

Degree of Certainty About Plans to Have Children Strongly Predicts Whether Individuals Will Do So

Individuals' intentions to have a child consistently predict whether they eventually do so. According to an analysis of data from two rounds of the National Survey of Families and Households,¹ the associations between respondents' intentions and their actual childbearing are strong and highly significant, even when life-course and background variables are controlled for. These associations decrease over an intentions continuum that goes from being very sure of intending to have a child to being very sure of not intending to do so: The odds of having a birth between the surveys fall from 7.2 among those who were very sure they would have a child to 1.8 among respondents who were initially moderately sure about not having a child (all compared with those who were very sure they did not intend to have a child). Only marital status has an effect comparable to that of childbearing intentions on the likelihood of a birth.

The data come from a national probability sample of individuals who were interviewed in 1987–1988 and again in 1992–1994. The investigators limited their sample to non-Hispanic white adults aged 16–39 who were fertile and nonpregnant (or whose partners were fertile and nonpregnant). The final sample consisted of 2,812 persons.

Thirty-seven percent of the overall sample had a child in the years between the two interviews. For the 2,768 persons who provided data at the first interview on the certainty of their intentions (1,538 women and 1,230 men), 67% affirmed they intended to have a child sometime (with 28% being very sure of it, 26% moderately sure and 13% not sure). The remainder said they did not intend to have a child (with 14% being very sure of that intention, 14% moderately sure of it and 6% unsure). The proportion having a child declined steadily across the intentions continuum, from 61% among those who had been very sure they intended to have a child to 11% among those who had been very sure they did not intend to have a child.

To assess how individuals' intentions

about having children contribute to their actual fertility, the investigators conducted three sets of logistic regression analyses that measured the monthly likelihood of a conception leading to a live birth (or the likelihood of a formal adoption) in the period between the surveys. The first set controlled for three variables related to fertility intentions and timing—respondents' fertility plans (including their degree of certainty about those plans), how closely respondents' plans matched their spouses' plans and whether they planned to have a child within four years. The second set controlled for eight social and demographic variables—marital status, age, parity, school enrollment status, employment status, educational level, the respondent's mother's educational level and income. The third analysis considered all 11 variables simultaneously. The investigators also examined the data separately by marital status at the time of the initial interview and by gender among those who were unmarried at the first interview.

The results of the logistic regression analyses revealed statistically significant associations between each fertility intention and childbearing, with the magnitude of the association decreasing along the fertility intentions continuum (from being very sure about wanting a child to being moderately sure about not wanting one, with the category "very sure of not intending to have a child" serving as the reference group). For instance, among respondents who were married at the time of the first interview, the analysis accounting for all background and fertility-related factors revealed that childbearing was 7.2 times as likely among those very sure they would have a child as among those very sure they would not; the odds ratios declined to 5.4 among those moderately sure of having a child, to 2.2 among those intending to have a child but with very little certainty and to 1.8 among those moderately sure of not having a child. (This effect of intentions on observed fertility was consistently smaller, and not always significant, among respondents who were un-

married at the time of the initial interview; odds ratios ranged from 4.6 to 2.2, depending on the certainty of intentions.)

The likelihood of a birth also varied significantly by spouses' relative intentions about childbearing. Respondents whose spouse was more sure about having a child were twice as likely to do so (odds ratio, 1.9) as were respondents who had the same fertility plans as their partner. Correspondingly, when a spouse was less sure about having a child than the respondent, that likelihood was significantly lowered (0.8). Respondents' expectations of the timing of an upcoming birth had a more modest effect. Expecting to have a child within four years raised the likelihood of a birth in the first 29 months since the initial interview by 40%. Moreover, respondents who were no longer married by the time of their second interview were roughly 60% less likely than those who remained married to have had a child between the surveys.

In general, having already had a child significantly raised the likelihood of having another one, with fluctuations by the amount of time that had gone by since the most recent birth. For example, married respondents with three children whose last child had been born fewer than three years earlier were more than twice as likely as those who had never had a child to conceive between surveys (odds ratio, 2.2); however, parents of three children whose last child had been born 3–6 years ago were only half as likely as those who had no children to conceive between the surveys (odds ratio, 0.5).

The single background variable that had an even stronger effect on actual fertility than the respondents' intentions to have children, at least among men, was marriage. In an analysis based on respondents who were unmarried at the earlier interview, when all factors were controlled for, men who subsequently married were more than 10 times as likely as those who were still unmarried to have fathered a child (odds ratio, 10.4). Among initially unmarried women, mar-

riage significantly raised the likelihood of conceiving a child by a factor of six.

The likelihood of a birth was significantly elevated among initially unmarried female respondents who intended to have a child (3.1–3.8); odds were also elevated among initially unmarried women if they had had one or two children 3–6 years ago (1.7–2.8) or if they had had three children more than six years before their last child (4.7). Moreover, the timing of an expected birth had a moderate effect on the likelihood of a conception among these women, as those who said they expected to have a baby within four years were 2.3 times as likely as those who did not to have conceived in the first 29 months after their initial interview. However, the odds of a birth between surveys among women who were unmarried at their first interview were significantly lower if they had had some college education or had grad-

uated from college than if they had had a high school education only (odds ratios of 0.6 and 0.5, respectively).

