Risky Sexual Behaviour among Adolescent Girls and Young Women in Nigeria: Persistent driver of HIV infections

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ABSTRACT

Introduction: Nigeria has battled the scourge of HIV/AIDs since its outbreak with concerted efforts made towards its reduction and total eradication, but progress has been slower than expected. Therefore, this study investigates prevalence of risky sexual behaviour (RSB) which is predicated as bane of eradicating HIV/AIDs among the most vulnerable - Adolescent Girls and Young Women (AGYW). **Methods:** This study used 2018 Nigerian Health and Demographic Survey data. Samples were selected independently using two-stage sampling scheme with 1,400 Enumeration Areas (EAs) selected at first stage. Systematic sampling was used in selecting 40,427 households at second stage from which nationally representative sample of 41,821 women aged 15-49years were successfully interviewed to examine AGYW risky sexual behaviours in association with some sociodemographic factors on which such RSB thrive using the multivariate logistic regression model. **Results:** It was found that 41.1% and 28.3% of the adolescents and young women are involved in RSB, respectively. Adolescent girl who has at least secondary education is significantly less likely (OR=0.63, CI=0.44–0.90) to engage in RSB. Young women cohabiting and those ever married are more likely to be engaged in RSB with those cohabiting (OR=2.11, CI=1.40–3.20) having higher risk than those who are ever married (OR=1.59, CI=1.15–2.20). **Conclusion:** Having little or no formal education, non-religious, regional differences, cohabitation, larger household sizes and living in poorer households increase RSB among AGYW. Therefore, to end the HIV/AIDS epidemic in Nigeria; regional and community-based interventions must be intensified early among the adolescent girls and young women.

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Introduction

Adolescent Girls and Young Women (AGYW) remains the cohorts with the highest prevalence of HIV/AIDs particularly in sub-Saharan Africa including Nigeria for about four decades now [1]. These vulnerabilities of AGYW hinge on socio-cultural, economic and demographic factors with reference to the patriarchal system of these societies, where men are socialized into particular sexual behaviour to the detriment of girls and women [2]. It has been proven empirically that sexual behaviour in relation to gender and cultural norms are major drivers in the vulnerabilities of adolescent girls and women to HIV/AIDS [3,4]. The World Bank Group reported in 2016 that behavioural, socioeconomic, and structural factors especially those that relate to society structure and gender roles makes women in general more vulnerable to HIV infections [5]. In the same vein, the Centre for Disease Control and Prevention (CDC) in Nigeria reported in 2017, that gender norms, inequalities and violence against women and girls are important reasons for their continued vulnerability to HIV due to multiple sociodemographic factors, including limited ability to negotiate safer sex [6].

The National Agency for the Control of AIDS in Nigeria (NACA) reported in 2019 that despite the persistent fight of the nation against AIDS, Nigeria remains one of the countries in the world with the highest number of people living with HIV (PLHIV) with a national prevalence of 1.4% [7]. The report also added that women and girls have the highest burden since the invasion of AIDS epidemics particularly, adolescent girls and young women aged 15-24 years [7]. Women and girls have been shown to always be at the receiving end of practices and misgivings that will give more pleasure to men at their disadvantage. These practices include child marriage, multiple sex partners, marrying much older men, and female genital mutilation which all violate the sexual rights of women and girls but still prevalent in Nigeria [2]. The United Nations Population Funds (UNFPA) affirmed that in Sub-Sahara Africa (SSA), girls and women are taught that their bodies exist primarily for the pleasure of, or the control by men and are also less likely to know their right [8]. Efforts to eradicate HIV/AIDs will not be achieved until the forms of sexual practices responsible for women and girls´ vulnerabilities to the disease are addressed particularly at the grassroots. This study is an investigation into the prevalence of risky sexual behaviour which is predicated on sociodemographic cum economic reasons among the most vulnerable (AGYW).

