# Parents' Smoking, Seat Belt Nonuse May Be Linked To Increased Odds of Adolescents' Sexual Debut

Two risky health behaviors of parents with adolescent children—smoking and not using seat belts—appear to be linked to their children's sexual and contraceptive behaviors. According to an analysis of 1994–1995 data from the National Longitudinal Study of Adolescent Health (Add Health),[1] an adolescent whose parent smokes has independently elevated odds of ever having sex and of having sex before age 15 (odds ratios, 1.4–1.5), as well as of using a contraceptive method at first sex (1.3 for males only). Further, adolescent males whose parent rarely uses seat belts have significantly increased odds of ever having sex (1.3). There is no independent association, however, between parental heavy drinking and the adolescent sexual and contraceptive behaviors examined.

The data come from the adolescent and parent questionnaires administered in the first wave of the Add Health survey. The data for analysis, which refer to more than 9,000 adolescents of each gender in grades 7–12, were weighted to be nationally representative. Binary logit analyses were performed to assess the influence of a parent's risk behaviors (in 95% of cases, the mother's) on the odds of sexual initiation, early first sex (before age 15) and contraceptive use at first sex (i.e., use of any method or a condom or medical method in particular).

Separate models by gender controlled for socioeconomic variables and the high-risk behaviors of one parent—smoking, drinking heavily (five or more drinks at a time) in the past month, and never or rarely wearing seat belts. The analyses also included controls for the adolescent's own risk behaviors—smoking regularly, binge drinking, having friends who use alcohol or drugs, and engaging in delinquent behaviors (i.e., deliberately damaging others' property, stealing, using or threatening to use a weapon, and selling marijuana or other drugs). The investigators also controlled for parental supervision with measures of how often each parent was present when the child left for school, returned home from school and went to bed. All analyses controlled for family income and welfare receipt and parents' educational attainment, as well as adolescents' age, race, religious affiliation and religiosity, living arrangement and area of residence. In the analyses of predictors of contraceptive use, the investigators also controlled for adolescents' age at first sex and the year in which first coitus occurred.

At the time of the survey, the adolescents in the sample were 15.5 years old, on average. Males were significantly more likely than females to have ever had sex (39% vs. 37%) and to have done so before their 15th birthday (20% vs. 17% of those at least 15 years of age). There was no significant difference by gender, however, in the proportions who had used a method of contraception at first coitus (64–65% of sexually experienced adolescents). Thirty-one percent of the adolescents had a parent who smoked, 13–14% had a parent who drank heavily in the past month and 19–20% had one who never or only sporadically used seat belts. Mean supervision scores (summed over the three items) reported by the adolescents were uniformly higher for their mothers (8.6–8.7 on a scale of 0–12) than for their fathers (4.9–5.3).

Net of all other variables, having a parent who smoked was significantly associated with elevated odds of sexual initiation among both females (odds ratio, 1.5) and males (1.4). A parent's nonuse of seat belts was independently related to increased odds of sexual debut, but only among males (1.3); parental drinking, however, had no effects on adolescents' sexual debut. Levels of each parent's supervision had gender-specific effects only: The increased presence of a mother throughout her child's day was independently associated with lowered odds of sexual initiation among daughters (0.96), and a father's higher level of supervision was similarly associated with reduced odds of sexual debut among sons (0.96).

Having a parent who smoked was independently associated with elevated odds of having had sex before age 15 among both males (1.5) and females (1.4). Whereas neither a parent's drinking nor seat belt nonuse had an impact on an adolescent's early sexual debut, increasing maternal supervision was associated with significantly reduced odds of early first sex among adolescent females (0.9). A father's presence at home, however, had no independent effect on early initiation of sexual activity among adolescents of either gender.

Whereas none of the parental risk behaviors affected the odds of a daughter's contraceptive use at first sex, smoking was independently associated with elevated odds of use at first coitus among sons (1.3). The investigators suggest that smokers' potential openness toward parent-child discussions about contraception may partially explain this unexpected association; when the authors controlled for such discussions, the association was no longer significant. They maintain that parental risky behaviors may also indirectly affect adolescent contracepive behavior through their demonstrated influence on age at first sex, a known predictor of method use among adolescents. Finally, although the three parental risky health behaviors had no independent effect on the type of method used by adolescent children, sons whose fathers scored higher on the supervision scale had significantly reduced odds of using a medical method the first time they had sex.

The authors cite several potential limitations of their study, including the lack of information about the timing of the behaviors studied (which made it impossible to disentangle cause and effect), the unavailability of data from both parents and the wording of the items defining the risk behaviors. Nonetheless, they affirm that their findings "support the notion that risk is 'reproduced' across the generations, perhaps because parents often serve as role models for their children." They conclude that "public health campaigns that urge parents to act responsibly by engaging in health-conscious behaviors are likely to help reduce precocious and unsafe sexual activity among teens."—*L. Remez*

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## Racial Disparities in Early and Adequate Prenatal Care Decreased Among U.S. Women in 1980s and 1990s

Adequate use and early initiation of prenatal care in the United States increased among both black and white women between 1981 and 1998.[1] The proportion of women with adequate use of prenatal care steadily increased from 34% to 50% among whites and from 27% to 44% among blacks, while the proportion initiating care within the first trimester increased from 80% to 85% among whites and from 61% to 73% among blacks. Intensive use of services, as measured by two standard indices, also rose. Overall, racial disparities in prenatal care decreased during the study period, with the exception of certain measures among high-risk groups, such as young and unmarried mothers.

