

Urban Parents, Particularly Those Who Are Unmarried, Frequently Have Children by Multiple Partners

More than a third of urban parents have children by multiple partners, and unmarried parents are more likely to report such multipartnered fertility than are married parents, according to an analysis of data from the Fragile Families and Child Wellbeing Study.¹ Overall, a quarter of mothers have children with several partners: Of these, 84% have children by two fathers and 15% have children by three fathers. Black parents are more likely than parents of other racial or ethnic groups to have children by more than one partner. Mothers who have their first child before age 18, have a higher number of births, have a partner of different ethnicity or have worked in the last year have elevated odds of multipartnered fertility. Fathers who are U.S.-born, are in fair or poor health, or have been incarcerated also have elevated odds of such fertility.

In the United States, major changes in marriage and fertility patterns occurred in the latter half of the 20th century, including an increase in the proportion of births occurring outside of marriage (from 4% in 1940 to 36% in 2004). As multipartnered fertility becomes more common, the children from such relationships may receive less emotional and financial support. To date, little research has been conducted on childbearing with multiple partners. This study assessed the prevalence of such fertility among urban parents, and examined individual and relationship factors that might be associated with this phenomenon.

The Fragile Families and Child Wellbeing Study is a national longitudinal study being conducted in 20 U.S. cities with populations exceeding 200,000. It follows a cohort of more than 3,700 children born to unmarried parents and a comparison group of nearly 1,200 children born to married parents over the period 1998–2000. After weighting, the sample is representative of nonmarital births, and nearly representative of marital births, in large American cities. The analyses of the prevalence and correlates of multipartnered fertility are based on data from 4,300 couples interviewed at the birth of their child and again one year

later. Information was collected on parents' demographic and socioeconomic characteristics, as well as several psychosocial measures—frequency of church attendance, whether the father had ever been incarcerated and whether either had thought about having an abortion.

Overall, 39% of mothers were white, 31% Hispanic, 22% black and 8% members of other racial or ethnic groups; nearly a fourth of both mothers and fathers were foreign-born, and about a fourth had not completed high school. Twenty-two percent of mothers had had their first child by age 18, 16% at ages 19–20, 43% at 21–29 and 19% at older ages. Five percent of fathers were 19 or younger at the focal child's birth, 44% were in their 20s and 51% were 30 or older. More than half of mothers and fathers had lived with both biological parents at age 15 (54–61%).

Among the 4,209 mothers for whom detailed fertility information was available, three-fourths had had all their children by the same father. Of the remaining mothers, 84% had had children by two fathers, 15% by three fathers and 2% by four or more fathers. The proportion of mothers with children by multiple fathers increased as parity rose: 24% of those with two births, 48% of those with three, 47% of those with four and 72% of those with five or more. In 36% of all couples, one or both parents had had a child with another partner. The proportions of married and unmarried couples reporting multipartnered fertility were dramatically different: 59% of unmarried couples and 21% of married couples.

Multivariate logistic regression analysis found that a number of individual and relationship characteristics were associated with the likelihood of multipartnered fertility. For mothers, age at first birth and parity were significant factors: Women who had had their first child at ages 14–16 or 17–18 had an elevated likelihood of having had children by multiple partners compared with those who did so at 30 or older (odds ratios, 6.0 and 2.3, respectively), and each additional birth more than tripled the odds (3.5). Furthermore, mothers 21 or older at the follow-up interview were

more likely than younger women to have had children with multiple partners (4.7). However, mothers who had lived with both biological parents at age 15 had lower odds of multipartnered fertility than those who had not (0.8), and white and Hispanic mothers had lower odds than black mothers (0.6–0.7). Women who attended church more often had lower odds than women who went less frequently (0.9). Other factors associated with an increased likelihood of such fertility were having a partner of different ethnicity (1.4), having worked in the last year (1.3) and having thought about getting an abortion (1.2). Unmarried mothers were also at increased risk of having children by multiple fathers (4.0–5.6, depending on type of relationship).

