Sexual Behavior Among U.S. High School Students, 1990–1995

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Context: High rates of unintended pregnancy and sexually transmitted diseases (STDs), including HIV infection, among adolescents are major public health concerns that have created interest in trends in teenage sexual activity.

Methods: Nationally representative data from Youth Risk Behavior Surveys conducted in 1990, 1991, 1993 and 1995 are used to examine levels of sexual experience, age at first intercourse, current sexual activity and condom use at last intercourse among students in grades 9–12.

Results: The proportion of students who reported being sexually experienced remained at 53–54% from 1990 through 1995, while the percentage of sexually active students who used condoms at last intercourse rose from 46% to 54% between 1991 and 1995. Black students were more likely than white students to report being sexually experienced, being currently sexually active and having had four or more lifetime sexual partners; black students also reported a significantly younger age at first intercourse. Gender differences in sexual behavior were found more frequently among black students than among white or Hispanic students.

Conclusions: Although levels of sexual experience for high school students in the United States have not risen during the 1990s, a very high percentage of students continue to be at risk for unintended pregnancy and STDs, including HIV infection.

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regnancy and sexually transmitted diseases (STDs), including HIV infection, among adolescents continue to be major public health problems in the United States. 1 About one million adolescents become pregnant annually, 74–85% of them unintentionally,² and young women in this age-group experience more than 400,000 induced abortions or fetal losses and have nearly 500,000 live births per year.³ In addition, one in eight teenagers contract an STD each year,4 and about one-fifth of all people diagnosed with AIDS are in their 20s. In fact, AIDS was the sixth leading cause of death for youths aged 15-24 in 1995.5 Because the median incubation period from infection with HIV to the onset of AIDS is 10 years, many persons aged 20-29 years who have AIDS must have been infected during their teenage years.

In the study described in this article, we use data from the national, school-based Youth Risk Behavior Survey (YRBS) for four years—1990, 1991, 1993 and 1995—to examine trends and differences among U.S. students in grades 9–12 in self-reported sexual experience, median age at initiation of sexual intercourse, lifetime number of sexual partners and use of condoms at last intercourse. The YRBS is one component of the Youth Risk Behavior Surveillance System, which was established by the Centers

for Disease Control and Prevention (CDC) to measure high-priority health-risk behaviors among adolescents at the national, state and local levels.⁶

We address three questions in this article: What were the trends in sexual behavior among U.S. high school students during the early 1990s? How does sexual behavior vary by race and ethnicity, and how have these differences changed over time? And finally, how does sexual behavior vary by gender and how have these differences changed over time?

Data

In all four study years, the YRBS used independent, cross-sectional, three-stage cluster samples of students in grades 9–12 at public and private schools in the 50 states and the District of Columbia. Schools with high percentages of black and Hispanic students were sampled at a higher rate. In sampled schools, one or two classes in a required subject, such as English or social studies, were selected at random to participate in the survey. The sample sizes were 11,631 in 1990, 12,272 in 1991, 16,296 in 1993 and 10,904 in 1995. School response rates were 74%, 75%, 78% and 70%, respectively, and student response rates were 87%, 90%, 90% and 86%, making the overall response rates 64%, 68%, 70% and 60%, respectively.

The data were checked for consistency, and a weighting factor was applied to each student record to adjust for nonresponse and oversampling of black and Hispanic students. The weights were scaled so that the weighted count of students equaled the total sample size and so that the weighted proportions of students in each grade matched national population projections.⁷ We used SUDAAN,⁸ which takes into account the complex sample design used in the YRBS, to compute 95% confidence intervals.

The survey procedures were designed to protect student privacy and allow for anonymous participation. The questionnaire was administered in the classroom by trained data collectors, and students recorded their responses in computer-scannable booklets. Parental consent was obtained prior to survey administration.

In 1990, the YRBS posed four questions on sexual behavior: whether students had ever had sexual intercourse (sexual experience), their age at first sexual intercourse, whether they had had sexual intercourse during the three months prior to the survey (current sexual activity) and how many sexual partners they had had during their lifetime. The 1991, 1993 and 1995 surveys included a fifth question asking whether they or their partner had used a condom the last time they had sexual intercourse.

