

## ORIGINAL RESEARCH ARTICLE

# Do Family Structure and Poverty Affect Sexual Risk Behaviors of Undergraduate Students in Nigeria?

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## Abstract

This study examined sexual practices in a Nigerian University community with a view to understanding the role of family structure and poverty on risky sexual behaviours. A representative sample of 1,301 undergraduate students was randomly selected from the various faculties that made up the University. Using a questionnaire instrument, information was obtained on sexual behaviours of interest such as sexual initiation, multi-partnered sexual activity and condom use. Findings showed a noticeable variation in the relationship between family structure and risky sexual behaviour. Contrary to expectations, students from single parent homes showed lower likelihood of having multiple sexual partners. Also poverty was found not to be a critical determinant of risky sexual behaviour. Given the unclear nature of the findings, future study should explore further understanding of the relationship between family characteristics, poverty rating and risky sexual behaviour among students. (*Afr J Reprod Health* 2013; 17[4]: 137-149).

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**Keywords:** Sexual risk behaviour, family structure, poverty, undergraduate students, Nigeria

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## Résumé

Cette étude a examiné les pratiques sexuelles dans une communauté universitaire nigériane en vue de comprendre l'influence de la structure familiale et de la pauvreté sur les comportements sexuels à risque. Un échantillon représentatif de 1.301 étudiants universitaires a été choisi au hasard parmi les Facultés différentes qui composent l'université. Nous avons recueilli des informations sur les comportements sexuels qui nous intéressent à l'aide d'un instrument de questionnaire, tels que l'initiation sexuelle, activités sexuelles avec plusieurs partenaires et l'utilisation du préservatif. Les résultats ont montré une variation remarquable dans la relation entre la structure familiale et les comportements sexuels à risque. Contrairement aux attentes, les étudiants de familles monoparentales ont montré une moindre probabilité d'avoir de multiples partenaires sexuels. En plus, nous avons découvert que la pauvreté n'a pas été considérée comme un facteur déterminant du comportement sexuel à risque. Compte tenu de la nature incertaine de ces résultats, il faudra une étude future qui devrait explorer davantage la compréhension de la relation entre les caractéristiques familiales, le niveau de la pauvreté et des comportements sexuels à risque chez les étudiants. (*Afr J Reprod Health* 2013; 17[4]: 137-149).

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**Mots-clés:** comportement sexuel à risque, structure familiale, pauvreté, étudiants universitaires, Nigeria

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## Introduction

With 4.1% National HIV Sero-prevalence which translates to about 3.5 million people living with HIV in Nigeria, the country has the second largest burden of HIV in Africa<sup>1</sup>. Recent evidence showed that the major drivers of the pandemic in Nigeria are high rate of sexually transmitted infection (STIs) among the vulnerable groups, poverty, low condom use as well as general lack of perceived personal risk<sup>2</sup>. According to a recent estimate by National Agency for the Control of AIDS<sup>2</sup>, the

infection rate among those aged 15-24 was about 4.1% at the end of 2010. The epidemic has been reported to be rampant among Nigerian students in tertiary institutions<sup>3</sup>. If exposure to STDs and HIV/AIDS is to be reduced among Nigerian adolescents and youths, and particularly among those in the tertiary institutions, research efforts and prevention strategies must focus on factors that affect sexual risk-taking behaviors.

Most studies elsewhere have associated sexuality-related behaviors in adolescence and adulthood with characteristics of the family during

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an individual's childhood and early adolescence<sup>4-6</sup>. For example it is posited that poverty encourages early and risk sexual behavior<sup>5</sup> as youths engage in risky sexual behaviors in order to earn some incomes to take care of their needs. It is extrapolated that most students do this in order to get money to pay for their school fees and meet other pressing needs, which their parents and guardians cannot provide.

Studies have reported that family characteristics of an individual can influence his or her sexual risk-taking behavior<sup>7,8</sup>. For instance, Leigh et al<sup>8</sup>, Scott-James and White<sup>9</sup> have found that educational level of an individual parents especially that of the mother influences the age at sexual initiation. Adolescents with better educated parents tend to postpone sexual intercourse, receive sexuality education from their parents, possess greater knowledge about sexuality and have higher aspirations than those who begin having sex early in life<sup>10</sup>.

Further studies have found relationships between the number of parents in the household and the age at sexual initiation. It has been noted that being raised by a single parent is associated with early sexual debut, and vice versa<sup>11</sup> while a study in Britain found that males from single parent families were 50% more likely than those from two-parent families to have initiated sexual activity before the age of 17. The average age at first sex was two years higher for young men who were raised in a two-parent household than for those whose parents were divorced<sup>12</sup>. Even when other variables like religiosity, socio-economic status are considered, this relationship still stands. In Nigerian literature on adolescent and youth sexuality<sup>13-15</sup>; family structure has not been examined as a critical variable.

