

## Levels of Sexual Experience Among U.S. Teenagers Have Declined for the First Time in Three Decades

The proportion of never-married U.S. teenagers who have had intercourse at least once has fallen for the first time since data collection began in the early 1970s, declining from 56% to 52% between 1988 and 1995.<sup>1</sup> According to analyses based on data from the National Center for Health Statistics, most of the decrease is attributable to a statistically significant drop among males (from 60% to 55%). Although the proportion of teenage females who were sexually experienced was virtually unchanged (51% vs. 49%), the proportion who had had sex before age 15 rose from 11% to 19%. Among females, contraceptive use at first intercourse rose from 67% in 1988 to 77% in 1995, but use at last intercourse declined from 80% to 71%; among males, use at first sex and at most recent sex remained stable.

The analyses are based on parallel, nationally representative samples of unmarried 15–19-year-old males and females. For females, the investigators used data from the National Survey of Family Growth (samples of 1,186 for 1988 and 1,344 for 1995). Information for males came from the National Survey of Adolescent Males (samples of 1,880 for 1988 and 1,710 for 1995). Both surveys collected data on levels of sexual experience, recent sexual activity, number of partners, age differences between partners, and contraceptive use at first and most recent intercourse, as well as on socioeconomic and demographic characteristics.\*

### *Sexual Activity*

In 1995, 52% of unmarried 15–19-year-olds reported having had sexual intercourse at least once, representing a significant decline<sup>†</sup> of four percentage points since 1988. This proportion dropped from 60% to 55%

among males, but remained stable among females (51% and 49%, respectively). The decline among males overall reflects seven-point decreases for whites (from 57% to 50%) and 15–17-year-olds (from 50% to 43%). The investigators note that the stabilization among females is a departure from the upward trend begun in the 1970s.

Females were significantly more likely in 1995 than in 1988 to report having had sex by age 15 (19% vs. 11%); the overall pattern was reflected among blacks, whites and Hispanics. In both years, 21% of males reported sexual experience before age 15. That proportion increased significantly among Hispanics (from 19% in 1988 to 28% in 1995), but changed little among blacks or whites.

The proportion of males who were sexually active (i.e., had had sex in the three months before their interview) decreased significantly between the two surveys (from 43% to 38%), while the proportion of females who reported recent sexual activity was similar in 1988 and 1995 (41% and 38%, respectively).

### *Contraceptive Use*

The proportion of sexually experienced teenage females who used a contraceptive method the first time they had intercourse increased significantly between 1988 and 1995 (from 67% to 77%). Much of the decrease in unprotected sex resulted from a significant increase in condom use by young women's partners (from 50% to 70%). These patterns were evident among blacks and whites, as well as in the sample as a whole.

The level of protected first intercourse among sexually experienced males rose from 71% to 76%, a nonsignificant change. Condom use rose significantly (from 55% to 69%). The proportion of males using condoms at first sex increased significantly among whites and blacks, as well as in the sample as a whole.

Between 1988 and 1995, the proportion of sexually active teenage females who reported having used a contraceptive meth-

od the last time they had intercourse declined significantly (from 80% to 71%). In 1988, 43% had relied on the pill, a proportion that dropped to 25% in 1995. Use of two new hormonal methods—the implant and the injectable—offset part of that decline, with 7% of sexually active teenage females relying on those methods in 1995. Blacks were three times as likely as whites to use the new methods in 1995 (16% vs. 5%), while whites were twice as likely as blacks to rely on the pill (30% vs. 15%). In 1995, 38% of females reported that their partner had used a condom the last time they had sex, compared with 31% in 1988. Concurrent use of a hormonal method and the condom increased significantly (from 3% to 8%) between the two years.

The proportion of sexually active males who reported contraceptive use at last intercourse in the two surveys was similar (84% and 82%). Males' reports of reliance on their partner's pill use at last sex declined significantly (from 37% to 28%), while the proportion reporting condom use rose from 53% to 64%. Concurrent use of condoms with a partner's hormonal method, however, changed little from its 1988 level (15%).

In 1988, sexually active black teenage females were less likely than their white counterparts to report contraceptive use at last intercourse (68% vs. 80%); by 1995, however, a significant decrease among whites and a nonsignificant increase among blacks caused the levels of protected sex in the two groups to converge at 73%. In contrast, the proportions of black males and white males reporting protected sex remained stable, although the proportion of black males reporting use of condoms along with their partner's hormonal method decreased significantly (from 28% to 19%).

### *Number of Partners*

In 1995, 37% of sexually experienced teenage females reported only one lifetime partner, while 14% reported six or more. Among males, those proportions were 27% and 24%, respectively. The overall

\*In addition to the overall information given in this digest, the report describes participation in these behaviors among teenagers with varying demographic characteristics, family backgrounds, religious participation and school attainment levels.

†In this study, differences were considered statistically significant at  $p < .10$ .

distributions by number of partners in the two years were similar for males; among females, the proportion who had had two partners was significantly larger in 1995 than in 1988 (22% vs. 16%), while the proportion with only one partner was slightly (but not significantly) lower (37% vs. 41%). Females aged 18–19 in 1995 were significantly less likely than their 1988 counterparts to have had only one partner (30% vs. 37%), but were significantly more likely to have had two (23% vs. 16%).

