

Extramarital Sex Among Nigerian Men

Polygyny and Other Risk Factors

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Summary: The AIDS epidemic in Nigeria is generalized, with infection primarily occurring through heterosexual transmission. It is important to understand patterns of sexual behavior to assess their impact on the epidemic and to design appropriate intervention strategies. This study examined risk factors for extramarital sex among Nigerian men, with a particular focus on polygyny and peri- and postpartum abstinence. Data from the 2003 Nigeria Demographic and Health Survey were analyzed for 1153 men and their wives. Eleven percent of men reported extramarital sex in the previous year. Logistic regression models showed that men with 3 or more wives were at the greatest risk for extramarital sex, followed by monogamous men, when compared with men with 2 wives. Other significant predictors included region, religion, wealth, age at sexual debut, and self-perceived risk of HIV infection. Peri- and postpartum abstinence was not significant. Based on these findings, HIV prevention programs should include men with 3 or more wives and those living in the southwest region, in addition to activities targeting men of all ages. Given the heterogeneity within Nigeria, further in-depth studies should be undertaken to explore the relation between number of wives, peri- and postpartum abstinence, and extramarital sex within specific communities.

Key Words: high-risk sex, polygamy, postpartum abstinence

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This study analyzed the risk factors associated with male extramarital sex in Nigeria. Previous studies have shown that monogamous men are more likely to engage in extramarital sex than their polygynous (having more than 1 wife) counterparts.^{1,2} This is partially a result of the ability of men in polygynous unions to change partners within marriage, particularly when 1 wife is away from home or unable to engage in sexual relations. In contrast, a monogamous man would have to go outside marriage to seek sexual relations. In this study, we posited that it may not necessarily be the case that

monogamous men are at greater risk than polygynous men of having extramarital sex, particularly during the periods of partner abstinence that may occur during or after pregnancy. In addition, the interaction between polygyny and partner abstinence may modify the variables' effect on extramarital sex. In the face of HIV/AIDS in Nigeria, a country with great ethnic, religious, and regional diversity, it is important to conduct country-specific and culturally relevant studies to inform prevention policies and programs that can effectively reduce the spread of the disease. This study examined certain cultural practices and other risk factors thought to influence the occurrence and prevention of male extramarital sexual behavior as it relates to the transmission of HIV and other sexually transmitted diseases (STDs) in Nigeria.

According to Nigeria's 2003 National HIV Seroprevalence Sentinel Survey, there are an estimated 3.8 million Nigerians living with HIV/AIDS—roughly 5% of the adult population, with wide variations between states.³ In 2003, more than 310,000 AIDS-related deaths occurred and there were approximately 1.8 million AIDS orphans.⁴ The epidemic in Nigeria affects all segments of the population, with infection primarily occurring through heterosexual transmission. Some of the broader systemic factors include poverty, low literacy, gender inequality, and widespread stigma and discrimination. At the population level, it has been shown that the actual risk of infection depends primarily on biologic factors, such as the presence of STDs.^{5,6} At the individual level, however, risky sexual behavioral practices, such as infrequent or inconsistent condom use, having multiple sex partners, and young age at sexual debut, may account for some of the more proximate determinants of the spread of HIV. It is therefore important to understand patterns of sexual behavior to assess their impact on the epidemic and to design appropriate intervention strategies accordingly.

In the early 1990s, Uganda launched an aggressive national anti-HIV/AIDS campaign. One key intervention was the use of the "ABC"—abstinence, be faithful, use condoms—approach, which was aimed at reducing risky sexual behavior. "Be faithful" specifically targeted a reduction in the number of casual sexual partners and was a driving force behind the dramatic decline in HIV prevalence in Uganda during this period.⁷ Shelton et al⁸ showed that the reduction in partners has also had a direct impact on declines in HIV prevalence in certain populations in Thailand, Cambodia, Ethiopia, and the Dominican Republic. The "zero grazing" theory (sticking to 1 sexual partner) has not been given adequate attention in most HIV prevention programs,

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however.⁸ Instead, donor agencies and public and private organizations have historically promoted condom use as an intervention that worked in the West, and, more recently, the US administration in particular has earmarked funds for abstinence programs. Despite the emphasis on condom use and abstinence, staying with 1 uninfected partner was the most frequently cited method of preventing HIV infection among men and women surveyed in the Nigeria 2003 National HIV/AIDS and Reproductive Health Survey (NARHS); yet, in practice, more than one quarter of all men surveyed reported having more than 1 partner in the previous 12 months.⁹

In Nigeria and in other regions of sub-Saharan Africa, it is widely believed that men are biologically different from women in their need for sex. This has resulted in the perception that men may have unlimited sexual freedom, whereas women are expected to be faithful to only 1 partner at a time.¹⁰⁻¹² This cultural belief is played out in sexual behavioral patterns; for example, according to the 2003 NARHS, 26% of all men surveyed reported having more than 1 sexual partner in the past year versus less than 3% of women.⁹ The proportion of women may be greatly underreported, however, reflecting a stronger taboo against women openly engaging in extramarital sex and therefore underreporting the practice.¹

Although the practice of polygyny certainly has economic and reproductive grounding, the belief that men are sexually polygynous by nature is central to the justification of this practice.¹² In terms of sexual behavior risk, being in a formal marriage is thought to reduce the probability of HIV infection.¹³ In regions with high HIV prevalence, however, marriage may be a risk factor for infection.¹⁴ In addition, Glynn et al¹⁴ found that a substantial proportion of HIV infection among men in Kenya and Zambia may be acquired outside marriage.

Similarly, polygyny does not preclude extramarital activity among men.¹² For example, Orubuloye et al¹⁰ found that more than 50% of monogamous men and roughly a third of polygynous men had engaged in extramarital sex over the course of a year in the Ondo State research program. Empiric studies have linked concurrency of sexual partners and sexual networking with increased risk of HIV transmission.¹⁵ In addition, condom use among Nigerian men is not widespread, particularly during sex with wives or regular partners. According to the 2003 NARHS, approximately 23% of men were using condoms at the time of the survey, whereas 33% reported ever using a condom.⁹ Together, lack of condom use and multiple partnering magnify the risk of HIV transmission.

