

Adolescents and HIV-related Behaviour in Nigeria: *Does Knowledge of HIV/AIDS Promote Protective Sexual Behaviour among Sexually Active Adolescents?*

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Abstract

Background: Despite marginal gain in the reduction of HIV/AIDS prevalence among Nigerian youths from 6% to 4.1% in 2010 and increasing level of HIV/AIDS awareness, the figure remains one of the highest in the world. Several studies have documented predictors of high risk sexual behaviour among adolescents, but only few studies have made recourse to examining the relationship between HIV/AIDS knowledge and protective sexual behaviour. This study is an attempt to fill this gap by examining linkages between knowledge of HIV/AIDS and HIV-related protective behaviour among adolescents in Nigeria.

Method: The study utilized data from the Nigeria 2007 National HIV/AIDS and Reproductive Health Survey (NARHS) on 865 adolescents (64% for males and 46% for females) aged 15-19 years who reported ever had sex in the last 12 months preceding the survey. Data were analysed in three levels of univariate, bivariate and multivariate analyses.

Result: About 75% of sexually active adolescents (78% males versus 70% females) had high knowledge of HIV/AIDS. Also, almost 1.5% (1.4% males vs. 1.6% females), 15.5% (15.5% males and females) and 32.8% (42.5% males vs. 16.0% females) reported use of condom, accepting gifts for sex and having more than one sexual partner respectively. High level of HIV knowledge was significant in predicting the likelihood of non-use of condom (OR=2.34; $p=0.041$) and accepting gifts for sex (OR=2.02 $p=0.043$) in the male model and odds of having more than one sexual partner (OR=1.30; $p=0.023$) in the female model. Regardless of adolescents' level of HIV knowledge, those with higher education, older age at first sex, higher wealth index and from urban location are less likely to engage in HIV non-protective sexual behaviour compared to adolescents in other categories. Out of the six background variables included in the multivariate analysis, only adolescents' level of education was significantly consistent in predicting the risk of engaging in non-protective sexual behaviour (non-use of condom, accepting gifts for sex and having more one sexual partner) for males and females.

Conclusion: Given the increased risk of HIV related behaviour associated with adolescents' high knowledge of HIV/AIDS, the study concludes that high knowledge of HIV/AIDS is not enough for ensuring protective attitudes towards HIV among adolescents. HIV responses should focus more on addressing socio-economic factors predisposing adolescents to HIV risky behaviour.

Keywords: HIV/AIDS, HIV/AIDS knowledge, sexual behaviour, adolescents, Nigeria

Background

HIV/AIDS pandemic remains a major public health problem in sub-Saharan African countries, particularly in Nigeria where more than 3 million people are currently living with the virus, with about 281,180 new infections in 2010 (FMOH, 2010). Substantial variations in the burden of HIV/AIDS exist between regions, countries and population sub-groups. Studies have confirmed that youth are the most vulnerable to HIV/AIDS in sub-Saharan Africa (Fatusi & Hindi, 2010; Akinyemi & Okpechi, 2011). Intensive program efforts on curbing the spread of the disease have yielded some measureable gains. However, despite marginal reduction in the burden of HIV/AIDS among Nigerian youth from 6% in 2001 to 4.1% in 2010, HIV prevalence rate among this category of population still remains one of the highest in the world (FMOH, 2010). Disaggregating by age group, the recent national estimates of HIV prevalence show that HIV prevalence rate for adolescents (15-19 years) and youths (age 20-24 years) peaked at 3% and 4.6% respectively. These rates raise serious concerns about the protection of next generation.

However, empirical research from the developing countries has documented evidence of high level of knowledge about modes of contracting and preventing HIV/AIDS (Cambell & Mbivzo, 1994). Particularly in Nigeria, studies have documented that youth have very high knowledge of HIV/AIDS in terms of its spread, prevention and care (Odu & Akanle, 2008; UNAIDS, 2008). However, the linkages between knowledge of HIV/AIDS and implications for sexual-related protective behaviour among adolescents in Nigeria remain unclear. The majority of studies have focused on the socio-demographic and psychosocial factors influencing onset of sexual and risky sexual behaviour among adolescents (Santelli et al. 2004; Fatusi & Blum, 2008). To a large extent, few studies on knowledge of HIV/AIDS and sexual behaviour have been limited to in-school adolescents with a very limited coverage (Okunta & Oseji, 2006), overlooking the majority of out of school adolescents.

