

# PERCEIVED BARRIERS AND BIASES IN THE MEDICAL EDUCATION EXPERIENCE BY GENDER AND RACE

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This study examined barriers and biases in the medical education experience by surveying fourth-year medical students. There were 270 female and 288 male respondents; their racial background was: 21% Asian, 13% underrepresented minorities, and 66% white. Women reported that the careers they were encouraged to pursue were affected by their gender (44% versus 15%) and they were often mistaken for a nonphysician (92% versus 3%). More importantly, women reported that the lack of a mentor of either gender as a large barrier (27% versus 19%). Underrepresented minorities reported that their race caused them to feel that they had to be twice as good to be treated as an equal to other students (52% versus 6%). Underrepresented minorities identified the lack of a same-race mentor (23% versus 4%) and role model (40% versus 1%) as a large barrier. Underrepresented minorities also noted an overall lack of mentors as a large barrier (25% versus 19%). Women and underrepresented minorities from the class of 1996 reported having a medical school experience characterized by similar barriers to their professional development. (*J Natl Med Assoc.* 1998;90:681-688.)

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**Key words:** medical education ♦ minorities  
♦ medical students

The medical profession in the United States was fairly homogeneous until the advent of affirmative action and the women's rights movement during the 1960s and early 1970s. Since then, an increased number of women and underrepresented minorities (African Americans, Latinos, and Native Americans) have graduated from US medical schools and diversified the community of physicians at large. It was determined in the 1970s that there was a need for

population-based representation of these groups to help ensure that these communities would have physicians to care for them. After an initial rise in the number of underrepresented minorities to 7% to 9% of total acceptances, their percentage has never reached the population goals set at 12%.<sup>1-3</sup>

Overall, since the 1970s, the composition of medical graduates changed from almost all men to classes with more women than men.<sup>4,5</sup> The medical literature has little data on how the experience of minorities and women in medical school differs from that of majority and male students. However, recent articles have explored a number of issues relevant to the careers of minorities and women once they complete their medical education. The literature reveals that there are still differences between genders and races with regard to financial compensation and promotions.<sup>4-13</sup> Other literature points out differences in income and patient populations served between underrepresented minorities and majority physicians.<sup>4,6,14-17</sup>

Since medical schools have become more diverse,

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we were interested in learning more about the experiences of these students and whether their experiences differed by race or gender. With this goal in mind, a survey instrument was designed to explore aspects of the medical educational experience to determine if there were any identifiable barriers or perceived biases attributable to race or gender. The objectives were to examine the psychosocial and psychoemotional aspects of the medical education experience as well as the career development experience of these medical students to determine if there were differences by race or gender. The survey also asked about the presence of role models and mentors to determine whether students had access to them, as well as what impact these role models or mentors, or the lack thereof had on their experiences.

## MATERIALS AND METHODS

A 7-page, 63-question survey was designed using Likert-scaled responses. The survey was then mailed to fourth-year medical students who were on the American Medical Student Association (AMSA) mailing list. The AMSA mailing list represents approximately 70% of US medical students. Participants were selected from the 25 US schools that had the most diverse student body according to 1994 data from the Association of American Medical Colleges (AAMC). This further selection was a deliberate attempt to emphasize schools with greater numbers of underrepresented minorities to effectively compare findings by race/ethnicity. The first mailing was in March 1996 and a second mailing was completed 6 weeks later.

The survey instrument explored several areas of the educational experience and factors that influenced the student to pursue a career in medicine. Questions asked about primary influences that led to the choice of medicine for a career. Students were asked to rank a variety of possible obstacles that could occur during their formal classroom training. They also were asked to rank their school's performance in teaching social and cultural differences in disease and ethical issues in medicine. Finally, students were asked to rate how they were graded during subjective clinical rotations. An extensive demographic section also was included to elicit relevant personal and sociodemographic information about the individual respondents and their families. Each questionnaire was confidentially coded to avoid repeat mailings while protecting identities. Questionnaires were completed anonymously and returned in

an enclosed, self-addressed, stamped envelope.

Five point Likert scales were used to determine gradations of opinion. All information was obtained by self-report.

## Response Rate

2128 student surveys were mailed. Of that amount, 61 were returned because of incorrect addresses. After two mailings, a total of 607 completed questionnaires were returned, for an overall response rate of 30%. Of these, 43 were removed from the final analysis pool due to nonfourth-year student status. The remaining 564 questionnaires are the basis for the results reported here.