Poverty is another factor commonly associated with reproductive health outcomes. Financial uncertainty may result in the delay of marriage among the students in Nigerian educational systems. Consequently these youths may feel forced to seek nontraditional methods of achieving adult status such as initiating sex. Poverty is often the reason for the commodification of sex in which women in dire economic circumstances agree to sexual relationships with men in exchange for financial support<sup>16</sup>. In addition, parental influence

on sexuality could be indirect. For instance, a study has revealed that the farther away the parents are from their children, the more sexually permissive the children tend to become<sup>17</sup>. Early sexual experience has also been found to be associated positively with older siblings who are sexually active<sup>18</sup>.

The various studies conducted in Nigeria show sexual behavior among the unmarried adolescents is on the rise<sup>13,19</sup> while others indicate that adolescents' attitudes toward premarital sex are becoming more liberal, their awareness of contraceptives remains poor<sup>20-23</sup>. The few existing studies in Nigeria are limited in their approach both in terms of size and conceptualizations. Furthermore, focus has been on the extent of sexual behavior among youth rather than on the correlates of that behavior. Even where correlates are discussed, the factors of family structure and poverty are unexplored, though acknowledged. The few studies that have shown the importance of such factors largely concentrated on sex workers and have largely ignored the youth population amid increasing evidence that heterosexual transmission of HIV is growing rapidly in Nigerian universities and other tertiary institutions.

In order to understand the social context of sexual risk behavior and exposure to HIV, this study examines the relationship between family structure, poverty and risky sexual behaviors. Adolescent age is a time of experimentation and sexual initiation. And youths in the University campuses have found opportunity to be free from parental and familial control. Many social, cultural, economic and individual factors tend to contribute to the risk of increased risk and vulnerability among young people. Knowledge about habits and practices prevalent among adolescents and young adults is important from the public health point of view since it provides a solid basis for structuring preventive strategies evaluating on-going interventions and undertaking epidemiological surveillance.

A limited number of studies have been conducted among Nigeria tertiary students that provide general information about health behavior, prevalence of sexual behavior, data on consistent condom use or type of partner<sup>14,24-27</sup>. Though all these studies provide data on prevalence of sexual

behaviors, they were never subjected to statistical testing to measure the extent of associations. This paper specifically examines what impact poverty has on risky sexual behavior of students in a multicultural university in Nigeria. With economic downturn in Nigeria, it has been stated that this led to high rate of adolescent sexual promiscuity as a result of the disintegration of family values. This paper, therefore, examines the relationship between family characteristics, poverty status and risky sexual behaviors among university students in a federal tertiary institution in Nigeria.

### **Hypotheses**

There are two hypotheses in this paper. One is that there is a relationship between family structure and sexual risk-taking among Nigerian undergraduates when other variables are controlled. Early onset of sexual debut and risk-taking has been found to be function of a complex set of family and individual relationships<sup>28</sup>. We hypothesized here that adolescents from polygamous families are more likely to be vulnerable to poverty and hence be exposed to risky sexual behavior. In a polygamous family, there is bound to be competition for scarce resources and insufficient parental control. Because the family is the primary source of socialization and role models, the learned behaviors by the youths within the family are likely to provide the foundation for subsequent attitudes and behaviors. Two, it is hypothesized that undergraduate adolescents from families with low socio-economic status (that is poor families) are more likely to engage in risky sexual behaviors.

### **Methods**

This study was conducted in one of the oldest Federal universities in Nigeria: the Obafemi Awolowo University, Ile-Ife, Nigeria, located in the South-Western region of Nigeria. All Federal Universities in Nigeria draw students' population from across the nation since there is a centralized system of admission of undergraduates. The Joint Admission and Matriculation Board (JAMB) is the national body that regulates the admission of undergraduates into Nigerian Universities. One of

the criteria of admission is the need to encourage national spread in the admission policy of all the universities especially the Federal Universities such that indigenes from the different ethnic groups are represented in the system. This is to ensure national integration and spread. Thus this university could be said to have a fair representative of Nigerian adolescents and youths drawn from various socioeconomic and ethnic backgrounds, although the host ethnic group is dominant.

In the case of sampling process, the number of faculties in the University was first identified and research coordinators recruited in each of them. The research coordinators are on the various faculties of the University. A meeting was arranged in which the purpose of the research and its methodology were explained to the thirteen research coordinators recruited for this purpose.