To examine the trends and racial disparities in use of prenatal care among U.S. women, researchers gathered information from the natality files of the National Center for Health Statistics. They analyzed all available birth certificate data for live singleton infants born to white and black women in the 50 states and the District of Columbia from 1981 to 1998.

Data on the trimester in which prenatal care began and the Revised Graduated Index of Prenatal Care Utilization (R-GINDEX) and Adequacy of Prenatal Care Utilization Index (APNCU) were examined. The two indices classify prenatal care on the basis of the month that care began and the number of visits, adjusted for gestational age. For their study, the researchers looked at the R-GINDEX categories of intensive care (signifying approximately one standard deviation above the mean number of visits) and adequate care, and the APNCU category of intensive or adequate-plus care (signifying 110% of the number of visits recommended by the American College of Obstetricians and Gynecologists).

The researchers examined trends and percentage changes in the early initiation and use of prenatal care among the total population and among three social and demographic groups considered to be at high risk of adverse pregnancy outcomes: women with fewer than 12 years of education, women younger than 18 and unmarried women. Data were grouped into two-year increments. To assess changes in racial disparities among the total population and among the three high-risk groups, the researchers calculated the white-black ratio for each prenatal care measure for 1985–1987 and 1995–1997; a ratio of 1.00 signifies racial equity for that measure.

Overall, whites were more advantaged than blacks in regard to prenatal care, although utilization of services improved for both races over the study period. Between 1981–1982 and 1997–1998, the proportion of women with adequate use of prenatal care steadily increased among both whites (from 34% to 50%) and blacks (from 27% to 44%). An upward trend was also seen in the proportions of women of both races initiating prenatal care in the first trimester: from 80% to 85% among whites, and from 61% to 73% among blacks. Furthermore, intensive use of prenatal care increased among both white (R-GINDEX, from 18% to 30%; APNCU, from 3% to 7%) and black women (R-GINDEX, from 20% to 31%; APNCU, from 4% to 7%).

The racial gap in adequate use of prenatal care narrowed during the study period, with blacks making more substantial gains than whites (64% and 49%, respectively); the white-black ratio decreased from 1.25 to 1.14. A similar trend was seen in early initiation of care: The proportion of women starting prenatal care in the first trimester increased 19% among blacks and 6% among whites between 1981–1982 and 1997–1998; the white-black ratio decreased from 1.31 to 1.16. White women had greater gains than black women in intensive use of prenatal care as measured by both the APNCU (68% vs. 56%) and the R-GINDEX (94% vs. 91%), closing the gap in that measure as well; the white-black ratio rose from 0.90 to 0.96 for the APNCU and from 0.95 to 0.96 for the R-GINDEX.

During the study period, there were substantial changes in the proportions of births to women classified as being at high risk for adverse pregnancy outcomes. While the proportion that were to young women was essentially stable among white mothers (4%), it declined notably among blacks (from 12% to 10%). The proportion of births to mothers with fewer than 12 years of education decreased among blacks (from 35% to 27%) but increased among whites (from 19% to 21%); the proportion to unmarried mothers increased somewhat for blacks (from 57% to 69%) and more than doubled for whites (from 11% to 26%) between 1981–1982 and 1997–1998.

Among the high-risk groups studied, the overall trend was toward decreasing racial inequities in prenatal care initiation and use. However, there were some exceptions: Among young mothers, changes in the white-black ratio for adequate prenatal care (from 1.07 to 1.13) and for R-GINDEX intensive care (from 1.02 to 1.07) suggest that the racial disparities for those measures increased during the study period. Furthermore, the change in the ratio for early initiation of care among unmarried mothers (from 0.99 to 1.07) suggests a reversal in disadvantage from white to black women. There was no change in the ratio for R-GINDEX intensive care among women with low educational level (1.07).

The researchers comment that although it is encouraging to see the narrowing of racial disparities in early and adequate prenatal care, the reasons behind the changes are still unknown. They speculate that "national policy emphasis on and commitment to the reduction of racial disparities in health outcomes" and "efforts to promote more culturally competent care" may each be partially responsible. And they suggest that more work needs to be done to "assess the extent to which disparities exist for other racial, ethnic, and high-risk groups."–*J. Rosenberg*

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## Even After Having an STD, Many Teenagers Do Not Adopt Safer-Sex Practices

Teenage women who receive a diagnosis of a sexually transmitted disease (STD) may learn about prevention as a result, but the experiences of a sample of adolescents in Alabama suggest that they do not apply that knowledge to subsequent behavior.[1] The odds of scoring high on a measure of STD prevention knowledge were nearly doubled among young women who had ever had an STD, but these teenagers also had elevated odds of having unprotected intercourse, using condoms inconsistently and having sex when either they or their partner were drinking. Furthermore, young women with a history of STD were no more motivated to use condoms than were those who had never had an STD.

The sample consisted of black sexually active 14–18-year-olds attending adolescent medicine clinics, health department clinics and school health classes in low-income areas of Birmingham between December 1996 and April 1999. Participants completed a self-administered questionnaire covering knowledge about STD prevention and attitudes toward condom use, followed by an interview in which they were asked about their STD history and their recent sexual behavior; they also provided vaginal swab specimens for STD testing.