The proportion of white females with two partners was significantly greater in 1995 than in 1988 (22% vs. 14%), and the proportion of black females with only one partner was significantly lower (22% vs. 38%). Among white males, the proportion with six or more partners decreased significantly between the two years (from 23% to 18%). No significant changes occurred among black males or among Hispanic males or females.

In the three months preceding the 1995 surveys, 22% of sexually experienced females and 31% of their male counterparts had had no sexual partners; 61% and 56%, respectively, had had only one partner. Just 17% of females and 13% of males had had two or more partners during that period. The overall proportion of males with two or more partners was significantly lower in 1995 than in 1988 (13% vs. 17%); the same pattern was evident among white males (7% vs. 14%), but not among black or Hispanic males. The data collected for females in 1988 were not comparable to those for 1995; therefore, no analysis of trends was possible.

#### *Age Differences Between Partners*

Three of four sexually active teenage females interviewed in 1995 reported that their most recent partner was either their age (20%) or 1–3 years older than they were (56%), while 24% said he was at least four years older. Fewer than 1% reported that their most recent partner was younger than they were. No data on age differences between females and their partners were available for 1988.

More than nine in 10 sexually active males reported that their most recent female partner was within three years of their age—46% said she was 1–3 years younger, 25% the same age and 22% 1–3 years older. Only 2% said their most recent partner was at least four years younger, and just 5% said she was at least four years older. These proportions were similar to those for 1988.

The majority of sexually experienced teenage females (61%) interviewed in 1995

had first had intercourse with a male partner who was 1–3 years older than they were, while 20% had done so with a partner who was at least four years older. Fifteen percent had been the same age as their first partner, and 4% had first had sex with a partner who was 1–3 years younger. Comparable data were not available for 1988.

In 1995, the great majority of males said that their first female partner had been close to their age: 1–3 years younger (24%), the same age (33%) or 1–3 years older (36%). Six percent said she had been at least four years older, and 2% said she had been at least four years younger. None of these proportions were significantly different from those for 1988.—*F. Althaus*

#### Reference

1. Abma JC and Sonenstein FL, Sexual activity and contraceptive practices among teenagers in the United States, 1988 and 1995, *Vital and Health Statistics*, 2001, Series 23, No. 21.

## **A First Pregnancy May Be Difficult to Achieve After Long-Term Use of an IUD**

Women who have never given birth and have used an IUD for an extended period of time face decreased fertility when they try to conceive, according to a prospective study conducted in England and Scotland.<sup>1</sup> Thirty-nine percent of nulliparous women who discontinued IUD use to become pregnant conceived within 12 months, compared with 54% of those who stopped using a barrier method; the proportion was significantly lower among women who had used an IUD for 78 months or more (28%) than for those who had used one for a shorter period (45%). The association between extended IUD use and decreasing fertility remained after other factors that affect fertility were taken into account.

To investigate the relationship between IUD use and subsequent fertility among nulliparous women, the researchers analyzed data from 558 women who had stopped using an oral contraceptive, IUD or barrier method in order to conceive. These women had been recruited between 1982 and 1985 as part of a larger prospective study at 17 family planning clinics, and were followed up on an annual basis through 1994. Study participation was restricted to white British citizens who had never given birth, were either married or in a stable living situation with a male partner, and were using an oral contra-

ceptive or IUD at the time of enrollment. The researchers assessed return to fertility by calculating the length of time between a woman's first discontinuation of contraceptive use in order to conceive and a term birth; they excluded from their analyses women who were lost to follow-up, did not have a term birth or resumed contraceptive use.

At the time that the women discontinued contraceptive use in order to conceive, 29% had been using an IUD, 28% oral contraceptives and 43% a barrier method. (A small number of women using the rhythm method were included in the barrier category.) Some women had recently switched methods, however: Three months prior to stopping contraceptive use, 43% had been using oral contraceptives, 33% an IUD and 24% a barrier method.

Women who had been using an IUD at the time they discontinued practicing contraception were slightly older (mean age, 27.7 years) than women using oral contraceptives or barrier methods (26.0 years for each). In addition, they were more likely to be current or former smokers (54%) than were users of other methods (41–48%), and were more likely to have a history of miscarriage, abortion or ectopic pregnancy (25% vs. 13–17%). Women using barrier contraceptives were the most likely to have a history of two or more gynecologic or other selected illnesses (9%, compared with 3–4% of pill or IUD users). Social class as measured by the husband's occupation was lower for women using oral contraceptives (47% had husbands working in manual occupations) than for women using other methods (33–34%); however, social class based on the woman's occupation was similar across groups.

Overall, women who had been using a barrier method achieved the quickest return to fertility. Twelve months after stopping use, 54% of these women had given birth, compared with 39% of IUD users and 32% of those who had been taking oral contraceptives. However, 18 months after discontinuation of use, return to fertility was more similar among the three groups: Seventy-six percent of barrier method users, 70% of pill users and 67% of IUD users had given birth.

Duration of oral contraceptive use had no impact on return to fertility. However, women who had switched from oral contraceptives to a barrier method within three months of attempting to conceive were more likely to become pregnant within 12 months (54%) than were those who attempted to conceive immediately

after discontinuing oral contraceptives (32%). Among women who had had an IUD, those who had used it for 78 months or longer were significantly less likely to give birth within 12 months (28%) than were those who had used it for a shorter period (46%). Too few women had switched from an IUD to a barrier method shortly before conceiving to permit analysis of the effect of such a change.

