

Determinants of condom use by men in extramarital relationships in Nigeria

Augustine Ankomah¹
Samson B Adebayo^{2,3}
Jennifer Anyanti³
Olaronke Ladipo^{3,†}
Bright Ekweremadu³

¹Department of Population, Family and Reproductive Health, School of Public Health, University of Ghana, Accra, Ghana; ²Directorate of Planning, Research and Statistics, National Agency for the Control of Food and Drugs Administration and Control, Abuja, Nigeria; ³Society for Family Health, Abuja, Nigeria

[†]Olaronke Ladipo passed away on 30/10/2012

Background: Extramarital sex is a high-risk behavior in terms of Human Immunodeficiency Virus (HIV) transmission, yet condom use in extramarital relationships is an understudied area in Africa, and Nigeria in particular, where such liaisons are not uncommon. This study highlights key determinants of condom use among men who engage in extramarital sex in Nigeria.

Methods: Results are based on a subsample of 642 married men from a combined dataset from three waves of the National HIV/AIDS and Reproductive Health Survey (NARHS), a set of multiround nationally representative surveys. Logistic regression was employed to explore possible determinants of condom use in extramarital sex. The motivation, opportunity, and ability model was applied in selecting the determinants.

Results: HIV risk-reduction knowledge was found not to be associated with condom use. At the full logistic regression model, being of the Yoruba tribe, having no misconception about HIV transmission, ability to discuss condom use, and ability to wear condoms were the key variables significantly associated with condom use in extramarital sex.

Conclusion: Implementing HIV risk-reduction behavior change requires more than knowledge. Behavioral skills in condom use are critical. Intervention efforts should move away from knowledge about risk to concentrate on improving skills on how to discuss condom use and wear condoms correctly.

Keywords: married men, extramarital sex, condom use, motivation, opportunity, Nigeria

Introduction

By the end of 2005, Nigeria was adjudged to have the third-highest burden of HIV in the world after South Africa and India.¹ About 3.5–4.0 million Nigerians are currently infected with the virus,² with over 1 million orphans currently in the country. Nigeria, with a population of about 162 million people, has an estimated adult HIV prevalence of 3.6% according to the findings from a 2007 population-based household survey.³ Nigeria still has a generalized epidemic, with infection rates in some high-risk groups being as high as 31%.⁴ Various programs aimed at reducing transmission of HIV and mitigating the impact of HIV and AIDS have been embarked upon in order to ensure that Nigeria accomplishes the United Nations' Millennium Development Goals and halts the spread of HIV.

Since the first case of an HIV epidemic in Nigeria over two decades ago, Nigerian government and multilateral organizations and partners have committed substantial political, human, and financial resources to stem the tide of the infection. This was initially through a monosector approach, but more recently through multisector

Correspondence: Augustine Ankomah
Department of Population, Family and Reproductive Health, School of Public Health, University of Ghana, Legon, Accra, Ghana
Tel +233 261 524 407
Email aankomah@ug.edu.gh

response programs aimed at preventing the spread of the virus and mitigating its impact on the populace. From the results of the 2005 Sero-prevalence Sentinel Survey in Nigeria,² a total of 2.86 million people were estimated to be living with the virus. The survey estimated new infections to be at 296,320 (adults) and 73,550 (children under 15 years). Condom use is receiving greater attention today because of its usefulness as a prophylactic against sexually transmitted infection (STIs) and HIVs among sexually active people.

Globally, surveys have reported the practice of extramarital sexual activities among both married men and women.⁵ In Nigeria, where culturally men are permitted to have more than one wife, extramarital sex by men, though not encouraged, is tolerable. Survey data among men in predominantly male and “mobile” occupations have supported the pervasiveness of extramarital sex in Nigeria. A study by Aniebue and Aniebue⁶ among transport workers showed that as high as 79% reported having engaged in extramarital sex in the past. In another study among soldiers in army barracks in Kwara State, Nigeria, 46% had engaged in extramarital sex. In another study among policemen in Akure, Ondo State, 61% of married respondents reported having extramarital partners.⁷ But extramarital sex is not limited to mobile and itinerant husbands and most-at-risk populations alone. Analysis of the 2003 Nigeria Demographic and Health Survey showed that 11% of married men reported having had extramarital sex.⁸ Several studies document the existence of extramarital liaisons in western Nigeria.^{9–12} In his study on extramarital sexual behavior in Nigeria, Isiugo-Abanihe¹³ examined HIV/AIDS awareness and perceptions as related to some socioeconomic factors in five towns. Although extramarital sexual relationships are more common among men compared to women, the practice exists within both groups, and there also exist concurrent sexual partnerships and assorted sexual mixing between higher-risk persons and persons at lower risk of HIV infection.¹⁴