Although the practice of polygyny seems to be declining in Nigeria (roughly 41% of all married women surveyed in the 1990 Nigeria Demographic and Health Survey [NDHS]¹⁶ were in polygynous unions vs. 36% in the 1999 NDHS¹⁷ and 2003 NDHS¹⁸), it is still quite widely practiced among certain subpopulations, such as in the northern regions of the country.¹⁸

It is plausible that polygyny should be protective against HIV transmission. Although polygyny does imply having multiple partners (itself a risk factor), it may also reduce the perceived need for men to seek extramarital sexual relations, thereby reducing the incidence of casual sex. The evidence for this is conflicting, however. Isiugo-Abanihe² found that male

monogamists were significantly more likely to engage in extramarital sexual relations than polygynists in the previous week in 5 towns across Nigeria, whereas over the men's lifetime, the opposite was the case (possibly confounded by age). Further, Lawoyin and Larsen¹⁹ found that polygynous men were more likely to have extramarital sex than their monogamous counterparts during their wife's pregnancy and in the postpartum period in Oyo State, Nigeria.

In addition to polygyny, the traditional practice of abstaining from sex during pregnancy (peripartum) and while breastfeeding (postpartum) has been shown to increase the prevalence of extramarital sex among men, thereby increasing the risk of HIV transmission between spouses.¹⁹⁻²¹ Previous research has shown that polygyny and peri- and postpartum abstinence are intimately linked. Cleland et al²⁰ looked at postpartum abstinence and its effect on extramarital sexual behavior in Benin. The authors found a significant increase in reported extramarital sexual behavior among married men who experienced postpartum abstinence versus those who did not. Further, condom use was not commonly practiced during these extramarital sexual contacts. Ali and Cleland²¹ conducted a similar study in Côte d'Ivoire and found a significant effect of postpartum abstinence on the probability of extramarital sex. As mentioned previously, Lawoyin and Larsen¹⁹ found that polygynous men in Oyo State, southwest Nigeria, were more likely to engage in sex with other partners (including regular and nonregular partners) during the peri- and postpartum periods.

Postpartum sexual abstinence is practiced worldwide; however, in Nigeria and other West African countries, it is often culturally proscribed to enable child spacing for the health of the child and mother.²² The Yoruba in Nigeria consider concurrent lactation and pregnancy to have a negative effect on the nursing infant and the new fetus.²² In addition, it is commonly believed that sperm taints or reduces the mother's breast milk, thereby harming the breast-fed child.²⁰ Finally, it has been suggested that postpartum abstinence may attenuate the tie between husband and wife, thus increasing the power of the lineage over the nuclear family.²⁰

In relation to HIV/AIDS, the period of abstinence may contribute to a reduction in the number of sexual acts, thereby reducing the risk of transmission. For example, Cleland et al²⁰ calculated that a typical woman in Benin aged 15 to 49 years abstains from marital sex for approximately 8.6 years. This practice, however, is often offset by the prevalence of polygyny in many West and Central African countries as well as by the potential for men to seek sexual relations outside marriage. In fact, Nigerian Yoruba women commonly accept that their husbands seek alternative sexual outlets during the postpartum period.²⁰ A comparison of World Fertility Survey (WFS) and NDHS data over time shows the mean duration of postpartum abstinence periods across West and Central Africa fluctuating over the past 20 years. In Nigeria, the mean duration of postpartum abstinence was 14.2 years in 1981 to 1982 and 14.4 years in 1990²¹ but dropped to 10.6 years in 1999¹⁷ and 8 years in 2003.¹⁸ In addition, the presence of HIV/AIDS, risk of mother-to-child transmission (MTCT), and high HIV-related infant mortality may shorten the duration of breastfeeding and therefore reduce the period of postpartum abstinence.²³

Although peri- and postpartum abstinence and polygyny seem to be on the decline, they may currently contribute significantly to the risk of extramarital sexual behavior and the subsequent spread of HIV in Nigeria. In addition to polygyny and peri- and postpartum abstinence, there are other risk factors that have been found to be associated with extramarital sexual behavior, including urban-rural residence, region, education, religion, age, income and wealth, number of children, age at sexual debut, marriage to someone other than sexual debut partner, number of sexual partners before first marriage, and knowledge of multiple partners as a risk factor for HIV/AIDS.^{2,19–21,24}

Finally, there is general skepticism about the quality and validity of self-reported sexual behavioral data. In particular, social and cultural norms may affect how men report extramarital sexual behavior—underreporting if sex outside marriage is frowned on in a community or more accurately responding or even overreporting if the behavior is more widely accepted or even encouraged. Recently, however, the triangulation of data from other sources, such as biomarkers and qualitative methods, has allowed researchers to cross-check the credibility and consistency of such data. As a result, there is a growing consensus that self-report data may actually be useful for examining trends rather than specific numbers.²⁵ Several articles have investigated the extent of underreporting and misreporting of these data, some using biomarkers to validate the findings.^{26,27}

METHODS

This study used data from the 2003 NDHS, which was carried out by the National Population Commission of the Federal Republic of Nigeria. The sample was selected using a stratified 2-stage cluster design consisting of 365 clusters taken from a list of enumeration areas developed for the 1991 Population Census. A nationally representative probability sample of 7864 households was then selected from the clusters, in which all women aged 15 to 49 years were eligible to be interviewed. The men's questionnaire was administered to all men aged 15 to 59 years living in every third household in the sample. The survey collected information between March and August 2003 and included questions on fertility, reproductive behavior, sociodemographic characteristics, and HIV/AIDS-related knowledge and attitudes.

The dependent variable was binary and defined as the occurrence of currently married or cohabitating men reporting having had sex with a nonmarital and noncohabitating partner in the last 12 months and those who did not. This variable corresponds to the Joint United Nations Program on HIV/AIDS (UNAIDS) sexual behavior indicator 1, "high-risk sex in the last year,"¹⁸ and is also referred to in this article as extramarital sex.