When women were classified on the basis of the contraceptive method they had used three months before attempting to conceive, return to fertility did not differ significantly across groups. Again, duration of use was not related to the rapidity with which fertility returned among women who had taken oral contraceptives, but longer use of an IUD was associated with a delayed return of fertility. When women were classified according to whether they had ever or never used an IUD, duration of use was linked to fertility decline in a similar fashion. (Only 28 women had never used oral contraceptives; therefore, meaningful comparisons could not be made between ever- and never-users.)

In initial log-rank and proportional hazards analyses of individual factors, a number of factors were associated with delayed fertility at a significance level (*p*-value) of .10 or less: contraceptive method used; duration of IUD use; maternal age; social class, based on the husband's occupation; smoking history; and history of gynecologic and other illnesses. The researchers conducted a multivariate proportional hazards analysis to assess the independent effects of each of these factors on fertility.

According to the multivariate results, women who had taken oral contraceptives and those who had used an IUD for 42–78 months were less likely to give birth during follow-up than were those who had used a barrier method (relative hazard of 0.7 for each group). There was an even more dramatic decline in fertility among women who had used an IUD for 78 months or more: These women were only half as likely as barrier method users to bear a child (0.5). Older maternal age, lower social class, and a history of multiple gynecologic and other diseases were

also associated with decreased fertility (0.2–0.5).

Because the types of commonly used IUDs have changed and infection screening has improved since the time that these women were recruited into the study, the researchers warn that their results "should be extrapolated to present day practice with extreme caution." Nevertheless, they conclude that "long-term use of an intrauterine device by a nulliparous woman increases the risk of impairment of fertility to a clinically important extent," and cite the well-established link between IUD use and pelvic inflammatory disease, a known cause of infertility. They conclude that "intrauterine devices should be used sparingly in nulliparous women and, in particular, that use for many years should be avoided."—A. Hirozawa

## Reference

1. Doll H, Vessey M and Painter R, Return of fertility in nulliparous women after discontinuation of the IUD: comparison with women discontinuing other methods of contraception, *British Journal of Obstetrics and Gynaecology*, 2001, 108(3):304–314.

## Preeclampsia and Eclampsia, While Often Preventable, Are Among Top Causes of Pregnancy-Related Deaths

Preeclampsia and eclampsia were the third leading cause of pregnancy-related deaths between 1979 and 1992, according to an analysis based on nationwide mortality, birth and hospital discharge data.<sup>1</sup> Approximately 1.5 pregnancy-related deaths per 100,000 live births were attributable to preeclampsia or eclampsia during this time period; these conditions were also a factor in 6% of pregnancy-related deaths from other causes. The risk of death from preeclampsia or eclampsia was highest between 20 and 28 weeks' gestation and among black women, women aged 40 years or older, and women who received no prenatal care.

Using the Centers for Disease Control and Prevention's national Pregnancy Mortality Surveillance System, researchers reviewed pregnancy-related deaths that occurred between 1979 and 1992 among women whose pregnancies went to at least 20 weeks' gestation. (Pregnancy-related deaths were those that occurred during a pregnancy or within a year of its completion and were attributable to the pregnancy or associated complications.) All records that listed preeclampsia or eclampsia (with or without chronic hypertension) as the cause of death were classified as deaths from preeclampsia and eclampsia.

Live-birth information from the National Center for Health Statistics was used to calculate cause-specific mortality ratios as the number of deaths per 100,000 live births. In addition, the National Hospital Discharge Survey provided estimates of delivery hospitalizations involving preeclampsia and eclampsia diagnoses between 1988 and 1992; these estimates were used as the denominator in the calculation of case-fatality rates.

In all, 4,024 pregnancy-related deaths were identified for the study period, 790 of them from preeclampsia or eclampsia. These deaths were approximately evenly split between preeclampsia and eclampsia; about half were specifically attributed to cerebrovascular hemorrhage or renal failure (35% and 13%, respectively). Preeclampsia or eclampsia was listed as a contributing condition in 6% of deaths from other causes, including 11% of anesthesia deaths, 7% of cardiomyopathy deaths and 10% of deaths from placental abruption.

Preeclampsia and eclampsia together were the third leading cause of pregnancy-related deaths between 1979 and 1992 (with a mortality ratio of 1.5 deaths per 100,000 live births), following embolism (1.9 per 100,000) and hemorrhage (1.6 per

100,000); the mortality ratio associated with all pregnancy-related causes was 7.5 per 100,000.

The risk of death from preeclampsia or eclampsia increased as women grew older; women aged 40 years or older were more than five times as likely to die from preeclampsia or eclampsia (6.0 per 100,000) as were those between 20 and 24 years of age (1.1 per 100,000). Women in weeks 20–28 of pregnancy were at much higher risk (12.5 per 100,000) than women who had reached their 37th week (0.5 per 100,000). Black women's overall risk was three times that of white women (3.5 and 1.1 per 100,000, respectively); at ages 30–34, the disparity was even greater (5.3 and 1.3 per 100,000, respectively).

Information on prenatal care and live-birth order were available only for women who died following a live birth. For this subgroup, deaths from preeclampsia or eclampsia were more common among women who received no prenatal care (5.9 per 100,000) than among those who received any care (0.8 per 100,000); the protective effect of prenatal care was stronger for white than for black women. Women who had never given birth before or who had already had four live births were more likely to die from eclampsia or

preeclampsia (1.4 and 1.7 per 100,000, respectively) than were those who had previously had 1–3 live births (0.7–0.9).