Twenty-six percent of the 522 participants reported ever having been told that they had gonorrhea, syphilis, chlamydia, herpes, genital warts or trichomoniasis. Laboratory results showed that 28% had a current infection (predominantly chlamydia, trichomoniasis or gonorrhea); 5% tested positive for at least two STDs. Both lifetime and current rates of STD were elevated among 17–18-year-olds, women with partners two or more years their senior, those who were pregnant when surveyed and those in relationships of more than six months' duration. These factors served as controls in logistic regression analyses examining the association between STD history and current prevention knowledge, risk-related behavior and infection status.

In the multivariate analyses, teenagers who had had an STD were more likely than others to score above the median on a scale assessing knowledge of preventive measures (odds ratio, 1.8); they did not differ from young women who had never had an STD in their motivation to use condoms.

On almost all measures studied, adolescents with an STD history reported riskier behavior in the previous 30 days than did women with no history of STDs. They were significantly more likely to say that they had not used a condom the last time they had sex (odds ratio, 2.5), that they had failed to use a condom at least once (1.8) and that they had had unprotected sex with two or more partners (3.3). Although teenagers with an STD history had elevated odds of having had sex on at least one occasion when they or their partner had been drinking (2.1), they were not at increased risk of having had unprotected sex in conjunction with drinking.

The odds of current infection with gonorrhea or trichomoniasis were roughly doubled among women who had had an STD in the past (odds ratios, 2.5 and 2.1, respectively), but the risk of testing positive for chlamydia was not significantly elevated for this group. Results of additional analyses suggested that the increased current STD risk among those with a history of such disease was not attributable to their greater likelihood of engaging in risky behavior.

In discussing their findings, the researchers note that teenagers who have had an STD may know more than others about prevention because of counseling they received during treatment or because of their heightened desire for such information. However, these young people often fail to translate that knowledge into preventive behavior and thus remain at risk of further infection. Additionally, according to the researchers, the finding that current risky behavior does not explain the risk of current infection is an indication that teenagers with an STD history have been involved in high-risk sexual networks. Reducing STD rates among young people, the investigators conclude, will require intensified clinic-based counseling to "increase adolescents' adoption and long-term maintenance" of preventive behavior.–*D. Hollander*

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## Foreign-Born STD Clinic Clients with HIV Likely Acquired Infection Here

U.S.-born attendees at sexually transmitted disease (STD) clinics are as likely as foreign-born attendees to have HIV, and most HIV-positive attendees who were born abroad were probably infected after entering the United States.[1] At selected STD clinics in Los Angeles County in 1993–1999, similar proportions of U.S.- and foreign-born clients—1.8% and 1.6%, respectively—tested positive for HIV. HIV was most prevalent among clients born in North Africa and the Middle East (3.3%) and least prevalent among those from East Asia and the Pacific Islands (0.5%). Considering the average age of foreign-born clients, their age at immigration and the number of years they had lived in the United States, most of these attendees had likely contracted the virus after immigration.

Between January 1993 and December 1999, researchers investigated whether birthplace was associated with HIV prevalence among attendees at STD clinics at seven public health centers in Los Angeles County. They tested clients anonymously for the presence of HIV antibodies and recorded clients' birthplace, race and ethnicity, current age and HIV risk behavior. In addition, they estimated age at immigration and the number of years since immigration for clients born outside the United States (defined as the 50 states). Complete information was available for 61,120 clients.

The proportion of clinic attendees born in the United States was higher than that of attendees born elsewhere (62% vs. 38%). The vast majority of immigrants were born in Central America or Mexico (87%) and were Hispanic (87%); in contrast, most U.S-born clients were non-Hispanic and black (75%). The mean ages of U.S.- and foreign-born clients were similar (29 and 30 years, respectively), as were the proportions who were female (38% and 42%) and the proportions who tested positive for HIV (1.8% and 1.6%). HIV was most prevalent among clients born in North Africa and the Middle East (3.3%) and among those born in the Caribbean and the West Indies (2.9%); it was least prevalent among clients from East Asia and the Pacific Islands (0.5%) and among those from South and Southeast Asia (0.7%). Attendees from Central America and Mexico, Europe and the former Soviet Union, Sub-Saharan Africa and South America had intermediate HIV prevalence levels (1.6–2.2%). Of the 1% of immigrants who were born in U.S. territories, 2.4% tested positive for HIV.

Overall, HIV prevalence was higher among males than among females, both for attendees born in the United States (2.6% vs. 0.6%) and for those born abroad (2.5% vs. 0.4%). The general trend was reversed only among immigrants from Sub-Saharan Africa: In this group, 5.7% of women and 0.9% of men had HIV. Women from this region also had the highest HIV prevalence of all groups studied.

Multivariate logistic regression analysis that controlled for current age and risk behavior (i.e., history of male homosexual activity, of exclusive heterosexual activity and of drug injection) revealed that the odds of testing positive for HIV were significantly elevated for women from Sub-Saharan Africa (odds ratio, 8.6) and significantly reduced for women from Central America and Mexico (0.5), compared with the odds for U.S.-born women. Men who were born in South and Southeast Asia were less likely than U.S.-born men to test positive for HIV (0.3).