Fathers aged 19 or younger, 20–24 or 25–29 at the focal child's birth had a decreased likelihood of having had children with multiple partners compared with fathers who were 30 or older (odds ratios, 0.1–0.5). Other factors associated with reduced odds were having lived with both parents at age 15 (0.8), being white or Hispanic (0.4–0.6), being an immigrant (0.7) and having a college education (0.3). Men who were in fair or poor health, had ever been incarcerated or had thought about their partner's terminating her pregnancy by abortion had elevated odds of multipartnered fertility (1.4–2.2). Like their female counterparts, unmarried men had elevated odds of having had children by multiple partners (2.4–4.7).

The researchers point out several limitations of the data set, including a lack of detailed fertility history and the use of slightly different measures for the multipartnered fertility of mothers and fathers. A related weakness is that fathers' fertility was based on reports from their partners, who may underestimate the existence of children by other women.

The researchers believe that current government initiatives promoting marriage for low-income couples will be complicated by the fact that many new marriages will not create "traditional" nuclear families. Instead, many parents will be rearing children across several

households, likely diminishing the resources of parental time and money that children receive. As longitudinal data from the Fragile Families study become available, the researchers plan to examine multipartnered fertility prospectively in an effort “to better understand the underlying causal processes, as well as the consequences for parenting, relationship stability, and children’s well-being.” —*J. Thomas*

REFERENCE

1. Carlson MJ and Furstenberg FF, Jr., The prevalence and correlates of multipartnered fertility among urban U.S. parents, *Journal of Marriage and Family*, 2006, 68(3):718–732.

Education Program Design May Benefit from Health Professionals’ Involvement

The likelihood that Texas middle school students felt that sexual involvement should be postponed at least until after high school rose significantly after the youngsters took a sex education course designed by a team from an academic medical center.¹ Most of the change was attributable to an increase in the proportion who said that people should wait until marriage to have sex. Among the characteristics that were associated with a belief in delaying sexual activity were having taken a virginity pledge, intending to avoid substance use and achieving a high score on a test measuring knowledge of sexuality-related issues. Knowledge scores also increased after students took the course.

The curriculum was developed after school administrators in an area of Texas whose school system lacked a sex education program asked members of the obstetrics and gynecology department of an academic medical center for assistance in choosing one. Because the health care professionals were dissatisfied with the content and medical accuracy of available curricula, they collaborated with child psychologists, attorneys and educators to design a new one. In accordance with the preferences of parents and school officials, the program focuses on consequences of teenage sexual activity, the importance of delaying sexual initiation, skill building, character development and refusal skills.

Specially trained teachers in 33 school districts presented the curriculum in science classes for students in grades 6–8 during the

2002–2003 school year. Before and immediately after participating in the two-week program, students completed surveys assessing their demographic characteristics, behaviors, attitudes and knowledge of sexuality-related issues (including reproductive anatomy and physiology, STDs, teenage pregnancy, sexual abuse and legal issues). Researchers compared data from the two survey rounds and used multivariate logistic regression to identify characteristics associated with attitudes toward sexual activity.

Approximately 26,000 students completed surveys before taking the course, and 25,000 immediately afterward. In both groups, equal proportions of respondents were male and female; nearly one-half were white, one in five were Hispanic, one in seven were black and the rest were members of other racial or ethnic groups. About half of the youth lived with both parents, and half said that their parents were married. The majority of students reported that they usually got A’s or B’s in school, that they participated in at least one extracurricular activity and that they watched 1–4 hours of TV on school nights.

Students scored significantly higher on the knowledge test after the program than before. On average, sixth graders’ scores rose from 60 to 79, seventh graders’ from 68 to 77 and eighth graders’ from 61 to 73. Students also demonstrated a shift in attitude toward the timing of sexual activity: Whereas 84% said before taking the sex education course that people should wait until after high school, until after postsecondary school or until marriage to have sex, 87% gave these answers after participating in the course. The difference, although small, was statistically significant and mainly reflected an increase from 60% to 71% in the proportion who thought that sexual activity should be postponed until marriage. Comparisons of data from the two survey rounds also revealed increases in the proportions of youth who said that sex is not a safe activity for teenagers, that it is not acceptable for unmarried teenagers to become pregnant and that they intend to wait until they are married to have sex.

