly inculcated, in the earliest stages of medical education. Just as revealing, minority students in the class tended to make similar evaluations of the two patients.^{4,5} At a Canadian medical school with a student body that was 66% White, many students believed that a person of Asian descent was considered to be at a distinct advantage and that being White did not yield any particular privileges.⁶ Dogra and Karnik⁷ surveyed students regarding their attitudes toward diversity and diversity curriculum at their medical school. Their survey revealed that White students did not consider themselves as advantaged or privileged just by benefit of their race or economic status, though the minority students did perceive their majority race colleagues as such.

There have been relatively few studies or papers on the effects of perceived bias on the student. Schmader et al⁸ found that students reacted to perceived bias by psychologically

withdrawing or disengaging from the academic process. These actions may result in decreased motivation and lower academic success. Likewise, a particular test item in itself may not be more difficult for the minority member, perceived racism or bias in the item may result in him or her likewise disengaging from the test with the subsequent detrimental effect on performance.⁹

A lesser known factor in medical education is the amount of perceived bias in the curriculum of medical education institutions and its effect on students. A significant influence on retention and graduation could be the dissimilar perceptions by students of the amount of bias that exists. Therefore, pinpointing if and where bias exists, or is perceived to exist, may yield data to assist administrators to institute policies to correct these biases. In particular, determining the extent of differences between majority and minority race students at both schools may provide insight into the sociocultural aspects of institutions that have initiated efforts to increase diversity and awareness of diversity issues.

METHODS

Sample and Study Design

A descriptive/comparative research design was employed for this study. Student attitudes regarding perceptions of bias at their medical institutions were surveyed. A 30-item survey was developed for this study based upon research questions framed by elements identified in a literature review and stemming from personal observations and experiences. The categories of the instrument were: *I. Admissions Process*, *II. Curriculum*, *III. Didactic Lectures/Teaching Events*, *IV. Evaluations/Grades*, and *V. Interpersonal Relations*. There were six items per category for which respondents indicated level of agreement from *strongly agree* to *strongly disagree*. In addition, there was a section titled *VI. Demographic Information* that requested respondents identify their gender, nationality, ethnicity, and length of time in the United States. The instrument was copyrighted and registered with the United States Copyright Office.

The subjects of this survey were the medical student populations of both institutions. The survey contained no identifying participant information, therefore, there was minimal risk of loss of confidentiality. Since the survey was completely anonymous and voluntary, all three IRB-granting institutions waived the necessity of signed consent from each student. Surveys were gathered in a drop box or by hand, however I did not review the contents of any surveys until after transporting them to a neutral location.

The Institutions

A total of 541 students completed the survey, 327 students from Institution X and 214 from Institution Y. Since the survey was voluntary, a small number (approximately 15) were returned blank. Four surveys were not used due to their being returned incomplete or containing errors which invalidated the survey. A demographic breakdown is provided below.

Institution X is an established, nationally ranked, private medical school with a robust endowment and learning tradition, and has been historically dominated demographically by European-American males. However, in recent years the school has instituted significant efforts to diversify its student population. Institution Y, conversely, is a historically Black medical school that has trained a significant percentage of African-American doctors in the United States and has a proud history and reputation with a distinguished list of nationally recognized alumni. Females have in recent years comprised the majority gender of its population.

Analysis of Data

The purpose of descriptive research is “to create a detailed description of a phenomenon” and have the function of providing a detailed analysis of a group or situation at any one time. Likewise, a causal-comparative study was defined as one where “the researcher forms two or more groups and compares them in order to explore possible causes or effects of a phenomenon.” The common feature of descriptive and causal-comparative research design is “that they involve the study of behavior,

cognition, or other attributes of individuals without any intervention by the researcher.”¹⁰ Data were analyzed as an aggregate as well as by institution and in the major racial categories of European-European-descent/European-American (labeled for expediency as “White” hereafter), African/African-descent/African-American (labeled as “Black”), Asian/ Asian-descent/Asian-American (grouped as “Asian”), and all other students whether Latino/ Latina, Hispanic-American, Native American, other racial/ethnic categories or students who selected more than one category (grouped as “Other”).

All participants who completed the survey fully were included in the results. Incomplete surveys, including those without completed the demographic information, were excluded from the final results. In order to conduct quantitative analysis, the positively scored items (items 1-7, 11, 12, 17, 20, 21, 25, 26, and 28) were ranked accordingly: *strongly agree* = 5, *agree* = 4, *no opinion/neutral* = 3, *disagree* = 2, and *strongly disagree* = 1. However, a number of the survey items were scored with negative polarity (items 8-10, 13-16, 18, 19, 22-24, 27, 29, 30). Accordingly, those survey items were assigned the opposite ranked scores: *strongly agree* = 1, *agree* = 2, etc. Therefore, the higher means for each item indicates, for positively scored items, more agreement with the item and, for negatively scored items, more disagreement, thereby indicated the individual student’s general level of satisfaction or dissatisfaction with the item. Cronbach’s Alpha was used to determine validity of the instrument. The results were that the positively worded items scored an alpha of 0.72 and the negatively worded items scored an alpha of 0.79. The computational software used for statistical analyses in this study was *StatView for Windows*, Version 5.0.1.