Among men who were unmarried at the time of their first interview, those who were very or moderately sure they intended to have a child, as well as those who were unsure about not intending to do so, had significantly elevated odds of fathering a child compared with men who were very sure they did not intend to have a child. Men younger than 25, those whose only child had been born 3–6 years ago and those who had not completed high school all had elevated odds of fathering a child (1.7–2.8), while male respondents who had a partial or complete college education had significantly reduced odds of doing so (0.4 and 0.5, respectively).

According to the investigators, the only life-course variable that approached fertility intentions in importance as a pre-

dictor of fertility behavior was marital status. The researchers suggest that intentions were less predictive of subsequent fertility among unmarried than married respondents because these intentions, which may be contingent on marriage, were expressed without the knowledge of a partner's preferences. However, even the fertility intentions of unmarried persons independently predicted whether they would have a child. Therefore, the investigators conclude that "recognizing the predictive power of fertility intentions would encourage a healthy redirection of fertility research toward the dynamic interaction between the individual and society."—L. Remez

Reference

1. Schoen R et al., Do fertility intentions affect fertility behavior? *Journal of Marriage and the Family*, 1999, 61(3):790–799.

Women Exposed to Childhood Abuse Have Elevated Odds of Unintended First Pregnancy as Adults

Some 58–67% of women who were exposed to sexual abuse or to frequent psychological or physical abuse as children have an unintended first pregnancy during adulthood, compared with 37–41% of their peers who experienced no such abuse. Similarly, women whose mother was frequently abused by her partner or who lived with a substance abuser or with a mentally ill household member also have a higher likelihood of an unintended first pregnancy (48–64%) than other women (42–43%). Furthermore, an estimated 20% of unintended first pregnancies among adult women are related to childhood experiences of abuse or household dysfunction. These are some of the findings of a study conducted among reproductive-age women in San Diego.¹

The researchers analyzed data from a sample of women enrolled in a large health maintenance organization who had received medical examinations between August and November 1995 or January and March 1996. Study participants completed a mailed survey that included questions about their background characteristics, pregnancy history and exposure to various forms of abuse and household dysfunction during childhood (i.e., through age 18). In all, 1,193 women aged 20–50 who had had a first pregnancy at or after age 20 were included in the analyses.

The majority of respondents were white (61%), had at least some college education (81%), had been married at the time of their

first pregnancy (73%) and had been 18 or older at first intercourse (70%). More than half had had their first pregnancy between ages 20 and 24 (57%). Sixty-four percent were aged 40–50 at the time of the survey.

Women who reported that they had not intended to conceive at the time their first pregnancy began were considered to have had an unintended first pregnancy. The researchers measured four types of childhood abuse (psychological abuse, physical abuse, sexual abuse by someone at least five years older than the woman was at the time of the incident and peer sexual assault) and three types of household dysfunction (physical abuse of the mother by her partner, substance abuse by a household member and mental illness of a household member).

Overall, 82% of respondents reported having experienced at least one form of childhood abuse or household dysfunction; 66% had experienced two or more types. The majority had experienced childhood psychological or physical abuse (52–64%), and close to one-third had been sexually abused (29%). Fourteen percent of women had had forced sexual contact with someone their own age. At least one-third of respondents had experienced some form of household dysfunction: Twenty-six percent had lived with a mentally ill household member, 29% had had mothers who were physically abused and 36% had lived with a substance abuser.

More than 45% of respondents report-

ed that their first pregnancy had been unintended. A woman's likelihood of having had an unintended pregnancy rose from 32% to 64% as the number of types of abuse or dysfunction she had experienced increased from zero to four or more. Women who had experienced any type of abuse or dysfunction were significantly more likely than those who had not to have had an unintended first pregnancy. The proportion increased from 37% to 59% for frequent psychological abuse, from 39% to 67% for frequent physical abuse, from 41% to 58% for sexual abuse and from 43% to 61% for peer sexual assault. For measures of household dysfunction, the proportion of women reporting an unintended pregnancy rose from 42% to 48% of those who lived with a substance abuser, from 43% to 53% of those who lived with a mentally ill person and from 42% to 64% of those whose mother was frequently physically abused.

Using logistic regression analyses, the researchers estimated risk ratios measuring the effect of each type of abuse and dysfunction on the likelihood that a woman's first pregnancy was unintended, taking into account various factors that might influence this outcome. Women who had experienced sexual abuse (risk ratio, 1.2) or frequent psychological (1.4) or physical abuse (1.5) were significantly more likely than their peers to have had an unintended first pregnancy. There were no significant associations between house-

hold dysfunction and unintended pregnancy, except for frequent physical abuse of a woman's mother (1.4). Given these results, the researchers estimated that one in five unintended first pregnancies during adulthood were associated with childhood experiences of abuse or household dysfunction.

