

## In Malawi, Condom Use and Fidelity Are Linked with Religious Leaders' Discussions of These Behaviors

In rural Malawi, residents who belong to religious congregations whose leaders frequently talk publicly or privately about sexual behavior are more likely than their peers in other congregations to be faithful and to use a condom—two of the pillars of AIDS prevention.<sup>1</sup> Findings from a longitudinal study that examined respondents' sexual and religious behavior, as well as the characteristics of their congregations, revealed that belonging to a church or mosque whose leader privately advised members not to be promiscuous was associated with an elevated likelihood of fidelity among married adults (coefficient, 0.50). Similarly, among sexually active respondents, condom use was associated with belonging to a congregation whose leader privately advised members to use condoms (0.38).

The analysis used data from the third (2004) wave of the Malawi Diffusion and Ideational Change Project, and from its sister study, the Malawi Religion Project. In the first wave of the ideational change study, conducted in 1999, researchers used cluster sampling in three of the country's 28 districts to choose 145 villages, from which they randomly selected 1,500 ever-married women aged 15–49 and, if available, their husbands; although the resulting sample was not nationally representative, participants' characteristics generally resembled those of the country's rural population. For the 2004 wave, roughly 1,200 married or unmarried young adults aged 15–29 were added to the study, yielding a total sample of 3,386 respondents. In interviews, participants provided information on age, education, wealth (classified according to ownership of a mattress, radio, bicycle and pit latrine), lifetime number of partners and whether they felt that premarital sex and condom use with a spouse are acceptable. They also provided information on their adherence to the familiar ABCs of AIDS prevention: abstinence (whether they had ever had sex), being faithful (whether they had had a nonmarital partner in the past year) and condom use (whether they had ever used a condom with any of their last

three partners in the past year). Respondents' attendance at religious services was classified according to the last time they had gone to a church or mosque: in the past week, in the past month or more than a month ago.

In the sister study, conducted in 2005, religious leaders from each of the 187 congregations to which participants in the main study belonged provided information about the characteristics of their congregation, their views on AIDS and the impact of the disease on their congregation. They also reported whether they discussed morality and AIDS with congregation members frequently (weekly or "almost every week") or infrequently, and whether they ever privately advised members to be faithful to one partner or to use condoms. Responses were linked with data from the ideational change study to create multivariate models assessing the relationship between the ABC variables and congregation characteristics (e.g., having a leader who advised members about condom use or monogamy). For each model, the analytic sample was restricted to the appropriate subsample—never-married young adults for abstinence, married respondents for being faithful and sexually active respondents for condom use—and omitted respondents with missing information on key variables.

The mean age of the 615 never-married young adults was 18; 61% were male, 24% had completed secondary school and 57% had never had sex. The 2,486 married respondents were older (mean age, 38); most were female (67%) and had had no extramarital partners in the past year (91%). Nine percent had completed secondary school. Similarly, the majority of the 2,883 sexually active respondents (mean age, 35) were female (56%) and had been faithful (91%), and 11% had completed secondary school. Only 22% had used a condom with any of their last three partners of the past year, and only 1% reported consistent condom use.

In all three groups, most respondents were Muslim (24–26%), traditional mission Protestant (20–28%) or Catholic (18–22%); the

remainder belonged to another denomination (26–36%) or no church (1%). At least three-fifths opposed premarital sex (60–72%). Never-married young adults were more likely than respondents in the other two groups to say that condom use among married persons is acceptable (63% vs. 34–38%).

Most of the religious leaders reported that they frequently discussed morality (88%), sexual morality (73%) and AIDS (72%) in their services. The vast majority had privately advised members to stop being promiscuous (95%), though only half reported doing so on a weekly basis (52%). About a quarter (27%) had ever privately advised members to use condoms.

In multivariate models of never-married young adults, male respondents were less likely than females to report having been abstinent (coefficient, -0.90), and Muslims were less likely than Catholics to have abstained (-0.67). In addition, abstinence was positively associated with greater wealth (0.20 for each additional household possession) and negatively associated with completion of secondary school (-0.73). However, it was unrelated to attendance at religious services or to the frequency of congregation leaders' messages about AIDS, sexual morality or condom use.