These research coordinators identified lecture halls with large student population. In an identified class in a faculty, s/he sought the permission of the faculty officers and students. The purpose and objectives of the study were explained to the faculty authorities and students. About 40 students were randomly selected in each of the faculties or departments. The aims and objectives of the study were explained to the randomly selected students who gave consents to participate in the study. Other students, who were not willing, were asked to leave. This was done in order to maintain ethical standards of confidentiality and informed consent. After such sessions, in some cases, the number of respondents reduced as some of them withdrew. Where the selected students were of equal sexes, the questionnaires were distributed accordingly.

Data were collected by means of a self-administered questionnaire. The questionnaire included such sections as socio-demographic and economic variables as well as sexual practices, condom use, AIDS knowledge and attitudes. Data were collected on age, sex, grade, faculty, association memberships, religion, family characteristics and socioeconomic status. Questions were also asked on sexual debut, age at sexual initiation, number of partners, types of sexual practices, frequency of condom use, AIDS knowledge, attitudes and experience of STD

symptoms. The questionnaire was a sixteen-page document. Detailed questions were asked on the students' sexuality, perception of timing of sexual initiation, negotiation and use of preventive sexual behavior, among others.

**Table 1:** Distribution of respondents by their socio-economic and demographic characteristics controlling for gender, Nigeria

Characteristics	Male, N = 775	Female, N =518	Total, N=1293
University Level			
Part 1 (Freshers)	5.7	7.7	6.5
Part 2	13.8	16.9	15.1
Part 3	29.6	28.2	29.0
Part 4	34.2	31.1	32.9
Part 5	11.7	11.2	11.5
Part 6	5.0	4.8	5.0
Faculty			
Humanities	60.5	50.8	56.7
Sciences/Engineering	23.0	26.2	24.3
Health	16.4	22.9	19.0
Religious Affiliation			
Orthodox Christianity	74.4	80.9	76.4
Islamic	17.4	9.7	14.3
Pentecostal	9.2	9.3	9.3
Types of Association			
Social/Cultural	53.7	64.9	58.2
Religious	46.3	35.2	41.8
Place of residence when off campus			
Rural	11.9	6.6	9.8
Urban	88.1	93.4	90.2
Family Characteristics			
Father's Education			
None	24.7	17.7	21.9
Primary	18.9	9.3	15.2
Secondary	16.9	10.7	14.5
Tertiary	39.4	62.2	48.4
Mother's Education			
None	22.5	5.7	15.8
Primary	20.9	12.7	17.7
Secondary	24.5	26.1	25.1
Tertiary	32.2	55.5	41.4
Family Wealth status			
Rich	18.1	30.6	23.1
Average	75.2	68.6	72.6
Poor	6.7	0.8	4.4
Primary Source of Support			
Self	13.1	3.1	9.1
Parents	75.2	89.9	81.7
Others	10.7	7.0	9.2
Family Structure			
Monogamy	44.2	61.7	51.2
Polygamy	43.6	24.9	36.2
Single Parent	12.2	13.4	12.7

## Results

### Sample Characteristics

One-third of the students were in the 4<sup>th</sup> year of their study in the University. More than half were from the Arts faculties, which include Social Sciences, Humanities, Education, Law and Administration; while one-fifth were from the Physical Sciences. Majority of the participants were from the orthodox Christian religious groups (Catholic, Anglicans, and Baptists etc.) while 42% belonged to social-cultural students associations in the University.

Forty-eight percent of the respondents reported that their fathers had tertiary education. More of the male students had fathers who were well-educated than the females. Majority of the students reported residing in the urban areas when they are not in session. About two-fifths of the respondents reported their parents had tertiary level of education, 73% came from families of average income or socio-economic status while 51% were from monogamy families and above one-third from polygamous families. Majority of the students reported that their parents were responsible for their tuition. These characteristics vary by age and sex, though not statistically significant.

### HIV/AIDS Awareness

There is a high level of awareness of HIV/AIDS transmission routes and prevention methods. More than two-thirds of the students were aware of the link between sexually transmitted diseases and HIV/AIDS. Though awareness of HIV routes is high, there are still misconceptions: some tertiary students still believe that HIV/AIDS can be contracted by sharing of clothes, utensils and cups with kissing an infected person.

Twenty eight percent claimed they have had symptoms of sexually transmitted disease such as pain/burning during urination, unusual discharges from the penis or vagina, and or sores of bumps in the genital area. Further probing showed that most of those who experienced symptoms of sexually transmitted diseases sought for medical attention.

**Sexual Practices and Behaviour**

About two-thirds of the students in this survey reported ever having sexual intercourse, and one-fifth reported sexual experiences of different sorts. The median age for sexual initiation was 19 years, a noticeable increase from earlier studies in Nigeria which put the age at sexual debut to be 16<sup>21,22</sup>. This is higher for adolescents and young female students. The difference by the sexes and ages are statistically significant. While slightly more than two-thirds have regular sexual partners, 41% reported having non-regular sexual partner (nrsp). The adolescent male students had non-regular sexual partners three times more than female adolescents. The same is true for the young respondents of both sexes.