RESULTS

Demographics of Respondents

Institution X had the following population demographics as demonstrated on the survey: 52% male, 48% female, 67% European/European-descent/European-American, 8% African/African-

descent/African-American, 17% Asian/Asian-American (including Middle Eastern), 2% Latino/Latina/Hispanic American, and 6% other races and ethnicities (including Native American or self-identified as more than one race/ethnicity). Institution Y has a surveyed demographic population that was 48% male, 52% female, 73% African/African-descent/African-American, 6% European/European-descent/European-American, 7% Asian/Asian-American, 2% Latino/Latina/Hispanic-American, and 11% self-identified as other (including Native American or more than one race and ethnicity).

Limitations

Though the surveys were anonymous and completely confidential, the data was self-reported so I had to rely on the veracity and candor of respondents. Another issue to be mentioned that may be construed as a limitation would be the differences in how each student perceived “bias.” Given the subsequent results of the survey, students in the same lecture hearing the same information may perceive or not perceive biases, and these perceptions cut across racial and ethnic lines, though clearly there were some discernable differences between the groups in this study. Since “bias” can range from fairly benign personal favoritism (for any number of innate reasons) to overt racism, each student was informed to interpret bias individually.

DISCUSSION

I was interested in measuring the total population of surveyed students regarding individual items and the degree of agreement and disagreement to each item. In the tables below, only groups that differed significantly as determined by an unpaired *t-test* ($\alpha = 0.05$) are listed and discussed in detail. Other raw data is provided where necessary for further amplification or to highlight differences that bear discussing, yet did not meet statistically significant differences (SSDs) between groups.

The Admissions Process

Referring to Table 1, these items asked for level of agreement/disagreement regarding the admissions process at each school. For each item, only those with intragroup p scores of less than .05, or approaching .05, are included in tables. For example, item 1, “Interviews and interpersonal contacts were free of apparent bias,” had five combinations of results with p scores below .05. Three of these were between the entire populations of different groups and one each for groups at Institution X and Y, respectively. Two of the combined populations indicate that White students, with a mean item score of 3.9, were much more positive regarding this item than either Black students ($M = 3.6$) or Other students ($M = 3.4$). Likewise, Asian students ($M = 3.8$) were much more positive regarding admissions than Other students. This difference is replicated at Institution X as White students ($M = 4.0$), the majority race demographically, were much more in agreement with the item regarding biases in interviews and contacts than Black students ($M = 3.4$), the least populace major demographic at Institution X. At Institution Y, the largest demographic group, Black students, were much more in agreement ($M = 3.6$) than Other students ($M = 3.1$).

For item 2, “I did not perceive that my gender/race/ethnicity was an issue during the admissions process,” a noteworthy observation is that once again the largest racial/ethnic demographic, was much more in agreement regarding the item and, by extension, much more in agreement regarding the overall climate of the school than other population groups, some of whom were the smallest demographic group and some who were not. For example, at Institution X, White students had the largest mean difference compared to Black students and, to a lesser degree, than Other students, while at Institution Y, Black students were much more in agreement statistically than either Asians or Other students.

The results of item 3, “I understood that I would be supported should I raise issues regarding perceived bias in this institution,” pertains to communication issues within the school and are of

interest as only Institution Y had statistically significant differences between groups and these differences were between Black students, again the majority race, and all remaining student categories at that school. Though there were differences at Institution X, they were not found to be at the level of significance than at Y.

Item 4 pertains to the issue of “color blind” admissions and sought to address different perceptions of Affirmative Actions and related issues regarding the use of nontraditional, qualitative factors of admission. There is a decidedly racial cast to the level of agreement with the item as White and Asian students at both schools agreed much more strongly that they favor such admissions than Black and Other students.

There were more combinations (eight) of significant differences for item 5, which asked about admissions based solely upon qualifications, than another other item in this section. As with item 4, White and Asian students believed most strongly they were admitted based only upon their qualifications compared to Black and Other student categories. This item did not deal with students perceiving they were less qualified, but their perception whether other issues were involved during admissions and whether students had perceived these other qualifications.