Literature Review

Risky sexual behaviours (RSB) as defined by Tilahun and Mamo [9] refers to sexual activities that inclines an individual to the risk of sexually transmitted infections including HIV and unplanned pregnancies [9]. These sexual behaviours, strongly affect the reproductive and in fact the overall health of individuals and have daring consequences on public health [10]. It is more worrisome since the World Health Organization (WHO) declared in 2018, that the world today has the largest generation of young people in history with 1.8 billion between the age of 10 and 24 years [11]; and Kharsany and Karim noted that the possibility of an AIDS free generation cannot be realized unless we are able to prevent HIV infection in AGYW [12]. Global AIDS Updates reported that in Sub-Saharan Africa (SSA), six in seven new infections are among girls (aged 15-19 years) and young women (age 20-24 years) are twice as likely to be living with HIV than men [1]. Report further indicated that HIV remains a global health crisis, for instance in 2021, there were 38.4 million people living with HIV, including 9.7 million who were not on treatment and 650,000 people who died from AIDS-related ailments in 2021 [1].

Research have shown that AGYW continue to account for a disproportionate higher percentage of new HIV infection in SSA including Nigeria [13,14]. In 2016, The World Health Organization reported that HIV/AIDS was the leading cause of death among women of reproductive age [11]. Intersectional factors have been found to be connected to the differences experienced by AGYW in their continued susceptibilities to HIV/AIDs particularly with regards to RSB [15]. Among these factors are level of education, place of residence, religious practices, poverty, decision making prowess, etc. Men attitudes to sexual behaviours is also very important at driving HIV/AIDS infections in AGYW since men are mostly the decision makers. For instance, a study conducted among Danish men in 2011 revealed that an average of these men has sexual intercourse with at least 8 females during their lifetime and 9.8% of the men have had more than 2 new sexual partners in the past 6 months [16]. Tilahun and Mamo also confirmed from their studies among adolescents that even though more

than 75% of the respondents were aware of RSB and consequences of unsafe sex, well over 60% have more than one sexual partner and 58% never used condom during sex [9].

Sociodemographic factors have been shown to be major causes of HIV/AIDs; Klaas, et al. opined that gender inequality and perception of men being sexually and economically superior to women are central to HIV infection in patriarchal societies of Africa [17]. Over several years, research have continued to validate poor educational level, rural residence and economic challenge of surviving have as core HIV/AIDs vulnerability factors for AGYW in SSA [18,19,20]. Adolescent Girls and Young Women because of their subservient position as dictated by culture do not possess the powers in sexual negotiations. For instance, Madiba and Ngwenya stated that although women are reported negotiating safer sex in their relationships, they refuted the possibility of suggesting condom use with their partners living in a patriarchal society where women play no part in decision making [3]. Van Dervanter et al. [21] reported from their study that adolescent girls continued to engage in unprotected sex after diagnosis of their HIV status and having sexual intercourse without condom. Richardson et al. [22] also reported from their study that there is a significant correlation between having a predominantly heterosexual epidemic and high gender across all models used, gender inequality is therefore an imperative factor in the maintenance of HIV.

Mathur et al. [23] substantiated from their study that AGYW have differentials in vulnerability to HIV depending on place of residence, level of education, age and economic advantages. Maongwa et al. [24] examined determinants of RSB practices among men in Malawi and found that religion was key factor associated with having an increased number of non-marital, non-cohabiting sexual partners and formal education attainment was a consistent predictor that significantly reduced men´s high risk sexual behaviour. Wado et al. [25] revealed from their study that young people growing in slums face tremendous challenges in relation to their sexual and reproductive health and rights which usually resulted in unintended pregnancies, STIs and sexual violence. Also, Ali et al. [26] reported that higher percentages of male adolescents than female reported having more than one partner in the last twelve months.