Consistent use of condom during casual sex and having one faithful sexual partner have been found out to be an effective way of preventing the transmission of HIV/AIDS among men and women, and particularly among youth at the onset of pre-marital sex (Abma and McGill, 2007). Additionally, late sexual debut among adolescents is linked with reduced lifetime prevalence of sexual partners, thereby reducing the risk of exposure to Sexually Transmitted Diseases, including HIV/AIDS and unwanted pregnancy. In Nigeria as in many other developing countries, socio-cultural norms preventing adolescents from accessing preventive measures and safe sex practices are still prevalent. Young people as a vulnerable group with high exposure to the risk of HIV are often neglected from discussions on sexual issues, particularly in the public and in their curiosity, they resort into discussing with and obtaining distorted information from peers and sexual partners. Empirical research from the developing countries have documented evidence of high level of knowledge about modes of contracting and preventing HIV/AIDS (Cambell & Mbivzo, 1994; Odu & Akanle, 2008; UNAIDS, 2008) but only few studies have been able to explore linkages between knowledge of HIV/AIDS and implications for sexual-related protective behavior.

The crux of the study therefore, is to analyze implications of HIV/AIDS knowledge for safe sexual practices among sexually active adolescents in Nigeria. The proposition here is that adequate knowledge of HIV/AIDS will to a large extent influence protective sexual behaviour to

reduce HIV infections. The question to ask therefore, is whether increased knowledge of modes of transmitting, contracting and preventing HIV/AIDS among adolescents will translate into a more pre-cautionary and safer sexual behaviour or not? Also, is adolescents' protective sexual behaviour independent of their level of HIV knowledge?

Specifically, the paper is aimed at ascertaining the level of HIV/AIDS knowledge of adolescents and differentials between males and females, examine the relationship between knowledge on HIV/AIDS and its effect on protective sexual behaviour among adolescents.

Method

The study utilized data from the Nigeria 2007 National HIV/AIDS and Reproductive Health Survey (NARHS). NARHS is a nationally representative survey females aged 15-49 years and males aged 15-64 years of the reproductive age. The study population was randomly selected using three levels, multi-stage method with the aim of selecting eligible respondents in each of the 36 states in Nigeria with equal probability. The selection of respondents began with stratification of locations into rural and urban residences, followed by random selection of enumeration areas, and subsequently individuals.

A sample of 11,251 individuals (53.5% for males and 46.5% for females) was selected at the household level in NARHS 2007. Never married sexually active (have sexual intercourse in the last 12 months) adolescents aged 15-19 years are the unit of the analysis of the study. Out of the 2,470 adolescents age 15-19 years involved in the NARHS sample, only 865 (64% for males and 46% for females) reported ever had sex in the last 12 months and were included in the survey. Hence, the analytic sample for the study consisted of 865 unmarried sexually active adolescents aged 15-19 years.

Measures

The main independent variable for the study is adolescents' knowledge of HIV/AIDS and this was assessed from information on seven modes of transmission and prevention of HIV/AIDS¹ as reported by the adolescents. Factor analysis technique was used to categorize the level of knowledge into high, medium and low level. The reliability coefficient of item loadings is displayed in table 1. The other independent variables consisted of educational level, place of residence, wealth index, religion and region. Also included in the analysis are some sexual behaviour variables such as age at first sex, sex partner age grade, discussion of HIV/AIDS. The outcome variable for the study was HIV non-protective sexual behaviour measured by the use of condom during last sexual intercourse in the last 12 months, having more than one sexual partner and exchange of gifts for sex with a strange person. The analysis was further disaggregated into

¹ *HIV can be transmitted through unprotected sexual intercourse; HIV transmission can be prevented by delaying onset of sexual intercourse; HIV transmission can be prevented by avoiding sex with commercial sex workers; HIV transmission can be prevented by using condom during sexual intercourse; HIV transmission can be prevented by reducing number of sexual partners; HIV transmission can be prevented by abstaining from sex; HIV transmission can be prevented by avoiding sex with multiple partners.*

male and female sex categories. The method of analysis was done at three levels of univariate, bivariate and multivariate analyses.

