Correlates of HIV risk among young adolescents in a large metropolitan midwestern epicenter.


Abstract:

This paper examines levels of participation in and correlates of AIDS-related risk behavior for young adolescents in high-risk communities as determined by proxy indicators such as rates of reported STDs and adolescent pregnancies. Seventh and eighth grade students from two middle schools and ninth grade students from the receiving high school were surveyed. Descriptive and inferential techniques examined grade, racial, behavioral, and gender differences in participation in risk (substance use and sexual activity) and protective (use of condoms and use of condoms and foam) behaviors. Grade, race, and sexual activity were significant correlates of both licit and illicit drug use. Gender, grade, race, and licit and illicit drug use were significant correlates of sexual activity. Results demonstrate that not only are adults and older teens at risk in these communities, but younger adolescents also are at risk. Findings indicate a need for comprehensive HIV prevention programs at younger ages. (J Sch Health. 1995;65(1):28-32)

Full Text:COPYRIGHT 1995 American School Health Association

A compelling case has been made by researchers and health care providers that adolescents are a major risk group for transmission and spread of the human immunodeficiency virus (HIV).[1-4] Although the number of AIDS cases among adolescents remains relatively small, the fact that nearly one in five persons with AIDS are individuals ages 20-29[5] indicates these individuals probably acquired the disease during adolescence. [6] Current data on risk-taking behavior, substance use, incidence of STDs, and contraceptive patterns of adolescents suggest the incidence of HIV infection may increase dramatically among this group over the next several years.[4,7]

HIV risk factor prevalence and AIDS commonly are thought to be problems occurring primarily within inner-city epicenters. Thus, much of the published research and many prevention programs targeted at-risk populations in these areas with the focus primarily on adults and older teens.[5] Very little has been reported regarding risk factors for HIV/AIDS in younger teens. One important response to the growing risk of HIV infection for adolescents was the decision by the U.S. Centers for Disease Control and Prevention to establish a system of complementary school-based surveys to annually assess HIV-related knowledge, beliefs, and behaviors among adolescents in grades 9-12.[8] This relatively new database provides data to track the prevalence of self-reported health-risk behaviors among the adolescent population.

Results from this national school-based Youth Risk Behavior Survey, a component of the CDC's Youth Risk Surveillance System, indicate significant percentages of adolescents participate in behaviors which put them at risk for pregnancy, AIDS, and other STDs.[9,10] CDC data indicate that for large numbers of students, initiation of risk behavior begins prior to entry into ninth grade and high school. Data from the national 1990 Youth Risk Behavior Survey of a representative sample of students in grades 9-12, indicate 54.2% of students had experienced sexual intercourse.[9] About one-third (33.5%) of male and 20% of female students initiated sexual intercourse before age 15.[10] Black students were more likely to have ever experienced intercourse (72.3%) than White (51.6%) or Hispanic students (53.4%).[9]

Among students who reported they had sexual intercourse during the three months prior to the survey, 44.9% reported they or their partners had used a condom at last sexual intercourse. Male students (49.4%) were significantly more likely to report condom use at last sexual intercourse than female students (40%). Blacks were most likely (47.1%) and Hispanics were least likely (38.4%) to report using condoms at last sexual intercourse compared to 45.9% of White students.[10]

Other correlates of HIV risk among teens include use of alcohol and other substances, which are associated with risk-taking sexual behavior and impairment of decision-making. Teen-agers who initiate use of one or more substances at a given age are more likely to have sexual intercourse during the following year than those who did not begin substance use.[11] Further, it has been shown that use of alcohol and other substances may reduce the likelihood that adolescents will use condoms.[12]

Data also are available from the Youth Risk Behavior Survey on the use of alcohol, tobacco, and other drugs by 9th-12th grade students. A 1991 sample of students in grades 9-12 revealed that 81% of females and 82% of males had ever used alcohol. Illicit drug use among high school students is less prevalent than alcohol use: 31% of high school students reported they had ever used marijuana and 6% had ever used cocaine.[13]

For an HIV prevention program to prevent initiation of sexual and drug-related risk behaviors among teens, the program must start before ninth grade. It also is necessary to have data on the extent of these risk behaviors in younger populations for present and future comparisons. This paper investigated levels and correlates of risk behavior among younger students in high-risk communities. While some data are available on high risk behavior of middle school students in other parts of the nation,[14] this paper presents such data for students in grades seven-nine from three schools in two high-risk Midwestern communities located in an HIV epicenter in a major metropolitan area.