In a recent study,¹⁵ it was observed that a reasonable proportion of Nigerians are exposed to HIV infection through extramarital sex, yet little is known about the level and determinants of condom use in extramarital sex in Nigeria or sub-Saharan Africa as a whole. One of the few published studies in Africa was in Benin, where it was reported that condom use is low in extramarital relationships.¹⁶ Most studies on condom use in sexual relationships concentrate on either premarital or marital relationships without isolating whether the relationships are extramarital, even though the practice of extramarital sex is fairly common in Nigeria, and can be considered a high-risk behavior. In a country with a fairly high HIV prevalence rate, marriage by itself may be a risk factor for infection.¹⁷ It is reported that a substantial

proportion of HIV infections among men in Kenya and Zambia may be acquired outside of marriage.¹⁷ Condom use in extramarital relationships is understudied mainly because large-scale surveys with large sample sizes are needed to obtain adequate data for meaningful analysis, and few such studies are available in Africa. Until recently, the multicountry, multiround demographic and health surveys, now coordinated by ICF Macro (formerly ORC Macro), did not include men as a key sample of interest. This paper addresses the issue of sample size by combining data from three rounds of the National HIV/AIDS and Reproductive Health Survey (NARHS) conducted by the Federal Ministry of Health, Nigeria.

To ensure that the research findings were relevant to the development of condom-promotion interventions, we employed Rothschild's¹⁸ conceptual social marketing motivation, opportunity, and ability (MOA) model designed to identify behavior determinants mutable to change by social marketing interventions. Given that about 80% of condoms in Nigeria are socially marketed, we considered this a useful framework. Motivation, opportunity, and ability to “behave” have been theorized as being the summary determinants of behavior change that health-promotion interventions are, to varying degrees, capable of influencing.^{18–21} Specifically defined, motivation is an individual's arousal or desire to perform a promoted behavior; opportunity refers to institutional or structural factors that influence an individual's chance to perform a promoted behavior.²⁰ Ability is an individual's skills or proficiencies needed to perform a promoted behavior. The framework, as shown in Figure 1, does approach behavior change along three key lines. Does the target group have the opportunity to engage in the desired behavior? Does the target group have the motivation to engage in the desired behavior? Does the target group have the ability to engage in the desired behavior? These three summary constructs proximally explain a person's use of preventive or curative health products and services and/or risk-reducing behavior.^{19–24} In other words, opportunity, ability, and motivation facilitate or inhibit the behavior, and they can be enhanced, increased, or positively changed within the target audience by the intervention agency.^{25,26} The MOA framework has been applied in several behavior-change contexts. These include the design, implementation, and evaluation of a social marketing intervention in Burundi²⁷ and safer-sex interventions in Laos.²⁸ Outside of behavior change in public health, the framework has been used to explain knowledge-sharing experience.²⁹

This paper seeks to answer the broad question of how the MOA framework can be used in explaining condom use by examining the motivation, opportunity, and ability factors that affect condom use in extramarital sexual relationships.

Variables	Definitions
Motivation	This is an individual's desire to perform a promoted behavior.
Self assessment	This was measured based on respondent's attitude to contracting HIV. Respondents were asked if they were at high risk of contracting HIV (coded '1') for affirmative and (coded '0') otherwise.
Efficacy	This was also measured on whether a respondent perceived condom to be effective against HIV transmission (coded as '1') or not (coded as '0').
Beliefs/Misconceptions about HIV transmission	This was measured based on the respondents' perception to whether wearing three condoms at the same time provides more protection against HIV than one condom, (coded as '1') if they say no and (coded as '0') otherwise.
Opportunity	This refers to institutional or structural factors that influence an individual's chance to perform a promoted behavior.
Affordability	This was measured based on whether a respondent perceived condoms to be affordable (coded as '1') or not (coded as '0')
Availability	This was measured based on frequency and accessibility to condom. Respondents were asked if condoms are available within ½ kilometer from their houses. This was coded as '1' if respondents answered to the affirmative while '0' if otherwise.
Self efficacy (condom use)	This was considered as a self-efficacy indicator for wearing a condom. Questions on how confident a respondent is in his ability to wear a condom was used for measuring this. Respondents who were confident in their abilities to use condoms were coded 1, and 10 if not confident at all.
Ability variables	This is an individual's skills or proficiencies needed to perform a promoted behavior.
Knowledge (AIDS related death)	Respondents were asked whether they know someone who died of AIDS. This was (coded as '1') if respondents answer that they know someone and (coded as '0') otherwise.
Knowledge (AIDS has no cure)	Respondents were asked whether they know if AIDS has a cure or not. This was coded as '1' if respondents answered that AIDS does not have a cure; and '0' otherwise.
Knowledge (Healthy looking HIV carriers)	In the surveys, a question on whether respondents know that a healthy looking person could be HIV positive was included in the questionnaire. Respondents who knew that a healthy looking person can be HIV positive were coded "1" while those who did not know were coded as "0".
Knowledge (Modes of prevention)	Staying with one uninfected partner and using condoms correctly and consistently was considered as having correct knowledge of mode of prevention (UNAIDS indicator). A respondent who answered in affirmative to all these questions were coded as '1' and '0' otherwise.
Knowledge of HIV transmission routes	Measured on the respondent's knowledge about modes/routes of HIV transmission. Coded as '1' if respondent identifies that the correct modes of transmission of HIV are through sexual intercourse, sharing of razors, sharing of sharp objects, use of unsterilized needles, or coded as '0' if otherwise.

Figure 1 Motivation, opportunity, and ability variables.

Abbreviations: AIDs, acquired immunodeficiency syndrome; HIV, Human Immunodeficiency Virus infection.