Foreign-born clients who were HIV-positive were older than those who were HIV-negative

(mean age, 33 vs. 30); they also were older at immigration (21 vs. 19) and had lived in the United States for longer (12 vs. 10 years). Acknowledging that most people with AIDS receive their diagnosis in their 30s and that the median time between untreated HIV infection and AIDS diagnosis is 10–12 years, the researchers conclude that most HIV-positive clients from abroad had likely been infected after immigration, perhaps because of an elevated HIV risk in the United States. They point out, however, that immigrants often visit their country of birth, where they might acquire HIV. In contrast, clients born in Sub-Saharan Africa who tested positive for HIV had lived in the United States for only about three years, and they had immigrated, on average, at age 24. According to the analysts, the majority of these clients had therefore probably been infected before moving to the United States.

Noting that their findings are relevant to urban areas of the country that have sizable and expanding foreign-born populations, the researchers conclude that although foreign-born clients of public STD clinics are as likely as U.S.-born clients to have HIV, they may encounter multiple disadvantages in seeking treatment, such as poverty, lack of medical insurance and difficulty understanding English. Furthermore, "elevated HIV prevalences in some foreign-born subgroups suggest that specific immigrant populations warrant special attention." In particular, the researchers note, HIV programs need to target African, Caribbean and Middle Eastern immigrants because of their high HIV prevalence, as well as Central American and Mexican immigrants because of their large and increasing numbers in the United States. The authors also call for "research to identify factors that elevate some immigrants' HIV risk and to evaluate whether HIV services meet [their] needs."–*T. Lane*


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## Some Women with Genetic Susceptibility to Breast Cancer Face Elevated Risk from Oral Contraceptive Use

Among women with mutations of the breast cancer susceptibility gene BRCA1, certain patterns of oral contraceptive use increase the odds of the disease.[1] In a multicenter case-control study, women with a BRCA1 mutation who were ever-users of oral contraceptives had 20% higher odds of having had breast cancer than never-users. However, the odds were elevated only for certain groups of ever-users: women who had used oral contraceptives before age 30, women who had used them for at least five years and women who had first used them before 1975. Additionally, the odds were raised among ever-users only if their cancer had been diagnosed before they reached age 40. In contrast, women with a BRCA2 mutation did not have increased odds of breast cancer if they had used oral contraceptives, but the smaller number of women in this group limited analyses.

Women with BRCA1 and BRCA2 mutations have an elevated risk of breast cancer. To determine if oral contraceptive use further increases this risk, investigators studied women from eight European countries, Canada, the United States and Israel who had known mutations of one or both genes. The women had been identified by genetic testing prompted by a diagnosis of breast or ovarian cancer in themselves or a female relative. The investigators paired women who had had invasive breast cancer diagnosed during 1970–2001 (cases) with women who had never received a diagnosis of this cancer (controls); they matched each pair for year of birth, country of residence, BRCA gene mutated and history of ovarian cancer.

Women were excluded from the study if they had missing data or had been born before 1920. Potential cases were excluded if they had undergone oophorectomy before their diagnosis of breast cancer or if ovarian cancer was diagnosed before breast cancer; potential controls were excluded if they had had bilateral oophorectomy or bilateral prophylactic mastectomy before the age at which their matched case received her breast cancer diagnosis.

Study participants completed questionnaires asking details about their medical and reproductive histories, including their use of oral contraceptives. The relative odds of breast cancer were determined by multivariate conditional logistic regression.

Analyses were based on 1,311 matched pairs of women. In 75% of the pairs, the mutated gene was BRCA1; in 11%, the women had ovarian cancer. On average, women with and without breast cancer were both about 46–47 years old and had had two live births. Women with breast cancer were significantly older at the time of a first birth, but the difference was small (24.6 vs. 24.2 years); the vast majority of women were white. About four in 10 women in each group reported having smoked regularly at some time. The women with breast cancer had been, on average, 39 years old at the time of diagnosis. Nearly equal proportions of women with and without breast cancer had ever used oral contraceptives (70% and 68%, respectively), and the average duration of use among ever-users was similar (5.3 and 5.0 years).

After ethnicity and number of live births were taken into account, women with a BRCA1 mutation who had ever used oral contraceptives had a significant 20% increase in the odds of breast cancer relative to those who had never used them. The odds increased by 2% with each year of use. In contrast, among women with a BRCA2 mutation, ever-users did not have elevated odds of breast cancer relative to never-users, although analyses were limited by the small number of women with BRCA2 mutations.

Only certain patterns of oral contraceptive use were associated with significantly elevated odds of breast cancer in women with BRCA1 mutations. Women who had used oral contraceptives before age 30 had a 29% increase in odds relative to never-users, and the odds increased by 3% with each year of use before this age. Women who had used oral contraceptives for five or more years had a 33% increase in odds, and women who had used them before 1975 (when oral contraceptives had a higher estrogen content) had a 42% increase in odds. No associations emerged between the odds of breast cancer and use at later ages, for shorter durations or in more recent time periods.

The odds of breast cancer in women with a BRCA1 mutation also increased with the time elapsed since discontinuation of oral contraceptive use. Ever-users who had stopped use 10 or more years earlier had a 59% increase in odds relative to never-users; the odds of disease were not elevated among women who had used oral contraceptives more recently. Further analyses revealed that ever-use was associated with the likelihood of disease only among women who learned of their cancer before age 40 (increasing the odds by 38%) or during 1970–1979 (doubling the odds).