**Table 2:** Distribution of respondents by sexual practices and risk behaviors among Nigerian Undergraduates, Nigeria

Sexual Behavioral Patterns	Male Undergraduates	Female Undergraduates	Total sample
Sexual debut	71.5	41.9	59.6
Mean number of sex partners	3.2	1.8	2.5
Mean age at sexual debut	18.1	20.7	19.9
Sexually active in 2 months to survey	55.3	41.7	49.9
Sex with a non-regular partner	48.8	21.2	40.8
<b>Condom use with a Casual Partner</b>			
Never	13.0	32.1	17.7
Rarely	35.8	32.1	34.9
Always	51.2	35.9	47.4
<b>Condom use with regular partner</b>			
Never	13.2	19.2	14.7
Rarely	40.1	49.3	42.5
Always	46.7	41.5	42.8
<b>Last sexual act</b>			
< 4 weeks	50.2	55.6	51.7
1-3 months	34.3	25.2	31.7
3+ months	15.5	19.3	16.6

Table 2 shows that among the sexually active students, who had sexual intercourse with their

regular partners, 15% never used condoms while 43 percent rarely used. For both respondents aged < 19 years and 19-24 years, the females reported higher likelihood of inconsistent condom use than the male respondents. This difference is statistically significant. This same inconsistent condom use is obtained also among students who engage in sex with non-regular, non-steady sexual partners.

The mean number of sexual partners was 2.8 and female respondents had lower number for the two age groups than the males, a pattern that is consistent with other studies that have found that male adolescents and youths have more sexual partners than females, irrespective of age. There is a high level of sexual networking as more than two thirds reported having more than two sexual partners and two-fifths reported having sex with non-regular sexual partners and 46% expressed inconsistent use of condoms during the last sexual intercourse.

Kissing was the most frequently reported sexual practice (40%) among those who engaged in sexual activities in the preceding two months to the survey, followed by fondling, carousing, vaginal sex and stimulation of the sexual organs. Male and female Nigerian undergraduates in this institution were significantly different on the various measures of sexual behavior and risk-taking. While both engage in risky sexual behavior, male adolescents and youths take more risks than the females.

Inconsistent condom use is defined as not using condoms always when one has sex. There were significant differences in risky sexual behaviors according to gender, faculty of students, membership of association and father's education. There was significant difference in family socioeconomic status in initiation of sexual intercourse and also in primary source of financial support and family structure.

Majority of the respondents from poor families initiated sexual intercourse early followed by those from average families. Students who support themselves financially in the school and those supported from other unidentified sources apart from parents have initiated sex earlier than those sponsored by their parents.

**Table 3:** Percentage distribution of survey respondents who have ever had sex, age at first sex, multi-partner sexual relations, non-regular sexual partnership and inconsistent condom use by selected characteristics, Nigeria

Characteristics	% N = 1301	Sex debut	Age at sex < 19 years	2 + Sex Partners	Casual Partner (NSRP) <sup>†</sup>	Sex Inconsistent condom use
Total	100	59.6	57.6	64.8	40.8	45.8
Gender						
Male	60.1	71.5*	62.8*	71.2*	48.8*	47.2
Female	39.9	41.9	43.9	45.2	21.2	42.7
Faculty						
Arts	56.7	71.9*	56.9*	66.1*	41.5*	42.8
Sciences	24.3	43.7	68.9	75.5	46.9	53.4
Health Sciences	19.0	43.6	49.4	49.2	29.6	48.1
Year on Campus						
Year 1	6.5	61.3	62.5	68.2	27.9	40.0
Year 2	15.1	51.4	70.8	70.2	38.5	34.7
Year 3	29.0	60.9	51.6	65.4	43.9	48.5
Year 4	32.9	66.5	56.8	62.1	43.2	45.5
Year 5	11.5	51.8	54.1	63.4	36.8	57.4
Year 6	5.0	50.0	70.8	62.5	35.7	36.8
Membership of Association						
Religious association	58.2	53.5*	54.9	56.8	32.2*	42.6
Cultural association	41.8	65.8	62.1	68.0	46.8	50.6
Religious affiliation						
Christianity	76.4	58.2	58.4	65.5	43.2	47.5
Islam	14.3	65.9	56.9	70.6	35.7	38.9
Evangelical churches	9.3	61.1	57.7	46.2	30.4	45.8
<b>Family characteristics</b>						
<b>Parents Education</b>						
None	21.9	62.2*	52.1	66.7	29.9*	44.4
Primary	15.2	71.6	43.3	59.4	36.5	43.9
Secondary	14.5	68.6	61.4	61.7	44.7	41.5
Tertiary	48.4	52.5	65.9	67.3	46.5	48.4
<b>Family socioeconomic status</b>						
Wealthy	23.1	50.5*	57.1	63.8	38.9	39.8
Average	72.6	61.9	58.2	65.4	42.1	46.0
Poor	4.4	80.0	53.7	66.7	31.7	63.9
Primary Source of Support						
Self	9.1	82.5*	44.4*	70.3	40.5	41.1
Parents	81.7	55.8	61.5	66.5	40.7	45.6
Others	9.2	72.7	45.6	48.7	42.7	53.9
Family Structure						
Monogamy	51.2	51.3	58.9	61.7	43.8	49.4
Polygamy	36.2	69.4	54.9	68.1	39.9	42.8
Single parent	12.7	69.0	63.8	66.0	41.3	44.2