Data Analysis

Data were analysed using STATA (version 11.0). Data analysis was carried in three levels and further disaggregated into sex. First, the univariate analysis was undertaken to profile the proportion of sexually active adolescents with respect to level of HIV knowledge, age at first sex, sex partner age grade and other selected background characteristics. Chi-square was used to assess association between level of HIV knowledge and non-protective sexual behavior. The analysis also involved the determination of selected background characteristics that showed significant association with condom use, accepting gifts for sex and having more than one sexual partner. The percentage of adolescents with non-protective sexual behavior across selected variables and corresponding chi-square values was tabulated. A significance value of selected independent and background variables was established at $p\text{-value} < 0.05$.

Multivariate analysis was carried using binary logistic regression analysis to predict risk factors of engaging in HIV non-protective sexual behavior. Two models for each of the HIV non-protective sexual behavior variables for males and females separately were simulated: the first included only the main independent variable (level of HIV knowledge), while the second model included level of HIV knowledge and other selected background variables. Only the odd ratios of the variables simulated were presented in tables four and five.

Result of Univariate Analysis

Background Characteristics of the Respondents (Table 2)

Almost 9 out of every 10 respondents have secondary or higher, with no difference in the proportion of males and females with secondary or higher education (90% for males and 89% for females). About 60% of the adolescents reside in the rural areas while only 40% reported urban as their place of residence. More females (43%) than males (40%) live in the urban location. With respect to wealth status, majority of the respondents (41%) were found in low wealth status category. Evidence of low wealth status is found to be higher among male adolescents (38%) than female counterparts (45%). Majority of adolescents (59%) reported belonging to protestant religious group. With respect to the level of knowledge, more than 3 out of every 5 adolescents reported high knowledge of HIV. When disaggregated by sex, about 78% of male adolescents compare to 70% of female counterparts reported high knowledge of HIV. Adolescent mobility pattern may have implication for HIV related sexual behavior. Almost 2 out of every 5 adolescents reported to have moved away from home in the last 12 months.

The median age at first sex for both sexes is 17 years. Almost 7 out of every 10 adolescents initiated sex at age 16-19 years. Majority of the adolescents (47.3%) reported younger sexual partners, with almost 71% of males compared to 5% of females reported younger sexual partners. With respect to adolescents HIV/AIDS communication, about 47%, 34% and 22% reported ever discussed HIV/AIDS with their sexual partners, neighbor and parents. Almost half of the respondents (48.4% for males versus 43.3% for females) ever discussed HIV/AIDS with their partners.

Result of Bivariate Analysis

Association between selected factors and HIV non-protective sexual behavior: males (Table 3)

Out of eight selected explanatory variables included in the bivariate analysis, level of HIV/AIDS knowledge, education, place of residence and wealth status were significantly associated ($p < 0.05$) with condom use during sexual intercourse in the last 12 months. About 1.2% of adolescents with high knowledge of HIV reported the use of condom last sexual intercourse. Surprisingly, the magnitude of adolescents who reported the use of condom during last sexual intercourse decrease with the level of education. Only 2% and 1.4% of male adolescents with primary or lower education respectively used condom during last 12 months. Association between level of education and condom use was significant ($p = 0.032 < 0.05$). Also, about 2% of male adolescents from rural areas reported the used of condom compare to 1% of male adolescents from urban locations. With respect to wealth status, high condom during last sexual intercourse was found among those in low wealth status (2.4%) relative to those in medium (0.6%) and high (1.1%) wealth categories.

