

Community Characteristics Help Shape Women's Decisions on Whether to Give Birth in a Health Facility

In Africa, a woman's decision to give birth at a health facility—a choice that may be lifesaving if complications arise—is linked to community factors such as family size, male approval of family planning and level of female schooling.¹ In an analysis based on nationally representative survey data from six African countries, the patterns of association varied by country; and some variation across communities in women's decisions could not be explained, even after accounting for individual, household and community factors.

Researchers analyzed data from women aged 15–45 who participated in Demographic and Health Surveys in six countries in East Africa (Kenya, Malawi and Tanzania) and West Africa (Burkina Faso, Côte d'Ivoire and Ghana). In the surveys, which were conducted between 1998 and 2000, women provided social, demographic and reproductive information about themselves and their husbands, including fertility preferences, attitudes toward family planning and health care seeking during pregnancy and childbirth, as well as information about their household assets. Information about each community was derived by averaging the individual data from the surveys, and by using information from geographic databases.

For each of the six countries, the researchers used multilevel modeling to identify associations between individual, household and community factors and women's decision to give birth in a health facility instead of at home. Analyses were restricted to women who had given birth in the past three years and focused on the most recent birth. Sample sizes ranged from 1,131 women in Côte d'Ivoire to 6,318 women in Malawi.

With respect to individual-level factors, women in Malawi, Tanzania and Ghana who lived in urban settings had higher odds than their rural counterparts of having delivered their last child in a health facility (odds ratios, 1.4–3.1).

Compared with 20–29-year-olds, younger and older women in Malawi, Tanzania, Ghana and Côte d'Ivoire were more likely to have delivered in facilities (odds ratios, 1.2–2.3); this was the case only for younger women in Burk-

ina Faso (1.3) and only for the two older age-groups in Kenya (1.4–1.9). In all three countries in East Africa and in Ghana, women who had had three or more births were less likely than those with 1–2 births to have delivered their last child in a health facility (0.4–0.8); in Côte d'Ivoire, this was true only for women who had had 3–4 births (0.7).

In Kenya, compared with their counterparts in monogamous marriages, women in other types of relationships had reduced odds of having used a health facility for their last birth (0.7–0.8); in Malawi, women who were formerly married or who were in polygamous marriages had higher odds (1.1), whereas in Côte d'Ivoire, women in such relationships had lower odds (0.5–0.6). Women's likelihood of having delivered in a facility was elevated if they had a primary education in Tanzania (1.6), a secondary education in Kenya, Burkina Faso and Ghana (1.6–2.9) and either level of education in Malawi and Côte d'Ivoire (1.1–2.0).

In all countries except Côte d'Ivoire, having seen or heard family planning messages in the media was associated with elevated odds of facility use (odds ratios, 1.2–1.4). And in all countries except Burkina Faso, women who had made no visits for prenatal care during their last pregnancy were less likely than those who had made 1–3 visits to have delivered in a facility (0.1–0.7), whereas those who had made at least four visits were more likely to have done so (1.3–3.9). In Burkina Faso, women who had made at least four visits also had elevated odds of delivery in a facility (1.7). In all six countries, having previously given birth in a hospital was positively associated with having used a health facility for the last birth (2.0–2.9).

With respect to household-level factors, women living in a household with a low or medium asset index score were less likely than those whose household had a high score to have used a health facility for their last birth, regardless of country (odds ratios, 0.3–0.7). Except in Burkina Faso, having no household assets at all was associated with reduced odds of having used a facility (0.2–0.4).

Some community-level factors were also as-

sociated with delivery in a health facility. In Malawi, Tanzania and Ghana, the higher the average number of children ever born per woman in the community, the lower women's odds of having had their last birth in a health facility (odds ratios, 0.5–0.9). In all three East African countries, but none of the West African ones, the greater the proportion of husbands approving of family planning (as reported by wives), the more likely women were to have used a health facility (1.4–4.4). The odds of facility delivery in Malawi, Kenya, Burkina Faso and Ghana also rose with the proportion of women in the community who had at least a secondary education (2.4–20.5).

Except in Kenya, the odds of delivery in a health facility rose sharply with the average number of women in the community who had delivered at least once before in a facility. A variety of other community factors—transportation infrastructure, type of habitat, predominant religion and proportion of women desiring HIV testing—did not significantly influence facility use in any of the countries studied.

After the effects of individual and household factors were accounted for in each of the six countries, the addition of controls for community factors somewhat reduced the variation across communities in women's level of use of health facilities for their most recent birth. Nonetheless, the variation in use across communities remained significant.

