

Original article

Trends in Sexual Risk Behaviors, by Nonsexual Risk Behavior Involvement, U.S. High School Students, 1991–2007

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Manuscript received April 1, 2008; manuscript accepted August 16, 2008

Abstract

Background: Adolescent health risk behaviors often occur together, suggesting that youth involvement with one risk behavior may inform understanding of other risk behaviors. We examined the association between involvement in nonsexual risk behaviors and trends among sexual behaviors.

Methods: We analyzed 1991–2007 data ($n = \sim 125,000$) from the Youth Risk Behavior Survey, a nationally representative survey of high school students in the United States. We categorized students into groups based on lifetime (Lifetime Risk Scale) and recent involvement (Recent Risk Scale) in nonsexual risk behaviors, such as smoking and drug use. We examined each group's prevalence of and trends for four sexual behaviors: ever having had sexual intercourse, having four or more lifetime partners, current sexual activity, and use of contraception at last sex. Data were examined for linear and quadratic (U-shaped) change using logistic regression.

Results: Sexual behaviors varied considerably between youth engaged in no risk behaviors and those in the highest risk behavior groups: sevenfold for ever having had intercourse (13% vs. 87% in 2007) and threefold for four or more lifetime sexual partners (19% vs. 57%). Despite these differences, trends in sexual risk behaviors among youth engaged in multiple nonsexual risk behaviors and those engaged in few or no risk behaviors were remarkably similar. In contrast, sexual behaviors demonstrated a very different pattern of change from that found for nonsexual behaviors: sexual experience and having multiple sexual partners declined into the early 2000s and then increased, whereas nonsexual behaviors increased over time, peaked in the late 1990s, and then declined.

Conclusions: Youth who engaged in little risk taking and those who engaged in considerable risk taking showed similar trends over time. However, the pattern of changes in sexual and nonsexual risk behaviors were remarkably different, raising questions about the potential impact of interventions that would reduce sexual risk taking by reducing nonsexual risk behaviors. Recent increases in sexual risk behaviors may have ominous implications for prevention of unplanned pregnancy and sexually transmitted infections among youth. © 2009 Society for Adolescent Medicine. All rights reserved.

Keywords: Adolescents; Risk behavior; Sex behavior; United States

Since the early 1990s, teen pregnancy and birth rates in the United States have declined considerably. Pregnancy rates for 15–19-year-olds declined 35% between 1990 and 2002

[1], and birth rates (for which more recent data are available) dropped 34% between 1991 and 2005, before rising 3% in 2006 [2]. Likewise, many sexual and reproductive behaviors among U.S. teens also improved in this period. Data from the national Youth Risk Behavior Survey (YRBS) showed significant declines from 1991 to 2007 in the percentage of all U.S. high school students who had ever had sexual intercourse (54% in 1991 to 46% in 2007) and in the percentage

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that had had four or more lifetime sexual partners (19% to 14%) [3]. These declines occurred primarily between 1991 and 2001, and prevalence of these has not changed since 2001. Data from the National Survey of Family Growth (NSFG) demonstrates similar trends in sexual behaviors and contraceptive use for the period 1995 to 2002 [4]. Two recent analyses suggest that both delay in initiation of sexual intercourse and improved contraceptive use were important contributors to declines in teen pregnancy [5,6].

To better understand these trends, researchers have examined them by sociodemographic characteristics such as race/ethnicity and have found important differences and similarities among groups, both in the trends and absolute prevalence of these behaviors. For example, black students in particular experienced significant improvements in both sexual involvement and contraceptive use between 1991 and 2005 and have shown the largest decreases in teen birth and pregnancy rates over this period [1–3]. By contrast, Hispanics have shown the smallest declines in birth rates and the smallest improvement in sexual behaviors that result in pregnancy. Demographic characteristics, however, do not explain the factors influencing declining pregnancy rates.

