PREFERRED SOURCES OF AIDS INFORMATION, RISK PERCEPTIONS, AND RISK BEHAVIORS AMONG INNER-CITY COMMUNITY COLLEGE STUDENTS

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To understand preferred sources of acquired immunodeficiency syndrome (AIDS) information and level of worry about human immunodeficiency virus (HIV) among community college students, a survey of 102 students in an inner-city community college was conducted. The survey requested information on preferred sources of information about AIDS, risk behaviors, and level of worry about HIV infection compared with other life risks. Forty-six per cent of respondents had engaged in risk behaviors for AIDS. Of those who were sexually active, 81% acknowledged not always using a condom. Students noted that they were more likely to believe AIDS information from a health professional than from a friend, relative, teacher, clergy, or celebrity. Overall, getting AIDS ranked third on a list of life worries, ranking only behind getting bad grades and the death of a family member. For students who identified themselves as black or Latino, however, getting AIDS ranked first on a list of life risks. For those students who reported high-risk behavior for getting HIV, getting AIDS also ranked first on a list of life worries. We conclude that those students at whom messages about risk status have been targeted are most likely to report being more worried about getting AIDS than about other adverse life events. It remains unclear, however, whether heightened levels of worry about HIV actually translate into changes in risk behavior. (J Natl Med Assoc. 1996;88:87-93.)

Key words • acquired immunodeficiency syndrome (AIDS) • inner-city college students • AIDS risk perceptions

The acquired immunodeficiency syndrome (AIDS) most frequently strikes young adults. The long latency between infection with human immunodeficiency virus (HIV) and the development of AIDS suggests that many of these persons are infected in middle to late adolescence. For this reason, college students may be an important target population for prevention measures.

Seroprevalence of infection with the human immunodeficiency virus (HIV) is 0.2% among university students.[1] Previous studies conducted among students at 4-year colleges have demonstrated that despite knowing the risk factors for HIV infection, few students practice safer sex.[2] The African-American and Latino communities have been particularly affected; the cumulative incidence of AIDS is almost three times higher than in white Americans.[3]

Most studies done to date among college students have focused among students at 4-year universities. Few

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studies have examined attitudes and behaviors of students at community-based, 2-year institutions. These colleges tend to have a higher proportion of students who are older and come from a variety of ethnic backgrounds. Given that African Americans and Latinos are overrepresented among cases of AIDS, we felt it was important to study the perceptions and practices of those community members who are among the most highly educated.

This study had two goals. First, we wanted to understand where students preferred receiving information about AIDS and HIV. Second, we wanted to understand where worrying about getting AIDS fit in relation to worry about other adverse life events such as getting bad grades, having a family member die, or being the victim of a mugging, cancer, or homicide. Particular ethnic groups, particularly African Americans and Latinos, have been the target of prevention messages as a group at higher risk for HIV infection, and therefore we wanted to examine in what way these messages might have influenced students' level of concern about getting AIDS. It has often been implied that individuals who have a large number of life concerns may be unable to focus their attention on the possibility of HIV infection because other life risks overwhelm their ability to be concerned about getting AIDS. We wanted to see if this proved true among the students in this sample. In addition, media messages have focused on those who engage in high-risk behavior. Likewise, we wanted to understand whether students who had engaged in this behavior ranked their worry about getting AIDS higher than other life risks.

A questionnaire was administered to 102 students in an inner-city, 2-year community college to understand the reasons for high-risk behaviors in young adults. Knowledge about risk behaviors, trusted sources of information, obstacles to healthy behaviors, and perception of risks in young adults may help in designing more effective AIDS prevention activities.