The main independent variable was the number of wives as reported by men, categorized as 1, 2, and 3 or more. In this article, a wife may refer to a woman in a marital or cohabitating union. In addition, a secondary main independent binary variable approximating peri- and postpartum abstinence in the matched partners was included. Women who reported abstaining during or after pregnancy in the last year were classified as

having abstained and were determined using the following variables: currently pregnant, currently breast-feeding, currently abstaining, duration of abstinence since last birth, date of last birth, and date of interview.

Possible confounders and other independent variables identified through the literature and theoretic reasoning fell into 3 main groups: sociodemographic characteristics, risk factors, and HIV/AIDS-related knowledge. In the first group were educational attainment, marital status, age, residence (urban/rural), region, wealth, ethnic group, and religion. In the second group were length of time away from home, condom use at last sex, age at sexual debut, self-perceived risk of HIV/AIDS, reporting ever paying for sex, history of STDs in last year, and partner's fertility preference. In the third group were media exposure and knowledge of reducing the number of partners as a method of preventing HIV transmission.

Educational attainment was categorized as none, primary incomplete, primary complete (completed 6 years of primary school), secondary incomplete, secondary complete (completed 6 years of secondary school), and higher. Residence and region were included based on the method of sampling used by the NDHS. Although original sampling was performed using the 37 states, the analysis included regions instead because of the relatively few number of cases in some states and risk of nonconvergence in the multivariate statistical models. The wealth index was constructed from data on household assets collected in the 2003 NDHS using principal components analysis, which assigned weights to each asset. Ethnic group was broken down into 5 categories. Ethnic groups that represented 5% or more of the sample were included (Hausa, Igbo, Fulani, and Yoruba). All other ethnic groups (217 plus other) were placed into the "other" category. Age at sexual debut was categorized according to the median and the 25th and 75th percentiles for age at sexual debut, corresponding to 20, 18, and 25 years, respectively. Finally, media exposure was categorized according to self-reported frequency of watching, listening to, or reading the television, radio, or newspapers/magazines. High exposure was defined as being exposed to at least 1 medium approximately once each day. No or low exposure was defined as being exposed to 2 or more media less than once a week. Medium exposure covered all other exposure.

Statistical analyses were performed using the SAS statistical program (SAS Institute, Cary, NC). First, sociodemographic characteristics and risk factors thought to be related to the main exposure variable, type of marital union, which was categorized as men with 1, 2, and 3 or more wives, were examined using a Pearson χ^2 test.

Second, univariate logistic regression analyses were performed comparing sociodemographic characteristics and other associated risk factors of men who did with those who did not report high-risk sex in the last 12 months using a Pearson χ^2 test to determine statistical association.

Third, multivariate logistic regression analyses were performed to calculate the adjusted odds ratios (ORs) and 95% confidence intervals (CIs) for predictors of men reporting high-risk sex within the last 12 months. This adjusted model included all predictors for which $P \leq 0.05$ in the univariate analyses and forced in the 2 main predictors (number of wives

and peri- and postpartum abstinence) and region and residence (because of the method of sampling used in the NDHS). In addition, a correlation matrix was calculated for all variables in the final model to determine multicollinearity between variables.

Finally, the adjusted model was examined for effect modification looking specifically at the interaction between the main predictors, number of wives, and peri- and postpartum abstinence in the last year, based on the research questions. In addition, the interaction between religion and education was examined.

RESULTS

A total of 7985 eligible women were found in the selected households, of whom 7620 (95%) were successfully interviewed. The response rate for the male survey was 91% (2572 eligible men were identified, of whom 2346 were successfully interviewed). Of these, a total of 1196 men were currently married or cohabitating; however, for the purposes of this study, only men who were matched with women (1168 couples) were analyzed, because a main exposure, peri- and postpartum abstinence, was imputed from responses from the wives of the men. Men with missing values for the dependent variable “extramarital sex in the last 12 months” ($n = 14$) and the independent variable “ever paid for sex” ($n = 1$) were excluded from the analyses. The final sample size for men was 1153.

Overall, 64.4% ($n = 743$) of the men were monogamous, 27.9% ($n = 322$) had 2 wives, and 7.6% ($n = 88$) reported having 3 or more wives. Roughly, 11.3% ($n = 130$) reported having extramarital sex in the last 12 months: 12.9% ($n = 96$) of monogamous men, 5.3% ($n = 17$) of those with 2 wives, and 19.3% ($n = 17$) of those with 3 or more wives. This pattern corresponds roughly with that for men who had wives or partners reporting peri- or postpartum abstinence some time in the last year (26.4% overall): 25.6% ($n = 190$) of monogamous men, 20.8% ($n = 67$) of men with 2 wives, and 30.7% ($n = 27$) of men with 3 or more wives. In addition, most men did not have higher than a primary school education (66.2%), roughly two thirds resided in rural areas (66.3%), and most were from northern regions (73.6%) and reported being Muslim (63.9%). Although 13.2% ($n = 152$) of the men reported ever having paid for sex, only 4% ($n = 48$) reported using a condom at last sex and 3% ($n = 29$) reported having had STD symptoms. Despite high levels of media exposure (73%) and knowledge of HIV/AIDS (84% cited a reduction in the number of partners as a method of prevention of HIV transmission), 13% ($n = 145$) of the men reported not knowing or being unsure of their risk of HIV (Table 1).

The following variables were found to be significantly associated with the number of wives at the 0.10 level: education, marital status, age at survey, residence, region, wealth, ethnic group, religion, peri- and postpartum abstinence, high-risk sex in last year, condom use at last sex, HIV risk perception, knowledge of reduction in the number of partners as an HIV prevention method, and media exposure. In contrast, only 3 examined variables were not statistically significant: time away from home, ever paid for sex, and history of STDs.

