Supportive Practices Among Hospital Staff Are Strongly Linked to Chances of Breast-Feeding

The likelihood that women who intend to breast-feed exclusively actually do so in the first week after giving birth is associated with hospital staff's approach to the practice, according to a study of U.S. women who gave birth in 2005.[1] For example, first-time mothers had increased odds of achieving their intention to breast-feed if hospital staff helped them get started (odds ratio, 6.3). Mothers having a second or subsequent birth were more likely to reach their breast-feeding goal if staff encouraged them to feed their baby on demand than if health care providers did not promote this practice (3.4). Both first-time and experienced mothers were more likely to fulfill their intention to breast-feed if hospital staff did not supplement breast-feeding with water or formula (4.4 and 8.8, respectively). Overall, 61% of mothers had intended to breast-feed exclusively, and 51% were doing so in the first week after the birth.

The data come from Listening to Mothers II, a 2006 survey of 1,573 women aged 18–45 who delivered a live singleton infant in a hospital in 2005, and are representative of the general U.S. population of such women. Respondents participated via online survey or telephone interview; the latter method was employed to increase the number of nonwhite participants.

Respondents were asked about their experiences and attitudes related to their most recent birth within the previous 13 months. Breast-feeding questions focused on women's intentions before giving birth (exclusive breast-feeding, exclusive formula feeding or mixed feeding); their actual feeding pattern in the first week after the birth; their experience with hospital practices thought to support exclusive breast-feeding; and their opinion on which feeding regimen hospital staff promoted overall.

Prior to giving birth, 61% of women (70% of first-time mothers and 57% of experienced mothers) had intended to breast-feed exclusively; 51% of all respondents were breast-feeding exclusively in the first week after the birth. Those who intended to and were breast-feeding at one week represented 50% of first-time mothers and 53% of more experienced mothers. Among first-time mothers, large discrepancies between intending to breast-feed exclusively and actually doing so at one week were found among Hispanic and non-Hispanic black mothers (59% in each group had intended to exclusively breast-feed, and 32–33% did so), those with an income of $25,000–49,999 (78% vs. 49%) and those who worked part-time (78% vs. 51%). Patterns were similar among women who had experienced one or more previous births.

Three-quarters of respondents who had intended to breast-feed exclusively felt that hospital staff generally encouraged the practice. Some 77% of women reported that staff helped them get started, 77% were encouraged to feed on demand, 66% were given help positioning their baby and 65% were directed to community resources related to breast-feeding. Nonetheless, many women reported hospital staff behaviors that do not promote exclusive breast-feeding: giving women free formula samples (65%), giving the baby a pacifier (42%) and providing formula or water in addition to breast milk (37%). White first-time mothers were less likely than their black or Hispanic counterparts to report this last practice (40% vs. 71% and 74%, respectively).

Six of the seven hospital practices measured by the study were associated with first-time mothers' rate of achieving their intention to breast-feed exclusively. For instance, 69% of those who reported that hospital staff helped them start breast-feeding were breast-feeding exclusively at one week, compared with 33% of those who were not given help getting started. Among mothers who had experienced one or more prior births, encouraging feeding on demand, not providing free formula and not giving supplementary liquids were associated with fulfilling the intention to breast-feed exclusively. The hospital staff behaviors had a strong cumulative effect on the proportion of women who achieved their intention to breast-feed exclusively: Some 86% of first-time mothers and 93% of experienced mothers who reported at least six of the seven staff behaviors fulfilled their exclusive breast-feeding intention, compared with 14% and 45%, respectively, among mothers who reported one or none of the practices.

In analyses controlling for demographic factors and certain details of respondents' intrapartum experience (epidural use, cesarean or vaginal birth, prenatal care provider and others), first-time mothers' likelihood of achieving their intention to breast-feed was elevated if hospital staff helped them to start breast-feeding (odds ratio, 6.3), did not supplement breast-feeding with formula or water (4.4), did not give their baby a pacifier (2.3) and told them about community resources (2.3). Mothers having a second or subsequent birth experienced elevated odds of achieving their breast-feeding goal if hospital staff did not supplement breast-feeding (8.8) and encouraged feeding on demand (3.4). No demographic or intrapartum characteristics were associated with women's fulfillment of their breast-feeding intentions.