## Statistical Analysis

Statistical analyses were performed using PRO-DAS (Conceptual Software, Inc, Houston, Texas). Missing values for any variable were excluded from analysis. Only questionnaires completed by fourth-year students were analyzed. Chi-square tests were used to assess the association between categorical variables. The only continuous variable collected was age. However, due to the heavy concentration of responses around the number 26, it was determined that age was too heavily skewed for use as a meaningful variable. The chi-square statistic therefore was deemed sufficient for assessing associations between all groups and variables of interest. The sample size and the distribution of responses across the demographic variables justified the decision to not use any adjusted univariate analysis such as Fisher's exact or Mantel-Haenszel.<sup>18</sup> Multivariate analyses were not planned given the descriptive nature of the study.

To adjust for multiple comparisons, when necessary, the Bonferroni adjustment to the level of significance was used.<sup>19</sup> After initially examining the data, the extreme ranges of responses to all questions concerning both barriers and positive influences in medical school were assessed. Therefore, ordinal data were dichotomized from the Likert-scaled questions and treated categorically. For example, "What barriers/problems did you encounter in medical school?" was followed with a list of potential problems and a scale of 1 (not a barrier) to 5 (very large barrier). Those answering either 4 or 5 were grouped and differences were analyzed in proportions when compared to all others. Similar adjustments were done on all scales. Mean scores are presented from these questions for the entire range of responses.

Initial assessment of the range of respondents' race/ethnicity led the authors to conclude that it would be acceptable to use a three-way grouping for this variable. Given the current distribution of medical students in the United States, groups were designated as Asian, white, and underrepresented minorities. These groups then were used in chi-square analyses, with the Bonferroni adjustment, to assess the association between race/ethnicity, gender, and responses to the dichotomized scales.

## RESULTS

The respondents of this survey were 51.5% male (288) and 48.5% female (271). Racial categories were as follows: white, 366 (66.4%); Asian, 114 (20.4%); black, 43 (7.8%), Latino, 26 (4.7%); and Native Americans, 2 (0.4%) (Table 1). The racial/ethnic diversity of the respondent pool was slightly greater than US medical students overall. Mean debt and income were both equivalent to that of the US medical student population. The average age for respondents was 27.5 years.

Most students came from suburban (72%) or large city areas (72%), and were single. Only 10% of the surveyed population had children (69.2%). The largest geographical groups of respondents were from the Northeast and New England (29.8%) and the Midwest (29.6%) (Table 1). The underrepresented minority population comprised 12.7% of the total population and consisted of 60.5% black, 36.4% Latino, and 3.1% Native American.

The survey population had some differences by distribution of family incomes during their high school years. With regard to income, 85.7% underrepresented minorities fell mostly in the \$25,000 to \$100,000 range while only 71.7% of whites fell within this same range. A larger percentage of whites (27%) fell in the lowest group <\$25,000 compared with 11.3% of underrepresented minorities. Interestingly, 40% of Asians were also in the <\$25,000 category. The average debt load of all respondents was <\$75,000. No significant differences were found between comparison groups (underrepresented minorities versus white, and women versus men) with regard to debt.

### Reported Effect of Race on Educational Experiences

Underrepresented minorities reported several areas of their medical educational experience that were different from whites (Figure 1). Underrepre-

Table 1. Fourth-Year Medical Students\*

Characteristic	No. (%)
Gender	
Male	288 (51.5)
Female	271 (48.5)
Race/ethnicity	
White	366 (66.4)
Asian	114 (20.4)
Black	43 (7.8)
Latino	26 (4.7)
Native American	2 (0.4)
Age at time of survey (years)	
23-35	168 (30.2)
26-28	260 (46.7)
>28	129 (23.2)
Annual family income while in high school	
<\$20,000	40 (7.4)
\$20,000-\$50,000	170 (31.3)
\$50,001-\$100,000	189 (34.8)
>\$100,000	144 (26.5)
Total student loans	
<\$25,000	152 (27.5)
\$25,000-\$50,000	97 (17.5)
\$50,001-\$75,000	108 (19.5)
\$75,001-\$100,000	99 (17.9)
\$100,001-\$150,000	87 (15.7)
>\$150,000	10 (1.8)
Home Region	
New England	23 (4.1)
Northeast	143 (25.7)
Mid-Atlantic South	39 (7)
South	17 (3.1)
Southwest	79 (14.2)
Midwest	165 (29.6)
West	53 (9.5)
Northwest	2 (0.4)
Outside the United States	36 (6.5)
Type of hometown	
Urban (>100,000)	176 (31.6)
Nonsuburban city (10,000-100,000)	109 (19.6)
Suburban	225 (40.5)
Rural	46 (8.3)

