Long-Term Health Correlates of Timing of Sexual Debut: Results From a National US Study

| Theo G. M. Sandfort, PhD, Mark Orr, PhD, Jennifer S. Hirsch, PhD, and John Santelli, MD, MPH

Adolescent sexual activity has various adverse public health consequences[1–5] that disproportionately affect adolescents from racial/ehtnic minority groups.[1,6,7] In the United States, adolescent pregnancy rates have declined in recent years,[8] but adolescents still account for the highest age-specific proportion of unintended pregnancies,[2] with higher rates among African Americans and Latinas than among White women.[7]

Moreover, although rates of certain sexually transmitted infections (STIs) have fallen dramatically,[9] age-specific risks for many STIs continue to be highest among adolescents.[1] For example, almost half of the estimated 18.9 million STIs reported in 2000 in the United States affected adolescents and young adults.[10] Race/ethnicity is a factor as well; rates of gonorrhea and chlamydia among African American and Latino youths are 2 to 7 times higher than are rates among White youths.[1] The United States ranks highest among developed countries in terms of both sexual health risks (e.g., nonuse of contraception) and undesirable outcomes (e.g., adolescent pregnancy).[11] In addition, Bramlett and Mosher[12] showed that the high US divorce rate (in comparison with rates in other developed countries)[13] is associated with premarital sexual activity (corrected for the fact that the United States also has the highest marriage rate).

Driven by concerns regarding these serious health risks as well as by the conservative belief that expression of sexuality is acceptable only in marriage, promotion of sexual abstinence until marriage has become the cornerstone of US domestic and global policies.[4] According to federal guidelines, abstinence-only education should provide adolescents with knowledge about the presumed social, psychological, and health gains to be realized by abstaining from sexual activity. Abstinence-only education has been criticized on multiple grounds, including the promotion of ideas that are not scientifically grounded.[4] Beyond government policy, abstinence-only education

Objectives. We explored long-term health consequences of age at sexual initiation and of abstinence until marriage to evaluate empirical support for the claim that postponing sexual initiation has beneficial health effects.

Methods. We analyzed data from the 1996 National Sexual Health Survey, a cross-sectional study of the US adult population. We compared sexual health outcomes among individuals who had initiated sexual activity at an early or late age versus a normative age. We also compared individuals whose first sexual intercourse had occurred before versus after marriage.

Results. Early initiation of sexual intercourse was associated with various sexual risk factors, including increased numbers of sexual partners and recent sexual intercourse under the influence of alcohol, whereas late initiation was associated with fewer risk factors. However, both early and late initiation were associated with sexual problems such as problems with arousal and orgasm, primarily among men. Relationship solidity and sexual relationship satisfaction were not associated with early or late initiation.

Conclusions. Early sexual debut is associated with certain long-term negative sexual health outcomes, including increased sexual risk behaviors and problems in sexual functioning. Late initiation was also associated with sexual problems, especially among men. Further research is needed to understand how sexual initiation patterns affect later health outcomes. (*Am J Public Health.* 2008;98:155–161. doi:10.2105/AJPH.2006.097444)

is part of a broader social movement among conservative Christian groups.[14]

Proponents of abstinence-only education suggest that delaying sexual initiation has beneficial effects in terms of future marital relationship quality and sexual health, whereas initiation of sexual intercourse during adolescence causes later physical and psychological problems, including depression and marriage-related difficulties.[4,15] As part of the DHSS campaign (see http://www.4parents.gov), adolescents are informed about the supposed positive outcomes of postponing sexual activity until marriage, including increased likelihood of "better sex" once married and of a more trusting marriage and decreased likelihood of divorce. Although indeed in theory abstinence is the only certain way to avoid STIs and unintended pregnancies, delaying initiation of sexual activity may also create health risks by impeding development of the emotional, cognitive, and interpersonal skills that are crucial to satisfactory sexual functioning and general well-being.[16,17]

Very little is actually known about the long-term risks and benefits of abstinence

intentions, virginity pledges, or early or late initiation in the context of consensual sexual experiences; however, numerous studies have documented long-term adverse outcomes of sexual abuse, including sexual risk behaviors.[18–28] Some research seems to suggest that early initiation of sexual activity is associated with continuing risk of STIs, HIV, and unintended pregnancy.[26,29–31] These associations are mediated by number of sexual partners, STI history, alcohol and drug use related to sexual behavior, and partners' number of sexual partners.[5,32] However, the results of a longitudinal study in which biological STI testing[33] was used suggest that initial STI risk related to early onset of sexual intercourse is not persistent.