It further seeks to assess the relative strengths of each of the three groups of variables in determining condom use in last extramarital sex.

Methods and materials

The data upon which this study is based were derived from a combination of three datasets from three consecutive

multi-round cross-sectional surveys (2003, 2005, 2007) conducted by the Nigeria Federal Ministry of Health among women (15–49 years old) and men (15–64 years old).^{30,31} The total sample sizes of the three surveys were 10,090 in 2003, 10,081 in 2005, and 11,521 in 2007. Of these figures, only 4962 males in 2003, 5396 males in 2005, and 6161 males in 2007 were sampled. Further, only 2569 male respondents in

2003, another 2661 male respondents in 2005, and 3009 male respondents in 2007 were married. Of the male respondents in a stable relationship, only 202 in 2003, 211 in 2005, and 229 in 2007 had had extramarital sex in the last 12 months. Altogether, 642 married or cohabiting men reported having had extramarital sex in the past 12 months. This forms the sample for this paper. The multiround cross-sectional NARHS employed the same methodology and were all conducted across all the 36 states and the Federal Capital Territory in Nigeria. This paper is based on data from a subsample of 642 married men who reported extramarital sex within 12 months of the survey. This represented 8.3% of all married men in the total sample.

Probability sampling was employed to select the eligible respondents: males age 15–64 years and females age 15–49 years. The first level included a selection of rural and urban localities. Localities were classified into rural and urban, with settlements less than 20,000 inhabitants classified as rural. Localities were then grouped in geographic order according to size. The first three big towns in a state were grouped as a stratum and called major towns; all other urban settlements were grouped to form another stratum and called medium towns. The third stratum included all rural localities in the state. One major town, one medium town, and three rural localities were selected from each of the strata, with probability proportional to size. The second stage involved selection of enumeration areas using the National Population Commission updated sampling frame. The third stage involved the selection of individual respondents according to the age-eligibility criterion. Probability sampling was employed to select respondents at the individual level. The sample was later weighted to reflect the actual size of the population of each state.

Data analysis

For the purpose of this paper, a database was created of all male respondents in stable relationships (defined as currently married or cohabiting with a sexual partner) who reported having had extramarital sex, yielding a total of 642 respondents. Demographic characteristics about the respondents that were available in the data and used for analysis in this paper include educational attainment, religion, locality (rural/urban), age, and whether respondent had been away from home for more than a month in the last 12 months preceding the survey.

Dependent variable

The dependent variable for this study was condom use in the last extramarital sex act. Of all the respondents that were in

stable relationships who had had nonspousal sex within the last 12 months before the survey, a question on whether the respondents used a condom during the last extramarital sex act was asked. Suppose the dependent variable is y , which takes a value of 1 if a respondent used a condom during the last nonmarital sex act, and 0 otherwise (ie, if a condom was not used).

Independent variables

A number of independent variables were used.

Age of the respondents

Current age of the respondent was measured in years, and this ranged between 15 and 64 years for males. Age was included as a categorized variable in all models.

Place (locality) of residence

Place of residence was measured as to whether the respondent resided in an urban or rural area at the time of the survey. This was coded as 1 if the respondent resided in an urban area, and 0 if they resided in a rural area.

Educational attainment

This is a variable that identifies the highest level of education a respondent had attained at the time of the survey. Two dummy variables were created for this variable, ie, secondary/higher and Koranic/primary (secondary/higher 1, never attended any formal school 0; Koranic/primary 1, never attended formal school 0).

Religion

Given the impact religion plays in condom use, this was also included in this study. Dummy variables were created for Islam and Christianity separately, with traditional and other religions as the reference category.

Geographical zones

For this paper, we dichotomized Nigeria into two geographical parts: north = 0 and south = 1.

Ethnicity

Nigeria is a multiethnic nation. Dummies were created for the three major ethnic groups: Hausa, Igbo, and Yoruba (with others considered as the reference category). Based on the MOA framework, independent variables were developed, as shown earlier in Figure 1.

In order to explore any existing relationship between the outcome variable of interest and some selected determinants,

a binary variable that identifies whether a condom was used (or not used) in the last extramarital sex was created as the outcome (dependent) variable, as described earlier.³² At the multivariate level, multiple logistic regression was fitted using Stata version 9.2 SE (StataCorp LP, College Station, TX, USA).³³

Both bivariate and multivariate analyses were carried out. At the bivariate level, the effect of each individual determinant was cross-classified with the dependent variable and its significance assessed based on Pearson's Chi-squared test.³² In the multivariate analyses, an attempt was made to explore the influence of MOA separately and jointly in the presence of the background characteristics of the respondents. To achieve this, independent variables were grouped according to the MOA framework into the following models:

- M_1 : condom use = year of study
- M_1 : demographic variables
- M_2 : demographic variables + motivation variables
- M_3 : demographic variables + motivation variables + opportunity
- M_4 : demographic variables + opportunity variables
- M_5 : demographic variables + ability variables
- M_6 : demographic variables + motivation variables + opportunity + ability

In the preliminary analyses, several models were explored, but discussion shall be based only on models M_1 , M_2 , M_3 and M_6 . As a preceding step to selecting our models, logistic regression models were fitted in a systematic order by controlling for different sets of covariates so as to identify the set of determinants to be controlled for in the final model. Firstly, in model M_1 , we fitted a logistic regression model of the dependent variable on only background variables. Subsequently, we controlled for different groups of independent variables, as described for models M_2 , M_3 , and M_6 .