The final item in this section pertained to the overall admission process and indicated that Black students were more positive than the other three categories to a statistically significant degree. At Institution Y, the mean item score for Black students (3.4) was significantly different than Asian (2.6) and Other (2.5) and to a lesser degree for White (3.0) (not shown in table).

Table 1

Student Attitudes Regarding the Admissions Process: SSDs in Means By Institution and Group, Unpaired T-Test ($\alpha = .05$)

<u>Institution</u>	<u>Race (M)*</u>	<u>Race (M)</u>	<u>M Diff</u>	<u>DF</u>	<u>p Score</u>
<i>Item 1: Interviews and interpersonal contacts were free of apparent bias.</i>					
Combined	W (3.9)	B (3.6)	0.35	413	0.0018
Combined	W (3.9)	O (3.4)	0.55	293	0.0004
Combined	A (3.8)	O (3.4)	0.42	123	0.0301
X	W (4.0)	B (3.4)	0.56	244	0.0117
Y	B (3.6)	O (3.1)	0.50	185	0.0413
<i>Item 2: I did not perceive that my gender/race/ethnicity was an issue during the admissions process.</i>					
X	W (3.5)	B (2.5)	0.97	244	0.0006
X	W (3.5)	O (3.0)	0.51	251	0.0396
Y	B (3.7)	A (3.2)	0.62	72	0.0114
Y	B (3.7)	O (3.0)	0.62	185	0.0444
<i>Item 3: I understood that I would be supported should I raise issues regarding perceived bias in this institution.</i>					
Y	B (3.4)	W (2.5)	0.95	167	0.0029
Y	B (3.4)	O (3.0)	0.41	185	0.0545
Y	B (3.4)	Y (2.9)	0.59	169	0.0438
<i>Item 4: A totally "color blind" admission process works to my advantage.</i>					
Combined	W (4.0)	B (2.9)	1.03	413	<.0001
Combined	W (4.0)	O (3.0)	1.00	251	0.0014
X	W (4.0)	B (2.9)	1.12	244	<.0001
X	A (3.8)	B (2.9)	0.93	72	0.0005
Y	W (4.0)	O (3.3)	0.98	40	0.0091
Y	A (3.8)	O (2.6)	0.83	42	0.0148
<i>Item 5: I was admitted to medical school based solely upon my qualifications.</i>					
Combined	W (4.1)	B (3.5)	0.53	413	<.0001
Combined	W (4.1)	O (3.5)	0.52	293	0.0004
Combined	A (4.0)	B (3.5)	0.5	243	0.0018
Combined	A (4.0)	O (3.5)	0.49	123	0.0058
X	W (4.1)	B (3.1)	0.97	244	<.0001
X	W (4.1)	O (3.7)	0.42	251	0.0263
X	A (4.1)	B (3.1)	0.98	72	<.0001
X	A (4.1)	O (3.7)	0.42	79	0.0519
<i>Item 6: The admissions process was free of racial/ethnic/other biases.</i>					
Combined	B (3.3)	W (2.9)	0.48	413	<.0001
Combined	B (3.3)	O (2.7)	0.68	240	<.0001
Combined	B (3.3)	A (2.7)	0.67	240	0.0002
Y	B (3.4)	O (2.5)	0.90	185	0.0001
Y	B (3.4)	A (2.6)	0.82	169	0.0117

* Race = "W" White, "B" Black, "A" Asian, "O" Other; (M = Mean item score)

Curriculum

In the context of this study, curriculum was defined as all textbooks, assigned readings, journal articles, web-based materials, multimedia and handouts and printed matter not to include evaluations/grades. Item 7, “Multicultural perspectives are included in the curriculum,” resulted in several findings. Generally, Asian students at both institutions were in much less agreement than other groups regarding the amount of multiculturalism in curriculum, perhaps pointing to the fact that schools have made more efforts to reach out to non-Asian races and ethnicities.

Items 8, “The curriculum contains materials that could be perceived as biased,” and item 10, “I have encountered biased curriculum in this school” both addressed directly the issue of student perceptions of bias in curriculum. On both items Institution X White students were more supportive of the institution than Black and Asian students. Interestingly, students at both schools who were grouped as Other were statistically less perceiving of bias than both Black and Asian students at those schools.

Item 11 addressed the efforts of school administration to eliminate bias from curriculum. In both schools, the majority race was more positive about the administration than the minority race: White students at Institution X were much more positive than Black students, and Black students at Institution Y were much more positive than White.

The final item in this section, 6. “The issue of faculty diversity or lack thereof is **not** a major concern to me,” has an interesting cast. First, there were no statistically significant differences among the students at Institution Y, but there were five such delineations at Institution X. Clearly White students overall and when in the majority race at their school did not agree regarding the issue of a diverse faculty and Black students at Institution X disagreed with this item much more strongly than any other racial/ethnic group, as evidenced by the Black student mean of only 1.90.