It is therefore imperative to note that the AGYW cohorts despite frantic efforts are persistently responsible for HIV/AIDS trends which emanates directly from the structure of their society. The Global Funds stated that despite great progress made to reduce HIV globally, adolescent girls and young women continue to be disproportionately at risk of new infections [27]. The report added that in SSA, twice as many girls and young women are infected with HIV as their male counterparts and if nothing is done, new HIV infections among girls and young women aged 15-24 in SSA will increase by 42% by 2030, simply due to population growth [27]. Urgent action to reduce the risk of adolescent girls and young women to HIV is vital to end the epidemic but this won´t be achieved without addressing the entrenched social and demographical differences that exist where these girls and young women are. Therefore, this study investigates prevalence of risky sexual behaviour (RSB) which is predicated as bane of eradicating HIV/AIDs among the most vulnerable - Adolescent Girls and Young Women (AGYW).

Methods

Procedure

This study used data from the 2018 Nigeria Demographic and Health Survey (NDHS) [28] which was collected by the National Population Commission (NPC). The sampling frame used for the survey was obtained from the Population and Housing Census which was conducted in 2006. Samples were selected independently using two-stage sampling scheme. A probability proportional to size was used in selecting sample at the first sampling stage which yielded 1,400 Enumeration Areas (EAs). At the second stage, an equal probability systematic sampling procedure was used in selecting a fixed number of 30 households resulting in approximately 40,427 households out of which a nationally representative sample of 41,821 and women age group 15-49 years were successfully interviewed.

Measures

Dependent variable: The outcome variable in this study is risky sexual behaviour which is measured as "1" if the respondent had ever been involved in risky sexual behaviour and "0" if not. The "risky sexual behaviour" is a composite variable, which is the combination of three risky behaviours: having multiple sexual partners (i.e. having more one wives/partners which could be referred to as concurrent partners), non-use of condom and early sexual intercourse on or before age 14 years. A person is said to be involved in risky sexual behaviour if he/she has been involved in at least one of these behaviours. The risky sexual behaviour was further studied under two cohorts; adolescents and young women.

Independent variables: The socio-demographic factors identified in prior researches as being associated with risky sexual behaviours were selected and used as explanatory variables for this study. These include; region, place of residence, religion, level of education, employment status, wealth index, household size and relationship status. The explanatory variables are all categorised.

Statistical analysis

The predictors of risky sexual behaviour were measured among women of reproductive age 15-49 years. The data were analysed at three phases: descriptive, bivariate and multivariate. The descriptive analysis was used to explain rates of risky sexual behaviour among the women with the use of frequencies, percentages and chart. The Pearson Chi-square test was used to determine the association between risky sexual behaviours and the socio-demographic characteristics at the bivariate phase. Lastly, multivariate logistic regression analysis was used to show the joint contribution of each level of the sociodemographic factors to risky sexual behaviour using the adjusted odd ratios. All analyses are done using SPSS version 25 and any variable is considered to be significant predictor of risky sexual behaviour if the p-value associated with the Odds Ratio is less than 0.05 ($p < 0.05$).

Availability of data and material

It is publicly available and can be accessed through the DHS website at **https://dhsprogram.com/data/** .

Ethical considerations

This study uses data from 2018 Nigeria Demographic and Health Survey which is a secondary data. This was officially requested, and consent was given for the used of the data which has been properly acknowledged.

Results

Prevalence and Socio-Demographic Distribution of Risky Sexual Behaviour among Adolescent Girls and Young Women

Figure 1 shows the distribution of the respondents that are involved in risky sexual behaviours. It further reveals that more than two out of every five (41.1%) adolescent girls are involved in risky sexual behaviour; approximately three out of ten (28.3%) young women are involved in risky sexual behaviour. In **Table 1**, the socio-demographic distribution of the women is shown in relation to their group: adolescent girls (aged 15-19 years) and young women (aged 20-24 years).