The researchers conclude that the effects of childhood abuse and household dysfunction on women's sexual behavior continue past adolescence into adulthood. They believe medical care providers should be aware that the experience of childhood abuse and family dysfunction is common and may affect women's "ability or motivation to prevent an unintended first pregnancy."—*I. Olenick*

Reference

1. Dietz PM et al., Unintended pregnancy among adult women exposed to abuse or household dysfunction during their childhood, *Journal of the American Medical Association*, 1999, 282(14):1359–1364.

Surprisingly Low Sexually Transmitted Disease Rates Found Among Drug Users

The prevalence rates of chlamydia (3%), gonorrhea (0.4%) and HIV (6%) infection are moderate among drug users at a disease prevention and needle-exchange program in Canada, although clients report high rates of risky behaviors.¹ The prevalence of HIV infection is higher among those who currently use injection drugs (10%) than among former injection-drug users (6%) or among those who have never used injection drugs (0%).

Researchers recruited 738 drug users attending a sexually transmitted disease (STD) and needle-exchange program in downtown Quebec City.* Between February and April 1997, participants provided information about their demographic characteristics, medical history, sexual behavior and drug use in the six months prior to the interview. They also provided a urine sample that was tested for chlamydia, gonorrhea and HIV. Participants were advised that they could return to the clinic to receive their chlamydia and gonorrhea test results, as well as free treatment if they were infected. HIV test results, however, were not made available, as urinalysis is not yet accepted as a valid diagnostic test for HIV in Canada. Information about other sources of HIV

testing was provided, and participants received a \$10 payment for their time.

The researchers performed statistical analyses separately for women and men, grouping participants according to their injection-drug use status. They calculated the prevalence of disease and then conducted multiple regression analyses (which took into account participants' injection-drug use and gender, as well as factors that were significant at the univariate level) to assess the independent effects of various risk factors. Chlamydia and gonorrhea were analyzed separately from HIV infection.

Participants' Characteristics

Two-thirds of participants were male, and one-third were female; this distribution reflects the usual proportion of men and women who attend the clinic. On average, men were older than women (29.7 vs. 25.4 years) and were more likely to have spent time in prison (58% vs. 34%). Fifty-eight percent of participants had attended the clinic for more than two months, and 72% of this group were currently injecting drugs. Among those attending the clinic for the first time during the study, 12% were current injection-drug users.

Fifty-one percent of men and 39% of women were currently using injection drugs. The mean length of time that men had been using injection drugs was 8.3 years; the mean for women was 7.1 years. Roughly 20% of injection-drug users had knowingly ever shared a needle with an HIV-infected person, and a similar proportion had injected in a shooting gallery in the past six months. Approximately one-third of injection-drug users said that they had borrowed used needles during the six months prior to the study.

Among participants who were not currently injecting drugs, 28% had ever done so, but not in the six months prior to the study; 32% of male and 22% of female nonusers fell into this category. Virtually all clients reported having used drugs or alcohol during the previous six months. Injection-drug users were more likely than other participants to have used cocaine (96% vs. 37%), PCP (54% vs. 37%) and heroin (24% vs. 2%). Male clients who were injection-drug users were more likely than nonusers to report a history of hepatitis (33% vs. 7%) or HIV infection (7% vs. 2%), and female injection-drug users were more likely than other women to have had STDs in the past (50% vs. 32%) and HIV infection (14% vs. 0%).

Eight participants were sexually inexperienced and were excluded from the

analyses. The mean age of sexually experienced participants at first intercourse was 14 years. Eighty percent of men and 94% of women had had a heterosexual partner during the six months prior to the survey; 1% and 12%, respectively, had had at least 20 such partners. Overall, women were more likely to report using condoms consistently with commercial partners than with regular partners (66% vs. 18%, respectively). There were not enough men with commercial partners to make comparisons concerning condom use with these partners.

Many participants had engaged in sex with risky partners. Thirty-five percent of men and 42% of women had had unprotected intercourse with a partner who used injection drugs; 15% and 11%, respectively, with a homosexual or bisexual man; 27% and 11% with a prostitute; and 5% of each with an HIV-positive partner. Approximately two-thirds of men and women had had unprotected intercourse with a partner who had multiple sex partners. Injection-drug users reported higher rates of these behaviors than nonusers.

STD Prevalence and Risk

Overall, 4% of women and 3% of men had chlamydia; 1% of women and no men had gonorrhea. At the univariate level, the prevalence of these STDs was essentially the same among all male injection-drug users, regardless of whether they reported risky behavior. However, among men who were not injecting drugs, those who had first had intercourse before age 13 were significantly more likely to be infected than were those who had begun having sex at a later age (11% vs. 2%). The prevalence of STDs was also higher among those who had had regular sexual partners in the past six months than among those who had not (7% vs. 1%), and it rose from 3% among men who had had no more than one female partner in the past six months to 13% among those who had had more than five partners during the same period.