Adolescent involvement with health risk behaviors, specifically nonsexual risk behaviors, may be one factor influencing trends in sexual behaviors. Previous research has documented significant co-variation among youth risk behaviors [7–10]. This research on youth behaviors among adolescents often places sexual behaviors within a spectrum of health risk behaviors that include smoking, substance abuse, aggression, and other forms of risk behavior. Such work has suggested the existence of underlying propensities among adolescents for types of sensation seeking, novelty seeking, and/or risk taking. This work also has contributed to the growing consensus that adolescent problem behaviors, including sexual risk behaviors, are the result of a complex combination of social, genetic, and developmental factors [10–12]. As a result of these and related developments, comprehensive youth interventions have been recommended—interventions that target multiple risk behaviors by enhancing life skills or resiliency—rather than programs that target risk behaviors one at a time [13,14].

The primary purpose of our study was to examine trends in sexual behaviors by adolescents' nonsexual risk behavior status, both to measure similarities or differences in the pattern of trends between sexual behaviors and nonsexual risk taking and to assess the extent to which adolescents of different risk propensities or experiences (i.e., involvement in nonsexual risk behavior) shared in these trends. We were looking for evidence that trends in nonsexual behaviors may be influencing these improvements in sexual behaviors. We also wanted to know whether trends in sexual behaviors were experienced across all strata of adolescent risk takers. One could imagine that students who engaged in multiple nonsexual risk behaviors might be more resistant to positive changes in sexual behaviors than their lower risk counterparts. They might also be less amenable to health interventions and/or less influenced

by the social forces influencing change in sexual behaviors. Thus, our research could contribute both to understanding trends and to suggest how risk reduction programs could be tailored or targeted by their risk behavioral experience.

Methods

As part of the Youth Risk Behavior Surveillance System, the YRBS has been conducted biennially since 1991 by the Centers for Disease Control and Prevention's Division of Adolescent and School Health and its partners. This analysis uses nine rounds of data, covering a 16-year-period from 1991 to 2007. The YRBS is a school-based, self-administered, and nationally representative survey of U.S. private and public high school students. These data used independent, three-stage cluster samples to obtain cross-sectional data, which, when weighted accordingly, are representative of students in grades 9–12 in all 50 states and the District of Columbia. The YRBS trend data thus are repeated cross sections. The YRBS does not include students in alternative schools or adolescents who have dropped out of school. The questionnaire covers a broad range of health behaviors, from nutrition and exercise to violence and sexual activity, and has good reliability [15]. The YRBS provides limited background and contextual information; the background characteristics available in all years of data are age, grade, gender, and race/ethnicity.

This analysis builds on the ability of the YRBS to assess temporal trends in health behaviors and associations between trends in sexual and nonsexual risk behaviors. Outcomes of interest are trends in four sexual risk behaviors, two that are lifetime ("ever") measures: 1) among all students, those who ever had sexual intercourse (i.e., sexually experienced); 2) among those who have ever had sexual intercourse, those who had four or more lifetime sexual partners; and two others that describe behaviors around the time of the survey ("current") measures: 3) among students who ever had sexual intercourse, those who were currently sexually active (current sexual activity is defined as having had sexual intercourse with one or more partners in the last 3 months); and 4) among students who were currently sexually active, those who used any method of birth control (i.e., contraceptive pills, condoms, Depo-Provera, withdrawal, or some other method) at last sexual intercourse. Condom use and primary method used to prevent pregnancy were asked as two questions in the survey but condoms could be answered on both questions. If respondents mentioned a method to prevent pregnancy or condoms on either question, they were coded as "users." We coded respondents who said they were "not sure" if they used birth control or a condom at last sexual intercourse (~1.5% of each year's respondents) as nonusers.

The key predictor in these analyses is nonsexual risk behavior status. These behaviors were measured through two composite scales that are based on previous research on adolescent risk behaviors, data availability in the YRBS of nonsexual risk behaviors, and exploratory factor analysis. Categorizing students in terms of levels of nonsexual risk

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