The North West has the highest number of respondents for both adolescent girls (39.1%) and young women (35.1%). The majority (74.3%) of the respondents live in the rural areas and most of them (68.7%) practise Islam. Considering level of education, almost half of the respondents (49.0%) have no education while only 2.4% have higher education. Approximately three out of every five adolescent girls (57.1%) are unemployed while 55.7% of the young women are employed. More than half (55.4%) of the respondents live in poorer households while a few (22.7%) live in richer households. Three-fifths (60.3%) of the respondents live in households of size 3-5 persons. The majority (91.1%) of the respondents are ever married, 5.1% are never married while 3.8% are cohabiting.

Bivariate results

Table 2 shows the results of the bivariate analyses using Pearson Chi-square tests in examining the association between socio-demographic factors and risky sexual behaviour among the groups: adolescent girls and young women separately. Region, place of residence, religion, level of education, wealth index, household size and relationship status are all significantly associated with risky sexual behaviour while employment status is insignificantly associated with risky sexual behaviour irrespective of the age group. North West has the highest (45.0%) percentage of risky sexual behaviour among the adolescents while North East has the highest (31.7%) percentage among the young women. The risky sexual behaviour is more among women who practise Islam in adolescence (43.6%) while it is more among young women who practise other religions (46.3%) apart from Christianity and Islam.

Increase in level of education reduces risk level of sexual behaviour in women. Employment slightly increases risky sexual behaviour in women at adolescence and young womanhood. Women who live in poorer households have highest percentage of risky sexual behaviour. Adolescent and young women who live in larger household size of six or more persons have highest percentages of risky sexual behaviour of 46.3% and 37.8%, respectively. Adolescent who are married have highest percentage (42.8%) of risky sexual behaviour while cohabiting young women have highest percentage (30.1%) of the risk among their cohort.

Multivariate results

The significant variables at the bivariate analysis are carried forward to identify the significant predictors of risky sexual behaviour at the multivariate level as shown in Table 3. The results show that there are cohort differentials in predictors of risky sexual behaviours.

Adolescent

The logistic model identified the significant predictors of risky sexual behaviour; showing that an adolescent girl who has secondary education is significantly less likely (OR = 0.62, CI = 0.43 - 0.89, p-value = 0.010) to be engaged in this behaviour than their counterparts who do not have any education. Adolescent women living in household of size six or more persons are more likely (OR = 1.86, CI = 1.13 - 3.06, p-value = 0.014) to engage in risky sexual behaviour than those living in one- or two-persons´ households. Ever married adolescents are more likely (OR = 1.59, CI = 0.98 - 2.58, p-value = 0.032) to engage in risky sexual behaviour than those who are never married.

Young Women

The model also identified the predictors of risky sexual behaviour in young women. Young women living in the South-South region are more likely (OR = 1.72, CI = 1.31 - 2.24, p-value < 0.001) to be engaged in the behaviour than their counterparts from the North-Central. Those who practise other religions are twice more likely (OR = 2.01, CI = 1.20 - 3.38, p-value = 0.008) to be engaged in the behaviour than those who practise Christianity. Young women who have primary, secondary and higher education are less likely to be involved in this risk than those without education. Thus, increase in education leads to reduction in the risky sexual behaviour. Also, living in richer households lead to reduction (OR = 0.74, CI = 0.61 - 0.89, p-value = 0.001) while living in household of size 3-5 persons and 6 persons & above increase the level of engaging in risky sexual behaviour. Young women cohabiting and those ever married are more likely to be engaged in the risky sexual behaviour than those who have never married. Besides, those cohabiting (OR = 2.11, CI = 1.40 - 3.20, p-value < 0.001) have higher risk than those who are ever married (OR = 1.59, CI = 1.15 - 2.20, p-value = 0.005).

Discussion

Risky sexual behaviour remains dreadful and persistent driver of HIV infections among adolescent girls and young women in Sub-Saharan Africa and particularly Nigeria. This study examined the relationship between the demographic/socio-economic perceptions and risky sexual behaviour, which was measured by non-use of condom, early sexual intercourse and having multiple sexual partners. Over the years with interventions by the government, non-governmental organizations, and international communities the progress remains slower than expected. This calls for identification of socio-cultural, economic and demographic factors

on which such RSB thrives among the cohorts with the highest prevalence where men are socialized into particular sexual behaviour to the detriment of girls and women [2].