METHODS

Survey

An 58-item survey questionnaire was developed based on focus group discussions with young adults. This instrument was pretested to evaluate clarity of language and respondents' preferences for "street" versus clinical language. The final instrument included both "street" and medical terms. The instrument assessed the following areas:

- sources of information about AIDS—useful sources of information, most trusted sources of information, and use of media materials (such as newspaper or radio),
- risk perception—level of worry about AIDS relative to other life risks,
- sexual and drug use behavior—number of partners and specific types of sexual behavior, condom use, reasons for condom use or nonuse, and partners' sexual behavior, and
- demographics—age, gender, ethnic background, and parents' educational level.

Participants

Students attending an inner-city, 2-year community college in the Boston metropolitan area were studied. Students were enrolled in the health sciences and general studies programs. This group was selected because they are literate and ethnically diverse. In addition, because they are older than students in traditional 4-year colleges, these students may have more extensive life experiences.

Between September 1989 and June 1990, the survey was administered to a total of 102 students in various classroom settings by the principal investigators and a survey research consultant. Students were advised that their responses would be anonymous and their participation voluntary. No student refused to participate.

Analysis

Data were analyzed using SPSS+ software. Students were classified as having engaged in high-risk behavior or not. High risk was defined by any one of the following: more than five sexual partners, receptive anal intercourse, or needle-sharing, all since 1980; two or more sexual partners in the past year; or a sexual partner with other known partners. Sexual partner was defined as vaginal or anal intercourse only. All others were classified as low risk. High- and low-risk participants were compared using chi-square analysis with a Yates correction. Participants identifying themselves as black or Latino were grouped together for purposes of analysis and compared with other participants. This grouping was done because of the known disproportionate prevalence of HIV among persons of color and the fact that media and educational messages about HIV have stressed the increased incidence among people of color.

Students were presented with a list of possible occurrences and were asked to assess their degree of worry about each using a 4-point scale adapted from Chivian et al[4]: 4 being very worried, 3 being somewhat worried, 2 being a little worried, and 1 being not worried. Mean scores were compared across several dependent variables using the student's t-test. A two-tailed $P<.05$ was considered significant.

RESULTS

Demographics

One hundred and two students completed the survey. Demographic characteristics of participants are shown in Table 1. Mean age of the respondents was 27 years, 64% were female, and 33% were black or Latino.

Sources of Information

Several questions asked about trusted sources of information about AIDS. Doctors, nurses, and the health-care system were preferred to friends, relatives, teachers, clergy, celebrities, or the media for information on AIDS. When asked who they would ask first about AIDS information, 59% of the subjects listed a health professional or institution, 16% listed friends or relatives, and 7% listed written materials or a hotline. Women did not differ from men, and black and Latino students did not differ from other students on this question.

When asked from whom they would most likely believe information about AIDS, 84% of the subjects chose "doctor or nurse" from a checklist that also contained friends, relatives, lover, teacher, clergy, and celebrities. All other choices were selected by only 1% to 4% of the respondents. Women did not differ from men on this question. Black and Latino students were less likely to choose "doctor or nurse" compared with other students (67% versus 93%, $P<.008$), but this response was still much more frequent than all other responses (4% to 7%).

The question, "How helpful have the following sources of information on AIDS been to you?" elicited the following percentages of "very helpful" response: books 59%, television 45%, doctor or nurse 43%, various periodicals 25% to 32%, teacher 23%, radio 15%, various relatives 2% to 13%, and friends or lover 8% to 11%.

Risk Behaviors

Forty-six percent of the survey participants had engaged in at least one high-risk behavior for acquiring HIV infection. The most prevalent high-risk behavior was sex with multiple partners; 28 students (27%) had had more than five partners since 1980, and 27 students (26%) had had two or more partners in the past year.

Several significant differences were found between students reporting high-risk behaviors and those reporting none: high-risk students were more likely to be male, to have initiated sex before 16 years of age, to have used cocaine in the past year, and to have changed their behavior in response to hearing about AIDS. No other differences between high- and low-risk students were statistically significant (Table 2).