The researchers note that exclusive breast-feeding is deemed by many medical and health professional organizations to be the most healthful feeding regimen for infants and a practice that all hospitals should encourage. Citing the substantial difference between the proportions of women who planned to breast-feed exclusively and who actually did so, the researchers point out that "shifts between intention and practice represent a huge lost opportunity to encourage and support breast-feeding in the United States." Support may be especially important for women who have given birth in the past, some of whom may intend not to breast-feed because of adverse experiences after prior births. With a view to increasing breast-feeding overall, the researchers suggest that the strong association between hospital practices and breast-feeding represents a mandate to change practices "at the hospital and professional levels to ensure that the hospital

experience more consistently contributes to the health and welfare of mothers and babies."—*H. Ball*

REFERENCE

1. Declercq E et al., Hospital practices and women's likelihood of fulfilling their intention to exclusively breastfeed, *American Journal of Public Health,* 2009, 99(5):929–935.

Unintended Pregnancy Linked to Unhealthy Maternal Behaviors

Two-fifths of live births to Maryland women between 2001 and 2006 followed unintended pregnancies, and women whose pregnancies were unintended were more likely than those who had intended to conceive to engage in a number of unhealthy behaviors before, during and after the pregnancy.[1] In surveys completed 2–9 months postpartum, women reporting a mistimed or unwanted pregnancy had increased odds of saying that they had not used folic acid daily before conception, that they had smoked during pregnancy or since delivery, and that they suffered from postpartum depression. They were less likely than other mothers to have begun prenatal care during the first trimester and to have breast-fed for at least eight weeks.

The surveys were conducted as part of the Pregnancy Risk Assessment Monitoring System. Each year, participating states mail a random sample of postpartum women a questionnaire that asks about their pregnancy intentions and maternal behaviors. Data are weighted to be made representative of all women in the state who had live births during the year and are linked with birth certificate data, which provide demographic, medical and pregnancy information. Analysts used bivariate and logistic regression methods to identify associations between selected maternal behaviors and pregnancy intendedness among women in Maryland.

During the study period, 41% of Maryland women who had a live birth had not intended to conceive when they did: Thirty-one percent had wanted to become pregnant at a later time, and 10% had not intended ever to become pregnant. The proportion of pregnancies that were unintended varied significantly by women's socioeconomic characteristics. It was markedly higher among black mothers, teenagers, women with no more than a high school education, Medicaid enrollees and unmarried women than among others.

The analysts examined reports of one preconception behavior (daily use of folic acid), four prenatal behaviors (cigarette smoking and alcohol consumption in the third trimester, receipt of prenatal care in the first trimester and receipt of no prenatal care) and six postpartum behaviors (smoking, any breast-feeding, breast-feeding for at least eight weeks, placing the infant on his or her back to sleep, depression and contraceptive use). Results of bivariate analyses suggest that women whose pregnancies had been mistimed or unwanted were generally less likely to engage in healthy behaviors than were those who had intended to conceive. For example, 55–67% of women with unintended pregnancies had begun receiving prenatal care during the first trimester, compared with 86% of those whose pregnancies had been planned; 12–23% and 8%, respectively, had smoked during the third trimester. The exceptions to this pattern were that third-trimester alcohol consumption was more common, and postpartum contraceptive practice was less common, among women who had had intended pregnancies than among others.

Findings from multivariate analyses confirm that unintended pregnancies are associated with relatively unhealthy maternal behaviors. Compared with mothers who had intended to conceive, those whose pregnancies had occurred earlier than they would have liked were more likely not to have used folic acid daily before conceiving (odds ratio, 2.2) and more likely to experience postpartum depression (1.3); they were less likely to have begun prenatal care early (0.5). Women who had not wished to conceive at any time had elevated odds of not using folic acid daily before pregnancy (2.3), smoking while pregnant and after giving birth (2.1 and 1.9), and reporting postpartum depression (2.0); they had reduced odds of saying that they had begun prenatal care during the first trimester (0.3) and that they had breast-fed for eight weeks or longer (0.7).