Results

Sexual Experience

In each year, slightly more than half (53–54%) of all students in grades 9–12 reported that they had ever had sexual intercourse (Table 1). The proportion of white or Hispanic males and females with sexual experience did not change appreciably over the years. Significant changes did occur among black students, howev-

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er. The proportion of black female students with sexual experience increased significantly between 1990 and 1991 (from 60% to 76%), then remained stable from 1991 through 1995. For black male students, the proportion who were sexually experienced remained stable from 1990 through 1993, then declined significantly between 1993 and 1995 (from 89% to 81%).

In each year, black students were significantly more likely than white or Hispanic students to report ever having had sexual intercourse. In 1995, 73% of black students reported sexual experience, compared with 58% of Hispanic students and 49% of white students. This difference held among both females and males in all years except 1995, when black and Hispanic females had similar levels of experience. In addition, Hispanic male students were significantly more likely than white male students to report being sexually experienced in 1991 and 1993, but not in 1990 or 1995. Hispanic female students were as likely as white female students to report sexual experience in all years.

In 1990 only, significantly more male students than female students were sexually experienced, and white male students were significantly more likely than white female students to be sexually experienced. Black male students reported significantly higher levels of sexual experience than black female students each year. Hispanic male students reported significantly higher prevalence of sexual experience than Hispanic female students in 1990 through 1993, but not in 1995.

Median Age at First Intercourse

In 1995, the median age reported for initiation of sexual experience was 16.5 years (Table 1). The median age of initiation did not change between 1990 and 1995, either overall or for any of the gender-by-race-or-ethnicity subgroups.

In 1995, the median age reported for initiation of sexual intercourse was 15.0 years for black students, 16.2 years for Hispanic students and 16.7 years for white students. In all years, the median age was significantly younger for black males than for Hispanic or white males: In 1995, for example, it was 13.6 years for black males, 15.9 years for Hispanic males and 16.7 years for white males. Black females reported significantly younger ages than Hispanic or white females at initiation of sexual intercourse in the 1990, 1991 and 1993 surveys, but not in the 1995 survey.

Across all years, black male students had a significantly younger median age at initiation of sexual intercourse than

Table 1. Percentage of U.S. high school students, by selected measures of sexual behavior (and 95% confidence intervals), according to race or ethnicity and gender, Youth Risk Behavior Survey, 1990–1995