In multivariate analyses, the characteristics associated with students’ believing that young people should delay sexual initiation were similar before and after presentation of the sex education curriculum. Youth who had taken a virginity pledge had the most sharply elevated odds of expressing this attitude (odds ratio, 7.4 in the second survey); the odds also were

markedly elevated among those who reported an intention to abstain from use of alcohol and drugs (2.6). More modest increases were associated with weekly attendance at religious services, having married parents, watching no more than two hours of TV on school nights, being female, being white and scoring 70 or higher on the knowledge test (1.1–1.6). Students who reported current substance use had significantly reduced odds of believing that teenagers should postpone sexual involvement (0.4).

The researchers acknowledge that the study is limited by the lack of a control group and of long-term behavioral measures. However, they note that involving medical professionals in the development of sex education programs “can assure medically correct content, appropriate research outcomes, and enhanced quality of medical information in this important area of adolescent health.” —*D. Hollander*

REFERENCE

1. Sulak PJ et al., Impact of an adolescent sex education program that was implemented by an academic medical center, *American Journal of Obstetrics and Gynecology*, 2006, 195(1):78–84.

In France, Over-the-Counter Emergency Contraception Increases Access, Not Risk

The use of emergency contraception increased in France between 1999 and 2004, following the May 1999 introduction of a dedicated product that was almost immediately available in pharmacies with no prescription requirement.¹ According to a study of two cross-sectional surveys of women, increases in the use of emergency contraception had little apparent effect on indirect indicators of women’s risky sexual behavior: The researchers found no increase in the proportion of women who had ever had intercourse, no decrease in the age at first sex and no increase in the proportion of young women at risk for unintended pregnancy. The use of modern contraceptives increased in the first five years of emergency contraception’s over-the-counter status, and among women at risk for unintended pregnancy, levels of contraceptive use and use of effective methods did not diminish.

The data came from two household-based health surveys of 12–75-year-olds, conducted in 1999 and 2004. Analyses were restricted to the 4,166 women in 1999 and 7,490 in 2004 who were between the ages of 15 and 44 and

had responded to questions on sexual activity, STDs, contraceptive use and abortion. Relevant questions were the same in both surveys. The researchers used a variety of logistic regression techniques to examine differences between survey years in women's emergency contraception use, sexual experience, contraceptive use and experience of abortion.

In late 1999 (six months after the introduction of the dedicated over-the-counter emergency contraceptive pill), 10% of sexually experienced women reported that they had ever used emergency contraception. By 2004, the proportion had risen to nearly 17%, and increases were significant for all age-groups but the oldest (40–44). Women aged 15–24 experienced an increase in emergency contraception use of 17 percentage points, while use among women aged 25 and older increased only five percentage points between 1999 and 2004.

In 2004, most women (60%) who had ever used emergency contraception had last obtained the drug from a pharmacy with no prescription. Further reflecting women's preference for obtaining emergency contraception directly from a pharmacy, 85% of women who had used the method in the last year had gotten it without a prescription. Older women had sought a prescription more commonly than their younger counterparts had (48% of 40–44-year-olds, compared with 12% of women younger than 40).

Despite the increase in emergency contraception use, the availability of the drug apparently encouraged little change in women's sexual activity or risk for unintended pregnancy. The proportion of women who had ever had sex did not change, with the exception of a small but significant decline among women aged 35 and older. Age at first intercourse did not change in any age-group.

The proportion of women younger than 25 who were at risk for unintended pregnancy (sexually active in the 12 months prior to the survey, currently with a partner, able to conceive and not trying to become pregnant) did not change between 1999 and 2004. The proportion of women aged 25 or older who were at risk exhibited a slight upswing, which was attributable to an increase from 72% in 1999 to 80% among those aged 40–44. Among those at risk for unintended pregnancy, the proportion who used contraceptives, either consistently or sporadically, remained stable among women younger than 25 years (94% in 1999 and 96% in 2004), and decreased

slightly but significantly among older women (from 95% to 93%). However, the researchers point out, the increase in risk and decrease in contraceptive use cannot be attributed to use of emergency contraception, because only a small proportion of women older than 25 (9–21%, depending on specific age-group) reported having used emergency contraception in 2004.