In discussing the limitations of their study, the analysts observe that the postpartum period is not "the ideal time to ascertain pregnancy intention" and that, in any case, "the definition of unintended pregnancy…is innately problematic." Nevertheless, they conclude, the survey data demonstrate that unwanted pregnancies that end in live births are associated with a variety of unhealthy perinatal behaviors. Prevention of unintended pregnancies should help to reduce the prevalence of these behaviors, they note, adding that primary care and family planning service providers can play a role by including discussions of healthy behaviors in their visits with women of reproductive age. —*D. Hollander*

REFERENCE

1. Cheng D et al., Unintended pregnancy and associated maternal preconception, prenatal and postpartum behaviors, *Contraception,* 2009, 79(3):194–198.

Adults Who Were Abused As Children May Face Elevated Risk of STDs

Childhood abuse is linked to an increased risk of STD infection over time, according to findings from a prospective cohort study.[1] Participants who had been sexually abused as children had elevated odds of having had at least one STD (odds ratio, 1.9), and of having had more than one (3.3), by the time they were interviewed as adults. Those who had been physically abused during childhood had higher odds of having been infected with two or more STDs than those who had not been abused (3.6).

Researchers used court records from a metropolitan area in the Midwest to identify children aged 11 or younger between 1967 and 1971 who had been physically abused, sexually abused or neglected. To create a comparison group, they matched these youngsters by gender, race and age with children who had no documented history of abuse. The researchers interviewed respondents in 1989–1995, and again in 2000–2002 and in 2003–2004. For the analysis of the relationship of childhood abuse and neglect and STD risk during adulthood, the researchers used data from face-to-face interviews conducted in 2003–2004, in which respondents were asked about their lifetime STD history.

The 754 respondents in the final sample (423 of whom had been abused or neglected as children and 331 of whom had not) were 41 years old, on average, and about half (53%) were female. Six in 10 had no more than a high school education; 55% had unskilled or semiskilled jobs, and 14% had semiprofessional or professional jobs. Sixty-three percent of participants were white, and 37% were black; respondents of other racial

and ethnic groups were excluded because there were too few for analysis.

Some 22% of respondents reported having ever had at least one STD, and 8% reported having had two or more STDs. Similar proportions (3–4%) had had genital herpes, syphilis and human papillomavirus (HPV); 10–12% had had chlamydia or gonorrhea. Black participants were more likely than whites to have had any STD and to have had more than one; therefore, race was controlled for in further analyses. No difference in STD history was found by gender.

Logistic regression analysis revealed that adults who had been abused or neglected did not have an increased likelihood of having had any STDs, but they did have elevated odds of having had two or more STDs (odds ratio, 2.0). The relationship held for those who had experienced physical abuse (3.6) or sexual abuse (3.3), but neglect alone was not related to STD risk. The odds of having had any STD, syphilis or HPV were elevated only for adults who had been sexually abused (1.9, 4.3 and 3.2, respectively); the odds of having had gonorrhea or chlamydia were unrelated to a history of abuse or neglect.

In separate analyses examining STD risk by gender, no associations with childhood abuse and neglect were found among men. However, women who had been sexually abused had higher odds than others of having had multiple STDs (odds ratio, 3.9), syphilis (11.6) or gonorrhea (2.9).

Separate analyses by race also revealed different patterns of associations. Among blacks, a history of childhood sexual abuse was associated with having had syphilis (4.8); no other type of childhood abuse was related to STD risk. In contrast, among whites, those who had experienced any abuse or neglect, sexual abuse or physical abuse had elevated odds of having had multiple STDs (4.2, 3.6 and 5.4, respectively). Whites with a history of sexual abuse also had an increased likelihood of having had any STD (2.6) or gonorrhea (4.0), and those with a history of any abuse had an increased likelihood of having had genital herpes (4.5).

Among other study limitations, the researchers acknowledge that asking about STD history in face-to-face interviews may have led to underreporting, and that respondents were not asked how many times they had been infected. The investigators add that the abuse cases examined were clearly documented, but that respondents in the control group could have experienced unreported abuse. Even so, the researchers note, the findings point to an association between abuse and increased risk of STD infection that continues "beyond adolescence and young adulthood." They encourage greater attention to women and blacks, and early STD screenings for victims of any type of childhood abuse, to help prevent "later health consequences." —*S. Ramashwar*

REFERENCE

1. Wilson HW and Widom CS, Sexually transmitted diseases among adults who had been abused and neglected as children: a 30-year prospective study, *American Journal of Public Health*, 2009, 99(S1): S197–S203.