Very few studies have assessed long-term outcomes other than STIs. Examining data from the National Longitudinal Study of Youth, Finger et al.[34] found that virginity at age 18 years was positively associated with financial net worth and negatively associated with health problems and use of welfare benefits among women. Both men and women who had been virgins at age 18 years had a

higher average level of education and were less likely to have been divorced. Current level of happiness did not differ between those who had been virgins at age 18 years and those who had not. Hallfors et al.[35] found that, among women, substance use, sexual experimentation, and history of multiple sexual partners predicted depression 1 year later.

As demonstrated in a study conducted by Else-Quest et al.,[36] the specific contexts in which initial sexual experiences occur seem to be an important factor in later health outcomes. Using data from the National Health and Social Life Survey,[37,38] a cross-sectional investigation involving 3432 men and women aged 18 to 59 years, these researchers showed that long-term outcomes are determined more by whether initial sexual intercourse occurred in a negative context (e.g., forced intercourse, peer pressure) than by the timing of the experience. Individuals whose first sexual intercourse had occurred in such negative contexts were more likely to have sexual problems and sexual guilt, to be in poor health, to have an STI, and to have reduced life satisfaction.

Else-Quest et al. found that, when participants with coercive experiences were excluded, early sexual debut was associated with slightly poorer health, more STIs, slightly poorer life satisfaction, and lower levels of sexual guilt. Sexual problems, such as inability to experience orgasm and experience of pain during intercourse, were not associated with early sexual debut. Causal inferences cannot be made from this study because of the correlational nature of the data. Furthermore, several other factors (e.g., race/ethnicity, sexual socialization, and personality factors) that were not controlled may have biased the relationships observed.

Our goal was to explore the adult correlates of early or late sexual initiation and, in so doing, contribute to establishing sexual health policies aimed at adolescents. We chose to conduct a secondary analysis of data from the National Sexual Health Survey because this data set contains information on respondents' initial sexual experiences, their current sexual behavior and STI risk, and indicators of healthy sexual functioning. We hypothesized that early or late initiation of sexual activity relative to their peers sets young people apart and thus may result in

long-term negative health outcomes. Because of the political emphasis on abstinence until marriage, we also compared individuals whose first sexual intercourse occurred after marriage with those whose first experience occurred before marriage.

METHODS

Sample

The data for this study were collected between June 1995 and April 1996 as part of the National Sexual Health Survey, conducted by the Center for AIDS Prevention Studies, University of California, San Francisco.[39] The study population (n=8466) included English- or Spanish-speaking adults 18 years or older who resided (in housing units other than those located on military bases) in the 48 contiguous states. Participants were contacted and interviewed via random-digit dialing. The overall cooperation rate was 65% (see Ruiz et al.[39] for a full description of the sampling and data collection procedures).

Forty-eight percent of the participants were men (Table 1). The majority of the sample was White (74%). Mean ages were 43.3 years for men and 45.5 years for women; almost 50% of the participants were younger than 40 years. Sixty-five percent of men and 59% of women were involved in intimate sexual relationships (57.9% of men and 51.0% of women were married).

Timing of participants' first sexual intercourse was categorized as early, normative, or late in comparison with peers of the same gender and with the same racial/ethnic and educational background. To categorize participants, we initially subtracted their age at first sexual intercourse from the mean age for their respective subgroup. Those with scores in the first and fourth quartiles of the resulting difference score distributions for their subgroups were classified as "late" and "early" starters, respectively. Consequently, 25% of both men and women were categorized as having had an early or late start, and 50% were categorized as having had a normative start. Mean ages for early, normative, and late starters according to gender, racial/ethnic background, and educational level are shown in Table 2.

In addition, we categorized participants as having had their first sexual intercourse

before or after marriage by comparing age at first sexual intercourse with age at marriage (if these ages were identical, participants were categorized as having had their first sexual intercourse after marriage). We were able to classify 40.1% of men and 34.4% of women in this way. As a result of skip patterns in the survey, we were not able to determine timing of first sexual intercourse in relation to marital status among individuals who had been married more than once or were no longer married. These men and women were systematically different from those we were able to classify, specifically in terms of outcome variables (as described subsequently). Among the individuals we were able to classify, 13.6% of men and 36.1% of women had engaged in their first sexual intercourse after marriage (Table 1).