Table 2 presents results of the crude and adjusted logistic regression models examining sociodemographic characteristics and other risk factors for men who did and did not report having high-risk sex in the last 12 months. In general in the adjusted model, the association between the independent and dependent variables remained in the same direction as in the crude model and, as expected, the effect estimates tended to be attenuated. In the adjusted model, the effect estimates of the main exposure variable (number of wives) did not vary much from the crude model: men with 3 or more wives (OR = 4.77, 95% CI: 1.95–11.72) had the greatest risk of high-risk sex, followed by monogamous men (OR = 2.25, 95% CI: 1.17–4.32) as compared with men with 2 wives. In contrast, peri- and postpartum abstinence was nonsignificant in the crude and adjusted models (OR = 0.95, 95% CI: 0.56–1.63).*

In addition, although urban-rural residence was nonsignificant in the adjusted model, men who lived in the southwest region had a more than 7 times greater risk of reporting extramarital sex (OR = 7.65, 95% CI: 2.08–28.22) and those living in the northcentral region had a more than 3 times greater risk (OR = 3.14, 95% CI: 1.10–9.00) as compared with men living in the northwest. Wealth also proved to be significant, with poorer (OR = 2.28, 95% CI: 1.05–4.98), middle (OR = 2.85, 95% CI: 1.23–6.63), and richer (OR = 3.56, 95% CI: 1.41–8.99) men being at increasingly greater risk of extramarital sex than the poorest quintile. Catholic (OR = 2.81, 95% CI: 1.12–7.06) and Protestant (OR = 3.78, 95% CI: 1.84–7.76) men were more likely to engage in extramarital sex than their Muslim counterparts. Overall, risk factors were found to be more significantly associated with high-risk sex than with sociodemographic characteristics. For example, men who reported being away from home for more than a month at a time were more than twice as likely to engage in high-risk sex (OR = 2.11, 95% CI: 1.21–3.68); men who were younger than 19 years of age at their sexual debut were also more than twice as likely to have high-risk sex (OR = 2.02, 95% CI: 1.02–4.02); and the greater the men’s own perception of their HIV risk, the greater was their risk of extramarital sex (low/moderate [OR = 2.90, 95% CI: 1.62–5.18]; high/has AIDS [OR = 8.14, 95% CI: 2.62–25.29]). In contrast, sociodemographic characteristics, such as age, education, and ethnic group, although significant in the crude model, were not so in the adjusted model. In particular, in the crude model, the Yoruba were at a more than 7 times greater risk of high-risk sex (OR = 7.03, 95% CI: 3.73–13.23), whereas in the adjusted model, this association was nonsignificant. Similarly, the HIV/AIDS knowledge and awareness variables, although significant in the crude model, became nonsignificant in the adjusted model.

Wealth was found to be correlated with several variables, particularly with residence. Because wealth was also found to be significantly associated with the dependent variable, however, it was left in the model.

*When peri- and postpartum abstinence in the last year was analyzed as a 3-category variable (“yes,” “no,” and “inconsistent”), the last category ($n = 9$) was not found to be substantively different.

TABLE 1. Sociodemographic Characteristics of Men With 1, 2, and 3 or More Wives (n = 1153)

Variable	Sample Size		No. Wives			P*
	n	%	1 (%)	2 (%)	3 or More (%)	
Extramarital sex within last year†						<0.0001
Yes	130	11.3	12.9	5.3	19.3	
No	1023	88.7	87.1	94.7	80.7	
Wife abstained during last year						0.10
Yes	284	24.6	25.6	20.8	30.7	
No, inconsistent	869	75.4	74.4	79.2	69.3	
Education‡‡						<0.0001
None	427	37.0	31.1	47.5	48.9	
Incomplete primary	153	13.3	12.7	14.3	14.8	
Complete primary	183	15.9	18.2	11.2	13.6	
Incomplete secondary	182	15.8	18.6	11.2	9.1	
Complete secondary	79	6.9	7.8	5.6	3.4	
Higher	129	11.2	11.7	10.3	10.2	
Marital status						0.001
Married	1111	96.4	94.9	98.8	100.0	
Living together	42	3.6	5.1	1.2	0.0	
Age at survey (y)						
<30	158	13.7	19.0	4.7	2.3	0.0001
30–34	209	18.1	21.8	14.6	0.0	
35–39	184	16.0	14.9	19.9	10.2	
40–49	364	31.6	27.5	37.6	44.3	
50–59	238	20.6	16.8	23.3	43.2	
Residence						0.003
Rural	765	66.3	62.9	73.6	69.3	
Urban	388	33.7	37.2	26.4	30.7	
Region						<0.0001
Northcentral	197	17.1	17.0	15.8	22.7	
Northeast	284	24.6	21.9	30.8	25.0	
Northwest	368	31.9	29.5	38.5	28.4	
Southeast	84	7.3	9.2	4.0	3.4	
Southsouth	84	7.3	7.9	5.3	9.1	
Southwest	136	11.8	14.5	5.6	11.4	
Wealth index§						0.0003
Poorest	265	23.0	21.9	24.5	26.1	
Poorer	250	21.7	19.0	26.4	27.3	
Middle	231	20.0	19.4	22.1	18.2	
Richer	197	17.1	17.4	17.1	14.8	
Richest	210	18.2	22.3	9.9	13.6	
Ethnic group						<0.0001
Fulani	105	9.1	7.4	12.7	10.2	
Hausa	383	33.2	29.2	41.6	36.4	
Igbo	123	10.7	13.7	5.6	3.4	
Yoruba	126	10.9	13.2	5.9	10.2	
Other	416	36.1	36.5	34.2	39.8	
Religion						<0.0001
Catholic	110	9.5	10.9	5.6	12.5	
Protestant	147	12.7	16.0	7.1	5.7	
Other Christian	135	11.7	15.9	4.7	2.3	
Muslim	737	63.9	56.1	79.8	71.6	
Traditionalist, other	24	2.1	1.1	2.8	8.0	

TABLE 1. (continued) Sociodemographic Characteristics of Men With 1, 2, and 3 or More Wives (n = 1153)