Among women using any contraceptive, the proportion using the most effective methods increased from 84% in 1999 to 87% in 2004, while the proportion using other methods decreased from 16% to 14%. These changes were mainly attributable to a substantial shift among 18–19-year-olds from condom use to pill use: In 1999, 22% of 18–19-year-olds used condoms and 77% used the pill; in 2004, 12% of 18–19-year-olds used condoms, while 88% were pill users. Among the youngest women in the sample (15–17-year-olds), contraceptive use did not change between 1999 and 2004.

Young Female Medicaid Enrollees Seeking Reproductive Health Services Are at Risk of Abuse, Criminal Activity

Preadolescents and adolescents who are enrolled in Medicaid and seek reproductive health services have an elevated likelihood of being abused or engaging in criminal behavior, both before and after their reproductive health visits, according to a recent cross-sectional analysis of Alaskan public health databases.¹ The study revealed that female Medicaid enrollees aged 10–15 who sought pregnancy care, abortions or contraceptives had more than double the odds of other Medicaid enrollees in the same age-group of being victims of sexual abuse by a caregiver during the five-year study period. They also had increased risks of physical abuse and referral to the juvenile justice system for theft and other criminal offenses.

Prior research has shown that adolescents who have been physically or sexually abused are at risk for pregnancy. To explore whether clinicians who provide reproductive health care to young female patients should screen them for abuse and exposure to violence, the researcher conducted a cross-sectional analysis of several Alaskan databases: a data file of all females who were enrolled in Medicaid at any point in 1999–2003 and who were 10–15 years old on December 31 of any study year; a database of all females in that age-group who were

Overall, 17% of women in 1999 and 16% of women in 2004 reported having had an abortion. The proportion decreased from 20% to 17% among women aged 25 and older, but was 7% in both years among those younger than 25.

According to the researchers, France's "introduction of a dedicated product that was almost immediately available in pharmacies with no prescription requirement" had no negative influence on women's sexual behaviors. The researchers imply that instead of substantiating "concerns about the negative impact of easier access to [emergency contraceptive pills] on sexual risk-taking and regular contraceptive use," the policy did little more than allow women greater access to a needed drug.—H. Ball

REFERENCE

1. Moreau C, Bajos N and Trussell J, The impact of pharmacy access to emergency contraceptive pills in France, *Contraception*, 2006, 73(6):602–608.

referred to the state's child protective services unit for investigation of physical or sexual abuse by a primary caregiver in 1999–2003; a similar database for referrals to the state's juvenile justice system; and a database of births to Alaskan residents. By linking the databases, the investigator was able to determine whether young women for whom Medicaid claims for reproductive health services (contraceptive management, pregnancy or pregnancy termination) had been submitted had also been the victim of suspected or documented abuse or had been referred for criminal offenses. Odds ratios for these outcomes were calculated using logistic regression.

A total of 21,350 females aged 10–15 were enrolled in Alaska's Medicaid program at some point during the study period. Billing records indicated that 2% of these young women had been pregnant (about half of whom had a documented or suspected abortion) and 3% had sought contraceptive services. (Pregnancy tests were not included in the analysis because these tests are sometimes done for medical reasons, such as presurgical evaluation.) Fourteen percent of the Medicaid enrollees were referred to child protective services between 1999 and 2003, and 4% were the victims of physical or sexual abuse. The juvenile justice system re-

ceived one or more referrals for 9% of enrollees; 60% of these young women were referred for theft, 30% for assault or other violent offenses, 12% for drugs or alcohol and 12% for other reasons. Of the 841 young women who had a reproductive health claim, 39% were referred to child protective services and 31% to the juvenile justice system during the study period.