METHOD

Subjects
Schools were selected and recruited from communities which fell below the 50th percentile on proxy risk factors based on a statewide (Illinois) database. Community risk for HIV infection was based on variables such as percent of the population in poverty, proportion of minorities, rates of reported STDs and adolescent pregnancies, school dropout rates or truancy, and collective reading scores recorded by the schools from state exams. No students participating in the survey received any HIV/AIDS education, beyond what their schools ordinarily provided according to state mandates. In 1991, 294 seventh grade students and 286 eighth grade students from two middle schools and 327 ninth grade students from the receiving high school in these high-risk communities were surveyed regarding attitudes, risk behaviors, and resistance skills related to sexual intercourse and substance use.

The survey contained 208 questions regarding: 1) participation in risk behaviors, use of licit (tobacco and alcohol) and illicit drugs (marijuana and cocaine) and sexual activity, and 2) for those sexually active, protective behaviors (use of condoms, and condoms and foam). Students also were asked about a number of demographic characteristics.

During instrument development, focus groups were held to uncover key issues for an HIV prevention program targeting high-risk minority youth. Focus groups also helped determine appropriate language, and reading and cognitive levels to develop items and response formats that were both culturally sensitive and developmentally appropriate. The instrument was pilot-tested with approximately 200 seventh grade students on two occasions in the year prior to the data collection reported here. Pilot-tests established the reliability and validity of the instrument, amount of time needed to administer the survey, problems students had with response formats or question wording, and order and context effects. For further description and evaluation of the psychometric properties of the instrument, see Handler et al.[15]

Procedures

One week prior to the survey, all seventh, eighth, and ninth grade students at the selected schools were given "passive" consent forms as allowed by state law to take home to their parents or guardians, explaining that their child was to receive an anonymous survey about AIDS-related knowledge, attitudes, and behaviors. On the day of the survey, participating seventh, eighth, and ninth grade students were informed they had the right to decline to participate and they could decline to answer any questions. Student and parent refusal rates were both less than 1%.

The survey was administered during a 40-minute class period by trained data collection staff working on the project. Most (80%) students completed the survey during the allotted class period. The average student needed the entire class period to finish the questionnaire. Further time was not secured for the remaining students to complete the survey, and the information was considered as missing data. However, the data presented in this paper appeared early in the questionnaire, so the completion rate for these questions was more than 95%.

Analyses

Identifying correlates of risk and protective behaviors (use of condoms and use of condoms and foam) in young adolescents was addressed at both the descriptive and inferential levels. At the descriptive level, bivariate cross-tabulations involve risk/protective behaviors and demographic characteristics. At the inferential level, staff report: 1) a series of logistic regressions using drug risk behaviors as the dependent variables with grade, race, gender, and sexual activity as independent variables to identify correlates of drug use, and 2) additional logistic regressions using sexual activity and related protective behaviors as dependent variables with grade, race, gender, use of licit and illicit substances as independent variables to identify correlates of sexual activity and related protective behaviors. Interactions between the independent variables were tested in each of the above models. None of the interaction effects were significant; thus, main effects models are presented. Odds ratios are used to demonstrate strength of association between each independent variable and each risk/protective behavior.

RESULTS

Table 1 presents demographic characteristics of students participating in the survey. Overall, the sample was 49% Black and 24% Hispanic. A greater proportion of White students existed in ninth grade (28.8%) than in seventh (15.5%) and eighth (16.1%) grade samples because the ninth grade sample came from a high school which draws from multiple school districts, including the middle schools of the seventh and eighth grade students. Socioeconomic differences also existed between the grades. Available data reveal the percent of students from low-income families was lower (31%) at the high school than at least one of the middle schools (74%). Although school-level socioeconomic data for the other middle school were not available, census data indicate more than 50% of families in this school district were classified as low income.