While acknowledging that earlier studies have yielded conflicting results, the investiga-

tors contend that their findings "support the use of short-term oral contraceptives as a measure for reducing ovarian cancer risk in BRCA carriers." More specifically, they conclude, "it appears that oral contraceptive use after age 30 is not likely to increase the risk of breast cancer among BRCA1 mutation carriers and can be used safely to reduce the risk of ovarian cancer."–*S. London*

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## Teenagers with the Least Adult Supervision Engage In the Most Sexual Activity

The more time that high school students spend without adult supervision, the higher their level of sexual activity.[1] In a sample of youths attending a school-based sexually transmitted disease (STD) screening program, the proportion who had ever had intercourse rose steadily from 68% among those who were unsupervised for five or fewer hours per week to 80% among those who spent 30 or more hours without adult supervision. In addition, male students' lifetime number of partners rose steadily, from 3.7 to 4.7, as the amount of time they spent without supervision increased. Young women who took part in after-school activities were less likely than those who did not to be sexually experienced (59% vs. 71%).

These data are among the findings of a survey conducted in six urban public high schools during the 2000–2001 academic year. In all, 2,034 youths (1,065 males and 969 females) completed the self-administered questionnaire. Participants were about evenly distributed among students in grades 9–12 and were predominantly black (98%) and from low-income families (79%). Fifty-two percent lived with their mother only, and 27% lived with both parents; only 4% lived with their father only, and the rest in some other arrangement.

Roughly half of the students reported that they were unsupervised every day after school, one-quarter were without supervision 1–4 afternoons a week and one-quarter always had adult supervision. Two-thirds were unsupervised for three or more hours daily, including 38% who had no supervision for six or more hours each afternoon. The number of unsupervised hours did not differ markedly between males and females, or between youngsters from one-parent and those from two-parent families; it increased with grade level. Close to half of youths were in or planned to join an after-school activity; the proportion was significantly higher among males (55%) than among females (41%).

Three-quarters of respondents (about four in five males and two in three females) were sexually experienced; 42% of males and 9% of females had first had intercourse before age 14. Males reported a greater lifetime number of partners than females (4.2 vs. 2.4, on average), and they were more likely to have had multiple partners in the previous three months (60% vs. 51%). Nearly all sexually experienced youths said that their most recent episode of intercourse had occurred in someone's home: their own (37%), their partner's (43%) or a friend's (12%). The proportion reporting having last had sex in their own home was significantly higher among males (43%) than among females (28%). More than half of sexually experienced respondents reported that they had last had intercourse on a weekday—18% before three in the afternoon, 17% between three and six, and 21% sometime after six.

The proportion of students who had ever had intercourse grew from 68% among those reporting five or fewer hours of unsupervised time per week to 75% among those who were unsupervised for 6–29 hours and 80% among those with no adult supervision for at least 30 hours a week. The general pattern of increasing levels of sexual experience with decreasing supervision held for both genders but was linear only for males. Young women who reported participating in after-school activities had a lower probability than other females of having engaged in intercourse (59% vs. 71%).

Young men's lifetime number of partners rose from an average of 3.7 among those with the greatest supervision to 4.2 among those with moderate supervision and to 4.7 among those with the least supervision. For young women, by contrast, the average increased from 2.1 among those who were unsupervised for five or fewer hours weekly to 2.5 among participants who lacked adult supervision for 6–29 hours, and it remained at that level among young women reporting 30 or more unsupervised hours each week. The average lifetime number of partners increased steadily with grade; students in grade 12 had had 1.5 more partners than ninth graders. Results of linear regression analysis confirmed that lack of supervision has an independent effect on young people's lifetime number of partners.

One in 10 participants had had any STD. Among females, the proportion changed little (from 15% to 20%) from the lowest to the highest amount of unsupervised time; among males, however, it more than doubled (from 6% to 14%). The association among males held even when potentially confounding factors were controlled for in logistic regression analyses.

As the researchers acknowledge, the study has important potential limitations: Since the respondents were participants in an STD program, the sample may have been biased toward youths who were having unprotected intercourse. Furthermore, information about supervision reflected students' perception of the average amount of time they were unsupervised and was not confirmed by any objective measure. Nevertheless, given the associations uncovered between lack of supervision and risky behavior, the investigators conclude that "it is worth considering increasing youth supervision, not only by parents and other responsible family members and friends but also by programs at schools and other community settings." They add that "the provision of alternative supervised activities may be a higher priority for boys."–*D. Hollander*

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## Women Have Different Risk Factors for Verbal, Physical Partner Abuse

Women who are physically abused by their partners and women who are verbally abused have different profiles, suggesting differing risk factors for these two types of violence.[1] Of women surveyed at two family planning clinics in Texas, 43% and 73% reported physical and verbal partner abuse, respectively. Most women reporting physical assault also reported verbal abuse (95%), and the two forms of violence were strongly correlated with each other. A woman's employment status, age at first intercourse and at first birth, and contraceptive use at last intercourse were associated with both types of abuse. However, some factors—race or ethnicity, previous childbearing, education and lifetime history of sexual abuse—

were linked with only physical abuse.

To examine characteristics associated with victimization of women by their male partners, researchers recruited sexually active women who visited either of two community-based family planning clinics in Galveston, Texas, between April 1997 and January 1998. Participants were aged 14–26, had a current partner or spouse, were not pregnant or postpartum and were not mentally impaired. The self-administered questionnaire asked about women's demographic and reproductive background, as well as frequency of physical and verbal abuse in the current relationship, partner's age and the duration of the relationship. Physical abuse was defined as physically aggressive threats or behaviors (e.g., pushing, slapping, choking or punching), and verbal abuse was defined as critical or insulting behavior.