The results showed that the median age at sexual debut for AGYW in this study was 15 years which is lower than what was reported (17 years) in 2013 NDHS and that reported for the region (16 years) by Amo-Adjei and Tuoyire [29]. And that three out of every ten AGYW were involved in risky sexual behaviours which predisposes them to sexually transmitted infections. This has implications such as increased incidence of unprotected sex and multiple sexual partners which cumulate into RSB; and it is associated with increased rate of sexually transmitted infections [30,31,32]. This could be as a result of the patriarchal nature of SSA and Nigeria in particular [2] which predisposes them to contracting HIV and other sexually transmitted infections [33,34]. It further revealed that region, place of residence, religion, level of education, relationship status, household wealth index and size were significantly associated with risky sexual behaviours among AGYW while employment status does not associate with RSB in agreement with prior research on gender differences in RSB among South Africans [35].

This study further revealed that AGYW who lives in the South-South are seen to be more likely involved in RSB than their counterparts from the North-Central. This is not farfetched as earlier research on South-South revealed that there is increase in activities such as having sex for reward, non-use condom during last sexual encounter, visiting commercial sex workers and having sex for fun and recommended that brothels and transactional sex works should be prohibited in their communities [36]. Urbanisation is also found to reduce risky sexual behaviours among the AGYW as those who were raised in urban areas area more likely to be better informed about safe sex. This is in line with earlier work of Adeboyejo and Onyeonoru which stated that adolescents' who live in urban areas are better exposed to technologies and other materials to learn about safe sex [37]. Religious beliefs in early adolescence and adulthood serve as a protective factor against risky sexual behaviours as those who practice either Christianity or Islam are not likely to have early sexual initiation and multiple sexual partners. Hence, they are shielded from activities that leads to sexually transmitted infections including HIV and unplanned pregnancies. Our findings agree with the works of others that high religiosity makes AGYW avoid premarital sex despite the strong urge [38,39].

The result also revealed that as the level of education increases the risky sexual behaviours reduces, this could be because sex education and adolescents´ access to adequate information increase as they get more education. This corroborate earlier reports that AGYW are more vulnerable to HIV infection due to low level of education [19,20] and that most vulnerable groups to HIV/AIDS infections are poorly educated women [18]. The risky sexual behaviour prevalence among less educated AGYW is also linked with living in poorer households as this make them to be economically dependent on men. Low esteem in lower wealth quintile also causes them to be involved in risky sexual activities which lead to HIV/AIDS infections. Also, this structural condition (poverty) leads to risky sexual behaviours that ultimately lead to high HIV/AIDS among AGYW [40].

Contrary to previous research [35], AGYW cohabiting and those who are ever married engaged more in risky sexual behaviours than those who have never married. Our results differ from theirs in that they looked at the entire reproductive age while we looked at adolescent girls and young adults. It could also be that early marriage increase RSB because it is a period when couples explore themselves. Also, many of them might still “be in town” i.e., still struggling to detached themselves from previous partners. Likewise, cohabitation could increase RSB as an effect of early social bonds as alluded in a study on effects of early social bonds on adolescent trajectories of sexual risk behaviours among south African girls [41].

Limitations of the study

The data used for this study is secondary and so, the authors have no control over its flexibility. It is also a self-reported data, which may be subject to recall or social desirability bias where respondents answer to protect them. The potential influence of cultural and social norms on risky sexual behaviours is important but with the data this could not be explored as these were not fully captured in the data. These limitations then suggest that results gotten

should be explained with caution and that mixed method research could have been employed to better understand factors such as beliefs system and cultural influence on these risky sexual behaviours among the Adolescent Girls and Young Women.