In Africa, the community in which women live may shape their decision on whether to give birth in a health facility through several different pathways, the researchers say; female autonomy, availability of health facilities, prevailing fertility preferences and the extent of the community's economic development may all play a role. This new information, they assert, can be used to design interventions to increase women's use of facilities. “The range of community factors identified and their variation across the study settings demonstrate that any such interventions must be context specific, and should reflect the characteristics and dominant influences present in the community,” they conclude.—*S. London*

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Domestic Violence in India Is Linked to Individual And Community Factors

In the northern Indian state of Uttar Pradesh, where domestic violence is prevalent and women's status is low, indicators of relatively high socioeconomic status at the individual level are associated with reduced levels of physical, but not sexual, violence toward wives. The community's level of socioeconomic development is not associated with domestic violence, but the likelihood of physical violence toward wives is elevated in areas where norms support wife-beating, and the likelihood of both physical and sexual violence increases as the district murder rate rises. These are among the main findings of an analysis of data from the Male Reproductive Health Survey, which was conducted in 1995 as part of a study of how to improve family planning services in Uttar Pradesh.¹

Survey respondents were married men aged 15–59 who lived with their wives. A total of 4,520 men residing in four districts participated in interviews covering their socioeconomic and demographic characteristics; reproductive health and behavior; attitudes toward gender roles; and experiences with, and attitudes toward, intimate partner violence. The analysts aggregated selected measures to construct community-level variables. Additionally, they used data from appropriate local sources to calculate an index of community economic development and district murder rates. They conducted logistic regression analysis to identify associations between individual-level and contextual variables and two outcomes: men's perpetration of physical violence and sexual violence against their wives in the year before the survey.

The sample consisted predominantly of rural men (73%) who had been married for more than 10 years (74%) and had children (91%). Seven in 10 respondents and three in 10 of their wives had at least some education. Forty-six percent of the men reported owning at least three of the six household items that made up the survey's household assets index, and 16% owned none; one-third had had to borrow money in the past year to pay for medical ex-

penses. Five percent had ever had an extramarital relationship, and 33% said that as children, they had seen their fathers beat their mothers. In the 12 months before the survey, 25% of participants had hit, slapped, kicked or tried to hurt their wives; 30% had physically forced them to have intercourse.

Respondents lived in communities where the level of economic development was generally low (mean, 2.2 on a scale of 0–7) and women had little schooling (2.7 years, on average); 43% of households in the sample had electricity. In these communities, men largely agreed that wives should always show respect to and follow the instructions of their husbands, and largely disagreed that no harm is done if wives disagree with their husbands. Support for beating or physically abusing wives who disobey their husbands was mixed. Each year, an average of 6.2 murders occurred per 100,000 population in the districts represented in the sample (range, 3.3–8.2).

Results of the first multivariate analysis suggest that socioeconomic status and physical violence toward wives are inversely related. In models controlling only for individual-level variables, men with at least seven years of education were significantly less likely than those with none to have engaged in violence against their wives in the last year; the likelihood was similarly reduced if the wife had had seven or more years of schooling. The likelihood of violence also was reduced for men whose households had the greatest number of assets and was elevated among those for whom economic pressure necessitated borrowing money to cover medical expenses. Other individual-level factors that were associated with increased odds of physical violence were being married for five or more years, being childless, having had an extramarital relationship and having witnessed domestic violence as a child.

When contextual variables were added to the controls, results for the individual-level variables were essentially unchanged. In addition, the greater the support for wife-beating and the higher the murder rate, the greater the likelihood that respondents had physically abused their wives in the previous year.

The second regression analysis, examining correlates of sexual coercion of wives, yielded a different pattern of results. The most highly educated men had an increased likelihood of having sexually coerced their wives in the previous year, and there was no association with wives' level of education. Household asset index scores were not significant, but economic

pressure was predictive of sexual coercion. Childlessness, a history of extramarital relationships and exposure to domestic violence as a child were positively associated with sexual coercion. The only significant result with regard to marital duration was that men who had been married for 15 or more years were less likely to have forced their wives to have sex than were those married fewer than five years.

Again, the addition of controls for contextual variables did not substantially change the individual-level results. None of the community variables were significant in the analysis of sexual coercion, but the district murder rate had a positive association.

The researchers acknowledge that husbands, "as the principal aggressors, might be expected to underreport violent behavior." However, given that wife-beating is generally accepted in Uttar Pradesh, and that the prevalence of physical violence reported in the survey is consistent with other evidence from the state, they contend that underreporting is not likely to have significantly affected their results.