In the UK, Risk of Severe Maternal Health Problems Is Elevated for Nonwhites

In the United Kingdom, 89 women of every 100,000 who gave birth in 2005–2006 experienced at least one of five serious pregnancy-related conditions. The rate was significantly higher among black women than among whites, and analyses that controlled for a range of risk factors confirmed that nonwhite women overall have a higher risk of maternal morbidity than their white counterparts.[1] Maternal deaths are infrequent in the United Kingdom, as they are in most developed countries; therefore, the analysts reasoned that studying severe maternal morbidity—which occurs more frequently than maternal mortality—may shed additional light on the pregnancy experiences of different subgroups of women.

Data came from a national surveillance system that asks clinicians in hospital maternity units to report monthly on whether they have seen any women with certain rare, serious conditions, including women who have died. Five conditions that can lead to pregnancy-related deaths were considered in the analyses of severe maternal morbidity: acute fatty liver of pregnancy (a buildup of fat in the liver), amniotic fluid embolism (the presence of amniotic fluid, fetal cells or other debris in the woman's circulatory system), pulmonary embolism, eclampsia (characterized by convulsions during pregnancy or the first 10 days after delivery, followed by specified clinical events) or hysterectomy at the time of delivery. If an occurrence of any of these conditions was reported, clinicians were sent a form asking for details about the diagnosis and about women's background characteristics (including self-reported ethnicity) and risk factors for maternal morbidity.

Between February 2005 and February 2006, some 686 of the 775,186 women who gave birth in the United Kingdom experienced one of the conditions included in the analyses. Seventy-four percent of the women with one of these conditions were white, 3% Indian, 5% Pakistani, 2% Bangladeshi, 2% black African, 7% black Caribbean and 7% members of other ethnic groups. Their median age was 31, and four in 10 had not given birth before.

The rate of severe maternal morbidity was 89 per 100,000 births overall, but it varied significantly among ethnic groups. White women had a rate of 80 per 100,000, whereas nonwhites as a group had a rate of 126 per 100,000. Black women had the highest rates—188 and 196 per 100,000 among those of African and Caribbean origin, respectively. Pakistanis also had a significantly higher rate than whites (119 per 100,000 births). Rates appeared to be elevated in each of the other minority ethnic groups as well, but these groups were small, and the differences were not statistically significant. Peripartum hysterectomy was the most common of the conditions, accounting for nearly half of reported cases. No ethnic differences were apparent in the distribution of severe pregnancy-related conditions.

Results of a logistic regression analysis that controlled for women's background characteristics and risk factors demonstrated that nonwhite women (who were examined as a group because of the small numbers in some subgroups) were significantly more likely than white women to experience severe maternal morbidity (odds ratio, 1.5). Other characteristics associated with women's likelihood of having had one of the five conditions studied were being younger than 20 or older than 34 (2.6 and 1.8, respectively) and low socioeconomic status (1.3).

The analysts point out two characteristics of their study that could be viewed as limitations: They studied only selected conditions among those that are major direct causes of maternal deaths in the United Kingdom; and because national data on maternal ethnicity were not available, they had to estimate ethnicity for 25% of women included in the analyses. However, they note that evidence

in the literature suggests that effects on their results were likely not substantial.

Commenting on the ethnic differences they found in the risk of severe maternal morbidity, the analysts speculate that the causes may lie in ethnic differences in risk factors or in the care women receive during pregnancy, labor and delivery. This possibility, they conclude, "highlights to clinicians and policy makers the importance of tailored maternity services and improved access to care for women from ethnic minorities."—*D. Hollander*

REFERENCE

1. Knight M et al., Inequalities in maternal health: national cohort study of ethnic variation in severe maternal morbidities, *BMJ,* 2009, 338:b542, doi:10.1136/bmj.b542, accessed Mar. 27, 2009.

Mothers' Pap Screening and STD History Associated With Daughters' Uptake, Completion of HPV Vaccine

Mothers' attitudes toward prevention, and history of abnormal Pap test results or STDs, are strongly linked to whether their daughters receive the human papillomavirus (HPV) vaccine. Adolescent women were more likely to begin receiving the quadrivalent HPV vaccine if their mothers had had a Pap test in the previous three years, had had an abnormal Pap test result or had a history of STDs (odds ratios, 1.1–1.5), according to a study of mother-daughter pairs belonging to a large health care organization in Southern California.[1] Daughters of women who had had a recent Pap test also had increased odds of completing the three-dose regimen (1.4), as did those whose mothers had had abnormal test results or had a history of genital or anal warts (1.2 and 1.3, respectively).