Variable	Sample Size		No. Wives			P*
	n	%	1 (%)	2 (%)	3 or More (%)	
Time away from home						1.00
≤1 month	513	44.5	44.7	44.4	43.2	
>1 month	227	19.7	19.5	19.9	20.5	
Missing	413	35.8	35.8	35.7	36.4	
Condom use at last sex						0.0002
Yes	48	4.2	5.8	1.2	1.1	
No	1071	92.9	90.3	97.2	98.9	
Don't know, missing	34	2.9	3.9	1.6	0.0	
Age at sexual debut (y)						0.65
<19	365	31.7	30.8	32.9	34.1	
19–24	494	42.8	42.9	44.1	37.5	
25+	294	25.5	26.2	23.0	28.4	
HIV risk perception						0.003
None	666	57.8	61.2	52.8	46.6	
Low/moderate	321	27.8	25.0	32.6	34.1	
High/has AIDS	21	1.8	2.4	0.3	2.3	
Don't know, unsure, missing	145	12.6	11.3	14.3	17.1	
Ever paid for sex						0.39
Yes	152	13.2	13.1	14.6	9.1	
No	1001	86.8	86.9	85.4	90.9	
STD/symptom in last year						0.67
Yes	29	2.5	2.7	1.9	3.4	
No	1111	96.4	96.0	97.2	96.6	
Don't know, missing	13	1.1	1.4	0.9	0.0	
Media exposure¶						0.006
None/low	112	9.7	9.4	10.9	8.0	
Medium	197	17.1	15.3	23.0	10.2	
High	844	73.2	75.2	66.2	81.8	
Knows method to prevent HIV						0.002
Cites reduce number of partners	968	84.0	85.2	84.8	70.5	
Doesn't cite method, doesn't know, missing	185	16.0	14.8	15.2	29.6	
%		100.0	64.4	27.9	7.6	
Total	1153		743	322	88	

*Pearson χ^2 test.

†Extramarital sex is defined as sex with a nonspouse or noncohabitating partner.

‡“Complete primary” refers to having completed 6 years at the primary level; “complete secondary” refers to having completed 6 years at the secondary level.

§Wealth index constructed using household asset data and principal components analysis.

¶Specific ethnic groups listed consisted of 5% or more of entire sample. “Other” refers to 217 separate groups in addition to others not specified in the NDHS data.

¶¶“Media” refers to television, radio, or newspaper’s/magazine’s; “high” refers to exposure to any media almost everyday; “none/low” refers to exposure to 2 or more media less than once a week; “medium” refers to exposure to any media at least once a week.

Finally, the interaction terms between the number of wives and peri- and postpartum abstinence and religion and education were tested for in the adjusted model and found to be nonsignificant. They were therefore not included in the final model.

DISCUSSION

In this study, 11% of men in unions reported having sex with a noncohabitating and nonmarital partner in the last 12 months, demonstrating the prevalence of extramarital sex in the general population of men in unions, and thus the risk of

HIV transmission. This estimate seems to be consistent with findings from other studies. Orubuloye et al¹² found that 15% to 27% of men in 3 states in southwest Nigeria reported extramarital sexual activity in the last year. According to Figure 1, which shows the prevalence of extramarital sex by state, the prevalence in the same southwest states ranges from 14% to 55%. Isiugo-Abanihe² demonstrated that 19% of married men in 5 urban centers in Nigeria reported extramarital relations in the previous week. Although this is slightly higher than our population-based estimate, in our crude model, urban respondents were at a higher risk of

TABLE 2. Crude and Adjusted ORs With 95% CIs for Sociodemographic Characteristics and Risk Factors Associated With Men Reporting Extramarital Sex Within the Last Year*

Variable	Sample Size		Crude			Adjusted		
	n	%	OR	95% CI	P†	OR	95% CI	P†
Number of wives								
1	743	64	2.66	1.56–4.54	0.0003	2.25	1.17–4.32	0.02
2	322	28	1.00	—	—	1.00	—	—
3+	88	8	4.30	2.09–8.83	<0.0001	4.77	1.95–11.72	0.0006
Wife abstained during last year								
No, inconsistent	869	24.6	1.00	—	—	1.00	—	—
Yes	284	75.4	1.31	0.87–1.96	0.20	0.95	0.56–1.63	0.86
Education‡								
None	427	37.0	1.00	—	—	1.00	—	—
Incomplete primary	153	13.3	1.37	0.67–2.80	0.39	0.64	0.26–1.55	0.32
Complete primary	183	15.9	2.66	1.49–4.75	0.0009	1.23	0.55–2.73	0.62
Incomplete secondary	182	15.8	4.24	2.47–7.28	<0.0001	1.10	0.49–2.49	0.81
Complete secondary	79	6.9	2.88	1.38–6.01	0.005	0.99	0.37–2.66	0.99
Higher	129	11.2	2.44	1.27–4.68	0.007	0.78	0.31–2.00	0.61
Marital status								
Married	1111	96.4	1.00	—	—	1.00	—	—
Living together	42	3.6	3.37	1.68–6.75	0.0006	1.47	0.56–3.87	0.44
Age at survey (y)								
<30	158	13.7	2.22	1.14–4.30	0.02	1.98	0.80–4.89	0.14
30–34	209	18.1	1.85	0.97–3.51	0.06	1.19	0.52–2.73	0.68
35–39	184	16.0	1.77	0.91–3.43	0.09	1.35	0.58–3.15	0.48
40–49	364	31.6	1.70	0.94–3.06	0.08	1.22	0.60–2.51	0.58
50–59	238	20.6	1.00	—	—	1.00	—	—
Residence								
Rural	765	66.3	1.00	—	—	1.00	—	—
Urban	388	33.7	1.52	1.05–2.20	0.03	1.28	0.70–2.35	0.42
Region								
Northwest	368	17.1	1.00	—	—	1.00	—	—
Northcentral	197	24.6	5.30	2.71–10.36	<0.0001	3.14	1.10–9.00	0.03
Northeast	284	31.9	3.71	1.92–7.18	<0.0001	1.95	0.80–4.71	0.14
Southeast	84	7.3	2.10	0.77–5.70	0.14	1.88	0.34–10.32	0.47
Southsouth	84	7.3	3.69	1.56–8.74	0.003	2.07	0.56–7.66	0.27
Southwest	136	11.8	9.46	4.82–18.57	<0.0001	7.65	2.08–28.22	0.002
Wealth index§								
Poorest	265	23.0	1.00	—	—	1.00	—	—
Poorer	250	21.7	1.66	0.89–3.10	0.11	2.28	1.05–4.98	0.04
Middle	231	20.0	1.59	0.84–3.01	0.15	2.85	1.23–6.63	0.01
Richer	197	17.1	2.09	1.11–3.93	0.02	3.56	1.41–8.99	0.007
Richest	210	18.2	2.74	1.51–5.00	0.001	1.93	0.70–5.32	0.20
Ethnic group								
Hausa	383	9.1	1.00	—	—	1.00	—	—
Fulani	105	33.2	2.02	0.87–4.67	0.10	2.21	0.80–6.14	0.13
Igbo	123	10.7	1.70	0.74–3.92	0.21	0.37	0.08–1.65	0.19
Yoruba	126	10.9	7.03	3.73–13.23	<0.0001	1.56	0.47–5.19	0.47
Other	416	36.1	3.91	2.25–6.82	<0.0001	1.27	0.52–3.09	0.60
Religion								
Muslim	737	9.5	1.00	—	—	1.00	—	—
Catholic	110	12.7	2.14	1.20–3.83	0.01	2.81	1.12–7.06	0.03
Protestant	147	11.7	3.80	2.39–6.03	<0.0001	3.78	1.84–7.76	0.0003
Other Christian	135	63.9	1.57	0.88–2.83	0.13	0.90	0.37–2.18	0.81
Traditionalist, other	24	2.1	1.67	0.48–5.77	0.42	4.81	1.00–23.06	0.05