Measures

We examined several factors indicative of sexual risk: high number of sexual partners and history of sexual intercourse with a risky sexual partner (e.g., injection-drug-using or HIV-positive partner) in the preceding 1 and 5 years, frequent use (about half of the time or more frequent) of drugs such as alcohol or marijuana before intercourse with at least 1 partner during the preceding 12 months, denial of HIV risk (i.e., one's categorical belief that one is not at risk for HIV or other STIs, assessed on a 2-item scale [Cronbach $\alpha=0.79$]), history of an STI or of HIV-positive status as an indication of risky behavior, and negative attitudes toward condoms (assessed on a 17-item scale [Cronbach $\alpha=0.74$]).

Also, we explored aspects of participants' intimate relationships and sexual functioning, including their satisfaction with their current sexual relationship (very satisfied vs somewhat satisfied and somewhat or very dissatisfied), the solidity of their relationship (assessed on a 3-item scale [e.g., "We can count on each other for help in solving problems"; Cronbach $\alpha=0.69$]), and any problems they experienced with becoming sexually aroused, achieving or maintaining erections, or reaching orgasm (in the preceding 12 months). Finally, we assessed participants' general health via 10 questions focusing on the presence of physical health and emotional problems in the preceding 4 weeks and whether

TABLE 1—Sample Characteristics, Mean Age at First Sexual Intercourse, and Percentage of Participants Whose Initial Sexual Intercourse Occurred After Marriage: National Sexual Health Survey, 1995–1996

	Sample, %	Mean Age at First Sexual Intercourse, y	First Sexual Intercourse After Marriage, %
Gender			
Men	48	17.2	14
Women	52	18.5	36
Race/ethnicity			
Non-Hispanic White	74	18.0	26
Non-Hispanic Black	11	16.7	8
Hispanic	9	18.0	33
Other	6	18.5	23
Educational level			
High school or less	55	17.4	28
Any college	36	18.2	22
At least some postgraduate education	9	19.5	17

Note. Data were weighted. **TQ1<<AU: Correct? College or less would include the category high school or less.>>**

TABLE 2—Mean Age at First Sexual Intercourse Among Early, Normative, and Late Starters, by Sociodemographic Characteristics: National Sexual Health Survey, 1995–1996

	Early First Intercourse, MeanAge (SE)	Normative First Intercourse, Mean Age (SE)	Late First Intercourse, Mean Age (SE)	Overall, Mean Age (SE)
Overall	14.2 (0.06)	17.5 (0.03)	22.1 (0.09)	17.9 (0.05)
Gender				
Men	13.1 (0.11)	16.8 (0.04)	21.5 (0.13)	17.2 (0.08)
Women	15.0 (0.05)	18.2 (0.03)	22.8 (0.13)	18.5 (0.06)
Race/ethnicity				
Non-Hispanic White	14.3 (0.06)	17.6 (0.03)	22.4 (0.09)	18.0 (0.05)
Non-Hispanic Black	13.2 (0.25)	16.7 (0.08)	20.2 (0.21)	16.7 (0.14)
Hispanic	14.0 (0.24)	17.2 (0.11)	22.0 (0.38)	18.0 (0.21)
Educational level				
High school or less	13.9 (0.09)	17.0 (0.04)	21.6 (0.13)	17.4 (0.07)
Any college	14.3 (0.08)	17.8 (0.04)	22.4 (0.12)	18.2 (0.07)
At least some postgraduate education	15.5 (0.12)	18.7 (0.09)	24.1 (0.26)	19.5 (0.16)

Note. Participants with scores in the first and fourth quartiles of their subgroups were classified as late and early starters, respectively.

these problems, if present, affected participants' daily functioning (sum score ranging from 0 [poor health] to 10 [good health] based on number of "no" responses).

Data Analysis

We conducted linear and logistic regression analyses to examine relationships between timing of first sexual intercourse and sexual health outcomes. We controlled for the following potentially confounding factors: race/ethnicity, educational level, place of residence while growing up, religiosity, migration status, age (as an indicator of potential cohort effects), history of nonconsensual sexual experiences, first orgasm as a solo or social experience, and any other sexual involvement before first sexual intercourse. Analyses were conducted separately for men and women, and data were weighted to ensure that the sample would be representative of the adult US population.[39] Because our study was exploratory, we established $P<.10$ as the significance level and did not correct for multiple comparisons.