Data were drawn from the electronic health records of a managed care organization that serves more than three million Californians. Its members are representative of the general population in Southern California in their ethnic and socioeconomic diversity, and all members have similar health care coverage; HPV vaccinations are available to eligible female members at no additional out-of-pocket cost.

The sample comprised 148,350 mother-daughter pairs; daughters had to be aged 9–17 as of October 2006, the month in which the organization began dispensing the vaccine, and mothers had to have been enrolled for the preceding three years. Vaccine initiation was examined over the subsequent 12 months, and completion of the regimen was examined over the year following receipt of the first dose. Associations between demographic and socioeconomic variables (some of which were derived from data from the U.S. census and the state-subsidized Medi-Cal program), mothers' Pap screening and STD history, and vaccine initiation were examined using analysis of variance and chi-square tests; Pap test screening was considered to be an indicator of women's attitude toward preventive measures. Multivariable logistic regression models assessed the association between mothers' Pap and STD history and daughters' initiation and completion of the vaccine regimen, while adjusting for demographic and socioeconomic characteristics.

Daughters' mean age at the beginning of the study was 13 years. Some 26% were Hispanic, 18% white, 7% black and 4% Asian or Pacific Islander; 44% were of other or unknown race or ethnicity. Daughters who had begun the vaccine regimen were older than those who had not (14 vs. 13), and had been health plan members for longer (10 vs. nine years). Their mothers were more likely to have had a Pap test in the previous three years than were mothers of daughters who had not begun the regimen (82% vs. 76%), and were also more likely to have had an abnormal Pap test result (18% vs. 17%) or genital or anal warts (3% vs. 2%).

In the multivariable analysis, adolescents' vaccine initiation was associated with all four aspects of their mothers' Pap and STD history: having had a Pap test within three years (odds ratio, 1.5), having had an abnormal test result (1.1), having had genital or anal warts (1.2) and having had other STDs (1.1). In addition, mothers' Pap test history was consistently associated with daughters' vaccine initiation regardless of ethnic background (1.3–1.5) or neighborhood education and income levels (1.5–1.6). Mothers' abnormal Pap test results and STD diagnoses were not consistently linked to vaccine initiation across racial, ethnic and socioeconomic groups, and associations were generally modest.

Among the 18,275 mother-daughter pairs included in the analysis of the completion of the vaccine regimen, 41% of adolescents completed it within a year of initiation and at the recommended time intervals; another 2% completed the regimen but did not adhere to the recommended timing. Daughters whose mothers had had a Pap test within three years had increased odds of having completed the regimen (odds ratio, 1.4), as did those whose mothers had had abnormal Pap results or a history of genital or anal warts (1.2 and 1.3, respectively). Mothers' Pap test history was also associated with regimen completion for three of the four racial or ethnic groups (1.4–1.6, the exception being among black adolescents) and for every neighborhood education and income level (1.3–1.5). Women's abnormal Pap results and STD diagnoses were not consistently associated with vaccine completion across racial, ethnic and socioeconomic groups. The strongest association was found between mothers' history of having STDs other than genital or anal warts and their daughters' completion of the regimen among those who were of Asian or Pacific Islander background (4.9).

The researchers note several limitations of the study, including their use of neighborhood, rather than individual, socioeconomic measures and their use of Pap test history to indicate mothers' attitude toward preventive measures. Nonetheless, they believe that their use of detailed longitudinal health records minimized potential recall and selection biases, and point out that the diverse member population of the health care organization allowed the examination of associations across ethnically and socioeconomically diverse subgroups. The researchers note that if their findings are confirmed by other studies, public health programs might consider targeting the mothers of adolescent girls in an effort to increase the uptake and completion of the HPV vaccine regimen. Furthermore, they suggest that "mothers' attitudes toward preventive measures are one of the factors determining whether their daughters receive [this] nonmandatory vaccine against HPV infection and comply with its recommended 3-dose regimen."—*J. Thomas*

REFERENCE

1. Chao C et al., Papanicolaou screening behavior in mothers and human papillomavirus vaccine uptake in adolescent girls, *American Journal of Public Health,* 2009, 99(6):1137–1142.