\*p<0.05, (NSRP)<sup>†</sup> = Non-regular sexual partner.

Respondents from polygamous families have had sexual intercourse than those from monogamous families, though there is no much difference

between them in age at first sex. More than two-thirds of the students from single parents home have had first sex before age 19. More of the

students from monogamous and single parent homes have had casual sex partners.

### **The Multivariate Analysis**

#### **Age at Sexual Debut**

Only four variables were significant in predicting the likelihood of having initiated sexual intercourse at ages less than 19 years. Female students had a lower odd of initiating sexual intercourse before or at age 19 than male students (OR =0.29). Those who have experienced STD symptoms had 2.11 odds of initiating sexual debut early in life when compared to those who did not. This sounds reasonable. Those who watch blue

films (X-rated pornographies) showed a higher likelihood of sexual initiation before or at age 19 than those who do not (OR = 2.48).

Looking at family wealth variables, the analysis shows that students from average and poor homes had lower risk of initiating sexual intercourse before age 19 when compared to those from the wealthy families. It is also noted that the respondents from polygamous and single parent homes were less likely to have initiated sexual intercourse before age 19 relative to those from monogamous homes. Parental communication on birth control and consequences of premarital sex showed no significant effect on age at sexual initiation.

**Table 4:** Logistic regression of factors predicting undergraduates' risky sexual behavioral patterns in Nigeria.

<b>Variables</b>	<b>Sexual debut @ &lt; 19</b>	<b>2 + Sexual partners</b>	<b>Non-regular sexual partner</b>	<b>Inconsistent condom use</b>
<b>Individual Characteristics</b>				
<b>Year of Study</b>				
Year 1	1.0	1.0	1.0	1.0
Year 2	1.77	0.29	0.90	0.13**
Year 3	0.47	0.078*	5.33	0.31
Year 4	0.91	0.12**	11.58*	0.19
Year 5	1.09	0.289	7.91	0.29
Year 6	2.38	0.13	2.23	0.48
<b>Faculty</b>				
Arts	1.0	1.0	1.0	1.0
Sciences	1.23	1.65	0.53	1.10
Health Sciences	0.50	0.13*	0.48	0.86
<b>Association Membership</b>				
Religious Association	1.0	1.0	1.0	1.0
Social/cultural groups	1.15	1.39	1.81	1.52
<b>Religious Affiliation</b>				
Orthodox Christian groups	1.0	1.0	1.0	1.0
Islam	0.77	0.92	1.56	1.48
Pentecostal	1.14	0.73	0.25	0.62
<b>Gender</b>				
Male	1.0	1.0	1.0	1.0
Female	0.29*	0.21*	0.11*	0.22*
<b>Family Variables</b>				
Number of siblings	1.01	0.69	0.94	1.06
<b>Father's education</b>				
None	1.0	1.0	1.0	1.0
Primary	0.55	0.69	1.36	1.99
Secondary	0.65	0.35	2.39	0.46
Tertiary	1.94	2.09	13.28*	1.73
<b>Family Status</b>				
Wealthy	1.0	1.0	1.0	1.0
Average	0.62	0.54	0.15	1.12
Poor	0.62	2.01	0.58	2.78
<b>Family Structure</b>				

Monogamy	1.0	1.0	1.0	1.0
Polygamy	0.89	2.77*	2.49	0.51
Single parent	0.94	2.04	0.61	0.53
<b>Parental communication</b>				
Birth Control	1.11	1.13	1.58	0.64
Consequences of premarital sex	0.99	1.10	1.02	0.77
Ever had STD	2.16*	0.46	1.46	1.86
Aware of HIV/AIDS	2.74	0.49	0.096	0.49
Read Pornographic materials	1.16	1.75	4.09*	2.40
Watch blue films	2.48**	2.33	1.29	0.63
Multi-sex partners	NA	NA	6.51*	1.17
<b>Financial support</b>				
Self	1.0	1.0	1.0	1.0
Parents	1.48	1.19	1.65	1.40
Others	0.86	0.53	3.02	0.52
Age at Sexual debut	NA	NA	2.33	1.12
Number of observations	265	142	132	116
LR Chi2 (27)	62.25	57.1	72.82	26.20
Prob > X2	0.0001	0.0006	0.000	0.6142
Log likelihood	-143.997	-66.231	-55.071	-67.028
Goodness-of-fit test				
Pearson X2	271.4	127.3	167.1	114.92
P	0.0566	0.1861	0.0001	0.0203
Positive Predictive Value	75.5%	81.11%	81.7%	68.8%