Sexual behavior, race, ethnicity and gender	1990	1991	1993	1995
EVER HAD INTERCOURS AII Female Male	E 54.2 (±2.9) 48.0 (±2.7) 60.8 (±4.3)*	54.1 (±3.0) 50.8 (±3.4) 57.4 (±3.6)	53.0 (±2.7) 50.2 (±2.5) 55.6 (±3.5)	53.1 (±4.5) 52.1 (±5.0) 54.0 (±4.6)
White	51.6 (±2.9)	50.0 (±3.2)	48.4 (±2.8)	48.9 (±5.0)
Female	47.0 (±2.4)	47.1 (±4.0)	47.4 (±2.5)	49.0 (±5.5)
Male	56.4 (±4.5)*	52.7 (±3.7)	49.3 (±3.9)	48.9 (±5.5)
Black	72.3 (±3.7)†,‡	81.4 (±3.0)†,‡,§,**	79.7 (±3.1)†,‡ 70.4 (±5.2)†,‡ 89.2 (±2.4)*,†,‡,**	73.4 (±4.9)†,‡
Female	60.0 (±5.4)†,‡	75.9 (±3.9)†,‡,§		67.0 (±6.2)†
Male	87.8 (±2.4)*,†,‡	88.1 (±3.5)*,†,‡		81.0 (±5.5)*,†,‡
Hispanic	53.4 (±4.7)	53.1 (±4.4)	56.0 (±4.1)†	57.6 (±7.9)
Female	45.0 (±5.5)	43.3 (±5.0)	48.3 (±5.0)	53.3 (±8.6)
Male	63.0 (±5.5)*	64.1 (±5.9)*,†	63.5 (±4.0)*,†	62.0 (±8.3)
MEDIAN AGE AT FIRST IN AII Female Male	TERCOURSE 16.4 (±0.2) 16.8 (±0.3) 16.0 (±0.3)*	16.5 (±0.2) 16.6 (±0.2) 16.3 (±0.3)	16.4 (±0.2) 16.6 (±0.2) 16.3 (±0.2)	16.5 (±0.2) 16.5 (±0.2) 16.4 (±0.3)
White	16.6 (±0.2)	16.7 (±0.2)	16.7 (±0.2)	16.7 (±0.2)
Female	16.8 (±0.3)	16.8 (±0.3)	16.7 (±0.2)	16.6 (±0.3)
Male	16.3 (±0.3)	16.6 (±0.3)	16.7(±0.3)	16.7 (±0.3)
Black	14.9 (±0.5)†,‡	14.6 (±0.5)†,‡	14.6 (±0.4)†,‡	15.0 (±0.6)†,‡
Female	15.7 (±0.6)†,‡	15.5 (±0.5)†,‡	15.5 (±0.5)†,‡	15.9 (±0.7)
Male	13.6 (±0.6)*,†,‡	13.0 (±0.7)*,†,‡	13.3 (±0.6)*,†,‡	13.6 (±0.9)*,†,‡
Hispanic	16.4 (±0.9)	16.5 (±0.8)	16.4 (±0.6)	16.2 (±0.7)
Female	17.1 (±0.6)	17.3 (±0.9)	16.9 (±0.8)	16.5 (±1.1)
Male	15.6 (±1.0)	15.7 (±1.0)	15.8 (±0.9)	15.9 (±0.8)
HAD INTERCOURSE IN PA AII Female Male	AST 3 MONTHS 39.4 (±2.7) 36.4 (±2.1) 42.5 (±3.9)	37.4 (±2.7) 38.2 (±3.0) 36.8 (±3.0)	37.5 (±2.0) 37.5 (±1.6) 37.5 (±3.1)	37.9 (±3.5) 40.4 (±4.2) 35.5 (±3.4)
White	38.0 (±2.5)	33.9 (±2.6)	34.0 (±2.1)	34.8 (±4.0)
Female	37.1 (±2.3)	35.9 (±3.4)	35.2 (±1.6)	38.5 (±5.0)
Male	39.0 (±3.9)	32.2 (±2.6)§	32.8 (±3.6)	31.6 (±4.1)
Black	53.9 (±4.7)†,‡	59.3 (±3.7)†,‡	59.1 (±4.3)†,‡	54.2 (±4.7)†,‡
Female	42.3 (±5.1)‡	55.3 (±4.1)†,‡,§	53.2 (±4.9)†,‡	50.6 (±5.2)†
Male	68.1 (±5.1)*,†,‡	64.1 (±4.7)†,‡	65.2 (±5.2)*,†,‡	58.3 (±6.0)†,‡
Hispanic	37.5 (±3.7)	37.0 (±3.7)	39.4 (±3.7)	39.3 (±6.9)
Female	31.4 (±4.6)	32.8 (±4.2)	37.9 (±5.1)	39.4 (±8.5)
Male	44.6 (±5.3)*	41.8 (±5.0)†	40.7 (±4.9)	39.2 (±7.7)
HAS HAD FOUR OR MOR All Female Male	E PARTNERS 19.0 (±2.0) 11.8 (±1.4) 26.7 (±3.7)*	18.7 (±1.9) 13.8 (±1.6) 23.4 (±2.8)*	18.7 (±2.0) 15.0 (±1.9) 22.3 (±2.7)*	17.8 (±2.5) 14.4 (±3.3) 20.9 (±2.6)*
White	15.8 (±2.0)	14.7 (±1.7)	14.3 (±2.1)	14.2 (±2.3)
Female	10.7 (±2.0)	12.1 (±1.9)	13.3 (±2.0)	13.1 (±3.6)
Male	21.1 (±4.1)*	17.2 (±2.6)*	15.2 (±3.1)	15.2 (±2.4)
Black	37.8 (±4.7)†,‡	43.1 (±3.5)†,‡	42.7 (±3.7)†,‡	35.6 (±4.5)†,‡
Female	19.5 (±4.3)†,‡	26.1 (±3.3)†,‡	27.2 (±3.7)†,‡	21.7 (±4.5)†,‡
Male	60.4 (±6.5)*,†,‡	63.2 (±5.3)*,†,‡	58.8 (±4.8)*,†,‡	52.2 (±7.1)*,†,‡
Hispanic	16.5 (±3.1)	16.8 (±3.3)	18.6 (±3.3)	17.6 (±3.8)
Female	7.8 (±2.9)	10.4 (±4.3)	11.0 (±4.0)	11.9 (±4.3)
Male	26.5 (±4.1)*	24.1 (±4.8)*	26.3 (±3.6)*,†	23.6 (±5.7)*,†