Table 2

Student Attitudes Regarding Curriculum: SSDs in Means By Institution and Group, Unpaired t-test ($\alpha = 0.05$)

<u>Institution</u>	<u>Race (M)*</u>	<u>Race (M)</u>	<u>M Diff</u>	<u>DF</u>	<u>p Score</u>
<i>Item 7: Multicultural perspectives are included in the curriculum.</i>					
Combined	W (3.7)	B (4.0)	-0.30	413	0.0018
Combined	W (3.7)	A (3.4)	0.28	296	0.0388
Combined	B (4.0)	A (3.4)	0.58	243	<.0001
X	W (3.7)	B (3.1)	0.54	244	0.0090
X	W (3.7)	O (3.2)	0.47	251	0.0089
X	W (3.7)	A (3.4)	0.31	270	0.0390
Y	B (4.1)	A (3.6)	0.49	169	0.0577
Y	O (4.3)	A (3.6)	0.66	42	0.0282
<i>Item 8: The curriculum contains materials that could be perceived as biased.</i>					
X	W (3.2)	B (2.7)	0.53	244	0.0127
X	O (3.4)	B (2.7)	0.69	53	0.0055
Y	B (3.1)	W (2.2)	0.97	167	0.0023
Y	O (3.1)	W (2.2)	0.97	40	0.0165
<i>Item 9: Bias awareness should be more emphasized in our curriculum.</i>					
Combined	W (3.0)	B (2.6)	0.49	413	<.0001
Combined	W (3.0)	A (2.5)	0.55	296	<.0001
X	W (3.0)	B (1.8)	1.21	244	<.0001
X	W (3.0)	A (2.5)	0.55	270	0.0004
X	O (2.7)	B (1.8)	0.91	53	0.0013
X	A (2.5)	B (1.8)	0.67	72	0.0038
<i>Item 10: I have encountered biased curriculum in this school.</i>					
Combined	W (3.4)	A (3.1)	0.29	296	0.0507
X	W (3.4)	B (2.7)	0.74	244	0.0011
X	W (3.4)	A (3.1)	0.33	270	0.0493
<i>Item 11: I am confident school administration is doing all it can to eliminate bias from curriculum.</i>					
Combined	W (3.5)	B (3.3)	0.25	413	0.0134
X	W (3.6)	B (3.1)	0.49	244	0.0215
Y	B (3.3)	W (2.4)	0.88	167	0.0051
<i>Item 12: The issue of faculty diversity or lack thereof is not a major concern to me.</i>					
Combined	W (3.3)	B (3.0)	0.31	413	0.0123
Combined	W (3.3)	O (2.9)	0.45	293	0.0088
Combined	W (3.3)	A (2.7)	0.64	296	0.0001
X	W (3.3)	B (1.9)	1.42	244	<.0001
X	W (3.3)	O (2.8)	0.56	251	0.0123
X	W (3.3)	A (2.7)	0.68	270	0.0002
X	O (2.8)	B (1.9)	0.86	53	0.0173
X	A (2.7)	B (1.9)	0.74	72	0.0165

* Race = "W" White, "B" Black, "A" Asian, "O" Other races/groups; (M = Mean item score)

Didactic Lectures and Teaching Events

The third section of the survey dealt with student attitudes/perceptions toward lectures, whether a formal lecture in front of 100 or more students or any other iteration of a lecture or teaching event down to a one-on-one laboratory or clinical situation. The first item in this section, “I have perceived biased comments or attitudes during lectures and other teaching events,” addressed this issue directly. Based upon an unpaired *t-test* of means, Institution X White students (the majority demographic) were much less perceptive of biased comments or attitudes than the other three racial/ethnic categories in this study. Overall at Institution X, 30% of White students agreed and 5% strongly agreed while at Institution Y, 67% of White students at Institution Y agreed or strongly agreed with this item. These percentages were reversed for Black students as 71% of Institution X Black students agreed/strongly agreed while 41% of Institution Y did. The bottom line is that a large percentage of students in all ethnic groups perceived biases, but the majority race was usually less perceptive than the other demographically smaller groups in the school.