Among married adults, males were less likely than females to report having been faithful to their spouses (coefficient, -1.03). Fidelity was positively associated with opposition to premarital sex (0.80), and respondents belonging to congregations whose leaders frequently advised members not to be promiscuous were more likely to be faithful than were respondents who did not belong to such congregations (0.50). Fidelity was not associated with leaders' messages about AIDS or condom use, nor with denomination or frequency of service attendance.

Predictors of condom use among sexually active respondents included being male (coefficient, 0.49), having switched congregations in the past five years (0.29) and having had a nonmarital partner (1.23). Moreover, condom use was negatively associated with

opposition to premarital sex ( $-0.31$ ), and positively associated with wealth (0.17 per household item) and acceptance of condom use (0.62). Finally, respondents belonging to congregations whose leaders privately recommended condom use were more likely to use condoms than were respondents who did not belong to such congregations (0.38). Denomination and frequency of service attendance were unrelated to condom use.

A final analysis stratified respondents by service attendance. Among respondents who had attended a service in the past week, abstinence was associated with belonging to a congregation whose leader frequently preached about AIDS (coefficient, 1.36) and privately advised members to use condoms (0.78); faithfulness was associated with belonging to a congregation whose leader privately advised against promiscuity (0.45); and condom use was associated with belonging to a congregation whose leader privately advised members to use condoms (0.42). In each case, the comparison group was individuals who did not belong to such congregations.

The author cautions that these findings do

not establish causality and are subject to the limitations inherent in all self-reports of sexual behavior. Nonetheless, the results suggest that studies that focus on the relationship among religious attendance, denomination and sexual behavior in Malawi (and possibly elsewhere in Sub-Saharan Africa) should take into account what religious leaders say and do about sexual behavior. “Most religious leaders in rural Malawi are actively engaged in promoting sexual behavior change in their communities,” the investigator notes, and these interventions “matter for the AIDS-related behaviors of their members.” While such leaders commonly promote fidelity to a single partner—“a critical method of curbing the spread of HIV”—they are less likely to endorse condom use; flexibility on this issue on the part of religious leaders may be “crucial for improving uptake in a region where their use remains low.”—*P. Doskoch*

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outcomes, demographic characteristics, medical history and other relevant factors.

The investigators examined neonatal mortality (deaths in the first 28 days of life per 1,000 live births) among four groups of infants: those who received their first visit from a health worker on the first day of life, those whose initial visit occurred on day 2, those who weren't visited until days 3–6 and those who were first visited on the seventh day or later. For each group, the mortality rate was compared with the rate among infants who never received a visit but survived for an equal length of time. In addition to calculating mortality rates, the researchers estimated hazard ratios using models that controlled for economic status (based on the materials from which the family's home was constructed), parental education, gestational age at birth, multiple birth (whether the infant was a twin or triplet) and whether the pregnancy was the mother's first.

The analytic sample consisted of 9,211 newborns, of whom 31% were first visited by a health worker on day 1, 31% were first visited on day 2, 11% were first visited on one of the next four days and 13% on the seventh day or later. The remaining 14% never received a visit at all. The mothers of infants who were never visited tended to be wealthier and better educated than other mothers, and their births were more likely to be preterm.

The overall neonatal mortality rate was 29 per 1,000 live births. However, among infants who survived their first day of life, the mortality rate was substantially lower for those visited by a health care worker on day 1 than for those who never received a visit (21 vs. 65 per 1,000). Likewise, among infants who survived day 2, the mortality rate for those who were visited by a health worker on that day was a third the rate for infants who never received a visit (13 vs. 39 per 1,000). Mortality rates for infants whose first visit occurred on days 3–6 or on days 7–28 did not differ from rates for unvisited infants.