With respect to acceptance of gifts for sex, only level of HIV knowledge, educational level and age at first showed significant associations ($p < 0.05$). As evidence from table 2, about 6%, 19% and 11% of male adolescents with low, medium and high level of HIV knowledge respectively reported ever received gifts for sex. Higher proportion of male adolescents with primary or lower education (19%) than those with secondary school or higher (11%) reported acceptance of gifts for sex. As expected, higher proportion of those reported accepting of gifts for sex was found among male adolescents who initiated sex at age 15 or lower (14%) compared to those at 16-19 years (12%). The association is between age at first sex and accepting gifts for sex was significant at $p < 0.05$.

Higher proportion of male adolescents with medium level of HIV knowledge (47%) compared to those with low (40%) and high (42%) level of HIV knowledge reported having more than one sexual partner. Male adolescents with primary or lower education (49%) are more likely to report having more than one sexual partner compared to those with secondary or higher education (42%). No statistical difference was observed. With respect to place of residence, about 45% of male adolescents who reside in urban areas reported having more than one sexual partner compared to 41% of those from rural areas. High proportion of male adolescents in average wealth group (46%) relative to those in low (42%) and high (40%) wealth group reported having more than one sexual partner. Out of the eight variables included in the analysis, only age at first showed significant association with risk factor of having more one sexual partner. Overall, 1.5%, 11.9% and 42.5% of sexually active male adolescents reported the use of condom, accepting gifts for sex and having more than one sexual partner respectively.

Association between selected factors and HIV non-protective sexual behavior: females (Table 3)

This section deals with explanation of associations between selected factors and female adolescent HIV non-protective behavior. The analysis was done by cross tabulating selected independent variables with the use of condom during last sex, accepting gift for sex and having more than one sexual partner. The result showed evidence of significant associations between female adolescents' level of HIV knowledge and use of condom. The degree of condom use is very low among the respondents. About 1% of female adolescents with high knowledge of HIV reported having used condom during last sex in the last 12 months. Among this group, female

adolescents with medium level of HIV knowledge reported higher use of condom (5%). Educational is another factor that showed significant association with condom use ($p=0.036<0.05$). Surprisingly, higher proportion of female adolescents with primary or lower education (6%) than those with secondary or higher education (1%) reported having used condom. With respect to wealth status, condom use is lower among those in low wealth group (1.4%) than those who in medium wealth group (4%), although the association is not statistically significant. Similarly, adolescents from Northern region (3%) reported higher use of condom than those from the Southern region (1.2%). Female adolescents' age at first sex showed significant association with the use of condom ($p=0.024$). Condom use is found to be higher among female adolescents who initiated sex at 16-19 (2.0%) compared to those who reported sex debut at 15 or lower (1.0%).

Female adolescents' level of HIV knowledge showed no significant relationship with accepting gifts for sex from strange person. However, the proportion of female adolescents who reported ever received gifts with respect to level of HIV knowledge is substantial. About 12%, 20% and 15% of adolescents with low, medium and high knowledge of HIV respectively reported accepting gifts for sex. The proportion of female adolescents with primary or lower education who reported ever received gifts for sex (24.0%) is higher than those in secondary or higher education who reported action attitude (15%). Association between level of education and accepting gifts for sex is significant ($p=0.019$). More rural female adolescents (20.0%) than those in urban settings (11%) reported accepting gifts for sex ($p=0.024$). Similarly, female adolescents who initiated sex at age 15 or lower (22%) are more likely to report accepting gifts for sex than those who initiated sex at older ages (13%) and the association between age at first sex and risk of accepting gifts for sex is significant at $p<0.05$.

With respect to the risk of having more than one sexual partner, place of residence and wealth status showed significant associations. The result showed that about 20% of female adolescents from rural areas compared to 10% of those from urban locations reported having more than one sexual partner. Also, the proportion of adolescents who reported having more than one sexual partners decreases with increasing wealth status (20.0%, 15.0% and 9.1% for those in low, medium and high wealth group respectively). In summary, the proportion of female adolescents who reported condom use, accepting gifts for sex and having more than one sexual partner is 1.6%, 15.5% and 16.0% respectively.