RESULTS

Sexual Risk Factors

Timing of first sexual intercourse was associated with several sexual risk factors in the case of both men and women (Table 3). Men and women who had had an early start reported more sexual partners in the past year and the preceding 5 years and were more likely to have had sexual intercourse with at least 1 risky partner in the preceding 1 and 5 years. Early starters also were more likely to have had sexual intercourse under the influence of alcohol or drugs in the preceding year. We found the opposite effect among late starters, although not all differences were significant. Late starters were less likely to have had at least 1 risky sexual partner in the preceding 1 year and the preceding 5 years.

The differences observed between individuals whose first sexual intercourse had occurred before marriage and those whose first sexual intercourse had occurred after marriage were similar to the differences observed between early and normative starters. Men and women whose first sexual intercourse had occurred after marriage reported fewer sexual partners and were less likely to have had sexual intercourse with a risky partner in the preceding 5 years. Women whose first sexual intercourse had occurred after marriage were less likely to have had sexual intercourse under the influence of alcohol or drugs.

Attitudes toward HIV risk transmission were also associated with timing of first sexual intercourse. Both men and women with a late start were less likely to deny transmission risks than were men and women whose first sexual intercourse had occurred at a normative age. Men whose first sexual intercourse had occurred relatively early were more likely than were men who had started at a normative age to deny risk of transmission. Attitudes toward condoms were not related

TABLE 3—Independent Effects of Sexual Intercourse Initiation Patterns on Long-Term Health Outcomes: National Sexual Health Survey, 1995–1996

	Early First Sexual Intercourse[a]		Late First Sexual Intercourse[a]		First Intercourse After Sexual Marriage[b]	
	Men	Women	Men	Women	Men	Women
No. of partners in preceding year, r	0.20***	0.09***	−0.03	−0.01	0.01	−0.01
No. of partners in preceding 5 years, r	0.70***	0.28***	−0.16*	0.01	−0.15***	−0.07***
Any risky partners in preceding year, OR	1.27*	1.41***	0.72**	0.71**	0.65	0.56**
Any risky partners in preceding 5 years, OR	1.33**	1.43***	0.74**	0.62***	0.37**	0.45***
Sex under the influence of alcohol or drugs, OR	1.77***	1.69***	0.94	0.62*	1.22	0.20***
Risk denial, r	0.20***	0.10	−0.17**	−0.17**	−0.24*	−0.18*
Negative condom attitudes, r	0.03	0.06**	0.04	−0.01	0.08	0.05
STI history, OR	2.21***	1.64***	0.73	0.49***	0.33	0.44**
Relationship solidity, r	0.00	−0.01	0.07*	−0.05	0.12**	−0.06
Sexual relationship satisfaction, OR	1.07	0.96	0.87	1.23	1.24	0.82
Sexual arousal problems, OR	1.58**	0.89	1.59***	0.75**	1.27	1.38*
Erectile problems, OR	1.83***	. . .	1.46**	. . .	1.87**	. . .
Orgasm problems, OR	2.34***	1.07	1.74**	0.82	1.60	1.29
General health status, r	−0.23***	−0.11	−0.12	0.13	−0.13	−0.05

Note. OR = odds ratio; STI = sexually transmitted infection. Odds ratios were adjusted for sociodemographic and contextual factors, including nonconsensual sexual experiences, and were from logistic regression analyses. See "Methods" section for more information about effects.
[a]In comparison with same-gender peers of the same racial/ethnic background who began at a normative age.
[b]In comparison with participants whose first sexual intercourse occurred before marriage.
*$P < .10$; **$P < .05$; ***$P < .01$.

to timing of first sexual intercourse, except in the case of women whose first sexual intercourse had occurred at an early age; these women had more negative attitudes toward condoms than did women who had started at a normative age.

In line with the differences just described, early starters were more likely than were those who had started at a normative age to have a history of an STI, whereas late-starting women were less likely than were those who had started at a normative age to have such a history. Women, but not men, whose first sexual intercourse had occurred after marriage were less likely to have a history of an STI.