Results

This paper highlights some determinants of condom use in last extramarital sex among 642 married or cohabiting men in Nigeria between 2003 and 2007.

Descriptive analysis

The study is limited to married or cohabiting men who reported that they had engaged in extramarital sex 12 months prior to the survey ($n = 642$). Out of the 7070 married/cohabiting men in the surveys, 642, representing 8.3%, had had extramarital sex in the 12 months preceding

the survey. This seems to be consistent with other national surveys, which reported 11% of men in unions engaging in extramarital sex within the last 12 months.⁸ The summary descriptive information on some demographic characteristics of the 642 respondents is presented in Table 1. The mean age of respondents who engaged in extramarital sex was 35.0 years (standard deviation 9.5 years). Extramarital sex was more prevalent among respondents aged 35–49 years (40.7%). A higher proportion of respondents who engaged in extramarital sex had at least secondary-level

Table 1 Demographic characteristics of men who engage in extramarital relationships

Variables	Frequency n = 642	Percentage
Age of respondents (years)		
15–19	16	2.5
20–24	59	9.2
25–34	254	39.6
35–49	261	40.7
50–64	52	8.1
Condom use during last extramarital sex		
Did not use condom	345	53.7
Used condom	297	46.3
Education level		
No formal education	52	8.1
Primary	203	31.6
Secondary and higher	387	60.3
Religion		
Islam	191	29.8
Christianity	424	66.0
Traditional/others	27	4.2
Ethnicity		
Hausa	46	7.2
Igbo	62	9.7
Yoruba	191	29.8
Others	343	53.4
Residence		
Rural	398	62.0
Urban	244	38.0
Multiple nonspousal sex		
No	317	58.4
Yes: have sex with nonspouse	325	41.6
Sex in exchange for gift		
Never had sex for gift	479	74.6
Have had sex for gift	163	25.4
Alcohol consumption		
Every day	89	13.9
Once a week or less	267	41.6
Others	286	44.5
Away from home for more than 1 month in the last 12 months		
No	370	57.6
Yes	272	42.4
Do you agree or disagree that condoms are easy to obtain?		
Disagree	123	19.2
Agree	519	80.8

education (60.3%) compared with only 31.6% of those who had primary education only. Three out of ten men who engaged in extramarital sex were of the Yoruba tribe of southwest Nigeria. Over 60% of men who engaged in extramarital sex lived in rural areas, and in terms of religion, two-thirds were Christians. Some of the respondents reported having had sex with multiple extramarital partners. Of the 642 who had had extramarital sex, 41.6% had multiple extramarital partners. Although a high proportion felt condoms were affordable (83.5%), and easy to obtain (80.8%), less than one-half (46.3%) of the sample used condoms in their last extramarital sex. On knowledge about HIV, 69% had knowledge about all five modes of transmission of HIV.

Bivariate analysis

Tests of differences of proportions for some determinants of condom use in extramarital sex were carried out using Pearson's Chi-squared test of association or Fisher's exact test for 2×2 contingency tables.³² Table 2 presents the percentages of condom use in extramarital sex according to some relevant determinants of condom use. Overall, only 46.3% of married men who engaged in extramarital sex used a condom during their last extramarital sex. Regarding respondents' demographic characteristics, it was found at the bivariate level that condom use in extramarital sex was not statistically associated with age or religion. However, it was statistically associated with education ($P < 0.0001$), and rural/urban residence ($P < 0.0001$), with only 39.4% in rural areas compared with 57.4% in urban areas ($P < 0.0001$) using condoms in the last extramarital sex. There was also a positive relationship between education and condom use. While only 23.1% of respondents with no formal education and 36.9% of those with below secondary education used condoms, the figure for those with at least secondary level of education was 54.3% ($P < 0.0001$). In terms of ethnic origins, Yoruba and Igbo married men who engaged in extramarital sex were more likely to use condoms compared with their Hausa counterparts ($P < 0.05$).

We also explored at the bivariate level relationships between each of the MOA indicators and condom use. On motivation indicators, there was no relationship between personal risk perception and condom use. The two opportunity indicators were strongly associated with condom use. Men who agreed that condoms were easily available or were easy to obtain were more likely to use condoms. Over one-half (53.2%) of men who agreed that condoms were

affordable compared with only 11.3% who disagreed were more likely to have used condoms in the last extramarital sex ($P < 0.0001$). Married men who were not embarrassed to buy condoms were more likely to use condoms in extramarital sex ($P < 0.0001$).

Several of the ability indicators were statistically related to condom use at the $P < 0.0001$ level. These included knowledge that a healthy-looking person can be HIV-positive, knowledge that condoms protect against STI/HIV and unwanted pregnancy, and knowledge about HIV (as measured by UNAIDS). Having known someone who died of AIDS was found not to be related to condom use, but the knowledge that AIDS has no cure had a significant association with condom use ($P < 0.05$). Similarly, while 60.7% of men who felt they could convince their sexual partners to use condoms actually did use condoms in extramarital sex, compared with only 9.9% of those who said they could not convince their partners. Married men who were able to discuss condom use were more likely to use condoms in extramarital sex ($P < 0.0001$). Also associated with condom use were aspects of ability, which borders on skills and self-efficacy.