TABLE 2. (continued) Crude and Adjusted ORs With 95% CIs for Sociodemographic Characteristics and Risk Factors Associated With Men Reporting Extramarital Sex Within the Last Year*

Variable	Sample Size		Crude			Adjusted		
	n	%	OR	95% CI	P†	OR	95% CI	P†
Time away from home								
≤1 month	513	44.5	1.00	—	—	1.00	—	—
>1 month	227	19.7	2.02	1.32–3.10	0.001	2.11	1.21–3.68	0.009
Missing	413	35.8	0.62	0.39–0.99	0.04	0.77	0.43–1.38	0.38
Condom use at last sex								
No	1071	4.2	1.00	—	—	1.00	—	—
Yes	48	92.9	4.24	2.26–7.97	<0.0001	2.49	1.13–5.50	0.02
Don't know, missing	34	2.9	0.26	0.04–1.90	0.18	0.11	0.01–1.30	0.08
Age at sexual debut (y)								
<19	365	31.7	3.46	1.98–6.06	<0.0001	2.02	1.02–4.02	0.04
19–24	494	42.8	1.79	1.01–3.18	0.05	0.99	0.51–1.94	0.98
25+	294	25.5	1.00	—	—	1.00	—	—
HIV risk perception								
None	666	57.8	1.00	—	—	1.00	—	—
Low/moderate	321	27.8	3.52	2.30–5.40	<0.0001	2.90	1.62–5.18	0.0003
High/has AIDS	21	1.8	11.74	4.67–29.50	<0.0001	8.14	2.62–25.29	0.0003
Don't know, unsure, missing	145	12.6	2.80	1.61–4.88	0.0003	4.01	1.89–8.52	0.0003
Ever paid for sex								
No	1001	13.2	1.00	—	—	1.00	—	—
Yes	152	86.8	4.53	3.00–6.85	<0.0001	4.10	2.28–7.38	<0.0001
STD/symptom in last year								
No	1111	2.5	1.00	—	—	1.00	—	—
Yes	29	96.4	5.09	2.35–11.05	<0.0001	4.66	1.66–13.14	0.004
Don't know, missing	13	1.1	—	—	0.98	—	—	0.99
Media exposure¶								
None/low	112	9.7	1.00	—	—	1.00	—	—
Medium	197	17.1	0.56	0.18–1.76	0.32	0.97	0.26–3.56	0.96
High	844	73.2	2.87	1.23–6.69	0.01	2.45	0.89–6.75	0.08
Knows method to prevent HIV								
Doesn't cite method, doesn't know, missing	185	84.0	1.00	—	—	1.00	—	—
Cites reduce number of partners	968	16.0	2.22	1.17–4.20	0.01	1.74	0.77–3.95	0.18
Total	1153	100.0						

*Extramarital sex is defined as sex with a nonspouse or noncohabitating partner.

†Wald test.

‡“Complete primary” refers to having completed 6 years at the primary level; “complete secondary” refers to having completed 6 years at the secondary level.

§Wealth index constructed using household asset data and principal components analysis.

¶Specific ethnic groups listed consisted 5% or more of entire sample. “Other” refers to 217 separate groups in addition to others not specified in the NDHS data.

¶¶“Media” refers to television, radio, or newspaper’s/magazine’s; “high” refers to exposure to any media almost everyday; “none/low” refers to exposure to 2 or more media less than once a week; “medium” refers to exposure to any media at least once a week.

extramarital sex than their rural counterparts, which was likely reflected in this author’s results.