Intimate Relationships, Sexual Functioning, and General Health

Relationship solidity was not associated with timing of first sexual intercourse, with the exception of men whose first sexual intercourse had occurred after marriage (it should be noted that these men represented a very small proportion of the overall sample); these men rated their marital relationship as more solid than men whose first sexual intercourse had occurred before marriage. The percentages of

men and women who reported being very satisfied with their current sexual relationship did not differ according to timing of first sexual intercourse.

The findings in regard to sexual functioning were intriguing. In comparison with men whose first sexual intercourse had occurred at a normative age, men whose first sexual intercourse had occurred at relatively early and late ages more frequently reported having had problems associated with becoming sexually aroused, achieving and maintaining an erection, and reaching orgasm.

We did not find significant differences among women in frequency of problems associated with arousal and orgasm. The only exception was women whose first sexual intercourse occurred relatively late; in comparison with normative starters, these women more frequently reported problems related to sexual arousal. Whether initial sexual intercourse occurred before or after marriage was not associated with frequency of sexual problems, with a single exception: men whose first sexual intercourse occurred after marriage were more likely to report

problems with achieving and maintaining an erection.

Ratings of general health status were lower among men whose first sexual intercourse had occurred at an early age than among men whose first sexual intercourse had occurred at a normative age. In all other cases, timing of first sexual intercourse was not associated with general health status.

Nonconsensual Experiences

History of nonconsensual sexual experiences was independently associated with poorer sexual health outcomes (data not shown). Among women, nonconsensual sexual experiences, regardless of whether they preceded or followed initial consensual intercourse, were associated with almost all of the outcomes assessed in this study.

Among men, nonconsensual sexual experiences primarily were associated with sexual problems and risk factors such as high number of sexual partners and STI history if these experiences had occurred after their first sexual intercourse. When nonconsensual experiences had occurred before men's first consensual sexual intercourse, there were fewer

long-term negative health outcomes; nonconsensual experiences before first consensual sexual intercourse were independently associated only with history of risky partners in the preceding 5 years, problems with orgasm, and (in a negative direction) general health status.

Additional Analyses

In addition to the analyses described in the preceding sections, we conducted analyses in which we excluded men and women with a history of nonconsensual sexual experiences as well as those who identified themselves as gay, lesbian, or bisexual (this group was too small to analyze independently). These additional analyses produced patterns of results virtually identical to those already reported.

DISCUSSION

Our findings show that timing of first sexual intercourse is related to long-term sexual health outcomes. Initiating sexual activity at an early age was associated with various risk factors for STI infection, whereas a late start was associated with fewer risk factors. Among men, we found that early initiation and late initiation were both associated with various problems in sexual functioning, including problems associated with becoming sexually aroused, achieving and maintaining an erection, and reaching orgasm. With the exception of men whose first sexual intercourse had occurred after marriage, relationship solidity and sexual relationship satisfaction did not seem to be affected by early or late initiation.

We found, as have others,[4] that sexual debut after marriage is not the norm. Moreover, there seemed to be only limited effects of sexual initiation after marriage, but ours may not have been the ideal data set to address this issue because our analysis was restricted to people who had been married only once and were still married (40.1% of men and 34.4% of women). Individuals we could not classify had poorer long-term health outcomes overall (data not shown); if most of these men and women were to have engaged in sexual intercourse before marriage (which, given the overall pattern of our results, is likely), the differences between individuals whose first sexual intercourse had occurred before marriage and those whose first sexual

intercourse had occurred after marriage would have been more pronounced than what our analysis showed.

Our results do not allow for causal interpretations. A case in point is the association between timing of first sexual intercourse and sexual problems among men. Although these problems could result from early or late initiation, another explanation is that there might be a critical favorable stage at which men should become sexually active. Also, men with sexual problems may avoid sexual interactions and consequently start later. By contrast, sexual problems may result from frequent use of alcohol and drugs during sexual intercourse, which is associated with early initiation. There is a need for enhanced information on factors likely to be associated with timing of sexual initiation as well as later sexual health, such as physiological development, personality traits, and sexual- and gender-role socialization. Genetic and hormonal factors may also contribute to such associations.[40,41]

Although we assumed that long-term health outcomes of early or late sexual initiation are primarily social in origin, differences in outcomes may result from developmental factors as well, such as cognitive maturity and age at which puberty begins. As an alternative approach, we also compared groupings in which the ages of 15 and 18 years and 15 and 21 years were used as exact age cutoff points; these approaches resulted in virtually identical patterns of findings.