Of the 727 women who completed the questionnaire, 61% were 19–26 and the remainder were 14–18; mean ages of partners of women in these two age-groups were 25 and 20, respectively. Respondents were distributed about equally among three racial and ethnic groups: white, black and Mexican American. Roughly one-half of respondents had been in their current relationship for more than one year, and three in 10 had been involved with their partner for 1–6 months.

Some 43% and 73% of respondents indicated that they had experienced physical and verbal abuse, respectively; they reported, on average, that three episodes of physical aggression and nine of verbal abuse had occurred during their current relationship. Furthermore, 16% of respondents reported at least one case of severe physical abuse (i.e., they had been choked, strangled, punched or threatened with a knife or gun). Women who had been physically abused were significantly more likely than those who had not to have experienced verbal abuse (95% vs. 5%). In addition, an analysis of reported frequencies of abuse showed that the two types of violence were strongly correlated with each other (r=.7).

Chi-square analyses revealed that women who had been physically attacked were more likely than those who had not to be younger than 19, marginally less likely to be white or have at least a high school diploma and marginally more likely to have had at least one child. On average, they were younger at first intercourse (15.0 vs. 15.7 years) and at first birth (17.2 vs. 18.0); they were less likely to have used a condom, hormonal contraceptive or both at last intercourse and to have used a condom consistently in the previous year. Compared with women who had not been verbally victimized, those who had were significantly younger at first sex (15.2 vs. 15.8) and at first birth (17.5 vs. 17.9); they also were marginally less likely to have used condoms consistently in the previous year. Respondents who reported either form of abuse were more likely than those who did not to have a lifetime history of sexual abuse and to have been in their current relationship for more than six months.

The researchers used multivariate logistic regression analysis to determine which demographic and reproductive characteristics were independently associated with physical and verbal abuse. They entered into the model only factors that were at least marginally related to partner violence (i.e., at $p<.10$) in the chi-square tests, plus employment status (as a control for possible confounding of ethnicity and income). After adjustment for relationship length, these analyses showed that the odds of having encountered physical and verbal abuse were elevated among women who were employed (odds ratios, 1.6 and 1.4, respectively) and among those who had ever been sexually abused (2.2 for each). In contrast, the likelihood of partner violence was reduced among women who were older at first intercourse (odds ratio, 0.9 for either form of abuse) or at first birth (0.9) and among women who had used hormonal contraceptives (0.5), condoms (0.5–0.6) or both (0.4) at last intercourse. Additionally, the odds of physical assault were elevated among Mexican Americans and blacks (2.4–3.0) and women who had previously given birth (4.0), whereas odds were reduced among respondents who had at least a high school diploma (0.5–0.6).

Noting that partner violence is the main cause of serious injury among women aged 16–24, the investigators suggest that verbal abuse precedes or accompanies physical abuse and that limited education, early sexual debut, early motherhood and contraceptive nonuse at last sex predict physical violence. Despite three limitations of their study—the assessment of only male-inflicted violence and of only current relationships, and the nongeneralizability of the findings because of the low socioeconomic level of women recruited—the researchers conclude that "commonly collected demographic and reproductive health characteristics may assist the gynecologist to tailor his or her individual screening methods [for intimate partner violence]." Furthermore, they recommend that all women, including adolescents, be screened for both physical and verbal abuse.—*T. Lane*


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## Teenage Women Who Are Devoted to Their Religion Have Reduced Sexual Risk

Different aspects of religiousness have different effects on teenage women's sexual behavior and risk perceptions, according to an analysis of data from the National Longitudinal Study of Adolescent Health (Add Health).[1] For example, the stronger a young woman's spiritual connection, the fewer partners she is likely to have had in the recent past, the lower her awareness of possible consequences of intercourse and the greater her perception of how much she would suffer as a result of an unintended pregnancy or HIV infection. Level of involvement in a religious community has generally similar effects, but the influence of adherence to conservative religious beliefs and affiliation with a conservative religion is at best only marginally significant. None of these religious dimensions influences a teenage woman's likelihood of ever having had sex.

To assess the association between religiousness and sexual responsibility, the analysts examined data on 3,356 women who participated in the 1994–1995 wave of the Add Health survey. On average, members of the nationally representative sample were about 16 years old. Fifty-nine percent of the young women were white, 23% black, 6% Hispanic and 11% members of other racial or ethnic groups.

Responses to a variety of questions about religious beliefs and practices allowed the analysts to construct the following variables: personal devotion (reflecting how often a woman prays and the importance she attaches to religion), personal conservatism (measuring whether she considers her religion's scriptures divine and free of mistakes, and thinks of herself as a born-again Christian), participation in a religious community (as determined by frequency of attendance at religious services and other activities sponsored by a place of worship) and institutional conservatism (the relative fundamentalism of an individual's religion, as measured on a standard, validated

scale).The analysts used linear and logistic regression to identify associations between each of these variables and sexual activity, perceptions of risk and contraceptive use.

The analyses revealed that the greater a woman's personal devotion, the lower her number of sexual partners in the previous year (coefficient,–.10), the lower her assessment of the risks associated with having intercourse (–.08) and the more she thought she would suffer if she became pregnant unintentionally or she acquired HIV (.10). Additionally, a marginally significant finding suggested that as a young woman's level of personal devotion increased, the likelihood that her partner controlled contraceptive use decreased.