The next item bearing discussion was Item 16, “I have identified potentially biased material to the faculty and/or administrators at this institution,” which sought to gauge if students had perceived bias to the degree they felt compelled to point it out to faculty and administration. Overall, Whites (by virtue of the higher mean on this negatively scored item) were much less likely than Asian and Other students. In addition, at Institution X White students were likewise to have been less likely to identify materials than the other three groups. Interestingly, while only 8% of Institution X White students had agreed or strongly agreed with this item, 33% of Black students had, more than four times the number of Whites. In addition, while 9% of Black students at Institution Y agreed or strongly agreed, not one White student agreed or strongly agreed even though 67% of those students had agreed that they had perceived biased comments or attitudes (item 13 above). This result speaks

once again to the implication that students have differing perceptions of the amount of faculty and administration support in this regard. The next item also dealt with comfort as Institution Y Black and Other students were statistically much more comfortable than White and Asian students, highlighting the fact that a diverse institution with a diverse mission statement may need to be more cognizant of the perceptions of the minority populations within its student body.

When race or ethnicity is mentioned in a clinical vignette, as asked on item 18, do students accept the vignette objectively or do they to pause to question the intent of the writer of that vignette, particularly if the vignette may deal with an issue carrying a social stigma, such as an STD or alcoholism? Tittle¹¹ noted that a particularly salient question that must be asked is if there is a “positive representation of the various minority...groups who will take the final test?” and Hambleton⁹ noted “Tests should be free of material that may be offensive, demeaning, or emotionally charged.” At Institution X, 36% of White students tended to regard such vignettes more carefully (a significant number in its own right), however, 84% of Institution X Black students did. At Institution Y, the percentages were 25% for White students and 41% for Black students, a percentage difference of more than 50% yet not approaching statistical significance.

Table 3
Student Attitudes Regarding Didactic Lectures and Teaching Events: SSDs in Means By Institution and Group, Unpaired T-Test ($\alpha = .05$)

<u>Institution</u>	<u>Race (M)*</u>	<u>Race (M)</u>	<u>M Diff</u>	<u>DF</u>	<u>p Score</u>
<i>Item 13: I have perceived biased comments or attitudes during lectures or other teaching events.</i>					
Combined	W (3.2)	B (3.0)	0.28	413	0.0182
X	W (3.3)	B (2.3)	0.93	244	0.0002
X	W (3.3)	O (2.8)	0.43	251	0.0545
X	W (3.3)	A (2.8)	0.45	270	0.0149
<i>Item 14: If/when bias is perceived, it is distracting personally to me.</i>					
X	W (2.9)	B (2.4)	0.43	244	0.0206
<i>Item 15: I have discussed the issue of bias with a faculty member/lecturer.</i>					
X	W (3.8)	B (3.1)	0.69	244	0.0016
<i>Item 16: I have identified potentially biaeed material to the faculty and/or administrators at this institution.</i>					

Combined	W (3.9)	O (3.6)	0.32	293	0.0147
Combined	W (3.9)	A (3.4)	0.49	296	0.0002
Combined	B (3.8)	A (3.4)	0.39	243	0.0098
X	W (3.9)	B (3.4)	0.50	244	0.0106
X	W (3.9)	O (3.4)	0.50	251	0.0048
X	W (3.9)	A (3.4)	0.49	270	0.0006

Item 17: *I feel comfortable discussing issues of bias/racism with faculty.*

Y	B (3.4)	W (2.3)	1.20	167	0.0005
Y	O (3.3)	W (2.3)	1.08	40	0.0076
Y	B (3.4)	A (2.7)	0.73	169	0.0191

Item 18: *When I encounter a clinical vignette or question containing a reference to race or ethnicity, I tend to scrutinize (regard) it more carefully.*

Combined	W (3.1)	B (2.8)	0.23	413	0.0309
X	W (3.0)	B (2.1)	0.96	244	<.0001
X	O (2.9)	B (2.1)	0.79	53	0.0018
X	A (2.9)	B (2.1)	0.80	72	0.0014

* Race = "W" White, "B" Black, "A" Asian, "O" Other races/groups; (M = Mean item score)

Evaluations and Grades

The purpose of this section was to determine student level of agreement/disagreement to items pertaining to assessments and subsequent grades. The first item in this section to be discussed, 19. “If I perceive racism or ethnic/gender bias in a test question, it tends to affect my performance on the remainder of the test,” was included due to research that had concluded bias may affect academic performance. In this study, for the combined data set as well as at Institution X, White students tended to not agree with this statement (again by their higher mean on this negative polarity item), more so than either Black or Asian students. Regarding the component of culture again, it was interesting that at Institution Y, Black students and White students agreed or strongly agreed at about the same rate (11% and 8% respectively), but at Institution X more than 2.5 times the number of Blacks agreed than Whites (21% to 8% respectively). Also it was noted that at Institution X, 18% of 50 Asian students in the study agreed/strongly agreed with this item, but not one of the 14 Asian students at Institution Y had (0%).