Similarly, the proportion of women with chlamydia or gonorrhea did not vary among injection-drug users, but a number of factors were related to prevalence of these infections among nonusers. Among women who did not inject drugs, those who had been attending the program for more than two months had a higher prevalence of disease than those who had been coming for less time (13% vs. 3%), prevalence was higher among cocaine users than among nonusers (12% vs. 1%), and clients who had first had sex before age 13 were

more likely to be infected than those who had waited (19% vs. 3%).

In the multiple regression analysis, the researchers found that women were at increased risk of having chlamydia or gonorrhea if they were aged 20–24 (odds ratio, 6.5) or if they had had unprotected intercourse with a commercial partner (7.5). Men who were not injection drug users had elevated odds of disease if they had had intercourse with a regular partner during the six months prior to the interview (9.7). Among all men and women who did not use injection drugs, being younger than 13 at first intercourse and having used cocaine during the previous six months were also associated with an increased likelihood of STDs (6.1 and 5.3, respectively).

Six percent of participants (5% of men and 6% of women) tested positive for HIV; 68% of this group were already aware of their infection. All clients who had HIV had injected drugs, although the prevalence of infection was significantly lower among former users (6%) than among those who were currently injecting drugs (10%).

Among injection-drug users, the prevalence of HIV was higher for women than men (15% vs. 8%), and increased from 2% among clients younger than age 20 to 17% among those in their 30s. Infection with HIV was more prevalent among those who had spent time in prison than among those who had not (14% vs. 3%), and among those who had had hepatitis than among those who had not (21% vs. 4%). Injection-drug users who had engaged in any risky behavior had at least twice the risk of infection as those who had not. In some instances, the differential was striking. For example, 31% of those who had shared needles with an HIV-infected person tested positive for the virus, compared with 5% of those who had not; the prevalence of infection was 45% among those who had had unprotected sex with an HIV-infected partner, but 7% among those who had never done so.

According to results of the multivariate analysis, women, participants who had had hepatitis and those who had had fewer than two heterosexual partners in the past six months had an elevated like-

lihood of HIV infection (odds ratios, 2.6–3.4). The odds of HIV infection were even higher among those who reported having shared needles with an HIV-infected person (6.5).

Conclusion

The primary limitations of the study, as reported by the authors, are possible selection bias, as many drug users may have chosen not to attend the clinic while the research was under way, and the study's reliance on the retrospective, self-reports of participants' behaviors. Nonetheless, the researchers contend that the study provides support for the idea that "needle-exchange program sites may offer a good opportunity to provide complete prevention and medical services to [drug users]."—*M. Moore*

Reference

1. Poulin C et al., Prevalence of *Chlamydia trachomatis*, *Neisseria gonorrhoeae*, and HIV infection among drug users attending an STD/HIV prevention and needle-exchange program in Quebec City, Canada, *Sexually Transmitted Diseases*, 1999, 26(7):410–420.

Many Medicaid Recipients in Managed Care Plans Do Not Take Full Advantage of Available Prenatal Benefits

Many low-income women do not seek timely or adequate prenatal care, even when their health plan provides services covered by Medicaid. Half of Medicaid recipients who were enrolled in a managed care program in Tennessee and who were pregnant or gave birth in 1996–1997 sought no care during their first trimester; likewise, half made too few prenatal visits, as measured by a standard index of care. Although most women understood the value of prenatal care, personal circumstances such as fatigue and a lack of support from their baby's father often kept them from seeking services.¹

Researchers interviewed 200 Medicaid recipients to explore factors related to the timing and adequacy of the prenatal care they sought once enrolled in the managed care plan. The investigators considered care early, or timely, if it began during the first trimester; they classified it as adequate if the woman had made at least 80% of the expected number of visits. Using chi-square and multiple regression analyses, they examined the associations between these measures of prenatal care and three types of barriers that may prevent women from seeking services: socioeconomic, system-related and personal.

Survey participants were predomi-

nantly black, unmarried and younger than 25; the majority had at most a high school education. Half were employed, and the same proportion were poor, but few lived in crowded conditions. In general, the women had enrolled in the program after becoming pregnant; reports of system-related obstacles to seeking care (such as child care or transportation difficulties, inconvenient clinic hours, inability to get time off from work or worries about cost) were uncommon. For slightly more than half the women, this pregnancy was their first; for about three-quarters, it had not been intended. Fewer than one-quarter said they were too tired to make prenatal care visits or reported feeling like a failure; the majority received help from their baby's father or their family.