Result of Multivariate Analysis

This section presents the multivariate analysis of variables. Binary logistic regression analysis was used to predict the effects of independent variables on the risk of engaging in HIV non-protective sexual behavior. The major independent variables for the study are the level of HIV knowledge and some selected background characteristics. The dependent variable – HIV non-protective behavior – was measured by use of condom, accepting gifts for sex and having more than one sexual partner. Each of the levels of the dependent variables in the multivariate analysis was coded “0” if the respondent did not report risk factor of engaging in non-protective sexual behaviour and “1” if the respondent reported risk factor of engaging in non-protective sexual behaviour.

Logistic regression models predicting odds of engaging in HIV non-protective sexual behavior: males (Table 4)

Two models each of binary logistic regression were simulated. In model 1, surprisingly, the odds of reporting non-use of condom increased significantly by 28% and 134% among male adolescent with medium and high knowledge of HIV respectively compared to those with low knowledge of HIV. In model 2, after controlling for the effects of some background characteristics, the odds of not using condom increased significantly by 63% and 210% among those with medium and high level of HIV knowledge respectively relative to those with low level of knowledge. With respect to age at first sex, male adolescents who initiated sex at age 16-19 years are less likely (0.33) report to non-use of condom compare to those in the reference category (age less than 16 years). Distributions across place residence show that male rural adolescents compared to urban counterparts have higher odds of reporting non-use of condom. The odds increased by 37% among rural adolescents. Protestant adolescents are significantly more likely (1.27) to report non-use of condom compared to the non-protestant.

With respect to accepting gifts for sex, in model one, male adolescents with medium level of knowledge of HIV are 3.84 times as likely as those with low knowledge to report accepting gifts for sexual intercourse. In the second model, the odds of accepting gifts for sex among those with medium level of HIV knowledge increased significantly by 235% compared with those with low level of knowledge. Similarly, male adolescents with secondary or higher education are 0.43 times as likely as those with primary or lower education to report accepting gifts for sex. The odds of reporting accepting gifts for sex decreased significantly by 52% among those in medium wealth group compared to those in the reference group.

Male adolescents who initiated sex at age 16-19 years are significantly less likely (0.71) to report having more than one sexual partner compared to those who initiated sex earlier. Protestant male adolescents are 1.34 times as likely as non-protestant counterparts to report having more than one sexual partner.

Logistic regression models predicting odds of engaging in HIV non-protective sexual behavior: females (Table 5)

The odds of not using condom decreased significantly by 86% among female adolescents with high level of knowledge of HIV compared to those with low level of knowledge. In the second model, only educational level significantly predicted the odds of non-use of condom. The odds indicates that female adolescents with secondary or higher education are 0.07 times as likely as those with primary or lower education to report non-use of condom. Out of 7 predictor variables, only educational level and place of residence significantly explained than the risk of accepting gifts for sex. Female rural adolescents are twice as likely as urban counterparts to report accepting gifts for sex.

Level of HIV knowledge is significant factor predicting the likelihood of having more than one sexual partner among female adolescents. Stuningly, female adolescents with high level of HIV knowledge are 1.56 times as likely as those in reference category to report having more than one sexual partner. Similarly, relative to urban female adolescents, those from rural areas reported higher odds of having more one sexual partner. The odds of reporting more than one sexual

partner increased significantly by 46% among protestant compared to non-protestant counterparts.