Improvements in individuals' education or socioeconomic status, the investigators conclude, may help to lower the risk of physical violence toward women; however, "the same cannot be assumed with respect to sexual violence within marriage." At the same time, improvements in community socioeconomic development levels alone will not be sufficient to reduce the risk of domestic violence. Rather, according to the researchers, it may be necessary to address the "normative underpinnings condoning wife beating or... levels of violent crime."—D. Hollander

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Consistent Use of Condoms Lowers the Risk of Infection With Type 2 Herpes Virus

The more consistently that sexually active men and women use condoms, the lower their risk of becoming infected with herpes simplex virus type 2 (HSV-2).¹ In a prospective cohort study among individuals at risk for infection, 6% became infected during an 18-month period. The risk of acquiring the virus decreased by almost 30% with each increase across three categories

measuring how frequently condoms were used (during 0–25%, 25–75% and >75–100% of sexual acts). In contrast, the risk of acquiring herpes simplex virus type 1 (HSV-1) did not vary by pattern of condom use.

The men and women studied were participants in a U.S. trial of an HSV-2 vaccine subsequently found to be ineffective. The trial took place in 22 centers located in STI clinics. To be eligible, individuals had to be seronegative for both HSV-2 and HIV, and must have had at least four sexual partners or at least one STI in the past year. Participants provided demographic information and sexual history at baseline. Over the next 18 months, they made 11 visits, during which they gave blood samples for HSV testing, were asked about their sexual behavior (including condom use) and sexual partners since the last visit, received counseling about safer sexual behavior and were offered condoms. Associations between various factors and infection with HSV were assessed with Kaplan-Meier curves, log-rank tests, and bivariate and multivariate Cox regression models.

Analyses were based on 1,843 participants who were sexually active at some time during the study period. Three-quarters were men, and half were younger than 27. Almost two-thirds were white, nearly one-third were black and the rest were of other races or ethnicities. The majority of men (66%) and women (70%) were eligible for enrollment because they had had at least four sexual partners in the past year; the rest had had at least one STI (12% of men and 19% of women) or met both criteria (22% and 11%, respectively). One-third of participants were seronegative for HSV-1.

Participants' average level of sexual activity declined significantly during the study, from 2.2 sexual acts per week in the study's first quarter to 1.7 in its last quarter. The level of condom use also fell, from use during 49% of sexual acts to use during 43%, on average; the decline was mainly due to falling use among participants reporting no new partners. Condoms were used 0–25% of the time by 40% of participants, 25–75% of the time by 31% of participants and >75–100% of the time by 29% of participants; 12% of participants never used condoms, and 13% always did. The median number of new sexual partners during the study differed significantly among heterosexual men (three), men who had sex with men (seven) and women (two). In these subgroups, 15–17% of participants had at least one partner who had genital herpes.

During the study period, 6% of participants became infected with HSV-2. Men and women had a similar rate of infection (5.1–5.7 per 100 person-years), but blacks had a higher rate than whites (9.4 vs. 3.5 per 100 person-years). In multivariate analyses, the risk of HSV-2 infection was significantly higher among both women (hazard ratio, 1.8) and men who had sex with men (2.7) than among heterosexual men. Blacks' risk of acquiring the virus was almost four times that of whites' (3.8), and participants aged 27 or younger had more than half again the risk of their older counterparts (1.6). In addition, risk was roughly doubled among individuals who had a partner with genital herpes (2.3) and among individuals who had sex more than twice a week, on average (1.8).

At the extremes of the spectrum of condom use, 8% of never-users and 5% of always-users became infected with HSV-2. Infection occurred in 7% of participants using condoms 0–25% of the time, 5% of those using them 25–75% of the time and 5% of those using them >75–100% of the time. In multivariate analysis, with each one-category increase in condom use, participants' risk of infection fell by nearly one-third (hazard ratio, 0.7); moreover, the benefit was similar among men and women.

Among participants who were initially seronegative for HSV-1, 3% became infected with this virus during the study. Participants who had any new partners during the study had a risk of infection more than three times that of their counterparts with no new partners (hazard ratio, 3.2). Condom use was not associated with the risk of acquiring this virus, but analyses were limited because of the small number of participants who became infected.

Consistent condom use protects sexually active individuals against HSV-2 infection, the researchers contend, although protection is not perfect. (They add that the study did not assess whether participants used condoms correctly.) While antiviral therapy likely plays an important role in lowering the risk of transmission from a partner known to have genital herpes, "the use of condoms remains an important preventive strategy for sexually active persons who are at risk for HSV-2 infection," they conclude.