Table 2 presents the descriptive information on risk behavior for all students as well as protective behavior for those who reported being sexually active. Results indicate participation in drug use increases by grade level as expected. More than one-third of seventh grade students report ever having sexual intercourse, and slightly more [TABULAR DATA FOR TABLE 1 OMITTED] than half of eighth and ninth grade students report ever having sex. Among those sexually active, more than 65% of seventh, eighth, and ninth grade students report ever using condoms, with ninth grade students reporting greatest use (71.4%). Very few students reported ever using condoms and foam. Somewhat surprisingly, sexually active seventh grade students were the most likely to report use of condoms and foam together.

Boys appear to be slightly more likely than girls to have used drugs (76.4% versus 72.2%) and much more likely to be sexually active (67.2% versus 29.9%). Data also revealed that sexually active boys were slightly more likely than sexually active girls to have used condoms (70.4% versus 66.4%) and condoms and foam together (14.4% versus 11.2%).

Table 3 indicates racial/ethnic differences with respect to participation in risk and protective behavior. White and Hispanic students were more likely to have used all types of drugs than Blacks and Others. In terms of licit drug use, few differences appeared between Whites and Hispanics. Hispanic students were most likely to report using illicit drugs. Students in the Black and Other racial/ethnic categories were much less likely to have used either licit or illicit drugs. These patterns change drastically with respect to sexual activity and protective behaviors among the sexually active, as Blacks were the most likely to be sexually active. In terms of condom use, students in the "other" category were more likely to have used condoms than Black, White, or Hispanic students. However, this finding should be interpreted with caution given that only 20 sexually active students were in the "other" category. Black and Hispanic students were more likely to have used condoms and foam than students in the White and Other groups. Sexually active students were more likely to have used all types of substances than those not sexually active (cigarettes, 57.7% versus 40.4%; alcohol, 80.5% versus 58.7%; marijuana, 24% versus 6.9%; and cocaine, 3.9% versus 0.2%).
Table 2

<table>
<thead>
<tr>
<th>Risk Behaviors</th>
<th>7th Grade (n = 290)</th>
<th>8th Grade (n = 286)</th>
<th>9th Grade (n = 234)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever smoked cigarettes</td>
<td>38.4%</td>
<td>49.0%</td>
<td>58.1%</td>
</tr>
<tr>
<td>Ever drank alcohol</td>
<td>52.4%</td>
<td>75.2%</td>
<td>79.1%</td>
</tr>
<tr>
<td>Ever used marijuana</td>
<td>9.2%</td>
<td>14.7%</td>
<td>20.4%</td>
</tr>
<tr>
<td>Ever used cocaine</td>
<td>0.0%</td>
<td>3.1%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Ever used illicit drugs</td>
<td>9.3%</td>
<td>15.0%</td>
<td>20.9%</td>
</tr>
<tr>
<td>Ever had sex</td>
<td>35.2%</td>
<td>55.2%</td>
<td>54.0%</td>
</tr>
</tbody>
</table>

Protective Behaviors for Those Sexually Active

<table>
<thead>
<tr>
<th></th>
<th>(n = 99)</th>
<th>(n = 156)</th>
<th>(n = 175)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ever used condoms</td>
<td>66.7%</td>
<td>67.9%</td>
<td>71.4%</td>
</tr>
<tr>
<td>Ever used condoms and foam</td>
<td>23.2%</td>
<td>11.5%</td>
<td>9.7%</td>
</tr>
</tbody>
</table>

Logistic regression models (Tables 4 and 5) support trends suggested in the descriptive analyses. Grade, race/ethnicity, and sexual activity were independent correlates of alcohol use and illicit drug use. When gender, race/ethnicity, and grade were adjusted for, sexually active students were almost six times as likely to have used illicit drugs than sexually nonactive students. Gender differences suggested in the bivariate analyses were not maintained in the multivariable analysis for substance use (Table 4).

Table 5 indicates that gender, grade, race/ethnicity, and use of licit and illicit substances all were significant correlates of sexual activity. Independent of other variables considered, males were more than five times as likely to be sexually active as females. Black students were more than twice as likely to be sexually active than White students, adolescents who use licit drugs were more than 2.5 times as likely to be sexually active than non-users, and students who have used illicit drugs were more than 4.5 times as likely to be sexually active than non-users.

Gender, grade, race/ethnicity, and use of licit and illicit substances were not significant correlates of condom use, but grade does appear to be associated significantly with condom and foam use, with younger students being more likely to use foam with condoms.