Multivariate analysis

Findings from multiple logistic regression for models M_1 , M_2 , M_3 and M_6 are presented in Table 3. Results for Model M_1 presented in Table 3 show that adjusting for other background characteristics significantly reversed the pattern of association between condom use in extramarital sex and educational attainment ($P < 0.05$). Being a Yoruba or living in an urban area was significantly associated with condom use in extramarital sex. Men who were of the Yoruba tribe were about 1.54 times more likely to use condoms (odds ratio [OR] 1.54, $P = 0.039$) than those from other tribes, and respondents living in urban areas were 74% more likely to use condoms in extramarital sex than those living in rural areas. In addition to the background factors, the predictive power of the motivation, opportunity, and ability factors are presented for models M_2 , M_3 and M_6 in Table 3. The direction of significance for demographic characteristics in models M_2 and M_3 were similar; therefore, we restrict the discussion to the results of MOA indicators alone in those two models. In model M_2 , the belief that condoms protect against STI/HIV and unwanted pregnancies, not being embarrassed about buying condoms in public, and not having misconceptions about mode of transmission of HIV were significantly related to condom use in extramarital sex. Respondents who believed that condoms protect against

Table 2 Bivariate analysis of condom use in extramarital sex

Variables	Condom use in extramarital sex (%)		Total	P-value from χ^2
	Used condom	Did not use		
Respondents' age (years)				0.187
15–19	56.3	43.7	16	
20–24	45.8	54.2	59	
25–34	48.4	51.6	254	
35–49	46.7	53.3	261	
50–64	30.8	69.2	52	
Education				<0.0001
No formal education	23.1	76.9	52	
Below secondary	36.9	63.1	203	
Secondary and higher	54.3	45.7	387	
Locality				<0.0001
Rural	39.4	60.6	398	
Urban	57.4	42.6	244	
Religion				0.813
Islam	44.5	55.5	191	
Christian (Catholic and Protestant)	47.2	52.8	424	
Others	44.4	55.6	27	
Ethnicity				0.030
Hausa	39.1	60.9	46	
Igbo	46.8	53.2	62	
Yoruba	55.0	45.0	191	
Others	42.3	57.7	343	
Alcohol intake				0.484
Every day	43.8	56.2	89	
Sometimes	49.1	50.9	267	
Never	44.4	55.6	286	
Away from home for more than 1 month in the last 12 months				0.037
Yes	42.7	57.3	370	
No	51.1	48.9	272	
Motivation variables				
Self-assessment/appraisal of contracting HIV				0.513
High risk	41.0	59.0	39	
Others	46.6	53.4	603	
Condom protects against STI/HIV and prevents unwanted pregnancy				<0.0001
Agreed	51.2	48.8	541	
Disagreed	19.8	80.2	101	
Are you embarrassed to buy condoms?				<0.0001
Not embarrassed	52.1	47.9	401	
Embarrassed	36.5	63.5	241	
Misconception about HIV transmission				0.004
Yes	40.8	59.2	338	
No	52.3	47.7	304	
Opportunity variables				
Condom affordability				<0.0001
Agreed	53.2	46.8	536	
Disagreed	11.3	88.7	106	
Condoms easy to obtain				<0.0001
Agreed	52.6	47.4	519	
Disagreed	19.5	80.5	123	
Know how to wear a condom?				<0.0001
Yes	62.7	37.3	445	
No	9.1	90.9	197	

(Continued)

Table 2 (Continued)

	Condom use in extramarital sex (%)		Total	P-value from χ^2
	Used condom	Did not use		
Ability variables				
Know someone who died of AIDS				0.108
Yes	51.7	48.3	172	
No	44.3	55.7	470	
Know that AIDS has no cure				0.012
Yes	48.6	51.4	529	
No	35.4	64.6	113	
Know that healthy-looking persons can be HIV-positive				<0.0001
Yes	50.8	49.2	510	
No	28.8	71.2	132	
UNAIDS				
Condom use and remain with one uninfected partner				<0.0001
Yes	51.9	48.1	503	
No	25.9	74.1	139	
Discussed condom with partner?				<0.0001
Yes	69.0	31.0	381	
No	13.0	87.0	261	
Can convince partner to use condom?				<0.0001
Yes	60.7	39.3	460	
No	9.9	90.1	182	

Abbreviations: AIDS, acquired immunodeficiency syndrome; HIV, Human Immunodeficiency Virus infection; STI, sexually transmitted infection.

STI/HIV and unwanted pregnancy were about four times more likely to use condoms in extramarital sex compared with their counterparts who did not believe (OR 4.181, $P < 0.0001$). Further, those who said that they would not be embarrassed to buy condoms were 1.53 times more likely to use a condom in such a sexual relationship than their counterparts who would be embarrassed to buy condoms (OR 1.53, $P = 0.022$). Having misconceptions about mode of transmission of HIV was negatively associated with condom use in extramarital sex. Respondents who had some misconceptions were 0.57 times less likely to use condoms in extramarital sex than their counterparts who did not have any misconception.