\*n=599

sented minorities were more likely to report that their race affected their educational experience than were whites (76% versus 30%,  $P<.0001$ ). Other barriers identified by underrepresented minorities focused on support systems (Table 2). Underrepresented minorities reported that they had trouble establishing a peer-support network compared with

**Table 2. Perceived Barriers in the Medical Education Experience Stratified by Race/Ethnicity**

	No. (%) Underrepresented Minority	No. (%) White	No. (%) Asian
Fear of failure	16 (22.5)	91 (24.9)	32 (28.1)
Support network*	18 (25.4)	53 (14.5)	31 (27.2)
Peer relationships*	9 (12.9)	22 (6.0)	16 (14.0)
Lack of role model	12 (16.9)	64 (17.5)	22 (19.3)
Lack of same-sex role model	8 (11.3)	36 (9.8)	11 (9.7)
Lack of same-race role model*	22 (31.0)	5 (1.4)	31 (27.4)
Lack of a mentor	18 (25.4)	70 (19.3)	39 (34.2)
Lack of same-sex mentor	10 (14.5)	30 (8.3)	19 (16.8)
Lack of same-race mentor*	16 (22.5)	14 (3.9)	34 (30.1)
Feedback on performance	10 (14.1)	62 (16.9)	24 (21.1)

\* $P < .05$ .

whites (25.4% versus 14.5%,  $P < .05$ ). Similarly, they reported having problems establishing a good working relationship with their peers (12.9% versus 6%,  $P < .05$ ). Underrepresented minorities reported difficulties finding same-race role models (31% versus 1.4%,  $P < .001$ ) as well as finding same-race mentors (22.5% versus 3.9%,  $P < .001$ ). Interestingly, Asians also noted problems finding same-race role models (27.4% versus 1.4%,  $P < .001$ ) and mentors (30.1% versus 3.9%,  $P < .001$ ) compared with whites.

For primary influences on a choice of a career in medicine, there was only one area of statistically significant difference between underrepresented minorities and whites. Underrepresented minorities identified family encouragement as an important factor that led them to choose a career in medicine (37% versus 25%,  $P < .05$ ). Of note, Asians also noted this family influence even higher than that of underrepresented minorities and whites (60% versus 37% versus 25%, respectively  $P < 0.05$ ).

### Reported Effect of Gender on Educational Experience

Women reported several areas of concern that were similar to those of underrepresented minorities compared with men (Figure 2). Women reported similar experiences irrespective of race. Compared with men, women reported that their gender had an effect on their educational experience (60% versus 25%,  $P < .001$ ). Women were significantly more likely to report that the career opportunities they were encouraged to pursue were affected by their gender (44% versus 15%,  $P < .001$ ). Women perceived that they had to be twice as good to be treated as an equal

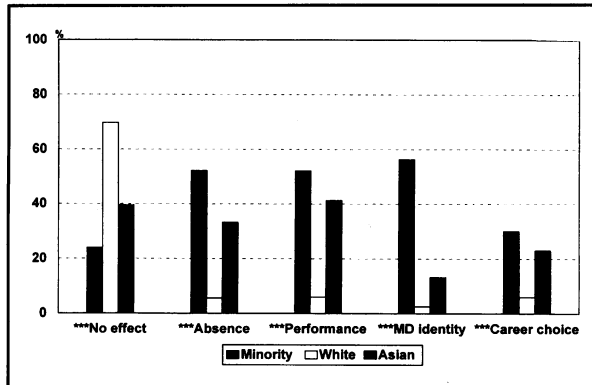
to their male counterparts (30% versus 7%,  $P < .001$ ). Women also reported being mistaken more often for a nonphysician than men did (92% versus 3%,  $P < .0001$ ) and that their gender made their absence more noticeable (20% versus 9%,  $P < 0.01$ ).