TABLE 1. SELECTED CHARACTERISTICS OF STUDY SUBJECTS*

Characteristic	%
Mean age (years)	27†
Female	64%
Black or Latino	33%
Black	25%
Latino	8%
Married or living with sex partner	36%
Parents with high school education or less	44%
Ever sexually active, opposite sex partner	
Male	94%
Female	91%
Ever sexually active, same sex partner	
Male	6%
Female	3%

*N=102.
†Range: 18 to 58 years.

There were also significant differences between black and Latino students compared with others. Black and Latino students were less likely to have used alcohol in the past year (33.3% versus 77.5%; $P<.002$), were less likely to have used marijuana in the past year (12.5% versus 45.0%; $P<.017$), and were less likely to have sex while drunk or "high" (3.1 versus 12.1; $P<0.01$).

Condom Use

Nineteen percent of currently sexually active students (N=84) reported that they always used condoms, 46% never used condoms, and 81% did not always use a condom. These proportions did not change when married students were removed from the analysis. Sexually active students who did not always use condoms were asked to complete a checklist of reasons for failure to do so (Table 3). The most frequent reasons given were: "I don't think any of my partners have disease" (53%), "condoms do not feel good" (29%), "my partner does not like them" (27%), and "condoms interrupt sex" (15%).

Attitudes toward condom use were further assessed by the question, "What do you think or how do you feel if your partner wants to use a condom?" The most frequent response from the total population was, "It makes me feel that my partner cares about me" (57%). However, black and Latino students were more likely than other students to choose the statement "It makes me think my partner doesn't trust me" (39% versus 3%; $P<.004$).

TABLE 2. DIFFERENCES BETWEEN SUBJECTS WITH AND WITHOUT HIGH-RISK BEHAVIORS

Variable	% High Risk*	% Low Risk†	*P* Value
Male	48.9	24.1	.0167
Age first sex <16 years	44.4	17.0	.0085
Cocaine use in past year	18.0	0	.04
Changed behavior because of AIDS	58.5	21.7	.001
Black or Latino	34.0	32.7	NS
Always use condoms	15.6	22.5	NS

Abbreviations: NS=not significant.
*n=47.
†n=55.

TABLE 3. REASONS FOR NOT ALWAYS USING CONDOMS*

Reason Cited†	%
I don't think my partner has any disease	53
Condoms don't feel good	29
My partner doesn't like condoms	27
Condoms interrupt sex	15
Condoms break too easily	8
I want to have a baby	8
I only have one sexual partner	8
I use birth control pills	8
Condoms don't protect from disease	4
I'm too embarrassed to buy condoms	4
I use other birth control	4

*n=73.
Responses not mutually exclusive.

Risk Perception

Life events that students worried about, from most worried to least worried, are shown in Table 4. Overall, students ranked worry about getting AIDS third, behind worrying about grades and worrying about a family member dying. There were differences by subgroup. Both black and Latino students, and students with high-risk behaviors ranked worry about getting AIDS highest.

Comparison of mean worry scores between subgroups was done for each question. Black and Latino students were significantly more worried than other students about the following issues: getting AIDS (mean worry score=3.4 versus 2.2, $P<.00005$); getting killed (2.9 versus 1.9; $P<.0003$); losing a job (2.5 versus 1.6; $P<.004$); getting cancer (2.9 versus 2.1; $P<.005$); and getting mugged (3 versus 2.3; $P<.007$)

Students with high-risk behaviors were significantly less worried than low-risk students about the following issues: looking good (1.7 versus 2.3; $P<.009$); getting cancer (2.1 versus 2.7; <.02); being liked (1.4 versus 1.9; $P<.03$); and grades (2.5 versus 3; $P<.04$). Despite having listed AIDS as their top worry, students with high-risk behaviors did not differ from low-risk students in their mean worry score on this item (2.5 versus 2.6).

Knowledge

Knowledge levels about AIDS were high. The following five true-false questions (and the percentage answering correctly) were asked: A person with HIV can look healthy and well (79%), AIDS can be cured (91%), AIDS can be caught through anal sex (93%), AIDS can be caught through vaginal sex (92%), and HIV can be passed from mother to baby during pregnancy (92%). Overall, 68% of students answered all five questions correctly. High-risk students did not differ significantly from low-risk students in the percentage answering all five questions correctly (75% versus 62%).