Conclusion

In this study, we have added to the body of knowledge in that Adolescent Girls and Young Women (AGYW) have been found to be the cohorts with the highest prevalence of risky sexual behaviours and if not checked at this early stage, achieving the SDG-3 of ending the epidemic of HIV/AIDS by 2030 will be a mirage. Against this background, this study examined AGYW Risky Sexual Behaviour (RSB) in association with some sociodemographic factors on which such RSB thrives and found out that to end the HIV/AIDS epidemic in Nigeria; regional and community-based interventions must be intensified early among the adolescent girls and young women. Also, religiosity and education must be promoted among them. Therefore, community health centres or mobile clinics should be established in high-risk areas to promote sexual health education, access to contraceptives and counselling. Also, community leaders, parents and local organisations in partner with religious institutes should be involved in designing and implementing interventions to ensure a coordinated and holistic approach in addressing risky sexual behaviours.

What is known about this topic

- Adolescent Girls and Young Women (AGYW) remains the cohorts with the highest prevalence of HIV/AIDs particularly in sub-Saharan Africa
- Vulnerabilities of AGYW hinges on socio-cultural, economic, and demographic factors
- Gender norms, inequalities and violence against women and girls are important reasons for their continued vulnerability to HIV due to multiple sociodemographic factors, including limited ability to negotiate safer sex

What this study adds

- Identification of risk factors (poverty and early marriage) on which RSB thrives among AGYW in Nigeria
- Identification of factors that reduce RSB among AGYW in Nigeria such as urbanisation, religiosity, and increased education
- Early community-based interventions are recommended among the adolescent girls and young women to reduce RSB to end the HIV/AIDS epidemic in Nigeria

Competing interests

The authors declare no competing interests.

Authors´ contributions

OSE: Conceptualization, Methodology, Writing, Review & Editing. OGA: Conceptualization, Writing, Review & Editing. All authors read and approved the final manuscript.

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Tables and figures

Table 1: Sociodemographic distribution by group

Table 2: Bivariate analyses of risky sexual behaviour by socio-demographic characteristics

Table 3: Multivariate logistic regression model predicting risky sexual behaviour by group

Figure 1: Distribution of risky sexual behaviour by group

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Table 1: Sociodemographic distribution by group						
Explanatory variables	**Adolescent**		**Young Women**		**Total**	
	Number	**Percent**	**Number**	**Percent**	**Number**	**Percent**
Region						
North Central	215	15.9	1134	84.1	1349	16.7
North East	398	19.1	1682	80.9	2080	25.8
North West	560	19.4	2327	80.6	2887	35.8
South East	92	17.2	444	82.8	536	6.7
South South	117	18.2	526	81.8	643	8.0
South West	52	9.2	513	90.8	565	7.0
Place of Residence						
Urban	283	13.7	1790	86.3	2073	25.7
Rural	1151	19.2	4836	80.8	5987	74.3
Religion						
Christianity	389	15.9	2050	84.1	2439	30.3
Islam	1032	18.6	4509	81.4	5541	68.7
Others	13	16.3	67	83.8	80	1.0
Level of Education						
No education	823	20.9	3124	79.1	3947	49.0
Primary	184	16.0	963	84.0	1147	14.2
Secondary	423	15.2	2353	84.8	2776	34.4
Higher	4	2.1	186	97.9	190	2.4
Employment Status						
Unemployed	819	21.8	2933	78.2	3752	46.6
Employed	615	14.3	3693	85.7	4308	53.4
Wealth Index						
Poorer	897	20.1	3572	79.9	4469	55.4
Middle	298	16.9	1466	83.1	1764	21.9
Richer	239	13.1	1588	86.9	1827	22.7
Household Size						
1-2 persons	89	30.0	208	70.0	297	3.7
3-5 persons	896	18.4	3968	81.6	4864	60.3
6+ persons	449	15.5	2450	84.5	2899	36.0
Relationship Status						
Never Married	130	31.4	284	68.6	414	5.1
Cohabiting	56	18.4	249	81.6	305	3.8
Ever Married	1248	17.0	6093	83.0	7341	91.1
Total	1434	17.8	6626	82.2	8060	100.0