In all, 47% of women had initiated prenatal care early, and 49% had made an adequate number of visits. At the bivariate level, no socioeconomic factors were significantly associated with the timing or adequacy of care. Several system-related factors, however, differed according to participants' level of prenatal care: Women who had initiated care late were about twice as likely as those who had sought services early to have enrolled in the plan after their first trimester (39% vs. 18%) and to

have considered the clinic hours inconvenient (27% vs. 14%). Similarly, 24% of participants who had received inadequate care reported child care problems, compared with 12% of women who had made at least the recommended number of visits.

Personal factors also were significantly related to prenatal care at the bivariate level. Some 31% of women who had delayed seeking services complained of fatigue, compared with only 16% of those who had started receiving care early; 21% and 9%, respectively, considered themselves failures. The differential in the proportions reporting physical violence during their pregnancy was even sharper: 17% of women who had initiated care late, compared with 5% of those who had had timely care. Women who had made an inadequate number of prenatal care visits were more likely than those who had had adequate care to say that their pregnancy was unwanted (53% vs. 30%), that they were too tired to visit their provider (31% vs. 16%) and that they received little or no help from their baby's father (40% vs. 18%).

Results of the regression analyses, which controlled for age and for factors that were significant at the bivariate level, indicated that women who had experienced violence during pregnancy were al-

most four times as likely as others to delay care until after the first trimester (odds ratio, 3.5). Women who had enrolled in the health plan after becoming pregnant and those who reported being too tired to seek care also had an increased likelihood of delaying care (odds ratios, 2.4 and 2.2, respectively). Only one factor was predictive of adequacy of care: Women who received help from their infant's father were twice as likely as others to make fewer than the recommended number of visits (odds ratio, 1.9).

Overall, 89% of participants had a generally favorable attitude toward prenatal care. Virtually all of the women (95–98%) recognized the importance of going to every scheduled visit and understood the benefits of prenatal care; 80% reported that they would be more likely to seek services if they had a better understanding of how prenatal care would affect their own and their baby's health.

Given that women have positive attitudes toward prenatal care yet fail to take full advantage of available benefits, the investigators suggest that managed care plans collaborate with agencies that work with traditionally underserved populations to educate women in these populations about the prenatal benefits available to them, and to encourage women to take advantage of these benefits in a timely manner.—*D. Hollander*

Reference

1. Gazmararian JA et al., Prenatal care for low-income women enrolled in a managed-care organization, *Obstetrics & Gynecology*, 1999, 94(2):177–184.

Social Factors Play Major Role in Making Young People Sexual Risk-Takers

High school students who use drugs and alcohol are more likely than those who do not to engage in activities that put them at risk of contracting sexually transmitted diseases (STDs), including HIV. Male students are more likely than females to take sexual risks, but they also are more likely to use condoms. Risk-takers are more likely than others to socialize frequently with peers, to receive little social support and to believe that they are at high risk of STD infection but that there is little they can do to prevent it. These are the major findings of a study of predominantly ninth-grade urban high school students.¹

The researchers recruited study participants from physical education classes at four San Francisco schools in 1991–1992.

They asked students to fill out an anonymous questionnaire that included items on the young people's demographic, psychosocial and behavioral characteristics. Psychosocial items covered students' perceptions regarding the acquisition of HIV and other STDs, attitudes toward people with AIDS, anxiety related to STDs, perceptions of friends' attitudes toward preventive health measures, social interactions with peers and social support received from others. Behavioral measures assessed sexual experience, risk-related activities (e.g., having sex with an injection-drug user, an HIV-infected partner or multiple partners), condom use, and alcohol and drug use. The investigators performed two types of analyses: a logistic regression to examine factors associated with sexual experience and a linear regression to explore predictors of sexual risk-taking among sexually experienced young people and condom use in the last month among those who had had intercourse during that period.

In all, 985 students were included in the analysis, 54% of them women. Ninth graders made up 74% of the sample; participants were, on average, 14.7 years old. The sample was ethnically diverse: Thirty-seven percent were Asian, 23% Hispanic, 18% black, 10% white and 12% members of other groups or of mixed ethnicity. Some 38% of the students spoke only English at home, 25% spoke English and another language and 37% spoke another language. The investigators did not obtain information on participants' socioeconomic status; however, using census information and data on public assistance, they calculated that 63% of students in the four schools lived in poor families.

Overall, 30% of respondents were sexually experienced; the average age at first intercourse in this group was 12.7 years. According to the logistic regression results, a number of demographic factors were associated with sexual experience. Males were significantly more likely than females to be sexually experienced (odds ratio, 1.8), and students who spoke only English at home were more likely than those whose families spoke no English to have had intercourse (odds ratio, 1.4). Compared with young people in the "other/mixed ethnicity" category, black and Hispanic respondents had increased odds of sexual experience (2.0 and 1.6, respectively), and respondents from Chinese and other Asian backgrounds had reduced odds (0.3 and 0.5, respectively).