*Differs significantly from females, within year, at p<.05. †Differs significantly from whites, within year, at p<.05. ‡Differs significantly from Hispanics, within year, at p<.05. §Differs significantly from 1990 at p<.05. **Significantly different from 1995 at p<.05.

black female students. We found no differences in the median age at initiation of sexual intercourse between white and Hispanic students overall or between males and females.

Current Sexual Activity

In all four years, slightly more than one-third (37–39%) of all students in grades 9–12 said they had had intercourse during the three months before they were interviewed (Table

Table 2. Percentage (and 95% confidence interval) of sexually active U.S. high school students who reported using a condom at last intercourse, by race or ethnicity and by gender, according to year

Race, ethnicity and gender	1991	1993	1995
AII	46.2 (±3.1)	52.8 (±2.7)*	54.4 (±3.4)
Female	38.0 (±4.2)	46.0 (±2.8)*	48.6 (±4.8)
Male	54.5 (±3.5)†	59.2 (±3.8)†	60.5 (±4.3)†
White	46.5 (±4.4)	52.3 (±3.9)	52.5 (±4.0)
Female	38.0 (±5.9)	46.0 (±4.1)‡	48.0 (±5.4)
Male	55.2 (±4.3)†	58.5 (±5.4)†	57.5 (±6.7)
Black	48.0 (±4.0)	56.5 (±4.0)*	66.1 (±4.8)‡,§,**
Female	39.4 (±5.9)	47.8 (±5.8)‡	60.5 (±5.2)‡,§,**
Male	57.0 (±5.7)†	63.8 (±5.0)†	71.6 (±6.1)*,§
Hispanic	37.4 (±5.4)	46.1 (±4.1)	44.1 (±10.2)
Female	26.9 (±6.6)	36.9 (±4.6)	33.4 (±10.8)
Male	47.0 (±7.2)†	55.1 (±6.6)†	56.1 (±10.3)†

*Significantly different from 1991 at p<.05. \dagger Significantly different from females, within year, at p<.05. \ddagger Significantly different from Hispanics, within year, at p<.05. \ddagger Significantly different from whites, within year, at p<.05. **Significantly different from 1993 at p<.05.

1). Levels of current sexual activity in all subgroups remained stable across the years, except for a significant increase among black females between 1990 and 1991 and a significant decrease among white male students between 1990 and 1991.

In 1990, black students were significantly more likely than Hispanic or white students to report current sexual activity (54% vs. 38% each), a difference that held across all years. In 1990, black females reported levels of current activity significantly higher than those of Hispanic females, but similar to those of white females. In 1995, however, black females reported levels of sexual activity significantly higher than those of white females, but not significantly different from those of Hispanic females. In 1991, but not in the other three years, Hispanic males were significantly more likely than white males to report current sexual activity. We found no significant differences in current sexual activity between white and Hispanic female students.

Black males were significantly more likely than black females to report current sexual activity in 1990 and 1993, but not in 1991 or 1995. Among Hispanic students, males reported significantly higher levels of current sexual activity than females in 1990 only. We found no statistically significant gender differences among white students.