Table 2: Bivariate analyses of risky sexual behaviour by socio-demographic characteristics						
Explanatory variables	**Adolescent**			**Young Women**		
	Yes	**Percent**	**P-value**	**Yes**	**Percent**	**P-value**
Region			**0.002**			**<0.001**
North Central	91	42.3		289	25.5	
North East	165	41.5		533	31.7	
North West	252	45.0		700	30.1	
South East	26	28.3		76	17.1	
South South	45	38.5		161	30.6	
South West	11	21.2		113	22.0	
Place of Residence			**0.001**			**<0.001**
Urban	91	32.2		384	21.5	
Rural	499	43.4		1488	30.8	
Religion			**0.01**			**<0.001**
Christianity	136	35.0		486	23.7	
Islam	450	43.6		1355	30.1	
Others	4	30.8		31	46.3	
Level of Education			**<0.001**			**<0.001**
No education	377	45.8		1077	34.5	
Primary	76	41.3		269	27.9	
Secondary	134	31.7		496	21.1	
Higher	3	75.0		30	16.1	
Employment Status			**0.518**			**0.799**
Unemployed	331	40.4		824	28.1	
Employed	259	42,1		1048	28.4	
Wealth Index			**0.004**			**<0.001**
Poorer	399	44.5		1149	32.2	
Middle	105	35.2		408	27.8	
Richer	86	36.0		315	19.8	
Household Size			**0.009**			**<0.001**
1-2 persons	28	31.5		35	16.8	
3-5 persons	354	39.5		911	23.0	
6+ persons	208	46.3		926	37.8	
Relationship Status			**0.004**			**0.003**
Never Married	37	28.5		55	19.4	
Cohabiting	19	33.9		75	30.1	
Ever Married	534	42.8		1742	28.6	
Total	**590**	**41.1**		**1872**	**28.3**	

Table 3: Multivariate logistic regression model predicting risky sexual behaviour by group				
Explanatory variables	**Adolescent**		**Young Women**	
	Odd Ratio	**CI**	**Odd Ratio**	**CI**
Region				
North Central	1.00		1.00	
North East	0.80	0.55 - 1.16	0.99	0.82 - 1.20
North West	0.92	0.63 - 1.33	0.92	0.77 - 1.11
South East	0.78	0.43 - 1.41	0.76	0.56 - 1.04
South South	1.27	0.74 - 2.19	1.72***	1.31 - 2.24
South West	0.55	0.25 - 1.20	1.24	0.95 - 1.62
Place of Residence				
Urban	0.78	0.57 - 1.08	0.88	0.76 - 1.03
Rural	1.00		1.00	
Religion				
Christianity	1.00		1.00	
Islam	1.01	0.68 - 1.51	0.97	0.80 - 1.17
Others	0.71	0.20 - 2.52	2.01**	1.20 - 3.38
Level of Education				
No education	1.00		1.00	
Primary	0.87	0.61 - 1.23	0.78**	0.66 - 0.93
Secondary	0.62**	0.43 - 0.89	0.55***	0.46 - 0.65
Higher	3.53	0.33 - 37.89	0.50***	0.32 - 0.76
Wealth Index				
Poorer	1.00		1.00	
Middle	0.84	0.62 - 1.13	1.01	0.86 - 1.17
Richer	1.03	0.71 - 1.49	0.74***	0.61 - 0.89
Household Size				
1-2 persons	1.00		1.00	
3-5 persons	1.30	0.81 - 2.10	1.52*	1.05 - 2.22
6+ persons	1.86**	1.13 - 3.06	3.05***	2.09 - 4.45
Relationship Status				
Never Married	1.00		1.00	
Cohabiting	1.49	0.73 - 3.04	2.11***	1.40 - 3.20
Ever Married	1.59*	0.98 - 2.58	1.59**	1.15 - 2.20
* Significant at 0.05 level ** Significant at 0.01 level *** Significant at 0.001 level and1.00 is reference category				