\*p<0.05, \*\*p<0.01

### **Risky Sexual Behaviors**

Here we examine predictors of multiple sexual partnership, non-regular sexual partnership and condom use.

#### **Multiple Sexual Partnerships (2+)**

Assessment of the correlates of multiple sexual partnerships among the respondents shows the effects of four significant factors. Those students who have spent more years in the university showed less likelihood of having multiple sexual partners than the first year students. This could be as a result of experiences they have had. Students from the Health Science Faculty were less likely to have more than two sexual partners relative to those from the Arts Faculty, a possible result of effect of the programme they do. Female respondents were less likely to have multiple sex partners than the males. This has been observed elsewhere<sup>14</sup>.

None of the family characteristics variables is significant, although undergraduates from poor family background were 2.01 times more likely to have multiple sex partners than those from the

wealthy homes. Also those from polygamous and single parent homes were more likely to have multiple sexual partners. Experience of STD symptoms and awareness of HIV shows a lower odd of having multiple sexual partners. Those who have experienced sexually transmitted diseases and are aware of HIV/AIDS were less likely to have multiple sexual partners.

#### **Non-regular Sexual Partners**

The significant predictors of non-regular sexual contact include students' year of study, gender, family socio-economic status, pornographic materials and multiple sex partners. Respondents' who have spent more than two years in the University showed likelihood of having sex with non-regular sex partners relative to first year students. However part six students (who are mainly medical students) showed lower odds of having non-regular sexual partners. These students are aware of the implication of non-steady sexual partnership. Consistently, female respondents showed lower odds of having non-regular sex partners (OR = 0.11). Islamic and Pentecostal religious undergraduates had lower odds of having

non-regular sexual partners than those from the orthodox religious groups.

In the family poverty status, it is shown that undergraduate respondents from average and poor homes were less likely to have non-regular sexual partners (OR = 0.15 and 0.58). This is an unexpected finding or at least disproving the poverty-sexuality connections. Although in terms of family structure, respondents from polygamous families were 2.49 times more likely to have non-regular sexual partners relative to those from monogamous family.

Types or content of parental communication have different effects. For one, parental communication on birth control has a positive effect on the likelihood of having sex with non-regular sexual partner (OR = 1.71). Such respondents could try to have sex with non-steady sexual partners but would use a condom. In fact a cross tabulation shows that even though these respondents would have sex with non-regular partners, they still used condom for protection against infection and unwanted pregnancy. However communication on premarital sex consequences showed the opposite effect. Interestingly, those who have experienced STD symptoms and are aware of the existence of HIV/AIDS have lower odds of having sexual intercourse with non-regular sexual partners.

Access to pornographic documents or materials has also a positive predictive power. Those students who have watched pornographic films were more likely to have multiple sexual partners. Students who have multiple sex partners are 7.81 times more likely to have non-regular sex partners. This is expected as one of the many partners could be a non-regular or casual sex partner.

**Inconsistent Condom Use**

Though condom use is reported to be common, what is of utmost importance is how often it is used. Inconsistency in condom use could be an avenue for STI transmission. Inconsistent condom use by the student respondents was most influenced by father’s education (primary OR = 1.99; Tertiary OR =1.73). No family variable was significant, although the expected pattern of relationship is observed. For example, students

from average, polygamous, single parent families have lower likelihood of inconsistent condom use than otherwise.

**Table 5:** Odds ratios of family variables affecting risky sexual behaviors of undergraduates in a Nigerian Federal institution.