After adjustment for economic status, maternal education, gestational age, first pregnancy and multiple births, neonatal mortality was substantially lower among infants who were visited by a health care worker on their first day of life (hazard ratio, 0.3) or their second day (0.4) than among infants who never received a visit. Other factors positively or negatively associated with neonatal mortality among infants who survived their first or sec-

## Early Postpartum Visits from Community Health Workers Reduce Neonatal Mortality in Bangladesh

Postnatal home visits by community health workers are effective in reducing neonatal mortality if they occur within the first two days after birth, according to a prospective study conducted in Bangladesh.<sup>1</sup> Among infants who survived their first day of life, the 28-day mortality rate was a third that among those who were visited that day by a health worker than among those who never received a visit (hazard ratio, 0.3). Similarly, among infants who survived for two or more days, the mortality rate among those visited by a health worker on day two was far lower than that among infants who were never visited (0.4). Infants whose initial visit from a health worker occurred after the second day had no survival advantage.

Researchers analyzed data from a 24-month study conducted in 2004–2005 to examine the effectiveness of three intervention approaches—community care, home care and usual care—for improving health outcomes among newborns and their mothers. Eight administrative districts in Sylhet, Bangladesh, were randomly chosen as sites for the home

care intervention, in which female community health workers monitored their assigned catchment area (comprising approximately 4,000 people) for pregnancies and provided a range of counseling and care. Health workers were asked to visit the home of each pregnant woman twice before birth (at 12–16 and 30–34 weeks of gestation) and three times after delivery (on the first, third and seventh days of life) to counsel the family on preventive care, birth preparations, neonatal care, breastfeeding and recognizing when to seek medical care. In addition, the health workers assessed newborns for signs of serious illness and provided appropriate referrals (as well as antibiotics, if infection was suspected but the parents refused a referral). Given the challenges of providing care in this setting, health worker visits frequently did not coincide with the desired schedule—and in some cases did not occur at all. However, the workers, monitored by field supervisors, kept detailed records of their visits, and they made a final visit to each household during the fifth week after birth to collect information on neonatal

ond day of life included first pregnancies (1.6–1.9), multiple births (3.6–6.7) and gestational age of at least 37 weeks (0.3). Mortality was not reduced if the first postnatal visit took place on day 3 or later.

Because infants whose parents refused referrals received extra home visits and treatment from health workers, the researchers were not able to assess whether a greater number of visits influenced infant survival. Nonetheless, the findings suggest that women in developing countries “where home delivery with unskilled attendants is the norm” should “receive a home visit and undergo assessment by a trained worker as soon as possible, preferably on the day of birth but no later than 48 hours after birth.” The degree of benefits, the researchers add, likely depends on the content and quality of the intervention, and future research should examine strategies for facilitating prompt provision of postnatal care.—*P. Doskoch*

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## Women Have Unprotected Intercourse Less Frequently After Testing HIV Positive

A year after learning their HIV status, women in Uganda and Zimbabwe who have tested positive for the virus have unprotected sex less often than they had before they learned they were infected, according to findings from a longitudinal study.<sup>1</sup> A comparison of women’s self-reported sexual behavior three months before the positive HIV test and 12–16 months after the test revealed that the proportion of sexually active respondents who reported having unprotected vaginal sex in a typical month declined from 74% to 56%, and the mean number of unprotected acts fell from 11 to seven. Encouragingly, no increase in the frequency of unprotected sex occurred among women who had received negative HIV test results.

Relatively little is known about whether African women increase their use of condoms or engage in sex less frequently after learning that they have HIV—or whether those who find out that they do not have the virus subsequently become less vigilant about protect-

ing themselves. To examine these issues, researchers pooled results from a study examining the impact of hormonal contraception on HIV risk and from an ancillary study designed to examine behavioral changes among respondents who received positive HIV test results. Women in Zimbabwe and Uganda were eligible for the initial study, launched in 1999, if they were aged 18–35, HIV-negative and sexually active; all participants in Zimbabwe and most of those in Uganda were recruited from family planning and maternal-child health clinics, although about 10% of women in the sample were recruited from STI clinics and other sites serving women at high risk for HIV.