Similarly, as a woman's involvement in a religious community increased, her number of partners in the last year fell (coefficient,–.08) and her perception of potential suffering in the event of unintended pregnancy or HIV infection rose (.09). In contrast to personal devotion, however, frequency of attendance at services or other activities was positively associated with risk assessment (.07) and responsible contraceptive use (.12).

Neither personal nor institutional conservatism was significantly associated with any of the sexual and reproductive health–related measures studied. However, level of personal conservatism had a marginally positive relationship with assessment of potential suffering, partner's control of contraceptive use and the likelihood of unprotected intercourse. Only one variable was even marginally associated with institutional conservatism: This dimension of religiousness may have a negative influence on a young woman's recent number of partners.

Of all of the variables examined, only being sexually experienced showed no relationship to any measure of religiousness.

The analysts comment that their findings "parallel previous research on adolescents revealing links between personal devotion, self-preservation, and a decreased tendency for self-destructive forms of venturesomeness." Likewise, their results are consistent with earlier work showing "greater capacity for impulse control and restraint among adolescents who are involved in [a] religious community." Moreover, the findings "may reflect success on behalf of some religious communities in educating adolescents" about sexually responsible behavior. Overall, the analysts conclude, the results may help inform faith-based initiatives aimed at reducing teenage women's chances of acquiring HIV or becoming pregnant unintentionally.–*D. Hollander*

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## Cervical Cancer Risk Rises If Women with HPV Also Have Herpes Infection

Women who have human papillomavirus (HPV) infection of the cervix have a greater risk of invasive cervical cancer if they also have genital herpes, according to a pooled analysis of case-control studies.[1] Women with invasive cervical cancer were much more likely than women without cervical cancer to have HPV-infected cervical cells, but they were also nearly twice as likely to have antibodies to herpes simplex virus type 2 (HSV-2). Among all women who had HPV-infected cervical cells, women who also had antibodies to HSV-2 had more than twice the risk of squamous cell carcinoma and more than three times the risk of adenocarcinoma or adenosquamous cell carcinoma relative to women who did not have these antibodies. Neither past sexual behavior nor chlamydial infection modified these associations.

Data were obtained from seven studies conducted in Thailand, the Philippines, Morocco, Peru, Brazil, Colombia and Spain. The analysis included 1,263 women with invasive cervical cancer (1,158 with squamous cell carcinoma and 105 with adenocarcinoma or adenosquamous cell carcinoma) and 1,117 women without cervical cancer who were the same age. Exfoliated cervical cells were tested by a polymerase chain reaction assay to determine if they contained HPV DNA and, if so, the HPV type. Serum samples were tested for the presence of type-specific antibodies to HSV-2 and HSV-1, and for antibodies to *Chlamydia trachomatis*. Personal interviews covered social, demographic, reproductive and other characteristics. Unconditional logistic regression was used to generate summary odds ratios.

On average, women with invasive cervical cancer were 48–49 years old, and women without cancer were 47 years old. Almost all of the women with cervical cancer were HPV-positive (91–95%), compared with 15% of the women without cervical cancer. Women with cervical cancer were significantly more likely than women without cancer to test positive for HSV-2 (44% in both cancer subgroups vs. 26%).

Among women without cervical cancer, several markers of sexual behavior were significantly associated with the odds of testing positive for HSV-2. Compared with married women, both cohabiting women and noncohabiting unmarried women had elevated odds of infection (2.2 and 1.6, respectively). The odds were nearly three times as high among women who had had three or more lifetime sex partners as among those who had had one or none (2.9). The odds were more than twice as high for women who had antibodies to *C. trachomatis* as for women who did not (2.2), and were 60% higher among women who had used the pill for five or more years than among never-users (1.6). However, the odds of testing positive for HSV-2 were not elevated among women who were infected with HPV.

A multivariate analysis was performed among HPV-positive women, taking into account age, study center, HPV type, history of Pap smears, pill use, number of full-term pregnancies and presence of antibodies to *C. trachomatis*. HPV-infected women who were also positive for HSV-2 had 2.2 times the odds of squamous cell carcinoma found among those women who tested negative for HSV-2, and 3.4 times the odds of adenocarcinoma or adenosquamous cell carcinoma. Compared with HSV-2-positive women who had low-risk types of HPV, those who had high-risk HPV other than type 16 had 2.6–4.2 the odds of invasive cervical cancer, and those who were positive for type 16 had 4.0–6.7 times the odds.

In analyses taking into account a woman's number of lifetime sexual partners and her age at first intercourse, HPV-positive women who were also infected with HSV-2 still had nearly twice the odds of squamous cell carcinoma as did those who tested negative for HSV-2 (1.9). This risk was not significantly modified by their age, pill use, marital status, number of full-term pregnancies or presence of *C. trachomatis* antibodies. In contrast, HPV-positive women who tested positive for HSV-1 were not at a higher risk of squamous cell carcinoma relative than those who were negative for HSV-1.

"[G]enital HSV-2 infection may act in conjunction with HPV infection to modestly increase the risk of invasive cervical cancer," the investigators comment. They add that past sexual behavior and presence of chlamydial infection do not modify this association, supporting a direct link between genital herpes and cancer risk in HPV-positive women.