In addition to standard limitations such as self-reported data and recall bias, our study was limited in that we used an existing data set not designed to specifically answer our research questions. First, although the literature suggests that potential long-term outcomes are dependent on such factors as emotional context, sense of readiness, and experienced level of control,[42,43] no information was available about the quality of participants' first sexual intercourse experience other than the nature (forced or voluntary) of the experience. Future research should explore diverse sexual initiation patterns instead of simply timing of first sexual intercourse.

Second, we had to restrict our assessments of associations to the outcome variables available in the data set. Other relevant outcome variables include motivation for sexual health

behaviors,[44] sexual self-efficacy, and assertiveness. Third, the relevance and quality of some of the outcome variables were restricted; for example, STI history was not indicative of recent sexual risk behaviors, and increased STI rates could also have resulted from differences in perceptions of risk and related testing practices. In the case of some variables, we were forced to rely on single yes–no questions, reducing variance in outcomes and limiting the possibility of detecting associations.

Fourth, our comparisons may have been biased because of the possibility that missing data were from individuals in specific subgroups; as a result of casewise deletion, missing data may also have affected statistical power. Finally, the sample covered a wide age range; taking current age into account was probably not sufficient to control for the fact that members of different groups initiated sexual activity in completely different cultural circumstances.

The relationships we observed in this study between timing of sexual debut and long-term health outcomes should be understood in a broader context. As suggested by comparisons with other developed countries,[11] young people in the United States are not adequately prepared to become sexually active; sexual education that is more supportive and acknowledges the diverse needs of young people might prevent the negative outcomes observed here. Furthermore, although our findings support an association between early initiation and long-term STI risk, they also suggest a more complicated picture of sexual functioning.

Contrary to the suggestions of proponents of abstinence-only education, we found that both early and late initiators are more likely to experience problems with sexual functioning than those who initiate sexual activity at a normative age. Such a finding in regard to late initiation lends credence to research showing that abstinence-only education may actually increase health risks[14,45–48] and that strategies designed to promote relevant sexual health information, motivation, and skills are likely to be more effective than abstinence-only messages in helping young people avoid short- as well as long-term health consequences.[15,49,50] In-depth knowledge of sexual

initiation patterns and health outcomes and how they are affected by individual, social, and structural factors, including exposure to sexual education programs, is urgently needed to inform adolescent health policies and programs. ∎

About the Authors

Theo G.M. Sandfort is with the HIV Center for Clinical and Behavioral Studies, New York State Psychiatric Institute and Columbia University, New York, NY. At the time of the study, Mark Orr was with the HIV Center for Clinical and Behavioral Studies, New York. Jennifer S. Hirsch is with the Department of Sociomedical Sciences, Columbia University, New York. John Santelli is with the Heilbrunn Department of Population and Family Health, Columbia University, New York.

Requests for reprints should be sent to Theo G.M. Sandfort, PhD, HIV Center for Clinical and Behavioral Studies, 1051 Riverside Dr, Unit 15, New York, NY 10032 (e-mail: tgs2001@columbia.edu).

This article was accepted April 6, 2007.

Contributors

T.G.M. Sandfort led the writing of the article. M. Orr performed the statistical analyses. All of the authors originated ideas, contributed to the design of the study, interpreted findings, and reviewed and edited drafts of the article.

Human Participant Protection

Approval for the data analysis and report writing phases of this study was obtained from the institutional review board of the New York State Psychiatric Institute.

References

1. *Sexually Transmitted Disease Surveillance, 2003.* Atlanta, Ga: Centers for Disease Control and Prevention; 2004.

2. Institute of Medicine. *The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families.* Washington, DC: National Academy Press; 1995.

3. Weinstock H, Berman S, Cates W Jr. Sexually transmitted diseases among American youth: incidence and prevalence estimates, 2000. *Perspect Sex Reprod Health.* 2004;36:6–10.

4. Santelli J, Ott MA, Lyon M, Rogers J, Summers D, Schleifer R. Abstinence and abstinence-only education: a review of US policies and programs. *J Adolesc Health.* 2006;38:72–81.

5. Kahn JA, Rosenthal SL, Succop PA, Ho GYF, Burk RD. Mediators of the association between age of first sexual intercourse and subsequent human papillomavirus infection. *Pediatrics.* 2002;109:e5.

6. *US Teenage Pregnancy Statistics: Overall Trends, Trends by Race and Ethnicity and State-by-State Information.* New York, NY: Alan Guttmacher Institute; 2004.