As recently as 2000, writes the author of an accompanying editorial, good evidence of the effectiveness of condoms for preventing genital herpes, as well as most other common STIs, was lacking; however, research in this area has since made notable gains, giving health care providers

evidence to support their recommendations to use condoms.² Although other interventions hold promise for reducing STI transmission, the editorialist notes, condoms are "the best proven currently available means" for lowering the risk of infection. "Clinicians should tell their at-risk patients that condoms can substantially reduce their risk for these diseases if they use them regularly," he recommends.—S. London

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Partner's Sexual Behavior Does Not Explain Elevated HIV Risk During Pregnancy

The physiological changes that accompany gestation make women more susceptible to acquiring HIV during pregnancy than at any other time.¹ According to a prospective study in Rakai, Uganda, pregnant women have significantly higher HIV incidence—2.3 infections per 100 person-years—than women who are breast-feeding and women who are neither pregnant nor breast-feeding (1.3 and 1.1 infections per 100 person-years, respectively). The rate of HIV acquisition is higher for pregnant women even after adjustment for such factors as the use of medical injections and the sexual risk behaviors of the women and their husbands.

The researchers sought to determine if the elevated rates of HIV acquisition during pregnancy found in earlier studies could be attributed to physiological changes related to pregnancy or increases in sexual risk behavior by the woman or her husband. Data were collected between 1994 and 1999 as part of a study of the control of STIs for prevention of HIV. Interviews were conducted at 10–12-month intervals with all consenting adults aged 15–49 living in rural communities in Rakai. The participants were asked to provide information on their age, marital status, educational level, health status, presence of genital ulcer disease, and number of sexual partners and level of condom use in the past year; blood samples were taken for HIV testing.

Sexually active women who were not pregnant or breast-feeding were tested for HIV at baseline and again at subsequent interviews; the average exposure interval contributed by

these women was 0.97 person-years. If a woman was pregnant (determined by interview and physical examination or urine test), she was tested for HIV at the time the pregnancy was identified; the average interval of exposure during pregnancy was 0.38 person-years. Women who breast-fed their babies were tested again postpartum (average exposure interval, 1.05 person-years).

The analysis included 2,625 intervals of exposure during pregnancy among 2,188 women, 2,887 intervals of exposure during breast-feeding among 2,183 women and 24,258 intervals of exposure among 8,473 women who were neither pregnant nor breast-feeding. The intervals of pregnancy and breast-feeding were more likely than the intervals of nonpregnancy and non-breast-feeding to be contributed by women who were married, less educated and relatively young. For example, 91% of the intervals of exposure during pregnancy and during breast-feeding were contributed by married women, compared with 73% of the intervals when women were neither pregnant nor breast-feeding. This difference in proportion is highly significant, indicating that women experience spousal absence at lower rates during periods of pregnancy and breast-feeding than at other times.

Women had fewer sexual partners during intervals of pregnancy, and were less likely to use condoms during pregnancy than during intervals when they were neither pregnant nor breast-feeding. Condom use was less consistent during pregnancy than during periods of nonpregnancy and non-breast-feeding; genital ulcer disease was less common during pregnancy than during breast-feeding or during periods when women were neither pregnant nor breast-feeding. The proportion of women who had been exposed to medical injections varied little across the three groups (44–45%).

Multivariate Poisson regression models were used to estimate HIV incidence during pregnancy and breast-feeding relative to incidence during periods when women were neither pregnant nor breast-feeding. HIV incidence was highest among women aged 15–19, those aged 20–29, never-married women, previously married women, women who had multiple partners during the interval of exposure and those with genital ulcer disease. For almost all of the covariates examined (age, education, marital status, multiple sex partners, genital ulcers and condom use), HIV incidence was significantly greater during pregnancy than at any other time (2.3 infections per 100 person-years com-

pared with 1.3 and 1.1 infections per 100 person-years for women who were breast-feeding and women who were neither pregnant nor breast-feeding, respectively). The HIV incidence ratio was significantly higher during pregnancy than during periods of nonpregnancy and non-breast-feeding (2.0); it was also higher during pregnancy than during periods of breast-feeding (1.8).

The husbands of married women were interviewed about their sexual risk behaviors; husbands were identified for 47–53% of cases across the three groups. The proportion of husbands who reported extramarital sexual partners was lower among those whose wives were pregnant than among those whose wives were breast-feeding or those whose wives were neither pregnant nor breast-feeding (36% vs. 40% and 39%, respectively). Among those reporting additional partners, men reported a lower mean number of sexual partners during intervals when their wives were pregnant than during intervals when their wives were neither pregnant nor breast-feeding.

In all three groups, 9–10% of HIV-negative women were married to HIV-positive men; the viral load of HIV-positive husbands varied little across groups. Within these relationships,

HIV incidence was higher during pregnancy than at any other time, despite the fact that couples had a lower mean monthly frequency of intercourse during pregnancy than during breast-feeding or periods when women were neither pregnant nor breast-feeding.