Roughly every three months, participants were interviewed about their reproductive, sexual and contraceptive behavior, tested for HIV, offered free condoms and, unless they were pregnant, given contraceptive counseling (which included information on condom negotiation and the opportunity to practice putting condoms on a wooden model). During the interviews, participants were asked how many times they had sex in a typical month (out of the past three months) and the number of times their partner used a male condom during a typical month. They also provided information about their social, demographic and behavioral characteristics.

The women were followed for two years or until they tested positive for HIV; those with positive tests were informed of the outcome and underwent a second test to confirm the results. Starting in 2001, women who tested positive became eligible for the ancillary study, which involved follow-up and counseling sessions similar to those of the main study; in addition, between June 2003 and the study’s conclusion in 2004, HIV-positive women who met certain criteria were offered highly active antiretroviral therapy.

The analytic sample consisted of the 151 women who became infected with HIV and for whom follow-up data were available, and 650 randomly selected women (out of 4,226) who remained uninfected. Analyses focused on data from interviews conducted 2–6 months before the positive test—or, for women who had not tested positive, from interviews conducted 2–6 months before a randomly selected negative test—and interviews conducted 12–16 months after the test. In addition to compiling descriptive statistics, the researchers estimated the odds that a woman reported at the “after” visit that she had unprotected vaginal sex at least

once in a typical month, compared with the odds that she had made a similar report at the “before” visit. They also examined changes in the proportion of women’s vaginal sex acts that were protected.

In both the infected and uninfected groups, women’s mean age at the “before” visit was 25. About half were employed, and nearly three-quarters were using hormonal contraceptives. Age at first sex was similar in the two HIV groups (18), but women who tested positive were more likely than those who remained uninfected to have reported at the “before” visit that they had had multiple partners in the previous three months (7% vs. 3%).

At both time points, the vast majority of women (>90%) reported that they had vaginal sex at least once in a typical month. Among these sexually active women, the proportion of HIV-positive respondents who said they had unprotected vaginal sex at least once in a typical month decreased from 74% to 56%. Moreover, among those who had had unprotected sex, the mean number of unprotected sex acts declined from 11 to seven, and the number of total sex acts fell from 20 to 10. In contrast, the proportion of HIV-negative women who said they had unprotected sex at least once in a typical month increased slightly (from 75% to 79%), and among these inconsistent condom users there was little change in the number of total sex acts (from 15 to 14) or unprotected sex acts (12 at both time points). Among women who were inconsistent condom users, the proportion of sex acts that were unprotected was similar at the two time points (25–30%), regardless of whether the women had tested positive.

Multivariate analyses revealed that HIV-positive women were twice as likely to report consistent condom use at the “after” visit as at the “before” visit (odds ratio, 2.0). In addition, the number of unprotected sex acts in this group declined by 38%, after the researchers adjusted for respondent characteristics. No changes in these outcomes were apparent in the HIV-negative group.

The study’s limitations include the possibility of social desirability bias and the lack of information about the HIV status of women’s partners. In addition, women who tested positive may have been engaging in riskier-than-normal behavior in the months before their positive test; thus, the decline in their number of unprotected sex acts may have reflected in part “a return to more typical behavior” rather than a response to learning their HIV status,

the researchers note. Nonetheless, the findings suggest that women in Uganda and Zimbabwe who receive HIV counseling and condom supplies engage in unprotected sex (and sex in general) less frequently after testing positive for the virus, and that the changes in sexual behavior continue for at least a year after diagnosis, thus reducing “the risk of HIV transmission to susceptible partners.” Equally important, the investigators add, women do not have unprotected sex more frequently after learning that they do not have HIV, an observation that may allay concerns “that a negative HIV result may be perceived as an endorsement of risky behavior.”—*P. Daskoch*

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## Heterosexual Anal Sex Is Associated with HIV Infection in South Africa

In a recent South African study, 14% of men and 10% of women interviewed at public venues and an STI clinic reported having engaged in heterosexual anal intercourse in the past three months, and those who had done so were more likely than others to report being HIV-positive, having ever had another STI and having never used a condom (odds ratios, 1.6–2.6).<sup>1</sup> They were also more likely to have ever exchanged money or goods for sex (1.7–1.8) and to have used alcohol or drugs in the past three months (2.0–2.8). Among respondents who had had recent anal intercourse, men reported more sex partners in the past three months than did women, and were more likely to have used condoms during vaginal or anal intercourse.