Turning to model M_3 , the direction of significance for the motivation variables were similar to model M_2 , except for being embarrassed to buy a condom, which was not significant. Again, the likelihood was halved for belief that condoms protect against STI/HIV and unwanted pregnancies. Therefore, we shall concentrate on discussing the results of the opportunity variables. Respondents who knew or believed that condoms were easy to obtain were 3.47 times more likely to use condoms compared with their counterparts who did not know that condoms were easy to obtain (OR 3.473, $P = 0.003$). Knowledge of how to wear a condom was positively and significantly associated with condom use in extramarital sex. Those who knew how to

wear condoms were 13 times more likely to use a condom than their counterparts who did not know how to wear them (OR 13.483, $P < 0.0001$). In model M_6 , the results for the motivation and opportunity variables were similar to model M_3 . Therefore, we present the results for the only significant ability variable. Of all the ability variables, only ability to discuss condom use with one's sexual partner was significantly associated with condom use in extramarital sex. Respondents who were able to discuss condom use with their sexual partners were over eight times more likely to use condoms in extramarital sex than their counterparts who were not able to do so (confidence interval 5.190–14.021, OR 8.53, $P < 0.0001$).

Discussion

This paper deals with a critical topic in behavioral research on HIV and AIDS in Nigeria, where a recent study has shown that over 30% of all new infections among males are from the general population in stable relationships, not in the traditional most-at-risk populations.³⁴ A study in Nigeria has shown that although both polygynous and monogamous men are at risk of extramarital sex, men with three or more wives are more likely to have extramarital sex.⁸ This implies that nonuse of condoms by men exposes not only themselves but several other married women to the risk of HIV. The fact that only 46.3% of married men who engaged in extramarital

Table 3 Results from logistic models for models M₁, M₂, M₃, and M₄

	Model M ₁			Model M ₂			Model M ₃			Model M ₄			95% CI for odds ratio	
	Odds ratio	SE	P	Odds ratio	SE	P	Odds ratio	SE	P	Odds ratio	SE	P	Lower	Upper
Constant	0.528			0.175			0.014			0.007				
15-19 (ref)	1.000			1.000			1.000			1.000				
20-24	2.436	0.612	0.145	4.102	0.662	0.033	4.662	0.807	0.057	6.227	0.947	0.053	0.973	39.846
25-34	1.656	0.420	0.230	1.719	0.439	0.217	1.324	0.513	0.584	1.708	0.560	0.339	0.570	5.121
35-49	1.850	0.346	0.076	1.761	0.362	0.118	1.334	0.430	0.502	1.573	0.468	0.333	0.629	3.932
50-64	1.489	0.343	0.246	1.460	0.358	0.291	1.362	0.427	0.469	1.792	0.467	0.211	0.718	4.471
No formal education	1.000			1.000			1.000			1.000				
Koranic and primary, secondary	0.352	0.361	0.004	0.542	0.382	0.109	0.967	0.463	0.941	1.223	0.514	0.695	0.447	3.349
Secondary and higher	0.556	0.186	0.002	0.613	0.194	0.012	0.777	0.227	0.266	0.838	0.257	0.493	0.507	1.387
Others and none	1.000			1.000			1.000			1.000				
Islam	0.786	0.453	0.594	0.715	0.472	0.477	0.739	0.561	0.589	0.469	0.609	0.214	0.142	1.548
Christianity	0.969	0.421	0.941	0.843	0.441	0.700	0.677	0.530	0.462	0.504	0.577	0.234	0.163	1.559
Other tribes	1.000			1.000			1.000			1.000				
Hausa	1.204	0.365	0.611	1.263	0.378	0.537	1.592	0.440	0.290	2.000	0.499	0.164	0.753	5.317
Igbo	1.101	0.295	0.744	1.173	0.310	0.607	1.107	0.357	0.775	1.005	0.396	0.989	0.463	2.185
Yoruba	1.537	0.208	0.039	1.492	0.215	0.063	1.354	0.239	0.205	1.744	0.271	0.040	1.025	2.966
Urban	1.738	0.185	0.003	1.625	0.192	0.012	1.466	0.218	0.079	1.327	0.245	0.247	0.822	2.144
Motivation variables														
Self-assessment/appraisal of contracting HIV				0.792	0.354	0.511	0.760	0.399	0.492	0.673	0.441	0.368	0.284	1.596
Believe that condom protects against STI/HIV and unwanted pregnancy				4.181	0.284	<0.0001	2.380	0.330	0.009	2.046	0.378	0.058	0.975	4.296
Not embarrassed to buy condoms				1.530	0.186	0.022	1.052	0.217	0.816	0.966	0.242	0.887	0.602	1.552
Misconceptions about HIV transmission				0.573	0.177	0.002	0.521	0.201	0.001	0.456	0.225	<0.0001	0.293	0.709
Opportunity variables														
Condoms are affordable				1.631	0.328	0.136	1.631	0.328	0.136	1.165	0.359	0.671	0.576	2.356
Condoms are easy to obtain				3.473	0.414	0.003	3.473	0.414	0.003	2.096	0.444	0.095	0.878	5.003
Know how to wear a condom				13.483	0.286	<0.0001	13.483	0.286	<0.0001	7.382	0.415	<0.0001	3.271	16.661
Ability variables														
Know someone who died of AIDS				1.311	0.241	0.262	1.311	0.241	0.262	1.054	0.298	0.860	0.587	1.890
Know that AIDS has no cure				1.410	0.305	0.260	1.410	0.305	0.260	1.609	0.307	0.121	0.882	2.936
Know that a healthy-looking person can be HIV-positive				8.530	0.254	<0.0001	8.530	0.254	<0.0001	1.128	0.440	0.784	0.476	2.670
Know that HIV can be prevented by using condom and remain faithful to an uninfected partner				1.128	0.440	0.784	1.128	0.440	0.784	1.128	0.440	0.784	1.128	2.670
Can discuss condom use with one's sexual partner				1.128	0.440	0.784	1.128	0.440	0.784	1.128	0.440	0.784	1.128	2.670
Ability to convince partner to use condom				1.128	0.440	0.784	1.128	0.440	0.784	1.128	0.440	0.784	1.128	2.670