In logistic regression analyses that controlled for age at Medicaid enrollment, length of enrollment, Alaska Native status and Anchorage residence, young women with a reproductive health claim were more likely than other Medicaid enrollees to be referred for any reason to child protective services (odds ratio, 2.9) or to have experienced physical (1.6) or sexual abuse (2.3) during the study period. The odds of physical abuse were especially elevated among young women who had an abortion (2.3); those who had received pregnancy care had particularly high odds of sexual abuse (3.2). One-fourth of referrals for physical or sexual abuse were made within the month preceding or following the young women's first claim for reproductive health services; 60% were made within six months before or after the claim.

Young women with reproductive health claims were also more likely than other Medicaid enrollees to be referred to the juvenile justice system for any criminal offense (odds ratio, 2.9), for a violent offense (3.1) or for theft (2.4).² Odds ratios were slightly higher among individuals who desired contraceptive management (2.5–3.0) than among those who sought services for pregnancy (2.1–2.6) or abortion (2.1–2.5). Twenty-five percent of referrals were made within three months of young women's first reproductive health claim, and 63% were made within 12 months.

These findings may not be generalizable to preadolescents and adolescents who are ineligible for Medicaid, the researcher notes, because poverty may increase a young woman's risk of abuse, criminal activity and early sexual initiation. In addition, the findings may not apply to states that differ from Alaska in their ethnic makeup and provision of services.

Many cases of criminal behavior and abuse occurred well before or after young women sought reproductive health care, suggesting that "sexual activity in this cohort often occurred within a general context of ongoing social disruption," the researcher notes. Nonetheless, the findings suggest that health care providers "should have a high index of suspicion" when a female Medicaid recipient

younger than 16 presents for reproductive health services. "Clinicians providing care to this population should consider routine screening for sexual activity and experience of violence and should adhere to mandatory reporting laws when child maltreatment is suspected or identified," he advises.—*P. Doskoch*

REFERENCES

1. Gessner BD, Reproductive health, criminal activity, and abuse among 10- to 15-year-old females enrolled in Medicaid, *Obstetrics & Gynecology*, 2006, 108(1): 111–118.
2. Errata, *Obstetrics & Gynecology*, 2006, 108(4):1035.

Frequent Male Condom Use Decreases Women's Risk of HPV Infection

The more consistently women's male sex partners use condoms, the less likely women are to acquire genital human papillomavirus (HPV) infection, according to a longitudinal study among newly sexually active young women.¹ Compared with their counterparts whose male partners used condoms less than 5% of the time for vaginal intercourse, women whose partners used them at least half the time had a 50% lower risk of infection and women whose partners used them every time had a 70% lower risk. The pattern was similar in analyses restricted to types of HPV associated with a low risk of cervical cancer as well as those associated with a high risk.

Researchers invited female university students aged 18–22 years who were sexually inexperienced or newly sexually active to participate in the study. Every four months, the women underwent gynecologic examinations during which cervical and vulvovaginal samples were collected for HPV testing (by a polymerase chain reaction assay that detects 37 types of the virus) and for Pap testing. The women also recorded information about their daily sexual behavior in a Web-based diary every two weeks. The time that women were considered to be at risk for infection began on the date of first intercourse, and factors potentially affecting the risk of HPV infection—the number of instances of vaginal intercourse, the number of new partners, the frequency of use of condoms by male partners, each partner's circumcision status and each partner's number of previous partners—were summarized for the eight-month period before each HPV test. Factors showing a statistical associ-

ation at $p < .10$ in univariate analyses were included in multivariate analyses.

Study results were based on 82 women who reported their first sexual intercourse with a male partner during the study or the two weeks before enrollment. On average, the women were about 19 years old and were followed for 34 months. The median number of instances of sexual intercourse reported was 48 per year, and the median number of new partners reported was one per year.

A total of 40 women experienced 126 type-specific HPV infections after first sexual intercourse, corresponding to a 37% cumulative incidence of a first HPV infection over a 12-month period. For every 100 woman-years at risk, there were roughly 38 infections when condoms were used by male partners for 100% of instances of vaginal intercourse in the preceding eight months, 62 infections when condoms were used 50–99% of the time, 160 when condoms were used 5–49% of the time and 89 when condoms were used less than 5% of the time.