Summary of findings and Discussion

The study had focused on the relationships between knowledge of HIV and HIV-related sexual behaviour using a nationally representative sample of Nigerian adolescents. Knowledge of HIV was measured from the information on seven indicative questions of how to prevent transmission and promote prevention measures of HIV. Evidence from the study shows that majority of adolescents have high knowledge of modes of contracting and transmitting HIV/AIDS. This finding is consistent with other studies that have documented high knowledge of HIV/AIDS among Nigerian adolescents (Omeonu & Kollie, 2010). High level of HIV knowledge in Nigeria as documented in this study and other past studies shows efficiency in the health education programme on HIV in Nigeria. When disaggregated by sex, the study a large knowledge gap between males and females, with higher proportion of males than females reported high knowledge of HIV. The present finding underscores gender imbalance in the level of HIV knowledge among adolescents. This finding is not consistent with Cheng, Eke-Huber, Eaddy and Collins (2005) who reported in their study that female students had a higher overall knowledge on HIV than males; however, Lowndes et al. 2008 in a different study in western Africa, reported that males have higher level of HIV knowledge than females but none of these studies have made recourse to factors accounting for the differentials.

Overall, the proportion of males and females that reported the use of condom during the last sexual intercourse in the last 12 months was estimated at 1.5% and 1.6% respectively. Evidence of low use of condom among sexually active adolescents as found in this study agrees with other previous studies (Fatusi & Blum, 2008; Adebisi & Asuzu, 2009; Oyediran et al. 2011). Surprisingly, the study found evidence of low condom use among male and female adolescents with high knowledge of HIV/AIDS and different level of background factors considered in this study. This finding reiterates the need for extensive and efficient behavioural change communication programmes with emphasis on education on sexual abstinence and safe-sexual behaviour as being currently undertaken by some NGOs, CSOs and faith based organizations in Nigeria.

The result shows gender differences in the factors associated with the use of condom. Educational level, place of residence and wealth status show significant association with use of condom during last sexual intercourse for males while level of HIV knowledge, educational level and age at first sex are significantly associated with condom use for females. The finding emphasizes strengthening programmes on sex and sexual related education among adolescents. The significant association of age at first sex and condom use for females support already documented evidence that female adolescents with early age at sexual initiation lack the will and power to negotiate safe sex with their partners (Onayade et al. 2008), hence, gender focused programmes, particularly on female adolescents to safe sex practices should be vigorously pursued.

Consistent with previous studies, higher proportion of female adolescents (42%) than males (16%) reported having more than one sexual partner. This finding questions some assertions that females consistently under report and males over report their sexual activities. In terms of the

relationship between adolescents background characteristics and likelihood of having more than one sexual partner, age at first sex shows significant association with having more than sexual partner ($p=0.004<0.05$) while place of residence and wealth status show significant association for female adolescents. The significant association of age at first sex with number of sexual partner further exemplifies assertion that the number of sexual partner that a person will have in her lifetime is hinged upon the age at which sexual act is initiated. The earlier the age at first sex, the more the number of sexual partner a person would have. This assertion was documented in the work of (Sanjose et al. 2008). Similarly, the established correlate of number of sexual partner with place of residence and wealth status, particularly for female adolescent further support previous findings of higher risk sexual behaviour among adolescents in rural areas (Voeten et al. 2004) and those from low wealth status background as a result of lack socio-economic will to negotiate safe sex with their partners (Booyesen and Summerton, 2002).

In the multivariate analysis, level of HIV knowledge significantly predicted the likelihood of non-use of condom and accepting gift for sex in the male model but only predicted the odds of having more than one sexual partner in the female model. As evidence in the study, high level of HIV knowledge does not constraint the adolescents from engaging in risky sexual behaviour such as non-use of condom, accepting gifts for sex from unknown partner and having more than one sexual partner. In other words, the prevalence of risky sexual behaviour is found among adolescents with higher knowledge of HIV/AIDS. This finding is consistent with the work of Okonta and Oseji (2006) among Nigerian in-school adolescent, where they found that adolescents' knowledge of HIV/AIDS has no significant influence on their sexual behaviour and Booyesen and Summerton (2002) study on South African women aged 15-49 years. Regardless of adolescents' level of HIV knowledge, those with higher education, older age at first sex, higher wealth index and from urban location are less likely to engage in HIV non-protective sexual behaviour compared to adolescents in other categories. This finding suggests that the provision of HIV-related information alone is not necessarily enough for adolescents to adopt safer sexual practices or to be better able to protect themselves from HIV. However, access to economic resources appears to improve the ability of adolescents to negotiate sexual relationships in a way that allows them to put their HIV-related knowledge into practice and consequently avoid infection.