While knowledge about AIDS and other STDs was not associated with sex-

ual experience, respondents who perceived themselves as being at risk of infection were more likely than others to have had intercourse (odds ratio, 1.2). The likelihood of sexual experience also was somewhat elevated among students who socialized frequently with friends (1.1), but it was slightly lowered among those who reported that their friends endorsed preventive health practices (0.9). Students who used alcohol or drugs were more likely than those who did not to have had a sexual experience (1.4).

Results of the linear regression analysis indicated that the factors examined explained 28% of the variation in the likelihood that respondents had engaged in sexual behaviors that put them at risk for STDs. Gender was the only significant demographic factor, accounting for 6% of the variation: Young men were considerably more likely than young women to engage in risky behavior. Psychosocial factors explained 11% of the variation in sexual risk-taking; respondents who perceived themselves as having little ability to prevent STDs, those who socialized frequently with friends and those who reported they received little social support had an elevated likelihood of being risk-takers. Alcohol and drug use also was associated with increased sexual risk-taking, explaining 10% of the variation.

Some 54% of participants who had had intercourse in the previous month reported usually or always using condoms during that period. In all, the variables included in the analysis explained 32% of the variation in condom use. Although male students were more likely than females to engage in risky behavior, they also were more likely to use condoms. In addition, teenagers who perceived that they could prevent STDs and those who thought that their peers approved of preventive health measures had increased chances of using condoms.

The researchers note that while demographic factors were important for predicting sexual experience in their sample, the only one that affected either sexual risk-taking or condom use was gender. Since males are more likely than females both to take sexual risks and to use condoms, the investigators state, it would be helpful to have more information on how males make decisions regarding sexual activity. Commenting on the lack of association in this study between knowledge and behavior, they conclude that while it is "necessary for adolescents to know how STDs/HIV are transmitted and prevented, knowledge alone is not sufficient to in-

fluence their risk behaviors." One important factor warranting further study is peer influence. Another is substance use, and the researchers observe that early prevention interventions may avert both premature sexual activity among young people and such negative outcomes as STDs and unintended pregnancies.—*M.L. O'Connor*

Reference

1. Boyer CB, Tschann JM and Shafer M-A, Predictors of risk for sexually transmitted diseases in ninth grade urban high school students, *Journal of Adolescent Research*, 1999, 14(4):448-465.

Entry into Prenatal Care And Breastfeeding Initiation Have Increased in 13 States

Of women in 13 states who had a live birth in 1997, 17–31% had entered prenatal care after their first trimester or had received no care at all; in most states, the proportion was significantly lower than it had been in 1993. Similarly, the proportion of women who attempted to breastfeed their newborn (48–87%) improved in most states. However, levels of other behaviors and experiences that may be associated with unfavorable outcomes for both women and their newborns—unintended pregnancy, smoking and physical abuse during pregnancy—remained unchanged. These are among the highlights of findings from the Pregnancy Risk Assessment Monitoring System (PRAMS).¹

PRAMS is an ongoing, state- and population-based surveillance system that gathers information on important maternal health indicators. Data are collected each month through questionnaires mailed to a sample of women who delivered a live-born infant in the previous 2–6 months. Thirteen states participating in PRAMS had data available for 1997: Alabama, Alaska, Arkansas, Colorado, Florida, Georgia, Maine, New York (excluding New York City), North Carolina, Oklahoma, South Carolina, Washington and West Virginia. The study utilized both PRAMS and birth certificate data; PRAMS data from earlier years were used to identify trends within states.

Unintended Pregnancy and Contraception

Women were asked what their attitude toward a pregnancy had been just before they became pregnant. Those who reported that they had wished to become pregnant at that time or sooner were classified as having had an intended pregnancy, while those who said that they had

wanted to become pregnant later or never were classified as having had an unintended pregnancy. The rate of unintended pregnancy in 1997 ranged from 34% (in Maine) to 50% (in Oklahoma and South Carolina). Only two states saw any significant change in the prevalence of unintended pregnancies since 1993; Georgia demonstrated a decrease from 52% to 45%, and New York showed an increase from 33% to 38%.

Age, education, race and Medicaid status all had significant effects on whether a woman experienced an unintended pregnancy. In every state, women younger than 20 had the highest prevalence of unintended pregnancy (61–85%). In eight states, the proportion of women who reported an unintended pregnancy decreased steadily as their age increased; only 16–40% of women who were older than 35 reported this situation. Between one-half and three-fourths of women who had less than 12 years of education, who were black or who received Medicaid had not intended to conceive, significantly higher proportions than were found among women with more education, white women and women who were not receiving Medicaid. In Oklahoma, Hispanic women were significantly less likely to report this outcome than were non-Hispanic women (34% vs. 52%).

Women who said that their pregnancy had been unintended were asked if they had been using any contraceptive method when they conceived. In each state, 37–48% of women had been doing so at the time the pregnancy occurred; the lowest proportion was in Arkansas, and the highest was in Maine. The prevalence of contraceptive use was unchanged from the level in 1996, the only other year for which these data were available, and generally did not differ significantly by maternal characteristics. In Alaska and Florida, however, contraceptive use was more prevalent among women who had had 12 years or more of education than among their less-educated counterparts.