In a multivariate analysis, women's likelihood of acquiring an HPV infection decreased significantly as the frequency of condom use increased. Relative to women whose partners used condoms for 5% or fewer instances of intercourse, women whose partners used them 50–99% of the time had a 50% lower risk of infection (hazard ratio, 0.5) and women whose partners used them 100% of the time had a 70% lower risk (0.3). The results were similar when analyses were restricted to infections with high-risk types of HPV, low-risk types of HPV or the four types covered by the HPV vaccine. Moreover, among women whose partners used condoms all of the time, the decrease in the risk of HPV infection did not vary by whether or not the women also had unprotected, nonpenetrative genital contact with their partners.

In addition, women whose partners had not had any previous partners had a markedly lower risk of becoming infected with HPV relative to their counterparts whose partners had had at least one or an unknown number of previous partners (hazard ratio, 0.0). Women who had one new sexual partner and those who had more than one had a sharp increase in risk relative to their counterparts who did not have any new partners (4.8 and 6.9, respectively). Neither the number of instances of vaginal intercourse nor a partner's circumcision status significantly affected the likelihood of acquiring an HPV infection.

A total of 15 women developed precancerous lesions of their cervix after first intercourse, corresponding to a 15% cumulative incidence of these lesions over a period of 24 months. For every 100 woman-years at risk, there were no lesions when condoms were used by male partners for 100% of instances of vaginal intercourse in the preceding eight months, 17 when condoms were used 50–99% of the time, 16 when condoms were used 5–49% of the time and 11 when condoms were used less than 5% of the time.

In a multivariate analysis, the frequency of condom use did not significantly influence women's risk of developing cervical lesions. However, compared with women who did not have any new sex partners, women who had one or more than one new partner had a sharply elevated risk (hazard ratios, 6.5 and 23.3, respectively).

Use of male condoms appears to reduce the risk of HPV transmission from men to women, the researchers conclude; however, they note that the study's findings may not apply to older

women or to women of lower socioeconomic status (proxied by lack of college education). Some HPV infections are to be expected despite consistent condom use because the virus can be spread by nonpenetrative genital contact and condoms are not always used correctly, they point out; nonetheless, the benefit observed is "encouraging" because the women studied were new to both intercourse and condom use.

Given the reductions in risk achieved across broad categories of the virus, the researchers assert that even though the HPV vaccine is known to be effective against the four types of the virus that put women at highest risk for cervical cancer, "consistent condom use by their partners may protect women against infection with other high-risk types of HPV...." —S. London

REFERENCE

1. Winer RL et al., Condom use and the risk of genital human papillomavirus infection in young women, *New England Journal of Medicine*, 2006, 354(25):2645–2654.

Young Adults Who Lack Continuous Health Insurance Coverage Have an Elevated Risk of Chlamydia Infection

Individuals who face barriers to obtaining routine health care may miss opportunities to be screened for chlamydia infection, which is frequently asymptomatic. It is, therefore, not surprising that poor access to health care was associated with chlamydia risk among young adults participating in the National Longitudinal Study of Adolescent Health (Add Health); however, some associations differed for men and women.¹ A lack of continuous health insurance coverage over the last year was associated with an increased risk of infection for both genders, but receipt of health care in the past year was associated with a reduced risk only among men. Furthermore, for young adults who typically obtained services from a source other than a primary care provider, associations between provider type and the risk of infection differed by gender.

Analysts used data from Wave 3 of Add Health (conducted in 2001–2002) to study the prevalence of chlamydia infection among young adults. Respondents, who were aged 18–27 when the data were collected, were included in the analytic sample if they were sexually experienced, had provided urine specimens for chlamydia testing at the time of the

interview and had completed questions about health care-seeking behavior. Using weighted logistic regression, the analysts sought to identify indicators of health care access that are significantly associated with the risk of chlamydia infection, controlling for age and race or ethnicity; they examined data on males and females separately.