Notes: Included are the odds ratio, standard error (SE), P-value and 95% confidence interval (CI; for model M₁ alone).

Abbreviations: AIDS, acquired immunodeficiency syndrome; HIV, Human Immunodeficiency Virus infection; STI, sexually transmitted infection.

sex used condoms together with the high prevalence of polygyny exacerbates the risk of HIV infection in Nigeria for women within marriage. National surveys report that 33% of all married women are in polygynous unions, and 20% of married men report having two or more wives.³⁵ Polygyny is not only common in northern Nigeria, where over 40% of women have cowives, but also in the southwest, where over 25% of married women share their husbands with other wives.³⁵

Among the Yoruba, who inhabit most of southwestern Nigeria, wives commonly come to accept that their husbands will engage in extramarital sex, particularly during the postpartum period.⁸ Thus, while it is normative for a Yoruba woman to remain faithful, the same cannot be said of her husband.³⁶ A study in Nigeria has shown that extramarital relationships are often open affairs. Thirty-five percent of married men mentioned that their wives knew of their extramarital affairs, while 65% said their relatives were aware.⁷ Thus, the acquisition of a second or third wife may be preceded by open-secret extramarital sexual liaisons. For men who engage in extramarital sex, the promotion of condom use should therefore be a major preventive strategy.³⁷ Furthermore, Hatcher and Hughes³⁸ reported in a study of heterosexual discordant couples that condom use was the best defense against seroconversion.

Multiple sexual partnering has been established to increase the risk of contracting HIV. In Nigeria, as in many other countries where HIV is transmitted mostly through heterosexual activities, the risk of transmission of HIV is largely determined by sex outside stable relationships, which may either be premarital or extramarital.³⁹ Findings from studies in sub-Saharan Africa have also emphasized the importance of condom use in both marital and extramarital relationships.⁴⁰ In a truly patriarchal society like Nigeria, a married woman whose husband engages in extramarital sex is at an elevated risk of HIV infection. Therefore, there is the need for programmers to understand the level and dynamics of condom use in extramarital relationships to assist them to design and implement appropriate interventions. Despite the common and risky nature of extramarital sex, only a few studies have reported on condom use in extramarital relationships.

In the multiple logistic regression models, age of respondents was categorized into 15–19 years (reference category), 20–24 years, 25–34 years, 35–49 years, and 50–64 years. The odds of using condoms in extramarital sex declined with increase in age-group (though not significantly). A similar finding among married men has been reported in Zimbabwe.⁴⁰ Programmatically, it becomes imperative

to address issues of cross-generational sex, as the older respondents who do not use condoms in their last extramarital sex act and yet have multiple extramarital partners constitute a risk to their spouses or cohabiting partners. Similarly, place of residence was positively associated with condom use in last extramarital sex. Respondents who were resided in urban localities were more likely to use condoms in their last nonmarital sex compared with their counterparts residing in rural localities. Again, these findings underscore the need to strengthen prevention efforts in rural communities. In addition to the demographic characteristics that were controlled for in model M_1 , inclusion of the motivation indicators of the MOA conceptual framework shows that knowing that someone has died of AIDS and that AIDS does not have a cure are not significantly associated with condom use in extramarital sex.

After controlling for misconceptions, as shown in M_6 , none of the HIV knowledge variables was associated with condom use, eg, knowledge that using condoms and remaining faithful with one uninfected partner was not associated with condom use in extramarital sex. Our findings are, however, in contrast with Isiugo-Abanihe,¹³ whose study of five Nigerian towns found a positive relationship between knowledge and condom use in extramarital sex. This may be related to differences in samples reflecting the heterogeneity of Nigeria.⁸ Whereas our study is based on a nationally representative sample of men, Isiugo-Abanihe's study¹³ was limited to five towns. Since both our study and Mitsunaga et al⁸ are based on nationally representative samples, the findings underscore the common gap between HIV knowledge and behavior. HIV research has shown that knowledge about HIV risk does not usually translate to changes in risky behavior. There is often a striking disparity between what individuals intellectually know about risk and how they actually behave.⁴¹