Thirty-six percent of the men in our study were in polygynous unions, and monogamous and polygynous men were both at risk for extramarital sex during the previous 12 months. Men with 3 or more wives had 4 times the risk, whereas monogamous men had more than twice the risk of extramarital sex when compared with men with 2 wives after adjusting for sociodemographic characteristics and other risk factors. The finding that monogamous men are more likely to engage in extramarital sex than their polygynous counterparts holds true in this study but only when compared with men who have 2 wives. Although comprising only 8% of the sample population, men with 3 or more wives were at the greatest risk

of engaging in extramarital sex compared with men in other unions. It is unclear as to why men with 3 or more wives are at greater risk than those with 2 wives; however, it is possible that the former may be more likely to be actively seeking other wives and therefore engaging in more extramarital sexual behavior, whereas the latter may be in more stable relationships and no longer seeking other wives. Further, in the crude analysis of type of marital union, men with 3 or more wives were more likely to have wives reporting peri- or postpartum abstinence, to be older, to reside in the northcentral and southwest regions, to follow Catholic and traditionalist religions, and to be less likely to cite a reduction in the number of partners as a method of HIV prevention than those with 2 wives. More in-depth research may elucidate the reasons

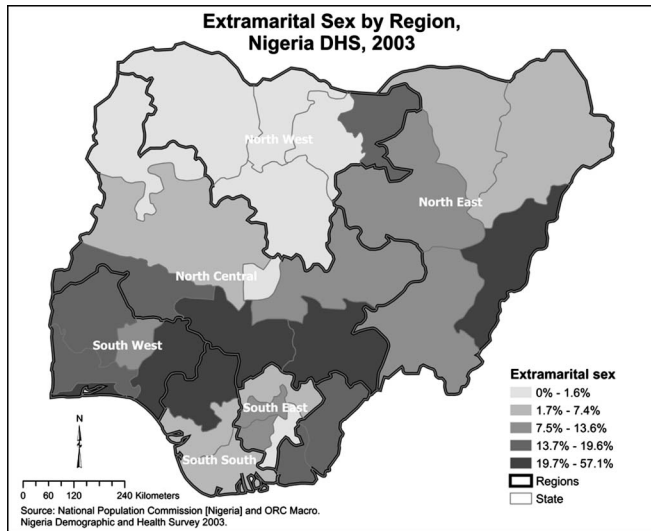


FIGURE 1. Prevalence of extramarital sex among Nigerian men in unions by state according to the 2003 Nigeria Demographic and Health Survey.

behind the difference in extramarital sexual activity in men with 1, 2, and 3 or more wives. For example, there may be a link between the prevalence of extramarital sex and how widely accepted it is (as well as the practice of polygyny) among specific communities.

No association was found between men with partners who had abstained from sex during the last year and extramarital sexual behavior. In addition, there was no interaction between the number of wives and peri- and postpartum abstinence. The quality of the peri- and postpartum abstinence variable may be inconsistent, however; for example, several women who reported giving birth less than 9 months ago also reported being currently pregnant and abstaining. The variable serves as an approximation of peri- and postpartum abstinence, particularly because it was not possible to match these periods with the actual timing of extramarital sex. Given the findings of previous studies,^{19–21,28} it is possible that an association does exist between extramarital sex and peri- and postpartum abstinence when broken down by state. Nigeria is a heterogeneous country, with wide variations in cultural practices and disease patterns across ethnic groups, regions, and religions. Although this study was not able to examine associations by state because of the limited number of cases in some states, the analyses showed regional differences, particularly between the northwest and northcentral and southwest regions, indicating possible intraregional differences (see Fig. 1).

Region, religion, wealth, time away from home, history of STDs, condom use at last sex, ever paying for sex, and age at sexual debut were all associated with male extramarital sex. Catholic and Protestant men were more likely to engage in extramarital sex than Muslim men. This difference may be a result of stronger religious taboos against sex outside marriage for Muslims. Orbuloye et al¹² claimed that although Christian ministers may preach against premarital and extramarital sex, their messages are often undermined by ongoing sexual scandals involving members of the ministry.

Men reporting “other Christian” religion, likely comprising mostly those affiliated with the Pentecostal or evangelical church, were at no greater risk than Muslim men.²⁹ In a review of studies by Gray³⁰ linking Islam and HIV risk factors, results were indeterminate. Some studies found that Muslim men were less likely to report extramarital sex than those of other religions, whereas others found that there was no association. The studies did consistently show that Muslim men were more likely to be polygynous and to have lower condom use. In our study, however, religion was still significant after adjusting for the number of wives and condom use at last sex, which points to a reduced risk overall of extramarital sex among Muslim men. Although there were likely too few cases among men adhering to traditionalist and other religions to enable a statistical association with extramarital sex, according to Orbuloye et al,¹² traditional religion condones polygyny as well as sex outside marriage. Moreover, although most Nigerians adhere to Christian or Muslim religions, aspects of traditional religion and culture are still influential.¹² Therefore, research conducted in specific communities in which traditional religious customs are followed may better examine the association with extramarital sex.

Considering the association with the wealth index, in the crude model, the risk of extramarital sex was greater the wealthier the respondent. In the adjusted model, however, there was an interesting upward and then downward trend, peaking at the richer quintile. It seems that as men get wealthier, they may have the financial means to afford to have more extramarital sex; however, interestingly, the richest quintile of men seem to be at no greater risk of extramarital sex than the poorest men. It is unclear why this is, but it may be related to level of awareness and associated behavior change. Further, because wealth was found to be correlated with several other variables, such as ethnic group, it is likely that these correlations may have caused the association between men in the richest quintile and risk of extramarital sex to be attenuated.

All the significant risk factor associations were found to be consistent with previous study findings. The more time a man spends away from home, the greater is his risk of extramarital sex. A study carried out in neighboring Cameroon found that married men who were absent from home for more than 1 month during the past year were 3 times more likely to engage in extramarital sex than those who reported no absence.³¹ In addition, if the men reported symptoms or a history of STDs, this would also indicate a greater likelihood of engaging in high-risk sex.³² This association would also suggest a greater risk of HIV infection. Similarly, given the low rate of condom use, particularly with wives and cohabitating partners, the fact that the men who reported using a condom at last sex were also those at risk for extramarital sex is not surprising.³² Further, men who reported ever having paid for sex would most likely also have engaged in extramarital sex. Finally, men with a young age at sexual debut (<19 years) were also more at risk. This association was also noted by White et al,²⁴ who found that younger age at sexual debut (<15 years) was significantly associated with extramarital sex within the last year among men in Côte d’Ivoire and Tanzania. It is important to note that the number of cases of men reporting a history of STDs, condom use at last sex, and ever paying for sex was low

and was likely underreported because of the sensitive nature and social and cultural norms surrounding these variables.