DISCUSSION

This population of community college students trusted and preferred health-care providers as sources of information on AIDS. These preferences were consistent throughout all groups of students, although black and Latino students showed less trust of health-care authorities than other students. However, students had found books and television more helpful than doctors and nurses for information about AIDS in the past.

Health-care providers have a potentially powerful role in influencing risk behavior. Counseling by trained peers frequently has been used among adolescents to promote smoking cessation,[5] drug-use prevention,[6] violence prevention,[7] and AIDS prevention[8] However, in this group of community college students, trained peers may not be the most effective educators for AIDS prevention. Prevention messages emanating,

TABLE 4. WORRY SCALE BY RANK FOR ALL STUDENTS, BLACK/LATINO STUDENTS, AND HIGH-RISK STUDENTS

Rank	All Students*	Black/Latino Students†	High-Risk Students‡
1	Bad grades	Getting AIDS	Getting AIDS
2	Family member dying	Bad grades	Bad grades
3	Getting AIDS	Getting mugged	Paying bills
4	Paying bills	Getting cancer	Family member dying
5	Getting mugged	Getting killed	Getting cancer
6	Getting cancer	Family member dying	Getting or making someone pregnant
7	Getting killed	Paying bills	Getting mugged
8	Getting or making someone pregnant	Job loss	Getting killed
9	Not looking good	Getting or making someone pregnant	Job loss
10	Job loss	Not looking good	Not looking good
11	Not being liked	Not being liked	Not being liked

*n=89.
†n=26.
‡n=42.

for example, from a student health service may be trusted more. Such an intervention could be carried out in person at the time of a student's entrance physical or at episodic visits. Because students reported that written information was helpful in the past, AIDS prevention messages in pamphlet form, published under the name of student health service providers, could be effective.

Almost half of the students in this study had engaged in behaviors that are considered risks for HIV infection. The most common risk behavior was sex with multiple partners. This is similar to other studies of the sexual behaviors of college students.[9,10] Despite this level of activity and despite their high knowledge about HIV transmission, very few of these students used condoms on a regular basis. This is again consistent with the findings of other investigators.[11-13]

Reasons for failing to use condoms consistently may provide insight into means to encourage behavior modification. The most frequently cited reason ("I don't think my partner has any disease") reflects a clear conflict between knowledge and behavior, since most of the students correctly stated that a person infected with HIV may appear healthy and well. It appears that students do attempt to estimate a potential partner's risk for HIV infection. Similarly, the third most frequent response ("My partner does not like them") also reflects a perception about a partner's preferences. These responses suggest that reluctance to use condoms may relate more to the process of interaction between partners and less to lack of knowledge. This is supported by the findings of other investigators concerning the importance of general and sexual communication with one's partner as a predictor of contraceptive behavior among college students.[14] The second most common reason for inconsistent condom use was "Condoms do not feel good," and the fourth was "Condoms interrupt sex." Taken together, these responses suggest that an appropriate intervention for this population would need to incorporate skills training around initiating a discussion of condom use between partners and include further discussion of the fact that one cannot assess another's risk on the basis of appearance. Training about ways to enhance sexual pleasure when using a condom also might address student concerns.

In attempting to assess the impact of other life concerns on students' level of worry about HIV, we found that black and Latino participants were most worried about getting AIDS compared with other potential life risks (including violence, loss of job, and school performance). Black and Latino students also were more worried than other students about AIDS. This was true despite the fact that overall, black and Latino students did not have a higher level of reported risk behavior. This finding is consistent with other studies demonstrating a higher level of concern about AIDS among African Americans.[15] While Prohaska et al[16] failed to find a greater perception of risk of HIV among black or Hispanic respondents, when placed in the context of

other life issues, HIV infection is a prominent risk for these groups.