In examining perceived barriers, women reported some similar areas to underrepresented minorities but had some differences (Table 3). Compared with men, women were more likely to report having to overcome a fear of failure (30.7% versus 19.4%,  $P < .01$ ). Women also noted having problems establishing a peer-support network (22.5% versus 14.2%,  $P < .05$ ). More significantly, women reported problems finding same-sex role models (18.8% versus 1.4%,  $P < .001$ ) and same-sex mentors (18.2% versus 3.2%,  $P < .001$ ). Women reported having trouble finding a mentor irrespective of race or gender (27.1% versus 19.2%,  $P < .05$ ).

In examining influences on choice of medical career, women reported two categories more significantly more often than men. Women were more likely to report dedication to public service as an important factor in their choice of a medical career (63% versus 52%,  $P < .05$ ). Women were also more likely to report that a personal or family illness played an important part in their decision to pursue a career in medicine (25% versus 13%,  $P < .05$ ).

### DISCUSSION

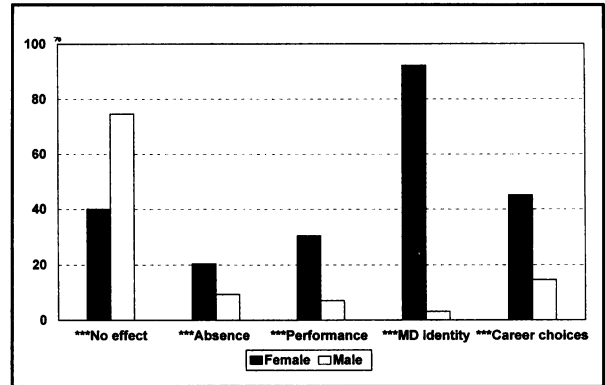
The results of this study demonstrate that there are perceived barriers and biases in the medical educational experience of underrepresented minorities and women. In particular, both groups identified having some problems establishing proper sup-



**Figure 1.** Perceived effect of race/ethnicity on educational experience stratified by race/ethnicity (\*\*\*)difference significant at  $P < .001$ .)

port networks with peers. Underrepresented minorities and women reported that their overall experience was affected by their race or gender, respectively. Both groups reported feeling a need to be better than others to be treated as an equal. More importantly, both groups reported problems finding mentors and role models to help with their career development. While their responses addressed same-race and same-sex role models/mentors, women reported having problems finding a mentor of any race or gender. Underrepresented minorities and women also reported that their race/gender had an effect on which career options they were encouraged to pursue. It was not determined whether this encouragement was from other peers, attendings, or formal counselors.

These findings point to differences in the medical educational experience of students other than white males. Now that medicine is becoming less homogeneous, it is imperative that the experiences of others be examined to make the medical educational experience more equitable. Because of projected changes in the population of the United States, it is important that diversity is sought in each medical school to provide caregivers for diverse patient populations. Each population group has been noted to treat patients that are of similar background and culture.<sup>10,15,19-21</sup> Without physician diversity, groups of people may continue to have poor health status, which indirectly increases morbidity and health-care costs. With diversity, these populations will have doctors they trust more and therefore may attempt to access care for preventive services and



**Figure 2.** Perceived effect of gender on education experience stratified by gender (\*\*\*)difference significant at  $P < .001$ .)

care early in a disease process.<sup>10,15,22</sup>

Within the medical literature, issues of race and gender have been examined. Articles to date have addressed inequalities between faculty members of similar backgrounds but different genders.<sup>4,6,12,13,15-17,22-25</sup> In 1993, Carr et al<sup>4</sup> concluded that women in academic medicine "received fewer rewards for their work both in academic rank and monetary compensation." These conclusions echoed similar findings of Wilson<sup>26</sup> in 1981, which showed women received less income than men when adjusted for similar specialty field, hours worked, and age.