In all, 6.4 deaths from preeclampsia or eclampsia occurred per 10,000 women hospitalized for delivery between 1988 and 1992; women with eclampsia were much more likely to die from their condition (71.6 per 10,000 cases) than were those with preeclampsia (3.4 per 10,000). Black women were 1.4 times as likely as white women to have preeclampsia or eclampsia at the time of delivery, and they were twice as likely as white women to die as a result (case-fatality rates, 13.9 and 6.1 per 10,000, respectively). Women aged 35

years or older had preeclampsia and eclampsia case-fatality rates that were approximately triple those for women younger than 25.

The researchers note that information on maternal and family medical history was unavailable, and that insufficient numbers prevented them from investigating age and birth order as confounders. Further limitations cited are the incomplete ascertainment of pregnancy-related deaths through routine surveillance methods and the possibility of erroneous or inconsistent information about cause of death on death certificates.

According to the investigators, the high-

er preeclampsia and eclampsia mortality risk and lower benefit from prenatal care among black women may indicate “a disparity in health status and access to and quality of prenatal care,” and warrant further investigation. More generally, they note that deaths from these conditions are “often preventable,” and stress the need “to develop specific interventions to reduce mortality from preeclampsia and eclampsia among all women.”—*A. Hirozawa*

## Reference

1. MacKay AP, Berg CJ and Atrash HK, Pregnancy-related mortality from preeclampsia and eclampsia, *Obstetrics & Gynecology*, 2001, 97(4):533–538.

## Lesbians Are More Likely Than U.S. Women Overall To Have Risk Factors for Gynecologic and Breast Cancer

Lesbians and bisexual women in the United States have above-average prevalence rates of several risk factors for breast and gynecologic cancers, according to a study combining data from several lesbian health surveys.<sup>1</sup> A comparison of these data with standardized estimates for all U.S. women suggests that lesbians and bisexual women are significantly more likely to be obese, smoke cigarettes and abuse alcohol (all known cancer risk factors). Furthermore, they are significantly less likely than average to have ever used oral contraceptives and to have ever been pregnant or given birth to a live infant (all shown to be protective against ovarian and endometrial cancer). Lesbians and bisexual women are also less likely than American women overall to have health insurance and to undergo cancer screenings. The breast cancer rate for lesbians in this study is not significantly different from that for American women overall.

To assess whether lesbians and bisexual women are at increased risk of certain cancers, researchers analyzed questionnaire responses from seven lesbian health surveys conducted in the United States between 1987 and 1996. Data from the surveys were pooled, and health and demographic variables were coded into a common format so they could be compared. Prevalence rates of health-related behaviors and self-reported breast cancer history were calculated from the pooled data and analyzed against data from two large, national samples of U.S. women, standardized to match the age, race and ethnicity, educational level and geographic location of the lesbian health survey data.

In all, 11,876 women were involved in

the study. Eighty-seven percent of the women surveyed were self-defined lesbians, while 12% considered themselves bisexual. (The researchers used the term “lesbian” to collectively refer to both groups.) Some 86% were white and non-Hispanic. On the whole, the women surveyed were highly educated: Forty-two percent had attended graduate school and 26% had a college degree, while 32% had a high school education or less. Twenty-eight percent of the women surveyed were aged 18–29, 63% were 30–49 and 8% were 50–75. The study population was almost evenly distributed among the Northeastern, Midwestern, Southern and Western regions of the United States. Even though the study sample was large and drawn from diverse geographic locations, the researchers noted that the study was not population-based and may not truly represent the total U.S. population of lesbians.

The researchers found that lesbians were more likely than women overall to have various behavioral risk factors for breast and gynecologic cancer. Nearly three in 10 lesbians surveyed were obese, compared with about one in five women overall; nevertheless, lesbians were less likely than average to consider themselves overweight (44% vs. 56%). Although there was no significant difference in current alcohol use between lesbians and women overall, the same was not true for problem drinking. More than 12% of lesbians reported having a history of problems with alcohol, a rate far higher than the 4% standardized estimate of women nationally who reported having five or more drinks almost every day. Lesbians were also more likely than average to currently use to-

bacco (21% vs. 16%) or to have used tobacco in the past (34% vs. 20%).

Sixty percent of lesbians surveyed reported having a history of heterosexual relations, yet they were significantly less likely than women from the national surveys ever to have used birth control pills (36% vs. 80%). Lesbians were also less likely than average ever to have been pregnant (28% vs. 67%) or to have given birth to a live infant (16% vs. 57%).

Furthermore, a smaller proportion of lesbians than of women overall were covered by health insurance (86% vs. 93%). Lesbians also were less likely to undergo cancer screenings: Only 73% reported having a recent pelvic examination, in comparison with the standardized estimate of 87% for women nationally, and lesbians in their 40s were less likely than women overall ever to have had a mammogram (73% vs. 87%).

Contrary to their expectations, the researchers did not find a significant difference in the incidence of breast cancer between lesbians and women nationally (1% of each). They speculated that a young mean age among respondents (36 years), healthy-volunteer bias and residual confounding all could have caused underestimation of the prevalence of cancer among lesbians.