7. Finer LB, Henshaw SK. Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspect Sex Reprod Health.* 2006;38:90–96.

8. Ventura SJ, Abma JC, Mosher WD, Henshaw S. Estimated pregnancy rates for the United States, 1990–2000: an update. *Natl Vital Stat Rep.* 2004;52(23).

9. *Sexually Transmitted Disease Surveillance, 2004.* Atlanta, Ga: Centers for Disease Control and Prevention; 2005.

10. Weinstock H, Berman S, Cates W Jr. Sexually transmitted diseases among American youth: incidence and prevalence estimates, 2000. *Perspect Sex Reprod Health.* 2004;36:6–10.

11. Darroch JE, Frost JJ, Singh S. *Teenage Sexual and Reproductive Behavior in Developed Countries: Can More Progress Be Made?* New York, NY: Alan Guttmacher Institute; 2001.

12. Bramlett MD, Mosher WD. Cohabitation, marriage, divorce, and remarriage in the United States. *Vital Health Stat 23.* 2002;22:1–93.

13. Schoen R, Standish N. The retrenchment of marriage: results from the marital status life tables for the United States, 1995. *Popul Dev Rev.* 2001;27:553–563.

14. Bearman PS, Bruckner H. Promising the future: virginity pledges and first intercourse. *Am J Sociol.* 2001;106:859–912.

15. Santelli J, Ott MA, Lyon M, Rogers J, Summers D. Abstinence-only education policies and programs: a position paper of the Society for Adolescent Medicine. *J Adolesc Health.* 2006;38:83–87.

16. Gold SR, Letourneau EJ, O'Donohue WO. Sexual interaction skill. In: O'Donohue W, Krasner L, eds. *Handbook of Psychological Skills Training: Clinical Techniques and Applications.* Boston, Mass: Allyn & Bacon; 1995:229–246.

17. Hogben M, Byrne D. Using social learning theory to explain individual differences in human sexuality. *J Sex Res.* 1998;35:58–71.

18. Beitchman JH, Zucker KJ, Hood JE, et al. A review of the long-term effects of child sexual abuse. *Child Abuse Negl.* 1992;16:101–118.

19. Cahill C, Llewelyn S, Pearson C. Long-term effects of sexual abuse which occurred in childhood: a review. *Br J Clin Psychol.* 1991;30:117–130.

20. Rind B, Tromovitch P, Bauserman R. A meta-analytic examination of assumed properties of child sexual abuse using college samples. *Psychol Bull.* 1998;124:22–53.

21. Rind B, Tromovitch P. A meta-analytic review of findings from national samples on psychological correlates of child sexual abuse. *J Sex Res.* 1997;34:237–255.

22. Heiman J, Heard-Davidson AR. Child sexual abuse and adult sexual relationships: review and perspective. In: Koenig LJ, Doll LS, O'Leary A, Pequegnat W, eds. *From Child Sexual Abuse to Adult Sexual Risk: Trauma, Revictimization, and Intervention.* Washington, DC: American Psychological Association; 2004:13–47.

23. Loeb TB, Williams JK, Carmona JV, et al. Child sexual abuse: associations with the sexual functioning of adolescents and adults. *Annu Rev Sex Res.* 2002;13:307–345.

24. Widom CS, Kuhns JB. Childhood victimization and subsequent risk for promiscuity, prostitution, and teenage pregnancy: a prospective study. *Am J Public Health.* 1996;86:1607–1612.

25. Kalichman SC, Gore-Felton C, Benotsch E, Cage M, Rompa D. Trauma symptoms, sexual behaviors, and substance abuse: correlates of childhood sexual abuse and HIV risks among men who have sex with men. *J Child Sex Abuse.* 2004;13:1–15.

26. Upchurch DM, Kusunoki Y. Associations between forced sex, sexual and protective practices, and sexually transmitted diseases among a national sample of adolescent girls. *Womens Health Issues.* 2004;14:75–84.

27. Kendall-Tackett KA, Williams LM, Finkelhor D. Impact of sexual abuse on children: a review and synthesis of recent empirical studies. *Psychol Bull.* 1993;113:164–180.

28. Finkelhor D, Hotaling G, Lewis IA, Smith C. Sexual abuse in a national survey of adult men and women: prevalence, characteristics, and risk factors. *Child Abuse Negl.* 1990;14:19–28.