Item 22, “I have received the grades I earned” sought to determine if students perceived bias either for or against the respondent. Overall students at both schools were very positive about the partiality of grades earned, however 20% of Other students at Institution Y disagreed with this statement versus 8%, 7% and 5% of the three remaining groups of students, indicating there were variations in perceptions at that particular school, though on balance it was not a statistically significant difference.

Table 4

Student Attitudes Regarding Evaluations and Grades: SSDs in Means By Institution and Group, Unpaired T-Test ($\alpha = .05$)

<u>Institution</u>	<u>Race (M)*</u>	<u>Race (M)</u>	<u>M Diff</u>	<u>DF</u>	<u>p Score</u>
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Item 19: *If I perceive racism or ethnic/gender bias in a test question, it tends to affect my performance on the remainder of the test.*

Combined	W (3.9)	B (3.7)	0.20	413	0.0213
Combined	W (3.9)	A (3.6)	0.25	296	0.0506
X	W (3.9)	A (3.5)	0.35	270	0.0140

Item 20: *I must work harder for my grade because of my gender/race/ethnicity than students of another gender/race/ethnicity.*

Combined	W (4.1)	B (3.5)	0.65	413	<.0001
Combined	W (4.1)	A (3.8)	0.29	296	0.0382
Combined	B (3.5)	O (3.9)	-0.44	240	0.0144
Combined	B (3.5)	A (3.8)	-0.35	243	0.0455
X	W (4.1)	B (3.6)	0.52	244	0.0162
X	W (4.1)	A (3.8)	0.36	270	0.0194

Item 21: *Students at this institution receive the grades they earn without regard to their gender/race/ethnicity.*

Y	B (4.1)	W (3.5)	0.60	167	0.0468
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Item 22: *I have received the grades I earned.*

Combined	W (4.3)	O (3.9)	0.14	293	0.0012
Combined	W (4.3)	A (4.0)	0.37	296	0.0020
Combined	B (4.2)	O (3.9)	0.27	240	0.0443
Y	B (4.2)	O (3.6)	0.56	185	0.0023

Item 23: *I have received a grade based, at least partially, on my race/ethnicity.*

Combined	W (4.5)	B (4.4)	0.17	413	0.0192
Combined	W (4.5)	A (4.0)	0.46	296	<.0001
Combined	B (4.4)	A (4.0)	0.29	243	0.0242
X	W (4.6)	A (4.0)	0.59	270	<.0001
X	O (4.6)	A (4.0)	0.49	79	0.0308

Item 24: *I have received a grade based, at least partially, on my gender.*

Combined	W (4.4)	A (4.1)	0.31	296	0.0223
Combined	B (4.3)	A (4.1)	0.23	243	0.0309
X	W (4.4)	A (4.0)	0.29	243	0.0080

* Race = "W" White, "B" Black, "A" Asian, "O" Other races/groups; (M = Mean item score)
 Interpersonal Relations and Other Issues

The purpose of this section was to delve more deeply into how students perceive their peers. The first item in the section, 25. “Students at this institution are encouraged to talk freely about bias,” resulted in the findings that, once again, Asian students are not as positive as the majority demographic both overall and at Institution X. Black students also differed from White students at X. However, even though there may have been only slight variations in the way in which each group responded to this item, the fact that even for the most positive group, only 62% of students agreed or strongly agreed, indicating that both institutions could initiate the necessary actions to encourage increased communication of this issue.

Researchers at Duke University found evidence that biases affecting the behavior of physicians were seen, and possibly inculcated, in the earliest stages of medical education.^{4,5} Though there were no statistically significant differences between races/ethnic groups for item 27, “I have encountered biased comments or attitudes from other students in this institution,” there were a number of significant findings regarding the percentages of students who agreed with this item. Overall, 56% of White students agreed or strongly agreed they had encountered biased comments (75% of White students at Institution Y agreed/strongly agreed and 54% of Whites at Institution X). Overall, 54% of Black students had (71% at Institution X, 52% at Y). Sixty-one percent of Asian students agreed/strongly agreed (64% at Institution X, 50% at Y). Finally, 54% of Other students at both schools had agreed/strongly agreed (67% at Institution Y and 42% at X).

The next item, 28. “In my experience, medical students are **less** biased than other graduate student populations,” again dealt with student perceptions of peers. Again, there were some

statistically significant differences between groups which are shown in Table 5. However, the most interesting result is the raw percentage of students who disagreed with this statement, thereby indicating that in their opinion medical students are **not less** biased. Overall, 29% of White students disagreed (28% at Institution X and 58% at Institution Y), 45% of Black students disagreed (54% at X and 43% at Y), 31% of Asian students disagreed (32% at X and 29% at Y) and 36% of Other students disagreed (35% at X and 37% at Y).