The researchers point out that although an increased incidence of breast cancer in lesbians was not found, lesbians may still have an increased risk of various other negative health effects of smoking, obesity and alcohol, in addition to cancer. The researchers comment that “despite the extensive public health efforts in the United States promoting weight loss, smoking cessation, reduced alcohol consumption,

and use of preventive screening, lesbians and bisexual women, an apparently logical target group given our findings here, have not been a particular focus of public health interventions."

The researchers also stress that many health care providers may not be treating lesbians properly because of a lack of knowledge and understanding. They add, "If public health is truly for everyone, the results of the current study call for developing culturally competent interventions targeted to the differential risk patterns evidenced by lesbians and bisexual women."

—J. Rosenberg

## Reference

1. Cochran SD et al., Cancer-related risk indicators and preventive screening behaviors among lesbians and bisexual women, *American Journal of Public Health*, 2001, 91(4):591–597.

## Health Care Providers' Encouragement Spurs Women to Breastfeed

Three-quarters of American women who give birth are encouraged by a doctor or nurse to breastfeed, and three-fourths of those who receive such encouragement nurse for some period of time. When background characteristics that may influence a woman's likelihood of breastfeeding are taken into account, women who receive encouragement from a health care provider are more than four times as likely to breastfeed as are those who receive no such encouragement; the impact of a provider's encouragement is similar regardless of women's race or other characteristics. These findings echo results of previous research, but whereas earlier work in this area was based primarily on small convenience samples, the study that produced these estimates was based on a large, randomly selected sample of women from throughout the United States.<sup>1</sup>

The analysis was part of a larger study, conducted between July 1995 and January 1996, that examined the needs and behaviors of parents with children younger than three. Researchers recruited parents to participate in a telephone survey that included questions on whether doctors and nurses encouraged breastfeeding and the length of time that the mother breastfed, as well as questions on respondents' demographic and socioeconomic characteristics. The investigators assessed the importance of provider encouragement in bivariate and regression analyses based on

the responses of 1,229 women who completed the survey.

Seventy-three percent of women in the sample were white, 13% were black and 14% were Hispanic. Respondents were predominantly married (81%) and aged 25 or older (68%). Half had more than a secondary education, one-third had only completed high school and the remainder had less schooling. Twenty-eight percent of women had an annual income of less than \$20,000, and 43% reported a yearly income of \$40,000 or more. One-third lived in the South, and the rest were about evenly divided among the Northeast, the North Central region and the West.

Overall, 34% of participants had not breastfed, 12% had nursed for less than one month and 53% had done so for longer. In the bivariate analyses, the proportions who had ever breastfed were highest (69–87%) among women older than 25; married women; whites and Hispanics; those with the highest levels of education and income; residents of the West; women not receiving government assistance; those who had attended childbirth classes; and those who had received provider encouragement to nurse.

The majority of respondents (73%) said that a physician or nurse had encouraged them to breastfeed; this proportion did not vary significantly among women of different characteristics. Whereas 75% of these women initiated breastfeeding, only 43% of those who had received no encouragement from a health care provider ever nursed, and the difference was statistically significant.

Regression analyses controlling for factors that may influence a woman's decision to nurse revealed that those who had been encouraged to breastfeed were more than four times as likely as others to have done so (relative risk, 4.4). Other factors were also associated with an increased likelihood of breastfeeding, but the effects were generally smaller: For women who had attended childbirth classes and those who were 25–34 years old, married or divorced, white or Hispanic and residents of the West, relative risks ranged from 1.3 to 2.9. Increasing levels of education were associated with increasing likelihoods of breastfeeding, and women who had graduated from college were 6.8 times as likely as those with less than a high school education to have nursed.

To assess the impact of a provider's encouragement to breastfeed on women of different characteristics, the researchers repeated the regression analysis, stratifying the sample according to race or eth-

nicity, educational level, income, marital status and age-group. Results showed that encouragement by a physician or nurse increased the likelihood of breastfeeding for virtually all groups. Relative risks ranged from 3.2 for women with less than a high school education to 11.0 for single women; for most groups, women were about 4–6 times as likely to have breastfed if they had received encouragement as if they had not. Divorced women appeared to have an increased likelihood of having breastfed if a provider had encouraged them to nurse, but because the number of divorced women in the sample was small, the relative risk (3.8) did not achieve statistical significance.

The researchers also conducted logistic regression analyses to determine whether a provider's encouragement affected the duration of breastfeeding. These calculations revealed no significant associations.

In the researchers' view, "obstetricians, midwives, and obstetric nurses have a special responsibility and capacity to promote breastfeeding." The findings from this analysis, the investigators comment, highlight the importance of ensuring that providers have the training they need to do so. Furthermore, they note, the results suggest that interventions promoting breastfeeding might have a "particularly strong influence" if they target groups of women who are traditionally unlikely to nurse.—D. Hollander

## Reference

1. Lu MC et al., Provider encouragement of breastfeeding: evidence from a national survey, *Obstetrics & Gynecology*, 2001, 97(2):290–295.