In contrast, a 1990 study by Nickerson et al<sup>16</sup> concluded that women were being promoted equally to men but more women were choosing the nontenure track. Nickerson hypothesized that their (women's) decisions might be made because of perceived obstacles.<sup>16</sup> In 1996, Kaplan et al<sup>15</sup> examined the differences between genders in academic advancement for pediatricians. They concluded that lower rates of academic productivity, more teaching and patient care responsibilities, less research time, and lack of specialization all contributed to lower academic rank and salaries of female faculty members in pediatrics.<sup>15</sup>

In 1991, the American College of Physicians (ACP) issued a report that contained many possible reasons for the differences in faculty numbers for minorities and women.<sup>6</sup> It concluded that although the number of female faculty had risen during the past 10 years, they remained disproportionately in the junior ranks. The ACP report hypothesized that contributing barriers to women's professional devel-

**Table 3. Perceived Barriers in the Medical Education Experience Stratified by Gender**

	No. (%) Females	No. (%) Males
Fear of failure*	83 (30.7)	56 (19.4)
Support network*	61 (22.5)	41 (14.2)
Working relationship w/peers	21 (7.8)	26 (9.0)
Lack of a role model	52 (19.2)	47 (16.3)
Lack of same-sex role models*	51 (18.8)	4 (1.4)
Lack of same-race role models	30 (11.1)	28 (9.7)
Lack of a mentor*	73 (27.1)	55 (19.2)
Lack of same-race mentor	31 (11.6)	33 (11.6)
Lack of same-sex mentor*	50 (18.7)	9 (3.2)
Feedback on performance	46 (17.0)	52 (18.1)

\**P* < .05.

opment included: child rearing, family obligations, lack of research opportunities, lack of accurate information about promotion and tenure expectations, and lack of mentors and role models.<sup>6</sup> With regard to minorities, the ACP noted that there had been no change in their representation on faculties since the early 1980s.<sup>6</sup> The ACP cited data that minority faculty tended to hold lower rank and had slower promotion rates compared with their white colleagues.<sup>6</sup> The barriers cited were economic and financial burdens, heavy clinical and advisory demands, lack of structure career guidance, lack of role and mentors, and a decrease in minorities attending college.<sup>6</sup> Overall, the ACP concluded that it was in the best interest of any university to attract and retain women and minorities to increase both potential scientific and social contributions by these groups.<sup>6</sup>

Our research echoes some of the points made by the ACP and others. Our survey population indicated the negative effects of the dearth of role models and mentors for underrepresented minorities and women. Data did not reveal any statistically significant difference between groups when examining research opportunities. However, both women and underrepresented minorities felt they had inadequate peer support, lack of appropriate professional recognition, and overall acceptance. These issues are being addressed by the AAMC and other groups who call for population-based admissions.<sup>12,21,23</sup> This has worked in the case of women, but may not work for minorities as anti-affirmative action decisions and federally funded scholarship programs, such as California Proposition 209 and Hopwood Decision

in Texas, have recently led to fewer underrepresented minorities in the acceptance pool.<sup>27</sup>

There are no easy solutions to the problems identified in this study. Many different recommendations have been put forth by various professional groups, but the ones that have been echoed by most of the groups include: 1) increasing the number of underrepresented minorities and women in student populations,<sup>1,6</sup> 2) increasing faculty diversification with underrepresented minorities and women,<sup>4,6,8-12,17,19,22</sup> and 3) identifying promising students early to prepare them for academic medicine.<sup>28</sup> Other suggested activities have included affinity groups to address issues of importance to nontraditional students as they go through medical school. In addition, medical schools could designate mentors for women and underrepresented minorities to advise them on career options.<sup>28</sup> These are good ideas for students, but unless there is support for these activities by department chairs, these options mean less time for faculty to pursue their academic interests.<sup>6,22,28</sup> Medical schools may need to recognize the important function that these mentors play in the development of students and reward them for their mentoring activities.<sup>22,29</sup>

The AAMC's program of 3000 by 2000 is a population-based admissions initiative to reflect percentages in our society.<sup>1</sup> The rationale behind this program is not only to increase the number of underrepresented minorities in medicine but to provide health-care providers for people who are typically underserved. While this goal is no different than that set years ago by health-care organizations, in 30 years since the advent of affirmative action, this goal has never been reached. Underrepresented minorities (African Americans in particular) represent only 7% to 8% of total medical school students; the goal was 10% to 12%.<sup>1,2,10,20</sup> Now with backlash against affirmative action, it is doubtful that 3000 by 2000 will become a reality. The impact on the nation may be less physicians to care for these communities.