HIV Testing for Prisoners Based on Risk Factors May Underestimate Prevalence of Infection

Targeted HIV testing programs that rely on prison inmates' self-report of conventional HIV risk behaviors are likely to underestimate HIV prevalence, according to a study of data from the North Carolina Department of Corrections.[1] Among the male and female prisoners who were voluntarily tested, the overall HIV prevalence was 3%. Forty-four percent of HIV-positive prisoners did not report any of the conventional HIV risk behaviors, such as history of multiple partners or sharing needles. In general, HIV risk behaviors were moderately associated with the likelihood of HIV infection, suggesting that testing programs based on prisoners' self-report of such risk factors may underestimate the prevalence of infection. An estimated 24–61% of HIV cases were not detected because not all male prisoners agreed to be tested.

To examine associations between incarcerated individuals' characteristics and their risk of HIV, researchers used data collected from male and female prisoners entering the North Carolina Department of Corrections between January 1, 2004, and May 30, 2006. Upon intake, most male and some female prisoners were screened for conventional HIV risk behaviors—ever having shared needles or had a blood transfusion between 1978 and 1985, having had multiple sex partners, having had sex as or with a sex worker, having had sex with men (for males only) and having had sex with an injection-drug user or with a male partner who has sex with men (both for females only). Inmates were offered voluntary HIV testing. Multivariate logistic regression analyses were conducted to determine which characteristics were linked to HIV infection. Researchers estimated the number of untested male prisoners living with HIV using age-, gender- and race-specific prevalences for prisoners and for the general male population of the state.

Of the 54,644 inmates aged 18 or older who entered the prison system during the study period, 39%—15,461 males and 5,958 females—were tested for HIV. Of these, 1% of men had had sex with men, and 3% of women had had sex with a male partner who has sex with men. Eighteen percent of men reported having multiple sex partners, and 7% had had sex with or as a sex worker; among women, those proportions were 27% and 17%, respectively. Three percent of men and 9% of women had ever shared needles; 16% of women had had sex with someone who shares needles. The proportions of males and females who had had a blood transfusion were 1% and 3%, respectively.

Some 718 prisoners tested for HIV were positive, for an overall HIV prevalence of 3% (4% for males and 3% for females). Among HIV-positive prisoners, 44% reported no HIV risk behaviors, and 34% reported at least one; 22% had no data. HIV prevalence was greater among those who reported at least one HIV risk behavior than among those who did not (7% vs. 3% for males, and 4% vs. 2% for females).

In multivariate analyses controlling for social and demographic characteristics, details about the crime and the sentence, and sexual and drug-use behaviors, having had a same-sex partner was strongly associated with HIV infection among males (odds ratio, 8.0); however, other conventional risk behaviors—multiple partners, sex with or as a sex worker, and sharing needles—were more modestly associated with infection (1.4–2.1). For women, having had multiple partners and having had a blood transfusion were associated with increased odds of HIV infection (2.2 and 2.6, respectively).

During the study period, 32,241 male prisoners were not tested for HIV; of those, the researchers estimated that between 223 and 1,101 were HIV-positive. Thus, an estimated 24–61% of all HIV cases were undetected.

While acknowledging that their HIV prevalence estimates are greater than those for neighboring South Carolina's prison system, the general population of North Carolina and the United States, the researchers express confidence in their estimates for female prisoners—most of whom underwent testing. However, in regard to male prisoners, they comment that "elective testing combined with a moderate testing rate likely resulted in a high estimate of seropositivity that is unrepresentative of the general male prison population." The researchers note that targeted testing based on prisoners' self-reported HIV risk behaviors is likely to underestimate HIV prevalence because of the modest associations between risk factors and infection, and because of prisoners' unwillingness to disclose sensitive information. They suggest that "testing should be widely encouraged among all prisoners," but warn that "prisoners should maintain their right to accept or decline HIV testing."—*J. Rosenberg*

REFERENCE

1. Rosen DL et al., Characteristics and behaviors associated with HIV infection among inmates in the North Carolina prison system, *American Journal of Public Health,* 2009, 99(6):1123–1130.