Lifetime Number of Sexual Partners

Overall, the proportion of students in grades 9–12 who reported having had sexual intercourse with four or more partners during their lifetime remained at 18–19% from 1990 through 1995 (Table 1). In each year, significantly more black students than white and Hispanic students reported having had four or more lifetime sexual partners. In

1995, for example, 36% of black students reported having had four or more sexual partners, compared with 18% of Hispanics and 14% of whites. In 1993 and 1995, Hispanic males were significantly more likely than white males to report four or more sexual partners.

In all years, black males and Hispanic males were significantly more likely than their female counterparts to report having had four or more sexual partners. In 1990 and 1991, white males were significantly more likely than

white females to do so.

Condom Use at Last Intercourse

Between 1991 and 1995, the proportion of sexually active students in grades 9–12 who reported condom use at last intercourse rose from 46% to 54% (Table 2). Among the three racial and ethnic subgroups, the increase was statistically significant only for blacks. For black females, condom use rose throughout the period 1991–1995, but only the increase between 1993 and 1995 (from 48% to 61%) was significant. The proportion of black males who reported condom use at last intercourse was significantly higher in 1995 than in 1991 (72% vs. 57%).

In 1995, black students were significantly more likely than white or Hispanic students to report condom use at last intercourse (66% vs. 53% and 44%). Condom use varied by gender within racial and ethnic subgroups. Among females, blacks and whites reported significantly higher levels of condom use than did Hispanic students in 1993; in 1995, however, blacks were significantly more likely than either whites or Hispanics to report condom use. Among males, blacks reported significantly higher levels of condom use than did whites in 1995.

Overall, male students reported significantly higher rates of condom use than did female students in each year of the survey. For Hispanic students, this gender difference held each year, but for white and black students, gender differences were significant only in 1991 and 1993.

Discussion

Our data indicate that rates of sexual activity among U.S. high school students may have stabilized, and that condom use

at last intercourse may have increased over time. These findings are consistent with results from other studies suggesting that adolescent pregnancy rates may have peaked in 1991 and plateaued thereafter.⁹

The rapid increase in the prevalence of sexual experience that occurred among adolescent females and males in the United States during the 1970s and early 1980s has been well documented. 10 A few studies have found different trends in the sexual experience of white adolescents and black adolescents. Among whites, the proportion with sexual experience increased rapidly between 1971 and 1979, then leveled off during the 1980s. Among blacks, that proportion increased between 1971 and 1976, was stable between 1976 and 1979, then declined during the 1980s.¹¹ These previous studies suggest that rates of sexual experience between whites and blacks may be converging.

The YRBS data for each year show that black male and female students were significantly more likely than their white counterparts to be sexually experienced. The level of sexual experience decreased among black students between 1991 and 1995, and among black males between 1993 and 1995; however, this decline did not negate the significant differences between blacks and whites. Although the racial differences in sexual experience narrowed, not enough evidence exists to suggest that the rates will converge in the near future.

Gender differences in sexual behavior were found predominantly among black students. Black males were significantly younger than black females at first intercourse, and they were significantly more likely to be sexually experienced, to be currently sexually active, to have had four or more sexual partners and to have used condoms at last intercourse. Among Hispanic students, males were significantly more likely than females to be sexually experienced, to have had four or more sexual partners and to have used condoms at last sexual intercourse. We identified few gender differences in sexual behavior among white students.

This article has focused on describing difference by gender and by race and ethnicity. Unfortunately, the underlying causes for subgroup differences (e.g., education levels, social and economic factors and cultural influences)¹² could not be addressed in our analysis.

In summary, although levels of sexual experience for high school students in the U.S. have stabilized during the 1990s, a very high percentage of students continuous.

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ue to be at risk for unintended pregnancy and STDs, including HIV infection. The median age of initiating sexual intercourse is about 16 years, and by the ninth grade almost one-third of females and more than 40% of males have had sexual intercourse. Also, only slightly more than half of all 9th–12th graders used a condom at last sexual intercourse. Thus, our nation must redouble its efforts to influence all adolescents, and especially the youngest ones, not to engage in sexual intercourse, but to use condoms if they do.

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