The ACP report calls for further diversification of medical school faculty with qualified women and underrepresented minorities.<sup>6</sup> As stated earlier, they found women were more successful in obtaining and retaining academic positions compared with underrepresented minorities. Certainly, the increasing number of women in faculty positions has helped to encourage other women to pursue academic positions. As more women enter, the failures in

the past hold less precedent. Women are being accepted as individuals instead of being representatives for all women. This could also become true for underrepresented minorities as their numbers increase on medical school faculty. As more diversity is seen in their attending staff, more minority students may contemplate a career in academic medicine. Additionally, it is imperative that majority faculty recognize the need and work actively to become role models and mentors for minority students. As more majority faculty take responsibility for these positions, they will find a "common ground" of understanding to be more effective role models and mentors for underrepresented students.

This study has several limitations. The response rate for this study was only 30%. This could possibly be because of the timing of the survey mailing and the target population. The survey was mailed to fourth-year students after the Match results, with the second mailing in the middle of May. It could be that some fourth-year apathy played a role in the low response rate. Other subjects may not have had the time to fill out the survey while trying to make arrangements to move to their residency programs. Demographically, this survey had a large percentage of respondents east of the Mississippi. In the selection of the 25 schools, we attempted to achieve an even distribution with respect to diversity. However, most of the schools in the eastern half of the United States had greater diversity on the whole.

## CONCLUSION

This study reveals some of the perceived barriers and biases encountered in medical education that hinder the professional development of underrepresented minority and female medical students. Many of these hindrances, which are psychosocial in nature, may be a reflection of our society in general. However, issues such as mentors and role models are areas that can be improved. The key to change will be how actively medical school administrations pursue diversity by making conscientious choices to hire qualified underrepresented minority faculty members. Medical schools need to foster the growth of early identification programs to encourage more underrepresented minorities and women to pursue academic medicine. Schools also need to investigate which aspects are important for recruitment and retention of diverse faculty members.

It is interesting to see how women have become more prevalent on faculties over the past 30 years;

how long will it take for underrepresented minorities to obtain similar status? Certainly, the present trend of anti-affirmative action makes one somewhat pessimistic about the likelihood of continued progress toward equal representation.<sup>26</sup> Because of this trend, it is also essential that majority and male faculty members go out of their way to identify potential colleagues while they are still in training and serve as much needed mentors and role models for these underrepresented minority and female medical students.

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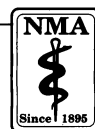
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## Coming this winter . . .

### Correlation of Alcohol Intoxification with Life-Threatening Assaults

*Derrick J. Beech and Robert Mercadel*

The number of violent crimes has increased substantially over the past decade with an associated increase in injury-related mortality. This article examines the correlation between alcohol intoxication and life-threatening victimization by penetrating torso trauma. Sixty-two patients with anterior abdominal stab wounds were evaluated; 51 (82%) were male. Ethnic distribution parallel that of the surrounding community, with 50 (81%) African-American patients, 8 (13%) Latinos, and 4 (6%) whites. Fifty-two (84%) patients tested positive for alcohol, with 39% (63%) having serum levels of ethanol above the legal intoxication limit. Urine toxicology screening revealed 12 (19%) patients who tested positive for cocaine. Polysubstance use was evident in 10 (16%) patients who tested positive for alcohol and cocaine. These data demonstrate a strong correlation between alcohol use and life-threatening assaults.

### International Comparison of Medical Students' Perceptions of HIV Infection and AIDS

*G. Reza Najem and Enuma I. Okoye Okuzu*

This article compared medical students' perceptions of human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) from two cities with different cultural and educational backgrounds. A total of 292 (45%) first- and second-year medical students from New Jersey Medical School (NJMS) and Bennin Medical School (BMS) in Nigeria were surveyed. Compared with BMS students, NJMS medical students were significantly more knowledgeable and had more positive attitudes and behaviors regarding HIV and AIDS. Misconceptions regarding modes of transmission of HIV were significantly higher among BMS students. The NJMS students had more frequent sexual encounters and used condoms more frequently, but BMS students had more sex partners. Perception of personal risk and concern of contracting AIDS was significantly higher among NJMS students.

Misconceptions regarding HIV and AIDS were significantly higher among BMS students. It is important that medical educators in medical schools convey accurate information to improve medical students' perceptions regarding HIV and AIDS.