The investigators suggest several mechanisms that may explain genital herpes's role as a cofactor in HPV-induced cervical cancer. Herpes lesions may allow HPV easier access

to deeper cell layers of the cervix; alternatively, the inflammation caused by these lesions may interfere with an immune response to HPV or may damage the DNA in HPV-infected cells. The herpes virus may also stimulate HPV to replicate or to integrate its DNA into the DNA of cervical cells. The investigators conclude that "Future studies are needed to elucidate at which step in the pathogenesis of HPV-induced cervical carcinogenesis HSV-2 infection may be relevant."–*S. London*


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## UK Youth Prefer Peer-Led Sexuality Education Classes To Teacher-Led Programs

Whether British teenagers enjoy and feel that they have learned from sexuality education partly depends on how and by whom the material is taught.[1] Significantly greater proportions of adolescents who have received sexuality education from peer educators than of those who have been in programs led by teachers report that the sessions changed their views on sexual matters (31% vs. 27%), were relevant to their experiences (44% vs. 37%) and were enjoyable (51% vs. 33%); a smaller proportion of students who have had peer-led instruction than of others report not having heard anything new (27% vs. 46%). On the other hand, a greater proportion of students who have received teacher-led education than of those who have had peer-led instruction report that their sessions were well controlled (69% vs. 62%).

To investigate students' views on sexuality education, researchers used data from a 1998–1999 survey of year 10 students (14–15-year-olds) who attended schools in central southern England that were randomly selected to provide either teacher-led (13 schools) or peer-led sexuality education (14 schools). The questionnaire inquired about students' demographic characteristics; their sexual knowledge, attitudes and behaviors; and their experiences with and evaluation of their year nine sexuality education programs, which were taught either by teachers or by specially trained year 12 peer educators (16–17-year-olds). The analyses are based on responses of 7,700 students.

The researchers also utilized qualitative data drawn from 52 focus-group discussions with year nine students: 41 in the schools that had peer-led sexuality education and 11 in those with teacher-led programs. Each focus group consisted of 6–8 teenagers led by one researcher; single-sex discussions were held when possible. Students were guaranteed that their anonymity would be protected and that their comments would be kept confidential.

To analyze the survey data, the researchers compared the frequencies of responses by type of program and students' gender. Using logistic regression analysis, they measured the effects of these factors and the interaction between them. The researchers analyzed the focus-group data by coding them with thematic headings and comparing responses across groups.

During their sexuality education sessions, significantly greater proportions of adolescents in peer-led programs than in teacher-led programs had looked at contraceptives (94% vs. 71%), touched condoms (87% vs. 29%), taken handouts (76% vs. 66%), had opportunities to ask questions (93% vs. 89%) and worked in small groups (97% vs. 72%). In addition, greater proportions of students taught by peers reported that the sessions changed their views on sexual matters (31% vs. 27%), were relevant to their experiences (44% vs. 37%), would be relevant in the future (67% vs. 59%) and were enjoyable (51% vs. 33%); a smaller proportion reported not hearing anything new (27% vs. 46%). Furthermore, teenagers who had received peer-led sexuality education were more likely than others to have asked questions and joined in the discussions, and to think that the sessions were good for students of both sexes and that the person teaching the session knew a lot about the subject.

By contrast, students in teacher-led programs were more likely than those who had been in peer-led programs to report that their sessions had been well controlled (69% vs. 62%), and less likely to report that the person leading the class had gotten embarrassed (11% vs. 22%) and that some people in the class had not been involved (45% vs. 52%). All of the differences by type of program were statistically significant once gender was controlled for in the logistic regression analysis.

In analyses taking type of program into account, young men were significantly more likely than women to report that they had taken handouts, asked questions and joined in discussions, and that the sessions changed their views on sexual matters, were relevant to their own experiences, were enjoyable, were good for men and were well controlled (odds ratios, 1.1–2.4). They were less likely than young women to say that they had felt uncomfortable during the sessions and that sexuality education was good for women (0.8–0.9).

Some significant interactions were present between gender and type of sexuality education. Although students from peer-led programs were more likely than others to have asked questions and joined in discussions, the difference was significantly greater for young men than for young women. In addition, women who had received peer-led sexuality education were more likely than men from peer-led programs to report not having heard anything new. Furthermore, although the overall proportion of students who reported that people had misbehaved during the sessions did not differ by type of program, a greater proportion of males than females in teacher-led programs and a greater proportion of females than males in peer-led programs reported this.

During the focus groups, students expressed greater satisfaction with peer-led sexuality education than with teacher-led programs. Students seemed to respond more positively to hands-on and "active-learning" methods, predominantly used by peer educators, than to teachers' lectures. Furthermore, students believed that peer educators were more empathic, open and trustworthy, and less judgmental than teachers. And although students reported that teachers were better able to manage and control sessions, they felt that the increased background noise in peer-led sessions allowed them to participate without feeling like the center of attention.

The researchers caution that although the data suggest that peer-led sexuality education has certain advantages over teacher-led programs, some of the students' enthusiasm for peer education may reflect that the methods are seen as "subversive of the normal teacher-student relationship." Furthermore, sizable proportions of adolescents in both peer- and teacher-led programs reported that the sexuality education sessions were not enjoyable or not relevant to their experiences. The researchers conclude that sexuality education "needs to be sustained and reiterated at increasing levels of complexity as young people grow older."–*J. Rosenberg*


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