## Boyhood Abuse Increases Men's Risk of Involvement In a Teenager's Pregnancy

Men who were exposed to abuse or domestic violence in childhood are significantly more likely than others to be involved in a teenage pregnancy, according to a cohort study conducted at a San Diego primary care clinic.<sup>1</sup> Nineteen percent in this population have impregnated a teenager at some point in their lives. Forty-three percent report having experienced physical or sexual abuse, or having witnessed the physical abuse of their mother, during their preteen or teenage years. Compared with men without exposure to abuse, men who frequently experienced one type of childhood abuse are about twice as likely, either during adolescence or as adults, to have engaged in

sex leading to a teenage pregnancy. Furthermore, men who endured a combination of physical abuse, sexual abuse and exposure to maternal battery before adulthood are more than twice as likely as other men to have been involved in the pregnancy of a teenager.

Although previous studies have reported a correlation between a female's adverse childhood experiences and her risk of teenage pregnancy, it has not been known whether a similar correlation exists for males. To assess this issue, researchers analyzed the responses of 4,127 men on a questionnaire used in a study of the effect of adverse childhood experiences on health outcomes and behaviors. On the questionnaire, each man was asked about his reproductive history, as well as his exposure to and frequency of childhood abuse.

At the time of the survey, the men were, on average, 58 years old. Eighty-one percent were white, and the vast majority were either currently married (78%) or living with a partner (4%). Forty-nine percent had graduated from college, and only 6% had not graduated from high school.

Nineteen percent of respondents reported involvement in at least one teenage pregnancy. The men were, on average, 21 years of age at the time of their first involvement in teenage pregnancy. At the time the pregnancy occurred, 59% were 20 or older, and at least 56% were not married. The females whom these men impregnated were, on average, 17.8 years old at the time of pregnancy. Sixteen percent

were 12–16 years old, 16% were 17 years old, 32% were 18 years old and 36% were 19 years old.

Of the men surveyed, 32% reported having been physically abused by age 18, 15% reported having been sexually abused and 11% reported having had a battered mother. Overall, 43% reported exposure to at least one type of abuse (31% one type, 10% two types and 2% all three types).

The researchers used logistic regression analysis to determine the relationship between the three types of abuse and men's involvement in teenage pregnancy, controlling for the potentially confounding effects of age, race and education. An increased risk of involvement in teenage pregnancy was found in men with a history of childhood exposure to physical abuse (odds ratio, 1.3), sexual abuse (1.5) or maternal battery (1.5).

Moreover, as the frequency of abuse increased, the odds of involvement in a teenage pregnancy rose significantly. Men who said that they had often or very often been physically abused or witnessed various types of maternal battery were about twice as likely as those with no such history to have impregnated a teenager (odds ratios, 1.7–2.4). Similarly, men who reported having been abused sexually at age 10 or earlier, and those whose abuse involved physical force or the threat of harm, were significantly more likely than men who had not been abused to have impregnated a teenager (1.8 and 2.1, respectively).

Further analysis of the data found a dose-dependent relationship between a man's exposure to adverse childhood experiences and his risk of involvement with teenage pregnancy. Men who experienced two types of abuse were significantly more likely than men not abused to have been involved in a teenage pregnancy (odds ratio, 1.7). Those men who endured all three types of boyhood abuse were more than twice as likely as men with no history of abuse to have engaged in sexual intercourse leading to the pregnancy of a teenager (2.2).

In light of the relationship found between adverse childhood experiences and the risk of involvement in teenage pregnancy, the researchers call for pediatricians to increase efforts to screen male and female patients for signs of abuse. They urge that "continued vigilance on the part of pediatricians to identify both boys and girls exposed to abuse or domestic violence seems to be a vital component of teen pregnancy prevention." The researchers also conclude that since "children of teenage mothers are more likely to be abused or neglected because of the social, financial, and emotional stressors of teenage motherhood," intervention by physicians in cases of childhood abuse could also help decrease "intergenerational transmission of abuse and domestic violence."—*J. Rosenberg*

## Reference

1. Anda RF et al., Abused boys, battered mothers, and male involvement in teen pregnancy, *Pediatrics*, <<http://www.pediatrics.org/cgi/content/full/107/2/e19>>.

## Sexual Intercourse and Orgasm During Late Pregnancy May Have a Protective Effect Against Preterm Delivery

Sexual activity during weeks 29–36 of pregnancy does not increase women's risk of delivering preterm, according to a study of nearly 600 women who visited three prenatal clinics in North Carolina.<sup>1</sup> By contrast, the results suggest that women who are sexually active late in pregnancy are considerably less likely than pregnant women who are not sexually active to deliver before 37 weeks of gestation.

As part of a larger study of preterm birth, researchers recruited women who were aged 16 or older and between 24 and 29 weeks pregnant from three community-based prenatal clinics in Chapel Hill and Raleigh. Between August 1995 and July 1998, researchers interviewed 1,853 women two weeks after recruiting them for the study, at approximately 28 weeks' gestation. In follow-up interviews before and after delivery, they asked women

about their frequency of sexual intercourse, use of the male superior position, experience of orgasm and interest in intercourse, as well as the date of their most recent intercourse and whether they received any medical advice regarding bed rest.

The researchers assessed three measures of sexual activity during the 29–36-week gestational period: sexual intercourse during the last two weeks (any vs. none), time since last sexual intercourse (fewer than seven days vs. seven or more days ago) and orgasm within the past two weeks (any vs. none). Using conditional logistic regression models, the researchers calculated odds ratios measuring the association between sexual activity and preterm delivery, taking into account a range of demographic, reproductive and behavioral factors that may affect the risk of this outcome. The analyses included 187 women who delivered

preterm and a control group consisting of 409 randomly selected women who were still carrying their pregnancies.