Heterosexual intercourse is believed to account for the majority of HIV infections in South Africa, and although anal intercourse carries a high risk of transmission, its prevalence and contribution to the HIV epidemic are unknown. This study examined the prevalence of heterosexual anal intercourse among men and women 18 or older; respondents were surveyed between 2003 and 2006 at a major STI clinic and 37 public venues in Cape Town. The sample included 2,593 men and 1,818 women, and more than 90% of those

who were approached completed the survey. Information was collected on respondents’ demographic characteristics, sexual behavior (number of partners, frequency of sex acts and condom use), HIV risk factors and HIV test results. The researchers used bivariate and logistic regression analyses to compare the responses of township and clinic respondents, and then to assess differences between those who reported having had heterosexual anal intercourse in the past three months and those who did not. Finally, the responses of men and women reporting recent heterosexual anal intercourse were compared.

Respondents’ median age was 30; two-thirds were black, and a third identified themselves as colored or of mixed race. More than four in 10 were employed, and a third were married or cohabiting. Fourteen percent of men had had heterosexual anal intercourse in the past three months, as had 10% of women. Compared with other respondents, STI clinic patients had had, on average, greater numbers of sex partners (2.0 vs. 1.3) and acts of vaginal (16.5 vs. 5.2) and anal sex (1.6 vs. 0.8) in the past three months; in addition, they were more likely to have never used a condom (odds ratio, 5.0), to have ever had an STI (4.0) and to have ever received money for sex (14.3).

Respondents who had had anal intercourse in the past three months had had more sex partners during that time than had other participants (2.3 vs. 1.4), and they had used condoms during a greater proportion of vaginal sex acts (65% vs. 40%). However, they were more likely to have never used a condom (odds ratio, 1.8), to have ever had an STI (1.6) and to have ever given or received money or goods for sex (1.7–1.8); in addition, they had an increased likelihood of having used alcohol or drugs in the past three months (2.0–2.8), and were more likely to have ever been tested for HIV and to be HIV-positive (1.4 and 2.6, respectively).

Finally, among respondents who reported having had anal intercourse in the past three months, the number of unprotected episodes of anal sex was similar for men (3.1) and women (3.6). However, men reported having had more episodes of protected anal sex (6.3 vs. 3.2) and more sex partners (2.6 vs. 1.7), and they had used condoms during a greater proportion of vaginal (69% vs. 57%) and anal (64% vs. 55%) sex acts. Men also reported proportionally more anal than vaginal intercourse than did women (51% vs. 43%).

The researchers note several limitations of their study, including possible underreporting of sexual practices and risk behaviors, and their use of a convenience sample that should not be considered representative of Cape Town communities. Nonetheless, they believe that although South Africa’s HIV epidemic probably cannot be attributed to unprotected anal intercourse, risk reduction interventions should address the role of anal sex in HIV transmission. The authors suggest that “counselors and health educators may require sensitivity training to increase their openness to discussing anal sex with their clients,” and that intervention programs should include “condom use skills and sexual communications skills [regarding] both anal and vaginal intercourse.”—*J. Thomas*

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## After Prenatal HIV Testing, Women Are More Likely To Discuss STIs with Partner

In a study conducted in Abidjan, Côte d’Ivoire, the proportion of women who had discussed STIs with their partner increased substantially after the women underwent prenatal HIV testing and counseling, regardless of the woman’s serostatus.<sup>1</sup> The proportion of HIV-negative women who reported having discussed STIs with their partner increased from 65% at prenatal testing to 97% at an 18-month postpartum visit; among HIV-infected women, the proportion increased from 28% to 65%. Moreover, after testing and counseling, most women suggested that their partner obtain an HIV test and that he use condoms with other partners.