Students engaging in high-risk behaviors listed AIDS as their primary concern when compared with other issues. While it might seem paradoxical that students with a high level of concern about AIDS would have engaged in high-risk behavior, it is not clear that increased worry about AIDS leads to a reductions in risk behavior. In a study of perceived risk of AIDS in a cohort of gay men, investigators found no evidence that an increased sense of risk about HIV resulted in decreased risk behavior. Furthermore, they found that individuals who perceived themselves at increased risk had greater barriers to reducing risk behavior and experienced psychological and social distress.[17] Other studies suggest that increased risk perception may decrease risk behavior for HIV but that these changes may not be sustained.[18]

It is not possible to determine from these data whether high-risk students are worried about HIV infection based on past behaviors or on anticipated future behaviors. Nevertheless, given that increased worry about HIV infection may in some cases decrease risk behavior, the findings here suggest that students who have engaged in high-risk behavior might be less likely to expose themselves or their partners to the risk of infection.

There are several possible limitations to these findings. First, the study was introduced to students by the principal investigators, who are physicians. Second, the study group included students studying for the allied health professions (dental hygienists, radiology technicians, etc). These two factors may have predisposed students toward preferring AIDS information from health professionals. Third, this was a small study in an urban community college and the findings may not be generalizable to individuals in other communities with lower levels of education or different life concerns.

SUMMARY

This survey of community college students indicates that students have specific preferences about where and from whom they would like to receive AIDS information. While significant numbers of these students engaged in behaviors known to confer high risk for HIV infection, relatively few consistently used preventive measures. Worry about the risk of HIV infection ranked high among all students but was especially high among black or Latino students as well as among students who had high risk behavior for HIV. While the role of increased worry in behavior change is unclear, educational strategies that are tailored to student preferences and that address concerns about AIDS in the context of other life risks should be examined. Future studies that examine risk perception in the context of other life risks would help to determine the future usefulness of this concept.

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The authors reply.

We would like to thank Dr Todd, the executive vice president of the American Medical Association, for his constructive comments on our article, "A Statistical Model Estimating the Number of African-American Physicians in the United States" [*J Natl Med Assoc.* 1995;87:264-272]. As he recognizes, obtaining an accurate estimation of the number of minority physicians has important implications for health-care policy and equitable access to health care for all Americans.

In response to the specific issues raised in his letter, we offer the following comments. First, it is important to understand that definitions of race and ethnicity are neither permanent, universal, nor biologically based but rather are socially defined categories whose meanings and relevance depend on how they are used by a particular society. Thus, in comparing one estimate with another, it is critical to delineate the criteria for and the conceptual meaning of such group classifications as black or African American. As we have indicated, an all-inclusive categorization is likely to be misleading. Specifically, our definition of an African-American physician is one who is a US citizen, who culturally identifies as black, and who is non-Hispanic.

Todd indicates that the AMA database suggests that the number of African-American physicians is 19,000, which he notes is "somewhat larger" than our 1991 estimate (16,282 with a 95% confidence interval ranging from 14,754 to 17,810). However, we are uncomfortable with his assumption that 2% (4500) of the physicians on the AMA Physician Masterfile for whom there are no race data are also African-American physicians. Indeed, a primary factor in using mark-recapture and network sampling methods is to establish a methodology that does not make strong assumptions about missing race data. Further, we are not able to determine whether the data Todd cites are from 1991 or 1995. If the "4500 additional African-American physicians" are from the 1994-1995 AMA Physician Masterfile, it would not be meaningful to use our 1991 estimate as a base because the AMA "extrapolation" does not appropriately account for either professional growth (ie, via matriculation or immigration) or attrition among African-American physicians since 1991.

We agree with Todd that the AMA Physician Masterfile is a valuable source of information about physicians and that it can be highly useful in research on minority physicians. In this regard, we share his interests in pursuing this line of research.

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