DISCUSSION

This survey provides some of the only data available on AIDS-related risk and protective behavior of younger age adolescents, and they are the only data known at this time for higher-risk communities in a Midwestern, metropolitan epicenter. These data on sexual activity and substance use risk behaviors are not available from the CDC Youth Risk Behavior Surveillance System, because the latter focuses on youth in grades 9-12. As such, these data provide an examination of the behavior of the younger counterparts of the participants in CDC surveys, albeit for acknowledged higher-risk communities in a large Midwestern metropolitan area. Perhaps the key observation which may be stated from these cross-sectional data is that risk behaviors for HIV as proxied by community risk assessment data reach into very young populations in greater numbers than most people believe or presently acknowledge.

Monitoring the prevalence of non-IV substance use in young teens is important with respect to prevention of HIV infection, not because of the direct threat caused by use of these substances, but because of the role these substances play in impairing judgement and making decisions to engage in other high-risk behaviors. In this study as well as in others,[11,16,17] young adolescents who use substances also are those most likely to be sexually active and vice versa. Because of the clustering of these behaviors, prevention programs must be specifically targeted to these very high risk youth to prevent spread of HIV infection in the adolescent population.[16]

As expected, the ever use of all substances by this sample of young adolescents is lower than that of the national sample of 9-12 grade students in the 1991 national YRBS.[13] However, comparison data also are available from a 1989-1990 Illinois survey, reported by county, of 7th-12th grade students which suggest youth in this sample are reporting use of substances, particularly cigarettes, alcohol, and marijuana at much higher rates than other seventh, eighth, and ninth grade students in the county in which these communities are located.[18] For example, the Illinois survey indicates the percentage of Black, Hispanic, and White middle school students in the target county who reported ever using alcohol are 32.4%, 53.6%, and 52.7%, respectively, compared to rates of 61.7%, 77.6%, and 80.2% for the Black, Hispanic, and White students in this sample.

The pattern of lower reporting of substance use by Black students compared to White or Hispanic students is evident in the target county sample except for marijuana use which is reported as lowest among White middle school students. It is not certain why White teens generally report greater rates of substance use than Black teens. This difference may be due to differential reporting or actual differences in level of drug use, possibly due to less economic access to substances,[19] or social normative behavior.

Table 4

Predicting Substance Use

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Smoked Cigarettes</th>
<th>Drank Alcohol</th>
<th>Used Illicit Drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have you ever...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FEMALE                  1.00             1.00             1.00
(referent)       (referent)       (referent)
Males                   .89              .81              1.00
(.65, 1.23)     (.57, 1.14)      (.64, 1.56)
Grade
Seventh                 1.00             1.00             1.00
(referent)       (referent)       (referent)
Eighth                  1.41(+)          2.55(**)          1.48
(.98, 2.05)     (1.73, 3.76)     (.82, 2.64)
Ninth                   1.67(**)          2.65(**)          1.75(*)
(1.16, 2.40)     (1.81, 3.90)     (1.01, 3.05)
Race
White                   1.00             1.00             1.00
(referent)        (referent)       (referent)
Black                   .27(**)          .37(**)          .43(**)
(.18, .40)       (.23, .57)      (.25, .75)
Hispanic               1.10             .90             2.54(**)
(.71, 1.71)     (.53, 1.52)      (1.48, 4.36)
Other                   .25(**)          .60             .10(*)
(.12, .48)       (.29, 1.22)      (.01, .79)
Sexually Active
No                       1.00             1.00             1.00
(referent)        (referent)       (referent)
Yes                    2.48(**)          2.94(**)          5.79(**)
(1.78, 3.45)    (2.05, 4.23)     (3.49, 9.67)
Model Chi-square       129.04(**)        114.97(**)        127.29(**)
(df = 7)           (df = 7)         (df = 7)
+ p [less than] .10,  * p [less than] .05,  ** p [less than] .01,  ***
p [less than] .001

CONCLUSION

As stated earlier, the CDC’s 1990 YRBS data indicate that about one-third of male students and 20% of female students initiate sexual intercourse before age 15.[10] As with substance use, rates of sexual activity are substantially higher among seventh and eighth grade students in this sample. Almost 70% of boys and 30% of girls report ever having had sex. Again, these data differ from results of the 1991 Illinois survey of ninth grade students[20] in which 52% of the males and 37% of the females report ever having had sex. Blacks in this sample as well as in the Illinois survey are more likely to have had sex than either Whites or Hispanics. The racial/ethnic differences in this sample are independent of grade, gender, and substance use; however, no adjustment was made for possible socioeconomic differences between the racial/ethnic groups.