Women who attended the three clinics came from a range of social and economic backgrounds—though they generally were from lower- and lower-middle-class backgrounds—and from both urban and rural areas. The women who delivered preterm were similar to those in the control group in their demographic characteristics: About half of the women in each group were white, about a third in each group had completed high school and nearly half had education beyond high school. About equal proportions of women in each group were married (41% of women who delivered preterm and 45% of controls).

The women also were similar in their reports of the frequency of sexual intercourse

before pregnancy (roughly 2.5 times per week) and during the first trimester (about twice weekly). For both groups of women, the frequency of sexual intercourse decreased as their pregnancies progressed. However, women who delivered preterm reported less-frequent sexual intercourse during their sixth month and, especially, in weeks 29–36 than did women with full-term pregnancies.

At the first interview, a smaller proportion of women who delivered preterm than of women in the comparison group reported having had at least one orgasm in the previous month (52% compared with 63%). This pattern was consistent through weeks 29–36. During weeks 29–36, a larger proportion of women who delivered preterm than of those in the comparison group reported reduced interest in sex in the last two weeks (71% compared with 57%). Furthermore, a larger proportion of women who delivered preterm than of women in the control group reported that a doctor or nurse had given them advice related to sexual activity during pregnancy (41% compared with 23%), including a recommendation that they stop or limit intercourse or orgasm (32% compared with 12%).

When women were asked why their frequency of intercourse decreased during weeks 29–36, a larger proportion of women who delivered preterm than of women in the control group reported medical reasons, such as receiving a recommendation of bed rest from their doctor, admission to the hospital or having surgery. In addition, women who delivered preterm were more likely than controls to say that they were in fair or poor

health during late pregnancy (19% compared with 13%).

The regression analysis revealed no relationship between preterm delivery and women's frequency of sexual intercourse six months prior to pregnancy or during the first trimester. However, women who said during weeks 29–36 that they had had sexual intercourse in the past two weeks or fewer than seven days ago had reduced odds of delivering preterm (odds ratio, 0.3 for each measure); the odds of preterm delivery also were reduced if women had had an orgasm in the previous two weeks (0.4). Women who reported having had sexual intercourse but not an orgasm in late pregnancy and those who had not had intercourse but reported having had an orgasm late in pregnancy also had reduced odds of preterm delivery (odds ratio, 0.3 for each). These results did not change when the researchers controlled for demographic and socioeconomic variables.

The researchers also examined the association between sexual activity and preterm delivery among subgroups of women defined by marital status; diagnosis of bacterial vaginosis; and type of preterm delivery (preterm labor, premature rupture of membranes or medically induced preterm delivery). They also examined the association according to women's level of risk of preterm delivery, classifying women as "higher-risk" if they reported poor health during the 29–36-week period; had had a previous miscarriage, stillbirth or preterm birth; or had received medical advice regarding bed rest or limiting intercourse or orgasm during pregnancy.

For most subgroups, results of this analysis were similar to those for the over-

all cohort: Recent sexual activity was associated with significantly reduced odds of preterm delivery (odds ratios, 0.2–0.4). The most notable exceptions were that whereas sexual activity was associated with reduced odds of preterm delivery for married and higher-risk women, it was not associated with preterm delivery risk among women who were unmarried or at lower risk of this outcome. Odds ratios were lower for women who had medically induced deliveries than for those with other types of preterm delivery, and were comparable for women who had bacterial vaginosis and those who did not.

The researchers offer two possible interpretations of their findings. One is that the protective effect of sexual activity indicated by their data could be related to the amount of social support a pregnant woman experiences. The other is that the overall effect is partly attributable to higher-risk women's simply limiting or stopping late-pregnancy sexual activity. This interpretation, according to the researchers, is supported by the analysis for lower-risk women: Since these women had fewer medical reasons to reduce their sexual activity, the investigators note, they are a useful group in whom to assess "an effect of sexual activity per se," and no such effect was uncovered. The researchers conclude that "as a whole...continued sexual activity during late pregnancy was a strong predictor that a pregnancy [would] go full term."—*B. Brown*

## Reference

1. Sayle AE et al., Sexual activity during late pregnancy and risk of preterm delivery, *Obstetrics and Gynecology*, 2001, 97(2):283–289.

## Female Condoms Remain Structurally Sound After Being Washed and Reused as Many as Seven Times

The female condom can be washed and reused several times and still meet structural standards set by the Food and Drug Administration (FDA), according to a study conducted in South Africa.<sup>1</sup> When a sample of women washed, dried and re-lubricated female condoms up to seven times, the devices continued to meet FDA requirements with respect to the amount of pressure they could withstand and the strength of their seams. Five holes were detected in the 295 condoms used, but these were not associated with the number of times the condom was used.

A sample of 50 women—predominantly commercial sex workers and clients at an inner-city sexually transmitted dis-

ease clinic—were enrolled in the study and instructed in how to clean a female condom for reuse. (The procedure consisted of rinsing the condom; washing it for 60 seconds with liquid detergent; rinsing it; patting it dry with clean tissues or towels, or air-drying; and relubricating it with vegetable oil just before reusing.) Participants were given a condom and asked to use, wash and reuse it, and return it to the study site for laboratory testing. If the condom was found to be structurally sound, the women were asked to repeat the cycle with a new condom, reusing it twice; the cycle was repeated until the women washed a single condom seven times (i.e., used it a total of eight times).