Although media exposure and knowledge of HIV prevention methods were not significant independent variables in the adjusted model, they were significantly positively associated with extramarital sex in the crude model. These associations are in contrast to what Isiugo-Abanihe² found in his study of 5 Nigerian towns; this author found an inverse relation between knowledge and behavior. This discrepancy is likely a result of the difference in samples, reflecting the heterogeneity of Nigeria; whereas our study included a nationally representative sample of men, Isiugo-Abanihe's study was restricted to 5 towns. Our results point to a common gap between knowledge and behavior change that must be addressed by current and future programs and policies, such as the 5-year Behavior Change Communication Strategy recently launched by The Nigerian National Action Committee to combat the epidemic, which is targeted at 5 priority audiences, including people who engage in high-risk behavior. The results from this study could well inform such a strategy, particularly because a media component is designed to be part of this intervention. In the crude model, men with high exposure to media were more than twice as likely to engage in extramarital sex as those with none. Assuming that higher media exposure is linked to greater exposure to HIV/AIDS-related media messages, it seems that current media messages are not affecting positive behavior change among men in unions. This is consistent with the general belief that knowledge and awareness do not necessarily equate to behavior change, as the study results indicate. These results underscore the importance of new and innovative approaches to HIV prevention programming if Nigeria's hope for its people to adopt new beliefs and attitudes through the use of media is to be realized.³³

As mentioned previously, the quality of self-reported information, particularly the dependent variable as well as the independent variable peri- and postpartum abstinence, may be unreliable. If anything, however, such sexual behavior as high-risk sex, ever paid for sex, condom use at last sex, and history of STDs would be underreported, biasing the association toward the null. Therefore, any significant association found may be an attenuated one.

This study looked at a nationally representative sample of men who are currently in marital or cohabitating unions. It does not examine unmarried men, precisely those at greatest risk of HIV transmission. Although the median age at first marriage of the men in this sample was 23 years, there are great variations across ethnic groups, religions, and regions within Nigeria. For example, according to Orubuloye et al,¹² to sustain polygyny with current population growth rates, men have to marry 10 years later than women, which means that men remain single until their late 20s. This late age at marriage also creates a greater risk of premarital sex (median age at first sex was 20 years) and a greater number of sexual partners in general for men who may be seeking marital partners. For example, in the 2003 NARHS, 12.8% of all men never married reported having 2 or more partners in the last 12 months versus 3.4% of married men. As a result, these sexually active unmarried men are at risk for acquiring HIV before marriage, risking transmission to subsequent partners and wives. It is

thus important to target prevention programs and research studies toward this particular population.

The study was cross sectional, and although our results determined associations between 2 variables, it was impossible to establish the direction of causality because of the absence of a time component. Longitudinal analyses of these relations would better enable researchers to determine whether or not certain risk factors were a consequence or a cause of extramarital sex.

Regions rather than states were included in the models, because the number of cases was too low to allow for state-specific analyses. Future in-depth studies should therefore be carried out within specific states because of the heterogeneity of the country and the fact that Lawoyin and Larsen¹⁹ found an association between polygyny, postpartum abstinence, and extramarital sex in Oyo State. Further, evidence of Nigeria's heterogeneity exists even within ethnic groups, such as the Yoruba, who are made up of subethnic groups with distinctive cultures; therefore, it is important to use caution when making generalizations about Nigerian populations.³⁴ Although this study examined risk factors on a national level in Nigeria, some of the nonsignificant associations may have been a result of these intraregional differences, leading to a null association. Quantitative and qualitative state- or region-specific studies should be carried out to probe the associations between extramarital sex, number of wives, and peri- and postpartum abstinence so as to assist program implementers and policy-makers targeting high-risk groups.

Although this study was not able to examine the association between extramarital sexual behavior, number of wives, peri- and postpartum abstinence, and actual HIV/AIDS risk directly, many of the variables included in the models indicate a link between high-risk sex, number of wives, and risk of HIV/AIDS. More importantly, the results of this study dispel the commonly held belief that polygynous men are at less risk of extramarital sex than monogamous men, indicating a need to address polygyny as a cultural practice in HIV/AIDS programming. Although polygyny is on the decline, it is nevertheless a widely practiced custom in many Nigerian communities and has strong religious and sociocultural roots that may not be easy to break down. Perhaps a better strategy would be to encourage faithfulness among all married men and to focus on the reduction of risky sexual behavior, particularly among men with 3 or more wives. Religious leaders have more recently become involved in the fight against HIV/AIDS and may help to change cultural and social norms by encouraging safe sexual practices. Orubuloye et al³⁵ found that although Nigerian Christian and Muslim religious leaders have discouraged extramarital sex for some time, there has been a greater emphasis on female rather than male sexual behavior outside marriage. Further, these religious leaders believe that government information campaigns may be more effective in containing the epidemic than their preaching.³⁵ Given that knowledge and media exposure were not indicative of positive behavior change in our study, it is apparent that a multipronged approach to fighting the epidemic is needed, including a more involved response from religious leaders. Regardless, it is imperative that the practice of polygyny as well as faithfulness be addressed in some capacity as part of any HIV prevention strategy.

Finally, given the conventional promotion of condom use and the current endorsement of abstinence as effective methods of HIV prevention, it is important to highlight “be faithful” as a strategy among all men regardless of marital status and number of wives. With the current international focus on HIV/AIDS and the infusion of substantial foreign and domestic funding combined with the urgency of the generalized epidemic in Nigeria, quantitative and qualitative behavioral studies such as this one are imperative in order to identify specific high-risk groups, thereby informing effective programs and policies to combat the disease.

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