Canadian Aboriginal Youth: Social, Interpersonal Factors Are Key to Sexual Behavior

A variety of characteristics—mainly related to the social environment and interpersonal experiences—are associated with the sexual behavior of Canadian Aboriginal adolescents, according to an analysis of data from a cross-sectional survey.[1] One-third of both male and female adolescents surveyed had ever had sex. Among those with sexual experience, three in five of each gender had had more than one partner; 21% of men and 41% of women had not used a condom at last intercourse. Youth who reported frequent use of alcohol or drugs, had been sexually abused or had ever lived on a land reserve had elevated odds of some or all of these sexual behaviors. On the other hand, the more connected youth felt to their family or their school, the lower their odds.

Investigators conducted a secondary analysis of data from the 2003 British Columbia Adolescent Health Survey, which is administered every 5–6 years to students enrolled in grades 7–12 in randomly sampled classrooms in the province. The analysis was restricted to participants who identified themselves as Aboriginal. The investigators ascertained the prevalence and predictors of three sexual behaviors: having ever had sex, having had more than one sexual partner and having not used a condom at last intercourse. The potential predictors studied consisted of social environmental characteristics, interpersonal characteristics, individual-level characteristics and situational characteristics at the time of sexual encounters.

Analyses were based on 1,140 male and 1,336 female Aboriginal youth, who were about 15 years old, on average. Overall, 34% of young men and 35% of young women had ever had sex. Among sexually experienced youth, 63% of males and 56% of females had had more than one sexual partner; 21% and

41%, respectively, had not used a condom at last intercourse.

Large proportions of the adolescents reported having learned about their culture from their family (70–76%), school (68–78%) and community (49–55%). Sizable minorities of both males and females had ever lived on a reserve (29% and 27%, respectively) and had volunteered in their community in the past year (22% and 35%). Fully 75% of young women and 55% of young men said that if they were involved in a pregnancy, their peers would be angry. The young people reported fairly high levels of connectedness to their family (mean score, 2.4–2.5 on a scale of 1–3) and to their school (mean score, 3.5 for each gender on a scale of 1–5). One-quarter of both male and female adolescents had a high (above-median) lifetime level of substance use.

Some 40% of sexually experienced young women and 10% of their male counterparts had been sexually abused or forced into sex. Sizable proportions (31% and 14%, respectively) had used a method of contraception other than a condom at last sex. And about a third of women (35%) and men (34%) alike reported substance use at last sex.

In multivariate analyses, males' likelihood of being sexually experienced increased with their age (odds ratio for each additional year of age, 1.5), and was elevated if they had ever lived on a reserve (1.9) or had a high lifetime level of substance use (10.0). Similarly, for females, the odds of being sexually experienced were positively associated with age (1.7), having ever lived on a reserve (1.6) and having a high lifetime level of substance use (4.0); the more connected females felt to their school, the lower their odds (0.7).

Both young men and young women had elevated odds of having had multiple partners if they had a high lifetime level of substance use (odds ratios, 2.2 and 6.1). Women's odds also increased with age (1.2) and were positively associated with having been sexually abused or coerced into sex (2.0) and having learned about the culture from the community (2.1). Women were less likely to have had multiple partners if they had learned about their culture from their school (0.5) or had volunteered in their community in the past year (0.3) than if they had not had these experiences.

Adolescent men and women alike were markedly more likely not to have used condoms at last intercourse if they had used some other form of contraception (odds ratios, 39.7 and 101.3). In addition, the odds of condom nonuse were elevated among men who had been sexually abused or coerced (4.5), and among women who were older (1.5) or had ever lived on a reserve (7.8). On the other hand, the more connected both males and females felt to their family, the less likely they were to have forgone condom use (0.5 and 0.4). Females were also less likely to have done so if they had learned about their culture from their family (0.4).

The investigators note that several predictors of risky sexual behavior—notably, substance use and sexual abuse—are more prevalent among indigenous youth than among other youth. "Therefore," they write, "it is imperative that these variables are addressed when planning interventions for this group." Moreover, including youth who have lived on reserves will be especially important. —*S. London*

REFERENCE

1. Devries KM et al., Factors associated with the sexual behavior of Canadian Aboriginal young people and their implications for health promotion, *American Journal of Public Health,* 2009, 99(5):855–862.