Laboratory analyses of the used condoms tested the devices' water leakage, the maximum pressure they could withstand before bursting and the tensile strength of the seams. Results were compared both with FDA standards for new condoms and with results for a sample of 20 unused condoms from the same production batch from which the study condoms were drawn.

Three-quarters of the women used liquid detergent to wash the condoms, as they had been instructed to do; the rest used bar soap or, in one instance, soap powder. Three in five women air-dried the condoms, and 99% relubricated the devices before reuse, primarily with baby oil,

sunflower oil or petroleum jelly.

Five holes were detected in the 295 condoms used, for a breakage rate of 2%. In three cases, the women had noticed the holes and told clinic staff about them when they returned the condoms for testing; the other two holes were found during the water leakage test. The holes were detected after various numbers of reuses, with no clear trend related to the number of times a condom was washed. Moreover, the investigators note that four of the holes were in the part of the condom that lies outside the vagina and that is twisted during removal of the device.

Regardless of the number of times a condom was washed, test values for burst and seam strength were above minimum FDA standards. Comparisons of reused and new condoms showed no differences in results for seam strength and minor variations for pressure.

The researchers comment that "although occasional holes result from the repeated handling of the condom, these are not sufficiently common to make the practice [of washing and reusing female condoms] unacceptable." Their overall conclusion is that "while it is preferable to use a new female condom or male condom, a reused female condom may be an acceptable next choice in situations where this is not possible."—*D. Hollander*

## Reference

1. Beksinska ME et al., Structural integrity of the female condom after multiple uses, washing, drying, and re-lubrication, *Contraception*, 2001, 63(1):33–36.

## Being Underweight Does Not Raise the Risk of Most Pregnancy Complications

Underweight women are more likely than those of normal weight to have a preterm delivery or a low-birth-weight infant, but their risk of most complications of pregnancy and other poor outcomes is no greater than that of normal-weight women, according to findings from a population-based British study.<sup>1</sup> Moreover, the prevalence of a number of adverse events—notably, preeclampsia, surgical obstetric interventions and postpartum hemorrhage, all of which contribute to the risk of maternal mortality—is lower among underweight women than among normal-weight women.

Using a database containing information from virtually all maternity units in the North West Thames section of London, the researchers analyzed the records of

women who had a singleton pregnancy between 1988 and 1997. They calculated women's body mass index (weight divided by the square of height) at the start of prenatal care, and compared the experiences of roughly 38,000 women who were underweight (i.e., with a body mass index of less than 20) with those of 177,000 normal-weight women (i.e., who had an index of more than 20 but less than 25).

Most of the women were white (64% of those who were underweight and 73% of their normal-weight counterparts); about half of each group had not given birth before, and one-third had had one previous birth. When the women first visited their maternity care facility, 3–4% had hypertension; negligible proportions had diabetes.

The researchers examined four types of variables: prenatal, maternal and delivery complications, and pregnancy outcomes. They assessed the independent effect of body mass index through a series of multiple logistic regression analyses that controlled for maternal age, ethnicity, parity, history of hypertension and diabetes, and additional factors of specific importance for individual variables.

Body mass index was significantly associated with four prenatal complications. Underweight women were more likely than normal-weight women to be anemic (odds ratio, 1.3). However, they were less likely to develop preeclampsia (0.8) or gestational diabetes (0.6), or to begin care late in pregnancy (0.4). The odds of placenta previa, placental abruption and breech presentation were similar in both groups of women.

Maternal complications (e.g., genital or urinary tract infection, pulmonary embolism and wound infection) were rare, affecting no more than 1% of women in either group. Roughly 20% of both underweight and normal-weight women required a prolonged postpartum hospital stay. The likelihood of these events did not differ significantly according to women's body mass index.

All seven delivery-related complications that the investigators examined were associated with body mass index. Underweight women had significantly elevated odds of having a breech delivery (1.3) but reduced odds of requiring induced labor, an operative vaginal delivery, or an emergency or elective cesarean delivery (0.7–0.9). They also were less likely than normal-weight women to have a postpartum hemorrhage or major postpartum hemorrhage (0.8–0.9).

Two adverse pregnancy outcomes were more common among underweight

women than among their normal-weight counterparts: Women with a low body mass index had an increased risk of bearing an infant whose weight was below the fifth percentile (1.4). They also had elevated odds of delivering before 37 weeks' gestation (1.2), but not before 32 weeks, which the researchers note is a more "clinically important" threshold. Other outcomes that were significantly related to low body mass index were breastfeeding (0.9), having an infant with a birth weight above the 90th percentile (0.5) and admission to a special care baby unit more than 24 hours after giving birth (1.1). Delivery after 42 weeks, stillbirth and infants' Apgar scores were not affected by body mass index.

According to the investigators, the "main adverse outcomes" associated with a woman's being underweight early in pregnancy are an increased risk of having a low-birth-weight infant or a premature delivery, but the "clinical and pathological significance" of these associations is unclear. The researchers conclude that being underweight does not increase the risk of most problems that may occur during or just after pregnancy, and it may protect against some "major" factors related to maternal mortality.—*D. Hollander*

## Reference

1. Sebire NJ et al., Is maternal underweight really a risk factor for adverse pregnancy outcome? a population-based study in London, *British Journal of Obstetrics and Gynaecology*, 2001, 108(1):61–66.