Timing of Prenatal Care

In the 13 states, 17–31% of women had entered prenatal care late (i.e., they had begun care after their first three months of pregnancy or had not received any prenatal care). The lowest prevalence of late entry into prenatal care was in Maine, and the highest was in Oklahoma. A decline in the prevalence of late entry into prenatal care was observed in eight of the 10 states with data available for 1993–1997; late entry in two states (Oklahoma and Wash-

ington) did not change significantly.

Women younger than 20 were the most likely to have received late prenatal care in every state (35–53%). In seven states, higher proportions of black women than white women entered prenatal care after the first three months of pregnancy or sought no care. White women had a lower prevalence of late entry than women of other races (excluding black women) in Colorado and Florida. In four states (Colorado, Georgia, New York and Washington), Hispanic women were significantly more likely than non-Hispanic women to have entered prenatal care late. Overall, the probability of late entry decreased as a woman's level of education increased. Some 31–51% of women with less than 12 years of education entered prenatal care after the first trimester or received no care, compared with 8–21% of women with more than 12 years of education. Medicaid recipients were more likely to report late care (27–42%) than were women not receiving Medicaid (6–24%).

Smoking During Pregnancy

During the last three months of pregnancy, 11–24% of women in the 13 states smoked. Smoking was most common in West Virginia and least common in Georgia. The proportion of women who smoked during the last trimester has decreased significantly since the mid-1990s in two states (Georgia and Washington).

Two factors were consistently related to the prevalence of smoking. In all 13 states, women with more than 12 years of education were considerably less likely to smoke (4–11%) than were those with less than a high school education (23–51%). Except in Oklahoma, Medicaid recipients had a significantly higher prevalence of smoking late in pregnancy (17–40%) than women who did not receive Medicaid (5–15%).

In six states, white women were more likely to have smoked during the last trimester (13–24%) than were black women (4–18%). In Alaska, white women (15%) and black women (7%) smoked significantly less than women in the "other races" category (24%), which comprised mostly Native Alaskan women. Hispanic women in five states were much less likely to have smoked late in pregnancy than were their non-Hispanic counterparts; for example, in Oklahoma, 3% of Hispanic women reported smoking during the last trimester, compared with 21% of non-Hispanic women. Women in eight states who delivered a low-birth-weight infant (i.e., an infant weighing less than 2,500 g) were significantly more likely to

have smoked than were those whose infants had a normal birth weight. Parity was a factor in one state (Alabama), where 11% of first-time mothers and 18% of those who had given birth before had smoked.

Physical Abuse During Pregnancy

Women who are physically abused (i.e., "hit, slapped, kicked, or physically hurt in any way") during pregnancy are believed to be in danger of adverse outcomes for themselves and for their infants. The proportion of women who were physically abused by a husband or partner during their most recent pregnancy ranged from 2% (in Washington) to 6% (in South Carolina). There was no significant change in the prevalence of abuse during pregnancy since 1996.

Levels of physical abuse differed significantly according to women's race in three states. In Alaska, white women were significantly less likely to be abused during pregnancy than were women of other races (3% vs. 7%). White women and black women were significantly more likely to experience physical abuse during pregnancy than were women of other races in Florida (4–5% vs. 1%). In Washington, black

women were significantly more likely to be abused during pregnancy than were white women (6% vs. 2%). Hispanic women in Colorado reported significantly more physical abuse during pregnancy than non-Hispanic women (8% vs. 2%).

In eight states, women were more likely to experience physical abuse during pregnancy if they had less than 12 years of education than if they had more than a high school education. Medicaid recipients in nine states were more likely to be abused by their husbands or partners than women who did not receive Medicaid. Women who delivered a low-birth-weight infant in one state (Alaska) were significantly more likely to be physically abused during pregnancy than women who delivered a normal-birth-weight infant (9% vs. 4%).

Breastfeeding Initiation

When asked whether they had ever tried to breastfeed their new infant, 48–87% of women said they had. Washington and Alaska had the highest proportion of women trying to breastfeed, and Alabama and West Virginia had the smallest proportion. Seven states showed an in-

crease in the initiation of breastfeeding since 1993.

In the majority of states, the proportion initiating breastfeeding increased as the age and level of education of the mothers increased. The proportion was significantly higher among white women than among black women in eight states, and was higher among Hispanic than among non-Hispanic women in Florida (80% vs. 64%). In every state except Washington, Medicaid recipients were less likely to initiate breastfeeding (33–82%) than were women who were not receiving Medicaid (59–89%). Mothers who gave birth to normal-weight infants had a higher likelihood of initiating breastfeeding than women who delivered low-birth-weight infants in seven states. In Georgia and South Carolina, first-time mothers had a significantly higher prevalence of breastfeeding initiation than multiparous mothers.—*L. Gerstein*

Reference

1. Colley Gilbert BJ et al., Prevalence of selected maternal and infant characteristics, Pregnancy Risk Assessment Monitoring System (PRAMS), 1997, *Morbidity and Mortality Weekly Report*, 1999, 48(SS05):1–37.