The investigators conclude that women have a significantly higher risk of acquiring HIV during pregnancy than at any other time and that this heightened risk remains even after adjustment for behavioral factors. The researchers speculate that biology may play a role, through the structural or immunological changes induced by pregnancy. Although its results are not generalizable outside of Rakai, this study highlights an important public health issue for women and infants. The authors “believe that it would be prudent to warn women of this potential risk of HIV acquisition during pregnancy,” and to encourage couples to practice monogamy, condom use or abstinence, which would also protect women from other STIs that could adversely affect pregnancy outcomes.
—L. Melhado

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Bangladeshi Men Whose Father Abused Their Mother Are More Likely to Be Violent Toward Their Own Wife

Numerous factors affect the likelihood that Bangladeshi women will be physically abused by their husband.¹ In a population-based survey of urban and rural women of reproductive age, the odds of abuse were elevated in both settings among women whose marriage involved a dowry or whose husband had seen his father abuse his mother. In contrast, the odds were reduced among women who had better communication with their husband and those whose husband had a relatively high level of schooling. In the urban setting only, women aged 15–19, those who belonged to a savings or credit group and those who had seen their father abuse their mother had elevated odds of abuse. In the rural setting only, women who earned income were more likely to be abused than those who did not.

Data for the study were derived from a survey conducted in 2001 among women aged 15–49 years residing in one large city and one rural area of Bangladesh. The women were asked whether they had experienced specific

types of physical abuse by their husband. In addition, they were questioned about social and demographic characteristics, their husband's schooling, dowry and living arrangements, domestic violence in their own and in their husband's family, personal income and participation in a savings or credit group, spousal communication and perceived gender roles. An adult household member was questioned about household income and concern about the local level of crime. Two community-level factors—the community's attitude toward gender roles and concern about the level of crime—were determined by aggregating individuals' responses.

Analyses were based on 1,373 urban women and 1,329 rural women who had ever been married. Greater proportions of rural women than of their urban counterparts had marriages involving dowries or other demands (53% vs. 14%), lived with their in-laws (37% vs. 25%), belonged to a savings or credit group (30% vs. 13%) and had seen their father abuse their

mother (17% vs. 13%). A larger proportion of urban women said that their husband had seen his father abuse his mother (15% vs. 10%). Most women in both settings (86%) said they might rely on their natal family for support in a crisis. Husbands of urban women generally had more education than their rural counterparts. On average, the level of communication of couples was slightly better in the urban group (3.1 vs. 3.0 on a scale of 0–4). With respect to community factors, attitudes toward gender roles were more conventional in the rural group than in the urban one (3.9 vs. 3.3 on a scale of 0–5), while a larger proportion of urban residents worried about crime in their community (15% vs. 8%). Overall, the annual income level was considerably lower for rural households.

Some 19% of urban women and 16% of rural women reported being physically abused by their husband in the past 12 months. A multi-level analysis identified certain factors as being associated with abuse in both urban and rural settings. Women whose marriage involved a dowry or other demands had higher odds of

being abused than did women whose marriage involved no financial demands (odds ratios, 1.6 and 2.1 among urban and rural women, respectively). Women whose husband had witnessed his father abusing his mother were more likely than other women to be harmed (2.9 and 1.9). In contrast, the higher the level of communication between a woman and her spouse, the lower her odds of experiencing physical violence (0.8 for each additional level in both settings). Urban women whose husband had six or more years of education and rural women whose husband had 11 or more years of education were less likely to be abused than women whose husband had no education (0.5 and 0.4).

In the urban setting only, women aged 20–24 or aged 30 or older had lower odds of being abused by their husband than did their counterparts aged 15–19 (odds ratios, 0.4 and 0.2, respectively), whereas women were more likely to be harmed if they participated in a savings or credit group (1.8) or if they had witnessed their father abusing their mother (2.0). In the rural setting only, women who earned income had higher odds than nonearners of

being abused (1.7). The other factors studied—living with in-laws, household income, religion, ability to seek support from natal families, and the community's attitude toward gender roles and concern about crime—were not associated with abuse in either setting.

The findings, the researchers contend, can be used to tailor interventions to reduce domestic violence against women in Bangladesh. They recommend strategies such as promoting the education of men, encouraging spousal communication and addressing the marital conflict that can arise when wives have personal income. However, the researchers note, altering the status quo will require a profound change in overall attitudes toward women, and interventions therefore “must be accompanied by mass education that includes a campaign for violence-free spousal relationships and gender equality.”—*S. London*

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