29. Burkett BJ, Peterson CM, Birch LM, et al. The relationship between contraceptives, sexual practices, and cervical human papillomavirus infection among a college population. *J Clin Epidemiol.* 1992;45:1295–1302.

30. Andersson-Ellstrom A, Forssman L, Milsom I. Age of sexual debut related to life-style and reproductive health factors in a group of Swedish teenage girls. *Acta Obstet Gynecol Scand.* 1996;75:484–489.

31. Kataja V, Syrjanen S, Yliskoski M, et al. Risk factors associated with cervical human papillomavirus infections: a case-control study. *Am J Epidemiol.* 1993;138:735–745.

32. Greenberg J, Magder L, Aral S. Age at first coitus: a marker for risky sexual behavior in women. *Sex Transm Dis.* 1992;19:331–334.

33. Kaestle CE, Halpern CT, Miller WC, Ford CA. Young age at first sexual intercourse and sexually transmitted infections in adolescents and young adults. *Am J Epidemiol.* 2005;161:774–780.

34. Finger R, Thelen T, Vessey JT, Mohn JK, Mann JR. Association of virginity at age 18 with educational, economic, social, and health outcomes in middle adulthood. *Adolesc Fam Health.* 2004;3:164–170.

35. Hallfors DD, Waller MW, Bauer D, Ford CA, Halpern CT. Which comes first in adolescence—sex and drugs or depression? *Am J Prev Med.* 2005;29:163–170.

36. Else-Quest NM, Hyde JS, DeLamater JD. Context counts: long-term sequelae of premarital intercourse or abstinence. *J Sex Res.* 2005;42:102–112.

37. Laumann EO, Gagnon JH, Michael RT, Michaels S. *The Social Organization of Sexuality: Sexual Practices in the United States.* Chicago, Ill: University of Chicago Press; 1994.

38. Laumann EO, Michael RT, eds. *Sex, Love, and Health in America.* Chicago, Ill: University of Chicago Press; 2001.

39. Ruiz RO, McKean EA, Card JJ. *1996 National Sexual Health Survey (NSHS): A User's Guide to the Machine-Readable Files and Documentation (Data Set 02-04).* Los Altos, Calif: Sociometrics Corp; 2003.

40. Quinsey VL. The etiology of anomalous sexual preferences in men. *Ann N Y Acad Sci.* 2003;989: 105–117.

41. Udry JR. Biological limits of gender construction. *Am Sociol Rev.* 2000;65:443–457.

42. Graber JA, Brooks-Gunn J, Galen BR. Betwixt and between: sexuality in the context of adolescent transitions. In: Jessor R, ed. *New Perspectives on Adolescent Risk Behavior.* New York, NY: Cambridge University Press; 1998:270–316.

43. Brooks-Gunn J, Paikoff RL. Sexuality and developmental transitions during adolescence. In: Schulenberg J, Maggs JL, Hurrelmann K, eds. *Health Risks and Developmental Transitions During Adolescence.* Cambridge, England: Cambridge University Press; 1997:190–219.

44. Abel E, Tak SH, Gortner E-M. Reliability and validity of motivation for sexual health. *West J Nurs Res.* 2003;25:548–560.

45. Bruckner H, Bearman P. After the promise: the STD consequences of adolescent virginity pledges. *J Adolesc Health.* 2005;36:271–278.

46. Haignere CS, Gold R, McDanel HJ. Adolescent abstinence and condom use: are we sure we are really teaching what is safe? *Health Educ Behav.* 1999;26: 43–54.

47. Manlove J, Romano-Papillo A, Ikramullah E. *Not Yet: Programs to Delay First Sex Among Teens.* Washington, DC: National Campaign to Prevent Teen Pregnancy; 2004.

48. Kirby D. *Do Abstinence-Only Programs Delay the Initiation of Sex Among Young People and Reduce Unintended Pregnancy?* Washington, DC: National Campaign to Prevent Teen Pregnancy; 2002.

49. Kirby D. Understanding what works and what doesn't in reducing adolescent sexual risk-taking. *Fam Plann Perspect.* 2001;33:276–281.

50. Kirby D, Larisj BA, Rolleri L. *The Impact of Sex and HIV Education Programs in Schools and Communities on Sexual Behaviors Among Young Adults.* Research Triangle Park, NC: Family Health International; 2006.