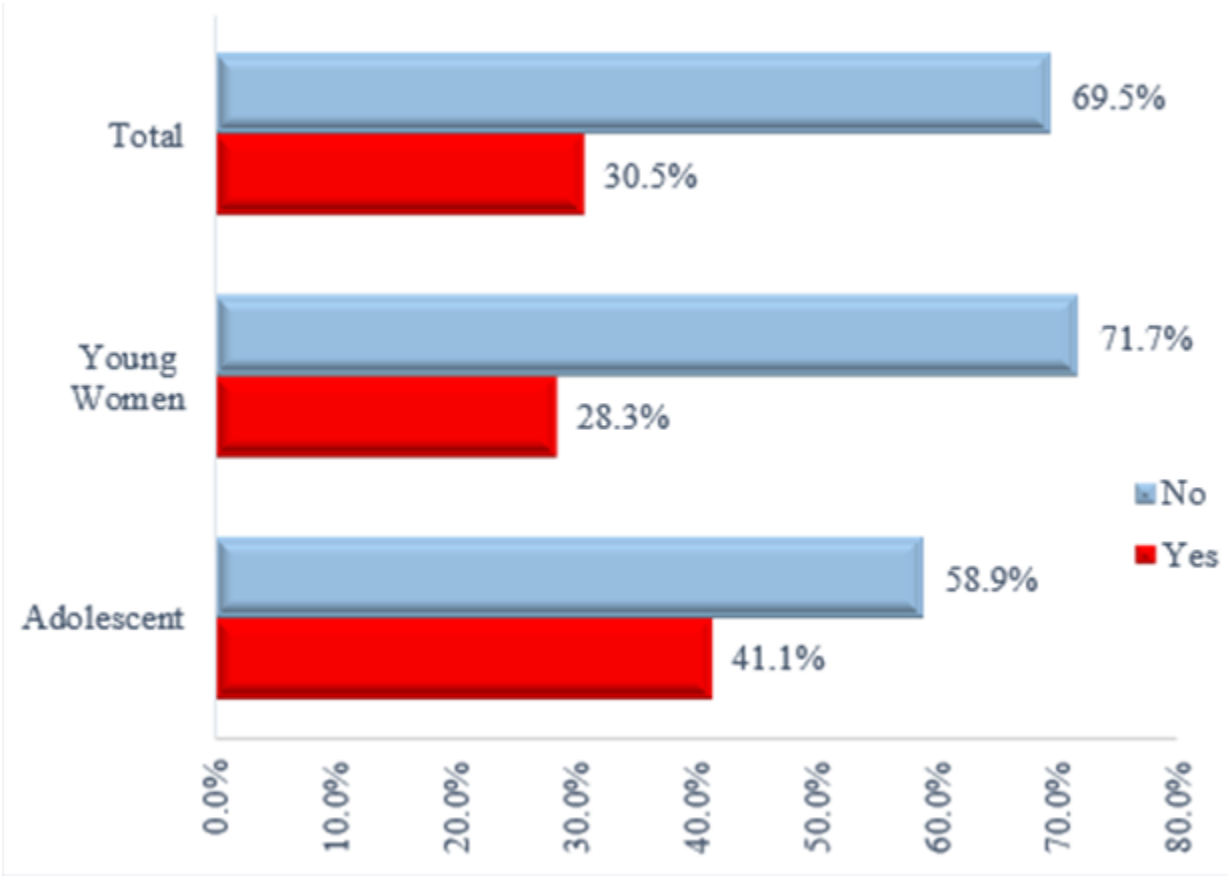

Figure 1: Distribution of risky sexual behaviour by group