Since the objective of HIV prevention in Nigeria, as elsewhere, is behavior change, it is critical that HIV-prevention efforts now advance beyond dissemination of basic factual messages about HIV and AIDS and begin to address other factors that influence why and how men who engage in extramarital sex behave with respect to HIV risk. Further studies are needed to explore the HIV risk-taking behaviors of men who engage in extramarital sex, particularly in rural areas. Is it that for some men, engaging in extramarital sex is a prelude to taking another wife? For these men, because pregnancy may be a welcome consequence, the use of condoms in such relationships becomes problematic. This can be understood within the context of 33% of married

women in Nigeria living in polygynous homes.³⁵ The role of infertility could also be explored. While primary infertility is low – about 3%³⁵ – many Nigerian couples report problems of infertility. Community-based data suggest that up to 30% of couples in some parts of Nigeria have difficulties in achieving a desired conception after 2 years of marriage without the use of contraceptives.⁴² Nigerian gynecologists frequently report that infertility cases constitute between 60% and 70% of their consultations in tertiary health institutions.^{43,44} In addition, a recent population-based survey of women of reproductive age in Ile-Ife, Nigeria revealed that up to 20% of women have secondary infertility.⁴⁵ Men often wrongly put the blame on women and present this as justification for extramarital affairs, which may result in marrying an additional wife. Orubuloye et al¹⁰ report that some married men engage in extramarital sex primarily for enjoyment. This to some men includes sex without condoms. Another study in Lagos observed that husbands go out “looking for younger partners as the glamour of initial (marital) relationship wanes.”⁴⁶

In the full model M_6 , only being a Yoruba, misconception about HIV transmission, knowledge about how to wear condoms, and discussion of condom use with partners were significantly associated with condom use in extramarital sex.

These findings have implications for HIV programming in Nigeria. For people to practice a promoted behavior, it is expected that they are provided with the opportunity that will enable them change behavior. Therefore, the opportunity variables show that individuals who believe that condoms are easy to obtain and affordable are more likely to use condoms in extramarital sex compared to those who do not believe same. As shown in this study, individuals who believe that condoms are easy to obtain and affordable are more likely to use condoms. HIV programmers should design intervention strategies to ensure availability. Perhaps condoms are now so cheap that affordability is not an important determinant for condom use. There is a need for further research to explore whether men who engage in extramarital sex do get condoms when and where they need them most. Furthermore, programmers need to ensure that people are given the skills to negotiate condom use and use condoms properly. Behavior-change communication efforts should provide integrated messages that include all three indices found to impact positively on condom use. Having misconceptions about modes of transmission is negatively and significantly associated with condom use in extramarital sex.

Self-efficacy about one's ability to wear condoms was significantly associated with condom use in extramarital

sex. This finding is of particular importance. As noted,⁴¹ implementing HIV risk-reduction behavior change requires more than knowledge. Behavioral skills in condom use are critical. Asking men to use condoms will have relatively little impact unless they know how to use them correctly. Programmers need to know that to the extent that skills in the use of condoms are deficient, men will be poorly equipped to achieve success in condom use.

Limitations of study

As in most other behavioral and cross-sectional surveys, these data are based on self-reported sexual practices, and may suffer from the problem of underreporting of risk behaviors among the respondents, especially on the issue of extramarital sex. For instance, the reliability of self-reported answers to sensitive questions on sexual practices could have affected the results presented in this study. It is also important to note that the data are derived from cross-sectional surveys, which limits our conclusions on condom use and key motivation, ability, and opportunity factors, particularly in terms of timing and direction of relationships.

Conclusion

This paper focused on the adoption of safer sexual practices by exploring dynamics and levels of condom use in extramarital sex. Condom use in extramarital sex is a critical factor in the spread of STIs and HIV. However, very few HIV interventions in Nigeria and Africa in general are theory-driven. This paper has demonstrated the feasibility of applying the MOA theoretical framework in identifying some determinants of condom use by men in extramarital relationships. The study found that respondents who knew that HIV had no cure were more likely to use condoms. In terms of demographic background, men who were of the Yoruba tribe were more likely to use condoms compared with other tribes. Also, residing in urban areas was significantly associated with condom use. However, there was no significant association between education and condom use. It was found that men who knew how to wear condoms were thirteen times more likely to use a condom than their counterparts who did not know how to do so (OR 13.483, $P < 0.0001$). Also, respondents who were able to discuss condom use with their sexual partners were over eight times more likely to use condoms in extramarital sex than their counterparts who could not discuss condom use with their sexual partners (OR 8.53, confidence interval 5.190–14.021, $P < 0.0001$). Affordability does not seem to be an explanatory factor; it is rather availability of condoms that impacts on condom use in extramarital sex.

Furthermore, the odds of using condoms in extramarital sex decline with increasing age. This suggests a risk for younger women who normally engage in sexual relations with older men. Thus, while many condom programs target young persons, the needs of older married men should also be a focus for programs. Intervention efforts should therefore be intensified about improving skills, making condoms available, and providing men with the skills on how to wear condoms correctly.

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Disclosure

The authors report no conflicts of interest in this work.

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