Item 29, “American society as a whole tends to ignore the issue of racism and bias in everyday life,” on the surface does not address an institutional question, but the results reveal much about the culture of the respective schools. First, White students overall and at Institution X were much less in agreement with this item. Second, Black students overall and at Institution X were much more in agreement with this item than White, Asian or Other student categories. However, the raw percentages again complete this picture. Only 26% of Institution X White students agreed or strongly agreed with this statement, but 65% of White students at Institution Y agreed/strongly agreed, raising the question of what differs in the culture of the two schools that would result in same race students differing to that degree? The results were the same for Asian and Other student categories, but not to that extent as only 38% of Institution X Asian students agreed versus 60% of Institution Y Asians, and 29% of Institution X Other students agreed versus 47% of Institution Y students. The only demographic to decrease in percentage, not surprisingly, was Black students as 71% of Black students at Institution X agreed or strongly agreed with this statement, while 60% of Institution Y students did. As Elam et al in their research discovered, a definite trend in culture is that as the amount of diversity increases in the school, the more comfortable were students with the issue of diversity and its value to medical practice.¹²

The final item, 30. “There is bias against certain races/ethnicities in this institution,” resulted in White students overall and predominantly at Institution X not agreeing to this statement compared

to the other races/ethnicities. Asian students overall were in most agreement with this statement, evidenced by their lower overall mean of 2.8 (another item with negative polarity, therefore the lower the mean the more in agreement regarding the existence of bias) compared to the other groups. At both schools, efforts to increase competency between White and Black students may have resulted in improvements for those groups, however, Asian students still perceived more biases. At a Canadian medical school comprised of predominantly White students, many students believed that a person of Asian descent was considered to be a distinct advantage and that being White did not yield any particular privilege.⁶

Table 5

Student Attitudes Regarding Interpersonal Relations and Other Issues: SSDs in Means By Institution and Group, Unpaired T-Test ($\alpha = .05$)

<u>Institution</u>	<u>Race (M)*</u>	<u>Race (M)</u>	<u>M Diff</u>	<u>DF</u>	<u>p Score</u>
<i>Item 25: Students at this institution are encouraged to talk freely about bias.</i>					
Combined	W (4.4)	A (3.2)	0.39	296	0.0040
X	W (3.6)	B (3.1)	0.40	270	0.0080
X	W (3.6)	A (3.1)	0.42	270	0.0047
<i>Item 26: I have close, personal friends of multiple cultures and ethnicities.</i>					
Combined	W (4.3)	B (4.0)	0.32	413	0.0006
Combined	B (4.0)	O (4.4)	-0.44	240	0.0045
Combined	B (4.0)	A (4.5)	-0.48	243	0.0013
X	B (4.0)	A (4.5)	-0.42	72	0.0414
<i>Item 27: I have encountered biased comments or attitudes from other students in this institution.</i>					
None					
<i>Item 28: In my experience, medical students are less biased than other graduate student populations.</i>					
Combined	W (2.9)	B (2.6)	0.33	413	0.0007
Combined	B (2.6)	A (3.0)	-0.44	243	0.0030
X	W (2.9)	B (2.3)	0.65	244	0.0015
Y	A (3.2)	W (2.3)	0.96	24	0.0186
Y	B (2.6)	A (3.2)	-0.59	169	0.0327
<i>Item 29: American society as a whole tends to ignore the issue of racism and bia in everyday life.</i>					
Combined	W (3.3)	B (2.6)	0.77	413	<.0001
Combined	W (3.3)	A (3.0)	0.33	296	0.0385
Combined	B (2.6)	O (3.2)	-0.57	240	0.0005
Combined	B (2.6)	A (3.0)	-0.44	243	0.0194
X	W (3.4)	B (2.4)	1.01	244	<.0001

X	B (2.4)	O (3.5)	-1.01	53	0.0009
X	B (2.4)	A (3.1)	-0.69	72	0.0236

Item 30: *There is bias against certain races/ethnicities in this institution.*

Combined	W (3.4)	A (2.8)	0.57	296	0.0002
Combined	B (3.3)	A (2.8)	0.46	243	0.0063
X	W (3.4)	B (2.8)	0.70	244	0.0032
X	W (3.4)	O (3.0)	0.41	251	0.0533
X	W (3.4)	A (2.8)	0.69	270	<.0001

* Race = "W" White, "B" Black, "A" Asian, "O" Other races/groups; (M = Mean item score)

Conclusions

Students of all races and ethnicities at both schools in this survey perceived that biases existed. Jencks's and Phillips's¹³ study discussed culture and its influence on the college experience. Black students at Institution X expressed significantly less agreement regarding the culture of the school and perceived biases than Whites and other races. Beagan⁶ found that the majority race students had a distinct outlook regarding issues of diversity and bias, including faculty diversity. This research was confirmed for both of these institutions as the majority races in both schools saw their institutions more positively than the non-majority races. However, this difference was clearly more pronounced in Institution X than Y as evidenced by statistical analyses of surveys. The conclusion in this regard is that the least populace race/ethnicity in a school may have completely contrary views of the culture and norms of an institution than the other races and ethnicities.