Roughly equal proportions of the 9,347 respondents in the sample were men and women; eight in 10 were in their early 20s. Sixty-seven percent of the young adults were white, and most of the rest were black (17%) or Hispanic (12%).

The overall prevalence of chlamydia infection was 5%. Women had a significantly higher prevalence than men (5% vs. 4%), and Native Americans and blacks had higher infection rates (13% each) than Hispanics (7%), whites or Asians (2% each). Patterns of racial and ethnic variations differed among men and women; within each gender, however, Native Americans and blacks had the highest prevalence rates, and whites and Asians the lowest. Chlamydia prevalence did not differ by respondents' age.

Twenty percent of all respondents had had no health insurance coverage during the 12

months preceding the interview; 20% had been covered for some of the time, and 60% for the entire year. The proportion who had been uninsured throughout was significantly higher among men than among women; within each gender, a consistent lack of coverage was most common among Hispanics. Results of the multivariate analysis indicate that men with any coverage or continuous coverage had a significantly lower chlamydia risk than those with no coverage (odds ratios, 0.7 and 0.6, respectively); among women, the risk was reduced only among those who had had coverage for all of the preceding 12 months (0.7).

By far the most frequently reported site of usual health care was a primary care provider; 47% of respondents gave this reply. Hospital clinics and emergency rooms were the next most common sources of usual care (16% and 11%, respectively), and a variety of other types of facilities were each reported by 2–9% of the sample. Seven percent of respondents said that they never got sick or needed care, and had no usual source of care. Men reported greater reliance on emergency rooms and less on primary care providers than women; they also were more inclined to say that they did not need regular health care. Among men, whites and Asians reported the greatest reliance on primary care providers, and blacks the greatest reliance on emergency rooms. Among women, whites and Hispanics used primary care providers more often than others; blacks and Native Americans were the groups who most frequently considered emergency rooms their usual source of care. Men who went to emergency rooms or unspecified facility types had significantly higher odds of being infected than those who saw primary care providers (odds ratios, 2.0 and 3.1, respectively); men who typically went to hospital clinics had a reduced risk (0.5). Among women, those who regularly attended school or college clinics had sharply reduced odds of infection (0.2).

The last indicator examined was whether respondents had visited a health care provider in the last 12 months; 79% had. Reports of a recent health care visit were significantly more common among women than among men (90% vs. 69%); within each gender, Hispanics and Asians reported the lowest levels of recent health care receipt. In the adjusted analysis, men who had seen a provider within the previous year had a reduced likelihood of chlamydia infection (odds ratio, 0.6); this measure was not associated with chlamydia risk among women.

While acknowledging several limitations of the sample and the available measures, the analysts nevertheless feel confident that their findings establish a relationship between chlamydia infection in young adults and the indicators studied. Given this relationship, they draw three broad conclusions. First, by improving access to screening, diagnostic and treatment services (including services for infected individuals' partners), efforts to expand health care coverage for young people may help reduce reproductive health problems stemming from chlamydia infection. Second, educational efforts aimed at young adults and their health care providers should emphasize that chlamydia infection is often asymptomatic and that yearly health care visits that include screening are essential. Third, providers should be encouraged to follow the chlamydia screening recommendations issued by the Centers for Disease Control and Prevention and the U.S. Preventive Services Task Force. "Screening and treatment programs," the analysts observe, "are critical elements of current control efforts."

—D. Hollander

REFERENCE

1. Geisler WM et al., Health insurance coverage, health care-seeking behaviors, and genital chlamydial infection prevalence in sexually active young adults, *Sexually Transmitted Diseases*, 2006, 33(6):389–396.

Symptoms of Depression In Middle School Teenagers Linked to Risky Behavior

Middle school students who report symptoms of depression are at risk for subsequently engaging in potentially harmful sexual behavior, a study based on data from two waves of the National Longitudinal Study of Adolescent Health (Add Health) shows.¹ Both males and females categorized as having a high level of depressive symptoms at the time of the first interview had significantly elevated odds of reporting at least one of four specified sexual risk behaviors about one year later. Likewise, for both genders, in calculations using a continuous measure of depressive symptoms, the odds of engaging in at least one risky behavior rose with symptom level. Despite the similarities in findings for the overall measures, however, associations between depressive symptom level and individual behaviors varied by gender.