<b>Familial Variables</b>	<b>Sexual debut @ &lt; 19</b>	<b>2+ sexual partners</b>	<b>Non-regular sexual partners</b>	<b>Inconsistent condom use</b>
<b>Father’s education</b>				
None	1.0	1.0	1.0	1.0
Primary	0.79	0.92	1.65	1.05
Secondary	1.32	1.04	2.07*	0.95
Tertiary	1.74*	1.45	2.29*	1.44
<b>Family status</b>				
Wealthy	1.0	1.0	1.0	1.0
Average	0.97	1.08	1.04	1.42
Poor	0.85	1.20	0.49	3.09*
<b>Family Structure</b>				
Monogamy	1.0	1.0	1.0	1.0
Polygamy	1.06	1.02	0.61*	0.73
Single parent	1.26	1.02	0.68	0.73
<b>Parental Communication</b>				
On Birth control	1.19	0.96	0.99	1.26
On Consequences of premarital sex	1.14	1.009	1.40	1.115
Number of siblings	1.011	1.14*	1.05*	1.03
<b>Financial support</b>				
Self	1.0	1.0	1.0	1.0
Parents	1.64	0.82	0.49*	1.06
Others	0.87	0.42	0.72	1.33
Number of Observations	521	285	513	457
LR Chi2 (12)	29.01	18.41	33.06	21.66
Prob > X2	0.0039	0.1038	0.0009	0.042
Log likelihood	-	-	-	-304.269
Goodness-of-fit	335.558	178.355	330.578	
Pearson Chi2	512.12	278.10	495.6	445.81
P>X2	0.2881	0.3229	0.4095	0.3623
Power of predictive value	64.2%	65.6%	65.6%	56.7%

\*p<0.05, \*\*p<0.01

The observed patterns and direction of the effect of family characteristics, socio-economic status, and poverty status of students did not differ when we examined the factors independently in a univariate model. This indicates that their effects can only be observed when other variables are controlled in a model (Table 5).

Eliminating all the variables except the family ones refined the models. The significant variables remain the same. There is no change in the pattern and direction of the effects. All the models displayed differing predictive power or values. The model of age at sexual initiation has a 75% positive predictive value with a goodness-of-fit test of  $\alpha = 0.05$ . The model for number of sexual partners also has 81% positive predictive value although the goodness-of-fit is not significant. Multiple sexual partners model has 82% of predictive power with a significant goodness-of-fit model of  $\alpha = 0.0001$  while the model for inconsistent condom use has a goodness-of-fit significance of  $\alpha = 0.02$  with a 68% positive predictive value.

## Discussion

This study describes HIV risk behavior of undergraduates in a Nigerian Federal institution whose population belongs to the public sector strata. The information will be particularly relevant for health intervention for adolescents and youths in Nigerian institutions especially in view of the urgent need to prevent the spread of HIV/STDs among this population.

Early sexual debut is common. There is knowledge and high use of condoms. Casual sexual partnership is common also. More than two-thirds of the sexually active respondents claimed they used condoms to protect themselves against unwanted pregnancy, STIs and HIV/AIDS. Inconsistent condom use (that is not using condom always in a sexual act) is also evident even when sexually active with a non-regular sexual partner. In other words, some respondents who reported sexual intercourse with non-regular sexual partner did not use condoms. About 18% never used condoms with a non-regular sexual partner, 35% rarely used. This shows that more than 53% are

inconsistent condom users with non-regular sexual partners and 58% also reported inconsistent condom use with regular sexual partners. While 15% never used a condom with a regular sexual partner 43% rarely used. The median number of multiple sexual partners each student respondent had was 2.8 and this varies significantly by gender: male students have more sex partners than female ones. Thus there is a high level of sexual networking among the students irrespective of sex, though male students are sexually networked.

There is a high level of awareness of HIV/AIDS transmission routes and prevention but this does not translate into safer sex behavior, as there is a level of inconsistent condom use (46%) and multiple sexual partnerships (65%). There is also a certain level of misconception of the routes of transmission as one-quarter believe that kissing, insect bites, sharing clothes, utensils with an infected person can transmit HIV or expose them to the infection, respectively. Two issues are clear from this finding. One, knowledge of HIV/AIDS does not translate into behavior change. Thus this supports Rwenge's view that informing and educating youths about sex and AIDS seems not to be sufficient to motivate sexual behavioral change between the adolescent and youths<sup>29</sup>. Two, continued AIDS education should address the various misconceptions associated with the disease. Further challenge to HIV/AIDS prevention activities in Nigeria is in the area of high level of sexual networking and inconsistent condom use, even with casual sex partners. Consequently, AIDS prevention programs should place a greater emphasis on fidelity, reducing the number of sex partners no matter the pressure to have more sexual partners and consistent condom use with regular and non-regular sexual partners.

One of the findings of this study is the insignificance of some of the family variables in the multivariate model. Though respondents from average and poor families have lower risk of initiating sex at or before age 19, those from poor families have a greater likelihood of sexual initiation. This confirms the poverty-sexual behavior hypothesis that early sexual behavior is driven by the extent of poverty among the youths. However, poverty variable does not consistently

affect risky sexual behaviour. Family structure variable has lower risk or odd, so also parental communication. These two variables do not affect the likelihood of early sexual initiation among the students population.