The very high rate of sexual intercourse among these young teens is alarming with respect to the potential spread of HIV infection in the adolescent population, especially since these findings most likely underestimate true risk for the spread of HIV among young adolescents because we lack information about other forms of risky sexual behavior in which they may engage, such as anal intercourse. These results suggest the trend of increasing rates of HIV infection among young adolescents probably will continue and possibly worsen. Policymakers and parents need to understand that the postponement of explicit health and sexuality education until the seventh grade does not protect their children. Rather, it potentially creates a far more dangerous situation in which their children may mature and be at increased behavioral risk for exposure to HIV/AIDS.

Table 5

Predicting Sexual Activity and Protection Behaviors for Those Sexually Active

<table>
<thead>
<tr>
<th>Dependent Variables</th>
<th>Had</th>
<th>Used</th>
<th>Used Condoms and Foam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variables</td>
<td>Sex</td>
<td>Condoms</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>(referent)</td>
<td>(referent)</td>
<td>(referent)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>5.39(**)</td>
<td>1.30</td>
<td>1.42</td>
</tr>
<tr>
<td>(.89, 7.46)</td>
<td>(.83, 2.07)</td>
<td>(.72, 2.81)</td>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seventh</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>(referent)</td>
<td>(referent)</td>
<td>(referent)</td>
<td></td>
</tr>
<tr>
<td>Eighth</td>
<td>2.30(**)</td>
<td>1.16</td>
<td>.43(*)</td>
</tr>
<tr>
<td>(.53, 3.46)</td>
<td>(.65, 2.07)</td>
<td>(.21, .90)</td>
<td></td>
</tr>
<tr>
<td>Ninth</td>
<td>2.21(**)</td>
<td>1.39</td>
<td>.39(*)</td>
</tr>
<tr>
<td>(.48, 3.30)</td>
<td>(.78, 2.47)</td>
<td>(.18, .81)</td>
<td></td>
</tr>
</tbody>
</table>
In communities with high risk profiles, efforts to prevent the spread of HIV infection must begin in earlier grades before risk behavior initiation. By the time students from many communities reach seventh grade, many of them already are engaging in behavior which puts them at risk for acquiring this deadly virus, as well as other sexually transmitted diseases and pregnancy. Prevention efforts should consider community norms and sensitivities. Such efforts may focus on sexuality, alternatives to sex, avoiding risky situations, and safer sexual behaviors including discussing and negotiating condom use with all partners before intercourse. Efforts also should integrate the negative role substance use plays in negotiating and decision-making.

While delaying initiation of sexual activity may provide a solution for some, for others it will be necessary to ensure they are knowledgeable about, have access to, and know how to use condoms, or condoms in combination with foam, the newer vaginal contraceptive film or whatever viable new preventive measures are available. For all youth, prevention of HIV infection will require provision of hope and real prevention opportunities, leading to a sense of commitment that their lives are valuable enough to make risky behavior appear "threatening" rather than "thrilling."

References


Susan R. Levy, PhD, Professor and Associate Director; Arden S. Handler, DrPH, Co-Principal Investigator and Assistant Professor; Kyle Weeks, MA, Research Specialist; Cydne Perhats, MPH, Project Manager; and Brian R. Flay, DPhil, Professor and Director, Prevention Research Center, University of Illinois at Chicago, 850 W. Jackson, Suite 400, Chicago, IL 60607; Claudia Lampman, PhD, Assistant Professor, Dept. of Psychology, University of Alaska-Anchorage, 3211 Providence Drive, Anchorage, AK 99508; and Todd Q Miller, PhD, Assistant Professor, Division of Sociomedical Sciences and Dept. of Preventive Medicine and Community Health, University of Texas at Galveston, Medical Branch, Route J-53, Galveston, TX 77555. This work was supported by grant MH45470 from the National Institute of Mental Health, Dept. of Health and Human Services, Rockville, Maryland. This article was submitted July 28, 1994, and revised and accepted for publication December 23, 1994.

Gale Document Number:A16661040

Disclaimer: This information is not a tool for self-diagnosis or a substitute for professional care.