Conclusions and recommendations

Despite widespread knowledge of HIV/AIDS among adolescents as evident in this study, high risk sexual behaviour (non-use of condom, accepting gifts for sex and having more than sexual partner) is still prevalent. Majority of the adolescents also show evidence of lack of communication in discussing their sexual lives with their parents. Therefore, the study recommends that beyond interventions for HIV/AIDS awareness programs and advocacies, targeted programmes in schools and out of schools should focus more on promoting safe sex practices among adolescents, particularly among those who lack social and economic will to negotiate safe sex behaviour with their partners. Attention should also be drawn to bridging the communication gaps between adolescents and their parents, through child-parent behavioural change communication programmes on sexuality education.

Table 1

Measurement scales, Internal Consistency and Item Loadings		
Scale Name	Item content	Item loading
HIV knowledge (Reliability coefficient) = .764	HIV can be transmitted through unprotected sexual intercourse	.790
	HIV transmission can be prevented by delaying onset of sexual intercourse	.640
	HIV transmission can be prevented by avoiding sex with commercial sex workers	.566
	HIV transmission can be prevented by using condom during sexual intercourse	.772
	HIV transmission can be prevented by reducing number of sexual partners.	.425
	HIV transmission can be prevented by abstaining from sex	.729
	HIV transmission can be prevented by avoiding sex with multiple partners	.406

Table 2: Background characteristics and sexual behavior of Adolescents by Sex

Variables	Male (%)	Female (%)	Both (%)
Educational level			
Primary or lower	10.0	11.0	10.2
Secondary or higher	90.0	89.0	89.8
Place of residence			
Urban	39.6	43.2	40.1
Rural	60.4	56.8	59.9
Wealth Status			
Low	37.5	44.8	40.7
Average	29.2	26.8	28.4
High	33.3	28.4	30.9
Religion			
Non-protestant	42.7	37.4	40.7
Protestant	57.3	62.6	59.3
Region			
North	30.5	20.2	27.6
South	69.5	56.8	72.4
Level of knowledge			
Low	6.1	10.7	7.3
Medium	16.2	19.3	18.0
High	77.5	70.0	74.7
Away from home in the last 12 months			
Yes	41.5	39.3	40.4
No	58.5	60.7	59.6
Sexual behavior variables			
Age at first sex			
15 or lower	33.0	33.8	33.3
16-19	67.0	66.2	66.7
Median age at first sex	17 years	17 years	
Sex partner age grade			
Younger	70.9	4.6	47.3
About the same age	24.4	17.8	22.0
Older than me	4.7	77.6	30.7
Ever discussed HIV/AIDS with sexual partners*	48.4	43.3	46.7
Ever discussed HIV/AIDS with neighbor*	33.1	34.5	33.7
Ever discussed HIV/AIDS with parents*	17.9	31.1	22.2

**Only the percentage for “yes” is tabulated*

**Table 3: Association between selected factors and HIV non-protective sexual behavior:
males**

Variable	use of condom		Accept gift for sex		More than one partner	
	%	Chi-square	%	Chi-square	%	Chi-square
Level of knowledge						
Low	-		5.7		40.0	
Medium	3.3	0.222	19.0	0.049*	46.7	0.670
High	1.2		10.9		41.9	
Educational level						
Primary or lower	2.0	0.032*	18.9	0.010*	49.1	0.312
Secondary or higher	1.4		11.2		41.9	
Place of residence						
Urban	1.0	0.043*	14.1	0.195	45.5	0.258
Rural	2.0		10.5		40.6	
Wealth Status						
Low	2.4	0.003*	13.5	0.447	41.8	0.480
Average	0.6		9.3		46.3	
High	1.1		12.4		40.0	
Religion						
Non-protestant	1.2	0.764	11.4	0.754	40.9	0.512
Protestant	1.6		12.3		43.7	
Region						
North	2.0	0.663	8.9	0.146	42.6	0.980
South	1.3		13.2		42.5	
Ever been away from home						
Yes	2.2	0.225	12.3	0.701	43.0	0.829
No	1.0		11.2		42.1	
Age at first sex						
15 or lower	1.8	0.786	13.5	0.034*	48.5	0.004*
16-19	2.0		11.5		40.1	
Summary of result	1.4		15.5		42.5	