Multiple sexual partnerships are a possibility for students from poor, polygamous, single parent families. This tends to support the hypothesis that poverty and family structure are critical factors affecting having more than two sexual partners. Incredibly, students from single parent homes showed lower risk of engaging in multiple sexual partners. Parents' education is also not significant in the prediction of risky sexual behaviors, so also other family characteristics. Parental communication on birth control has a lower odd (OR =0.96) of affecting age at sexual initiation; higher odd (OR = 1.46) of multiple sexual partnerships, non-regular sexual partnership (OR = 1.71) and lower odd of inconsistent condom use (OR = 0.62). In other words, those respondents whose parents communicated effectively on birth control issues were less likely to initiate sexual intercourse before or at age 19 and or engage in inconsistent condom use when sexually active. Moreover students whose parents communicated on consequences of premarital sex have lower odds of engaging in risky sexual behaviors.

The role of access to pornographic materials has positive effect on the practice of risky sexual behaviors. Either reading or watching pornographic materials lead to risky sexual behavior. The need for government regulation of these materials cannot be overemphasized. Parental characteristics, family structure and socio-economic status do not show a consistent significant effect on the risky sexual behavior. While elsewhere, it has been found that non-cohabitation of parents has a positive effect on risky sexual behavior<sup>29</sup>; this study does not support the claim. For example, undergraduates from single parent homes have lower odds of sexual initiation at age 19, non-regular sexual partner and inconsistent condom use relative to those from wealthy homes. Also it is expected that students who sponsor themselves in the university should be engaging in risky sexual behavior as a means of financial empowerment to pay their tuition and other fees, the findings rather show that students

who are supported by their parents were more likely to engage in risky sexual behavior. This could be explained by the fact that self-sponsored students would be conscientious and diligent with their study and would not engage in sexual experimentations.

### *Limitations and strengths of the study*

The use of self-administered questionnaires might have led to some inconsistencies and missing information. This does not provide opportunity to clarify a number of issues. Nevertheless, this method confers confidentiality than face-to-face interviews. A high degree of reliability may have been obtained if both quantitative and qualitative data have been collected from respondents, parents and sexual partners. The data is a cross-sectional one hence most variables had to be measured retrospectively, thus relying on respondents' opinions. A longitudinal approach would have revealed more dynamic and useful information. To create a better framework to study socioeconomic correlates of risky sexual behavior, we need multi-level designs. While macro-level design will be too large-scale and presumes community homogeneity in variance explanation, individual-level survey reveals little about the cultural and institutional environment surrounding the household.

Future studies should address these issues and explore further understanding of the relationship between family characteristics, structure, poverty rating and risky sexual behaviors. Sexual behavior is a complex phenomenon influenced by a wide-range of variables – physical, socio-cultural, intellectual and emotional. More factors need to be examined as possible predictors of risky sexual behavior. Examples include physical cognitive, emotional and sexual development, values, childhood religiosity, personality and tendency to interact socially. Also further studies should include additional parental variables to measure such factors as parental supervision, aspirations for children, parental values and extended family relationships.

This study has implications for reproductive health policy since it contributes to the knowledge of the risk situation of Nigerian adolescents and

youths. For reproductive health education interventions, it provides a basis for designing strategies to prevent HIV/AIDS in the University environment. The results of this study show a high level of awareness of HIV/AIDS routes of transmission and prevention methods, although there is an appreciable level of inconsistent condom use when sexually active. Further studies should investigate issues of beliefs and norms that affect condom use. That fewer sexually active students never used condoms with regular sexual partners and almost equal percentage rarely used and always uses condoms when compared with those who use condoms with non-regular sexual partners is an indication that sexually active individuals do not use condoms with their regular sexual partners because of 'love and trust'. This study has provided additional evidence on the increasing level of sexually transmitted diseases in this Nigerian University as 28% of the sample reported experience of sexually transmitted diseases and or its symptoms in recent times. This lends more credence to the need for reproductive health education in tertiary institutions.

## Conclusions

Previous studies have posited that poverty is an important predictor of risky sexual behavior. It is argued that poverty plays significant role in influencing sexual decision-making by limiting individual's decision-making powers in sexual relationships. Hence when applied to the University undergraduates one expects that students from poor homes and those on self-sponsorship are likely to engage in risky sexual behavior.

This analysis confirms this position although the relationship is not significant and the pattern not consistent. This study found that student from poor homes have 1.29, 2.01 and 2.70 odds of initiating sexual activity before age 19, having multiple sexual partners and engaging in inconsistent condom use - a possibility that they lack the powers to negotiate for safer sex. Yet the same study shows that they have a lower odd of having non-regular sexual partner. The lack of qualitative data in this study denies the opportunity

of exploring the reason for this pattern of behavior. This pattern of relationship needs further examination.

## Contribution of Authors

CO was the principal investigator, and writer. SAA participated in the drafting of the manuscript. All the authors read and approved the final manuscript.

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