Dogra and Karnik found that White students did not necessarily consider themselves as advantaged, though they were viewed as such by non-White students.⁷ In this study, roughly twice the percentage of Blacks in both schools agreed with the item that they must work harder for their grades than other races and ethnicities, indicating that a number of students perceived systemic biases against their performance compared to other students not of their race. This was not as dramatic a difference as Bright et al found in their 1998 study, but of note nonetheless.¹⁴

Item 18 was constructed based upon Hambleton's observation that "tests should be free of material that may be offensive, demeaning, or emotionally charged."⁹ Researchers have discussed the effects of perceived bias in test questions and the effect on test-takers.^{8,11} This study supports findings that references to race or ethnicity were perceived quite differently by students, the conclusion being that even though Blacks in both institutions were more suspect of such references in curriculum and testing, being a minority in a traditionally White institution dramatically impacted one's perception of the test builder's intent. This perception was reinforced on the next item regarding how perceived bias affects subsequent performance on a test. Two-and-a-half times more Blacks than Whites at Institution X felt that their performance suffered if bias was perceived, while at Institution Y the numbers were much closer: 11% to 8%, respectively.

Two survey items dealt with past research studies which found that biases were inculcated in students from the earliest stages of their medical education.^{4,5} In this study, significant numbers of students at both schools agreed that they have heard biased comments from other medical students, supporting those previous findings. Further, a significant number of students in both schools do not believe that medical students are less biased than other graduate student populations. Therefore, the conclusion is that students either enter medical school with biases or assimilate them very early in the process. Whatever the case, these biases have been found to be systemic in our national healthcare today and research indicates it may account for a significant portion of the gap in healthcare quality and overall health of underrepresented minorities in our society.

Research has found distinct differences between the perceptions of medical education by African Americans and other segments of the student population, particularly regarding diversity in curriculum and faculty.¹² Blacks agreed more strongly that there should be more diversity in curriculum than Whites. However, the White minority students at Institution Y perceived more bias in curriculum than Black students did.

Black students at both schools felt more strongly that diversity was an important issue, but the numbers were reversed again when discussing bias with faculty. The conclusion here is that minority students in an institution, no matter their race and ethnicity, may tend to feel less comfortable and more sensitive regarding their status as minorities and this manifests itself in different ways. Perceiving the existence of bias and then being comfortable enough to discuss it freely, or just having an outlet to do so, is an issue that depends upon one's race and ethnicity and in what numbers that race and ethnicity are found in a school.

Regarding curriculum and teaching events, there were definite biases perceived by students, most disturbingly by minorities in lectures and teaching events and less so in curriculum materials. Depending upon the student's racial or ethnic category and where that category fits demographically appeared to influence a student's perception. Perhaps being a member of the majority race in any institution prevents one from perceiving biases from the minority perspective or perhaps the majority race and gender shapes the cultural norms of the institution to the degree that they accept the status quo with little regard for minority perceptions.

There were a number of students who may harbor biases that could impact their ability to be impartial health care professionals. That was one of the more surprising and troubling findings of this study. The percentages were present in relatively strong numbers in both institutions and do not support the belief that succeeding generations of students may be necessarily more tolerant than previous ones. That notion would be dependent upon medical education administrators and leaders establishing the necessary policies to better ensure equity and impartiality in medical education.

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Item 27: *I have encountered biased comments or attitudes from other students in this institution.*

None

Item 28: *In my experience, medical students are less biased than other graduate student populations.*

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* Race = "W" White, "B" Black, "A" Asian, "O" Other races/groups; (M = Mean item score)

RECOMMENDATIONS

Specific recommendations are as follows:

- Refine the admissions process to better communicate issues of diversity and inclusiveness.
- Expand entry-level diversity awareness and cultural competency seminars to help students and faculty become aware that diversity and cultural competency improves the overall quality of medical education.

- Curriculum committees should review all materials to identify biased materials and expunge them if necessary.
- Increase efforts to be more inclusive to minority students throughout their years in medical school.
- Broaden future studies to include examining biases and related issues in other graduate school populations and undergraduate admissions and curriculum.
- Institute studies that would include that of religious intolerance and biases in student populations as well as biases against alternative lifestyles.
- Expand future studies to further delineate analysis by additional categories of ethnicity, citizenship, geographic origin, and so forth.

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