**Association is significant at $p < 0.05$*

Table 4: Association between selected factors and HIV non-protective sexual behavior: females

Variable	use of condom		Accept gift for sex		More than one partner	
	%	Chi-square	%	Chi-square	%	Chi-square
Level of knowledge						
Low	3.0		12.1		15.1	
Medium	5.0	0.037*	20.0	0.552	16.7	0.961
High	0.5		15.2		15.2	
Educational level						
Primary or lower	5.9	0.036*	23.5	0.019*	20.1	0.383
Secondary or higher	1.1		14.7		14.9	
Place of residence						
Urban	2.3	0.445	10.5	0.024*	9.7	0.014*
Rural	1.1		20.0		19.9	
Wealth Status						
Low	1.4		18.7		20.1	
Average	3.6	0.168	14.5	0.424	14.5	0.012*
High	-		12.5		9.1	
Religion						
Non-protestant	1.7	0.904	12.9	0.283	16.4	0.736
Protestant	1.6		17.5		15.0	
Region						
North	3.2	0.270	15.9	0.987	16.0	0.924
South	1.2		15.8		15.0	
Ever been away from home						
Yes	1.7	0.973	15.1	0.691	12.6	0.215
No	1.6		16.9		17.9	
Age at first sex						
15 or lower	1.0	0.024*	21.8	0.040*	18.8	0.353
16-19	2.0		12.6		14.7	
Summary of result	1.6		15.5		16.0	

**Association is significant at $p < 0.05$*

Table 5: Logistic regression models predicting odds of engaging in HIV non-protective sexual behavior: males

Variable	Non-use of condom		Accept gift for sex		More than one partner	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Level of knowledge						
Low	RC	RC	RC	RC	RC	RC
Medium	1.28**	1.63**	3.84**	3.35**	1.31	1.55
High	2.34**	3.10**	2.02	1.90	1.10	1.37
Age at first sex						
Less than 16 years		RC		RC		RC
16-19 years		0.33**		0.89		0.71**
Educational level						
Primary or lower		RC		RC		RC
Secondary or higher		0.70**		0.43**		0.75**
Place of residence						
Urban		RC				RC
Rural		1.37**		1.78		0.72
Wealth Status						
Low		RC		RC		RC
Average		0.23		0.48**		1.20
High		0.46		0.76		0.88
Religion						
Non-protestant		RC		RC		RC
Protestant		1.27**		0.95		1.34**
Region						
North		RC		RC		RC
South		0.81		1.79		0.89

****significant at p-value of 5%**

Table 6: Logistic regression models predicting odds of engaging in HIV non-protective sexual behavior: females

Variable	Non-use of condom		Accept gift for sex		More than one partner	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Level of knowledge						
Low	RC	RC	RC	RC	RC	
Medium	1.68	1.64	1.12	1.15	1.81	1.95
High	0.14**	0.10	1.00	1.19	1.30**	1.56**
Age at first sex						
Less than 16 years		RC		RC		RC
16-19 years		2.31		1.44		0.65
Educational level						
Primary or lower		RC		RC		RC
Secondary or higher		0.07**		0.87**		0.56**
Place of residence						
Urban		RC		RC		RC
Rural		0.17		2.00**		1.86**
Wealth Status						
Low		RC		RC		RC
Average		3.97		0.84		1.12
High				0.58		0.95
Religion						
Non-protestant		RC		RC		RC
Protestant		2.02		0.77		1.46**
Region						
North		RC		RC		RC
South		0.46		1.15		1.06

****significant at p-value of 5%**

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