Although HIV prevention messages have focused primarily on the reduction of such risky sexual behaviors as intercourse with occasional partners or sex workers, these behaviors do not constitute the full measure of risk. In Africa, most new infections occur within couples, as a result of either infidelity or the prior infection of one partner. In resource-limited countries where HIV testing is uncommon, prenatal counseling and testing can increase couples’ awareness of HIV and provide an entry point to related services. To aid in the development



of transmission prevention strategies, the authors of the current study examined communication between partners about STIs before and after prenatal testing, and examined levels of consistent condom use among HIV-infected and HIV-negative women.

As part of a broader mother-to-child transmission prevention program conducted in 2001–2005, prenatal HIV counseling and testing was offered to all pregnant women attending seven prenatal clinics in two districts of Abidjan. Women who tested positive were enrolled in the transmission prevention program and followed for two years after delivery; women who were HIV-negative also were followed for two years after delivery, at biannual reproductive health visits. All of the women were encouraged to advise their partner to be tested.

The study initially included 875 women, of whom 355 HIV-negative and 347 HIV-infected women attended their 18-month postpartum visit and were included in the analyses. At the prenatal HIV testing and counseling visit, all women were asked about their demographic characteristics and their sexual behaviors in the two years before their current pregnancy; those with regular partners were asked about their partner's age and education, their union type (polygamous or monogamous) and whether they had discussed STIs with their partner during the past two years. Women were queried about their sexual activities at each postpartum follow-up visit, and at the 18-month visit they reported whether their partner had undergone HIV testing and whether they had discussed STIs with their partner since the prenatal HIV test. In addition, to create an indicator of communication on sexual risk within couples, the researchers measured the proportions of women who had disclosed their HIV status to their partner, who had suggested at least once that their partner get tested for HIV and who had advised their partner to use condoms if he had sex with other women. If a woman had discussed all three issues with her partner, their communication was considered complete; if they had discussed only one or two of these issues, their communication was considered partial; if none of these matters had been discussed, communication was classified as nonexistent.

Compared with HIV-negative women, infected women were older, had older partners and were more often in polygamous unions. Prior to testing, a higher proportion of HIV-

negative women than HIV-infected women had discussed STIs with their partner in the past two years (65% vs. 28%). By the 18-month postpartum follow-up, the proportion had increased by more than 30 percentage points in both groups—97% of HIV-negative women and 65% of infected women had discussed STIs with their partner since HIV testing. Moreover, HIV-negative women reported high levels of communication with their partner at the 18-month follow-up visit: Ninety-seven percent had disclosed their HIV status to their partner, an identical proportion had suggested their partner get tested and 94% had suggested their partner use condoms in extramarital relations. Among HIV-infected women, 43% had disclosed their HIV status to their partner, 72% had suggested their partner get tested and 58% had suggested he use condoms with outside partners. Eighty-one percent of HIV-infected women who disclosed their status reported that their partner had been understanding; only 4% said that he had responded to the news with anger or rejection.

Seventy-eight percent of HIV-infected women and 94% of HIV-negative women had resumed sexual activity by the 18-month follow-up; levels of condom use among sexually active respondents did not differ by HIV status. Among infected women, only 27% of those whose partner had not been tested had used condoms consistently since their last fol-

low-up visit, compared with 39% of those whose partner was HIV-negative and 50% of those whose partner was HIV-positive. Consistent condom use among women with complete or partial communication on sexual risk issues was twice that of women who had not discussed sexual risk (37–38% vs. 19%). Among HIV-positive women, higher levels of partner education were associated with consistent condom use.

Although the researchers are encouraged by the increase in communication about STIs following prenatal HIV testing and by the level of condom use among study participants (which was greater than that typically observed in Côte d'Ivoire), they note that the level of condom use “remains insufficient to ensure a good prevention of HIV transmission.” They conclude that prenatal counseling and testing may “help HIV-infected individuals learn their HIV status, disclose their status to their partner and encourage partner testing,” and that it “is an efficient tool for sensitizing women and their partners to HIV prevention.” However, HIV prevention within relationships “remains difficult and needs to be specifically addressed.”—*L. Melhado*

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## South African Women Living in Areas with High Levels Of Sexual Violence Are at Risk for HIV, Early Pregnancy

Young South African women residing in communities where sexual violence is common are more likely than other women to have been pregnant before age 18 and to be HIV-positive, according to a nationally representative study.<sup>1</sup> In addition, young women in these communities are less likely than their peers to have used a condom at last sex. However, personal experience with sexual violence was not associated with these outcomes.