Add Health followed a cohort of youth who

were in grades 7–12 at baseline, in 1995; the study of the relationships between depressive symptoms and risky sexual behavior used data collected then and in the subsequent wave, roughly a year later. Respondents were eligible for inclusion in the analytic sample if they were unmarried at the time of the second interview, had had sex between survey waves, provided information on the sexual risk behaviors being studied and, at baseline, had completed at least 16 items on a 19-item scale assessing depressive symptoms in the week before the interview. For the main analyses, the researchers categorized participants' level of depressive symptoms as high, moderate or low; in secondary analyses, they substituted a continuous measure of depressive symptoms. All analyses were conducted separately for males and females.

Some 1,921 males and 2,231 females were included in the sample; the majority were white, aged 15–17 and nonpoor. Four in 10 participants of each gender lived with both biological parents, two in 10 in a stepfamily and the rest in some other arrangement; about one-quarter reported a high degree of religiosity. Small proportions reported same-sex attraction or behavior (2–3%) or sexual experience at age 10 or earlier (7% of males and 2% of females). Nine percent of males and 16% of females scored high on the depressive symptoms scale at baseline (a statistically significant difference); 42–43% of each registered moderate scores. In the first interview, close to half of youth of each gender reported at least one of the following risk behaviors: not having used a condom at last sex, not having used a contraceptive at last sex, having used alcohol or drugs at the time of last sex and having had three or more sexual partners. At follow-up, 63% of males and 55% of females reported having engaged in at least one of these behaviors between interviews.

In regression analyses controlling for background and risk-related characteristics, males with a high level of depressive symptoms at baseline were significantly more likely than those with a low level to say at follow-up that they had engaged in at least one of the specified risk behaviors between interviews (odds ratio, 1.7). They had elevated odds of reporting nonuse of condoms and contraceptives at last sex (1.6 and 1.8, respectively), and of using alcohol or drugs at that time (2.5). Males with a moderate level of depressive symptoms at baseline were not at increased risk of subsequently engaging in these behaviors.

Multivariate analyses using the continuous measure of depressive symptoms yielded similar results. Males' odds of having engaged in any risk behavior during the follow-up period increased by 3% for every one-point increase on the depressive symptoms scale; the odds of nonuse of condoms, nonuse of contraceptives and substance use at last sex each rose by 2–4% per one-point increase in the level of depressive symptoms.

Among females, a high level of depressive symptoms at baseline was associated with a significantly elevated likelihood of engaging in risky behavior between interviews (odds ratio, 1.5), but not with the odds of reporting any particular behavior. A moderate depressive symptoms score was marginally associated with an elevated risk, and the odds of substance use at last sex were significantly raised for females with scores in this category (1.4). Additionally, the analysts observe that the odds ratios for a moderate level of symptoms were consistently between those for low and high levels, a pattern that they say may suggest a dose-response relationship between depressive symptoms and the likelihood of risky behavior among females.

The analyses using the continuous measure of depressive symptoms revealed differences not detected with use of the categorical measure. Females' odds of reporting any risk behavior and each behavior except substance use at last sex increased by 2% with each one-point increase in their depressive symptoms score. The analysts speculate that differences in statistical power may explain the differences between models in results for females.

In the analysts' view, the associations identified in this study should be of interest to primary care providers, mental health practitioners and sexual health care providers who counsel young people and can help to ensure that they get all of the services they need. Furthermore, the analysts note that "increased understanding of gender-specific mechanisms for the association between depressive symptoms and [sexual risk behavior] would be helpful for intervention design." Finally, they press for "expanded, population-based efforts in mental health promotion, prevention, and care for adolescents," and suggest that schools are a "natural setting" for such efforts.—D. Hollander

REFERENCE

1. Lehrer JA et al., Depressive symptoms as a longitudinal predictor of sexual risk behaviors among US middle and high school students, *Pediatrics*, 2006, 118(1): 189–200.