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Despite recent decreases in sexual risk behaviors among high school students nationwide, human immunodeficiency virus (HIV) infection was the seventh leading cause of death for persons ages 15 to 24 years in the United States during 1997. To determine whether the prevalence of HIV-related sexual risk behaviors among high school students also has decreased in certain urban areas heavily affected by the epidemic, the Centers for Disease Control (CDC) analyzed data from the Youth Risk Behavior Surveys (YRBS) conducted in 1991, 1993, 1995, and 1997 in eight large-city school districts: Boston, Massachusetts; Chicago, Illinois; Dallas, Texas; Fort Lauderdale, Florida; Jersey City, New Jersey; Miami, Florida; Philadelphia, Pennsylvania; and San Diego, California. This report summarizes the results of this analysis, which indicate that, from 1991 to 1997, the percentage of high school students engaging in HIV-related sexual risk behaviors decreased in some US cities.

The local YRBS, a component of the CDC’s Youth Risk Behavior Surveillance System, measures the prevalence of health-risk behaviors among adolescents through representative school-based surveys conducted biennially in selected city school districts. The 1991, 1993, 1995, and 1997 surveys used a two-stage cluster sample design to produce representative cross-sectional samples of students in grades 9 to 12.

The school districts in this report obtained weighted data (ie, had a scientifically selected sample, an overall response rate of at least 60%, and appropriate survey documentation) for at least 3 of the 4 years. Across all districts and years, sample sizes ranged from 369 to 3,343. School response rates ranged from 81% to 100% and student response rates ranged from 62% to 85%. Overall response rates ranged from 60% to 85%.

Survey Demographics

For each survey, students completed an anonymous, self-administered questionnaire that included questions about sexual intercourse, number of sex partners, and condom use. Sexual experience was defined as ever having had sexual intercourse; multiple sex partners as having had four or more sex partners during one’s lifetime; current sexual activity as having had sexual intercourse during the 3 months preceding the survey; and condom use as having used a condom at last sexual intercourse among currently sexually active students. Data for racial/ethnic groups other than non-Hispanic black, non-Hispanic white, and Hispanic were combined because, when presented separately, sample sizes were too small for meaningful analysis.

Data were weighted to provide estimates applicable to all public school students in grades 9 to 12 in the respective jurisdictions. The software program, SUDAAN, was used to calculate 95% confidence intervals and to conduct trend analyses. The percentage change in behavior from 1991 to 1997 was calculated as the 1997 prevalence minus the 1991 prevalence divided by the 1991 prevalence and multiplied by 100.

Secular trends were analyzed using logistic regression analyses that controlled for sex, school grade, and race/ethnicity.

This report provides results from tests of linear trends. For Boston, 1991 data were not available. Therefore, Boston’s trend analyses were calculated from 1993 to 1997. For Philadelphia, 1993 data...
were not available; trend analyses for that city excluded data for that year.
Demographic characteristics of the respondents in 1997 closely matched the characteristics of the respondents in 1991, 1993, and 1995 (Table 1). Respondents were distributed evenly across sex and school grade, with slightly smaller percentages of 12th-grade students. The racial/ethnic distributions varied among cities, but generally had larger proportions of black and Hispanic students than of white students.

Decline in Sexual Activity Noted
From 1991 to 1997, the proportion of sexually experienced students decreased significantly in Chicago, Dallas, and Fort Lauderdale. In Boston, the proportion of sexually experienced students decreased significantly from 1993 to 1997 (Table 2). The percentage decrease in these cities ranged from 7% in Dallas to 16% in Chicago. The prevalence of multiple sex partners among students in the same four cities decreased significantly (Table 2). The percentage decrease in these four cities ranged from 12% in Fort Lauderdale to 33% in Chicago.
From 1991 to 1997, the proportion of students in Chicago, Dallas, Fort Lauderdale, and Philadelphia who reported current sexual activity decreased significantly (Table 2). The percentage decrease in these cities ranged from 8% in Dallas to 16% in Chicago.
Condom use among currently sexually active students increased significantly in Chicago, Dallas, Fort Lauderdale, Jersey City, Miami, and Philadelphia from 1991 to 1997 (Table 2). The percentage increase in these cities ranged from 25% in Dallas to 52% in Jersey City.

Editorial Note from the CDC
Students in all but one of the eight US cities examined in this study demonstrated a significant improvement in at least one HIV-related sexual risk behavior. The decrease in the percentage of urban students reporting sexual experience and multiple sex partners parallels recent national trends in these health-risk behaviors and represents a reversal of the increasing trend that occurred nationally during the 1970s and 1980s.
The increase in four cities in the percentage of currently sexually active students reporting condom use also parallels national trends. Although the percentage of currently sexually active students remained stable nationally from 1991 to 1997, this percentage decreased significantly in four of the eight cities included in this report. Declines in sexual risk behaviors among students in these cities are important because these cities have large black and Hispanic populations who have disproportionately higher rates of HIV infection.
The findings in this report are subject to at least three limitations. First, although data for each school district represent students in that jurisdiction, these school districts do not represent all cities heavily affected by the HIV epidemic. Second, these data apply only to adolescents who attended public high school. In the three cities for which data are available, 1996 high school drop-out rates ranged from 3% in San Diego to 12% in Philadelphia. Adolescents not enrolled in school are more likely to be sexually experienced and to have had multiple sex partners than are adolescents enrolled in school. Finally, the extent of underreporting or overreporting cannot be determined, although the survey questions demonstrate good test-retest reliability.

Support for Local Agencies
In 1987, the CDC began providing fiscal and technical support to local education agencies in these and other cities where the prevalence of the acquired immunodeficiency syndrome (AIDS) is high. This support assists schools in implementing HIV-prevention policies and programs for adolescents. For example, in Boston and Miami, the local education agency requires high schools to use a curriculum that has demonstrated effectiveness in reducing sexual risk behaviors. In Chicago, high school students participate in peer education to develop social skills to avoid peer pressure. In Dallas, school nursing and counseling services support the HIV-prevention program. In Fort Lauderdale, school-based health centers provide health-care services to students at school, including referrals for HIV counseling and testing.
The CDC also provides fiscal and technical support to local community planning groups to plan and implement HIV-prevention programs and services for adolescents. The decreases in sexual risk behaviors among high school students in the eight cities analyzed in this report may reflect the impact of these and other efforts, including those of families, local government agencies, and community-based organizations.
Despite the reductions in risk for HIV infection among urban adolescents, many remain at risk. Although school-based HIV-prevention education is widely conducted in US schools, more effort is needed to identify and disseminate effective curricula that can help students avoid risk for HIV infection and to increase the percentage of teachers who receive in-service training in HIV prevention. Community interventions should reinforce school-based HIV prevention and provide
additional HIV-related services to all adolescents, particularly those at greatest risk for HIV infection.

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