Likelihood That a Condom Will Break or Slip Off Is at Least Partly Related to User's Characteristics

While having a condom break or slip off during intercourse is often the result of design and manufacturing flaws, the user's experience with the method and other characteristics also play a part, according to a large prospective follow-up study.¹ Women who are young, black, single or childless and those who engage in risky sex are more likely than others to have condoms break, while women with children have heightened odds of experiencing slippage. Those who have experience with condoms and those who use spermicides as well are less likely than others to have problems with condoms.

Study participants were recruited from among 18–34-year-old nonpregnant women attending a county sexually transmitted diseases clinic in Birmingham, Alabama. Nurses provided them with information on the correct use of barrier methods and recommended use of a condom and spermicide at each act of intercourse or, if that is not possible, use of a condom alone. The participants were given free barrier contraceptive supplies and diaries for recording information on their sexual activity, contraceptive use and any problems that occurred with their method. At six monthly follow-up visits, the women

reviewed the diaries with a nurse.

A total of 1,122 women enrolled in the study; the analyses are based on the 892 who reported condom use. Most of these women were young adults (their median age was 24), 90% were black, half had more than a high school education and the majority were poor. On average, they had first had intercourse at age 16, their median number of partners was six and half had used barrier contraceptives. Seventy percent had had a sexually transmitted disease.

Participants' diaries recorded 34,036 instances of vaginal intercourse; latex condoms were used in 64% of the encounters, and in 33% of those cases, women also reported use of a spermicide. In all, 2% of condoms broke during intercourse, and 1% slipped (the study did not differentiate between partial and complete slippage). Other problems with condoms (e.g., they were not used throughout intercourse) occurred in fewer than 1% of acts of intercourse. Rates of breakage and slippage varied according to factors measured both at baseline (e.g., women's race, parity and education) and within the follow-up period (e.g., previous condom failure, type of partner and use of spermicide).

The researchers used logistic regression

analysis to compute the odds of breakage and slippage associated with various characteristics. Results of that analysis showed that baseline characteristics had a modest effect on the likelihood of condom breakage. Women younger than 30, black women and participants who had engaged in risky sex (defined as exchanging sex for money or drugs or having sex while under the influence of drugs or alcohol) had an elevated risk of experiencing breakage (odds ratios, 1.6–2.0), while women with children were less likely than childless women to have a condom break (odds ratio, 0.7).

Condom breakage was more dramatically affected by a number of factors measured during follow-up; the strongest predictor of breakage was a woman's experience with condoms. If a woman had had one condom break, the chance that she would have another one break was elevated (odds ratio, 3.6); once she had had two or more condoms break, her odds of experiencing another break were markedly higher (9.3). While slippage was not associated with the likelihood of a condom's breaking, women who had other problems with the method had significantly increased odds of experiencing breakage (2.8).

Participants who had used condoms without problems fewer than five times were substantially more likely to have a condom break than were women who had used condoms more than 30 times without problems (odds ratio, 6.5). Breakage was more common among women who had had unprotected intercourse fewer than five times than among those who had had unprotected coitus 30 or more times (odds ratio, 2.2). The risk of having a condom break tended to increase with a woman's number of partners, though the association was weak and inconsistent. Use of a spermicide had a slightly protective effect on breakage (odds ratio, 0.8).

Condom slippage followed a different pattern. Women with children were somewhat more likely than childless women to experience slippage (odds ratio, 1.4), but no other baseline characteristic had a sig-

nificant effect. A number of follow-up factors roughly doubled the odds of slippage: having 6–10 partners, having a new or casual partner and having had a condom break (odds ratios, 1.5–1.9). Women who had had a condom slip in the past were 3.0 times as likely as those who had not to report slippage; those who had previously experienced slippage at least twice were at even greater risk (7.4). Again, as the number of times a woman had used condoms without problems decreased, her odds of having a condom slip rose (2.0–10.3). Users of vaginal spermicides had slightly reduced odds of experiencing condom slippage (0.8). Associations between slippage and number of partners and number of unprotected acts of intercourse were inconsistent.

Noting that the rates of slippage and breakage they found are low, the re-

searchers nonetheless urge that women at high risk of contracting HIV from their partner exercise caution, and they encourage health providers to recommend abstinence over condom use for such individuals. Moreover, the researchers emphasize that their results show condom breakage and slippage, which have generally been believed to be a result of product defects, to be at least partly related to users' characteristics. Consequently, they recommend that future research and interventions focus on "the modifiable characteristics of the user" and on improving "user motivation and training."—*M.L. O'Connor*

Reference

1. Macaluso M et al., Mechanical failure of the latex condom in a cohort of women at high STD risk, *Sexually Transmitted Diseases*, 1999, 26(8):450–458.

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