Forced sex and intimate partner violence have been linked to a variety of reproductive health problems in South Africa, where a third of women aged 20–24 are HIV-positive and a similar proportion of 15–19-year-old females have been pregnant. To assess whether sexual violence at the community level is associated with HIV status, condom use and adolescent pregnancy (i.e., before age 18), researchers an-

alyzed data from 6,217 female respondents in a national 2003 survey of 15–24-year-olds from randomly selected households. In face-to-face interviews, respondents provided demographic information (including age, race, residence and level of education) and reported whether they had used a condom at last sex, whether they had been pregnant before age 18 and whether they had ever been coerced (threatened or physically forced) into having sex. Respondents' HIV status was determined by testing saliva samples. To create community-level variables for sexual violence, high school completion and sexual activity, the researchers aggregated respondents' data to determine the average level of these outcomes for each of the country's census enumeration areas. (About 4% of women were dropped from the analyses because the num-

ber of respondents who lived in their enumeration area was too low for the researchers to calculate community-level statistics.) Multivariate logistic regression analyses were used to assess the relationships among demographic variables, individual experience with sexual violence, community-level variables and the sexual health outcomes. The analysis of HIV status focused on 3,719 unmarried, sexually experienced women; the condom use analysis was further limited to 3,299 women who had had sex in the past 12 months, and the adolescent pregnancy analysis to 3,016 women aged 18 and older.

The mean age of young women in the full sample was 19, and eight in 10 were black. One-quarter (23%) of the women had a high school education and about two-thirds had ever had sex (65%); 11% of this last group had ever been coerced into having sex.

Among unmarried, sexually experienced respondents, 21% were HIV-positive; HIV status did not differ according to whether they had ever been forced to have sex. More than half of unmarried respondents who had had sex in the past year had used a condom at last sex (52%), but the proportion was lower among women who had ever had coerced sex (41%) than among women with no history of sexual violence (53%). Thirteen percent of unmarried, sexually active respondents 18 or older had been pregnant prior to age 18; again, the proportion differed between those who had ever been forced to have sex (16%) and those who had not (12%).

In multivariate analyses, the odds of condom use at last sex were reduced among women who lived in a community with high levels of sexual violence (odds ratio, 0.9 for each one-unit increase in z-scores). However, the association between condom use at last sex and having personally experienced sexual violence was only marginally significant (0.7) when community-level factors were taken into account. A personal history of sex-

ual violence was not associated with being HIV-positive or with having had an adolescent pregnancy, although the odds of the two outcomes were significantly elevated among those living in a community where sexual violence was prevalent (1.2 for each one-unit increase in z-scores for both outcomes).

Several demographic variables were associated with the sexual health outcomes. The odds of being HIV-positive were higher among blacks (7.2) than among whites. High school graduates had twice the odds of those with less education of having used a condom at last sex (2.0), and they had reduced odds of being HIV-positive and having been pregnant during adolescence (odds ratios, 0.4 for both). Compared with their rural counterparts, urban women had higher odds of both having used a condom at last sex (1.9) and being HIV-positive (2.0).

The investigators acknowledge that the cross-sectional design of the survey prevented them from determining if coerced sex had direct negative effects on women's sexual health. Another limitation is that the community-level variables were based on data from the sample rather than from the entire community. Furthermore, communities with high levels of sexual violence may have had the attendant problems of increased HIV prevalence and reduced access to reproductive health services. Still, the researchers note, these findings "illustrate that social norms and community influences are important, especially in terms of reproductive health behaviors and outcomes." They encourage further qualitative and longitudinal research on this topic and increased programmatic efforts to "address sexual violence as part of effective prevention strategies."—S. Ramashwar

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