



## Survey of HIV/AIDS Knowledge and Behavior-Risk among in-School Adolescents and Youths in Ebonyi State, Nigeria

A. F. Chizoba<sup>1</sup>, H. N. Chineke<sup>2</sup> and P. O. U. Adogu<sup>3\*</sup>

<sup>1</sup>Renewal Health Foundation, Nigeria.

<sup>2</sup>Department of Family Medicine, Imo State University, Orlu, Nigeria.

<sup>3</sup>Department of Community Medicine, Nnamdi Azikiwe University, Awka, Nigeria.

### Authors' contributions

This work was carried out in collaboration among all authors. Author AFC designed the study and performed the statistical analysis. The literature searches were managed by author HNC while the protocol and the first draft of the manuscript were written by author POUA. All authors read and approved the final manuscript.

### Article Information

DOI: 10.9734/AJRID/2020/v5i430174

#### Editor(s):

(1) Dr. Win Myint Oo, SEGi University, Malaysia.

#### Reviewers:

(1) Ângelo Souza Lobo, Universidade Federal da Bahia – UFBA, Brazil.

(2) Leen Kavulavu, Karatina University, Kenya.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/63510>

Original Research Article

Received 20 September 2020

Accepted 25 November 2020

Published 08 December 2020

### ABSTRACT

Adolescents and youths are at high risk due to knowledge gap and behavior risks related to HIV. Despite the well-known need for protection from HIV infections and other reproductive health risks, being an adolescent coupled with social and economic status could limit access to information and services. This is a study to ascertain the HIV/AIDS Knowledge and behaviour-risk among in-school adolescents and youths in Ebonyi State, Nigeria.

It is a descriptive cross-sectional study involving 1831 in-school adolescents selected by multi-stage sampling technique.

Females showed higher knowledge at 52.2±20.1 than males at 47.5±20.3 (p<0.001). Also the urban youths had higher knowledge (47.1±20.8) than rural schools (41.3±20.3). Conversely, males displayed higher behaviour risk at 44.8±24.5 than the female at 39.9±24.6 (p<0.001). Highest behaviour risk was observed in age group 16-20 years (51.2±25.8). Schools in urban setting had higher behaviour risk (56.1±25.5) than rural schools (41.3±23.7), while knowledge of HIV

\*Corresponding author: E-mail: [po.adogu@unizik.edu.ng](mailto:po.adogu@unizik.edu.ng);

transmission was highest as 63.8% of the respondent scored  $\geq 50$  in 5 HIV questions on knowledge of transmission. Also 48% (370) of the 778 participants who ever had sex had used condom while 50% (915/1831) of the study population were willing to abstain from sex till marriage. There is a strong need for appropriate regular and intensified HIV/AIDS risk reduction interventions to capture the attention of youths especially males, and to ensure sustainable and effective outcomes in secondary schools of Ebonyi state Nigeria.

*Keywords: HIV/AIDS; knowledge; behaviour risk; in-school; adolescents.*

## 1. INTRODUCTION

The Human Immunodeficiency Virus/Acquired immunodeficiency Syndrome (HIV/AIDS) pandemic has had a particularly devastating effect on young people throughout the world [1]. Adolescents and young adults aged 15 to 24 years account for half of all new HIV infections globally [2]. In some developed countries, although youths aged 15 to 24 years constitute only 25% of the sexually active population, they account for about half of new sexually transmitted diseases (STD) (including HIV) cases [3]. Despite the well-known need for protection from HIV infections and other reproductive health risks, being an adolescent coupled with social and economic status could limit access to information and services. Even when services do exist, providers' attitudes about adolescents having sex could pose a significant barrier to use of those services. Overall it appeared that a significant proportion of adolescents remained underserved. School-based health services is a strategy for the provision of health care services-with inclusion of HIV risk reduction education- to adolescents.

Adolescents are at age where they have difficulty understanding complex concepts, or the relationship between behaviour and consequences, or the degree of control they have or can have over health decision-making, including that related to sexual behaviour. This difficulty may make them particularly vulnerable to sexual exploitation and high-risk behaviours for contracting HIV. Adolescence is typically a period of experimentation, new experiences, and vulnerability which influences their HIV risk behaviours. Such behaviours include experiment with injecting drugs, alcoholism, sexuality, and sexual orientation (men may begin to have unprotected sex with other men), unprotected sex for gain, and some are exploited sexually. Millions of adolescents who are becoming sexually active live in countries with a high burden of HIV.

Ebonyi State, Nigeria has HIV prevalence rate of 0.9% [4]. But the state is surrounded by relatively high HIV prevalence states (Benue; 5.6%, Cross river; 4.4% and Enugu; 1.3%) which increases risk of cross infection between Ebonyi and these states. Moreover, according to the National Bureau of Statistics [5]. Ebonyi state has adolescents and young adults aged 10-24 years comprising 42% of the population, and a 73.6% poverty rate which is directly proportional to illiteracy and ignorance on health-related issues like HIV. Also adolescent age group in Nigeria roughly corresponds with the secondary school age (junior secondary school 1 to senior secondary school 3). Therefore, the objective of this study is to determine HIV/AIDS knowledge and behaviour risk among in-school adolescents and young adults in Ebonyi State, Nigeria.

## 2. METHODOLOGY

Ebonyi is a South Eastern state of Nigeria with an estimated population of about 2.8 million. There are three senatorial districts in Ebonyi State; North, Central and South. Government secondary schools in the state comprises of 221 schools (63 from central, 82 from North and 76 from South senatorial districts) with approximately 222,510 senior secondary school students [6]. Ebonyi State comprises of 1,064,156 (49%) males and 1,112,791(51%) females [5]. Age groups include 41% in age range of 0-14 years, 55% in 15-64 years and the remaining 4% are in >64 years [5].

### 2.1 Study Population

This includes adolescents and young adults in Ebonyi state who are in senior secondary classes. Specifically, school-based adolescents and young adults from government schools, co-educational schools (boys and girls)- and who are in senior class 1, 2 and 3- will be included in the study.

## 2.2 Study Design

This is a descriptive cross-sectional study, a baseline component of a larger interventional study in the state.

## 2.3 Sample Size Determination

(This survey is the initial part of a large interventional study) Therefore, RAOSOFT software, [7] a statistical software for sample size calculation was used to generate minimum sample size for the study. Sample size for total population of 222,510 was generated at 1602. Population of senior secondary school students per school was 1000 which resulted to sample size of 278 per school. To allow for anticipation of 10% attrition, 56 participants were added making a minimum sample size of 334 participants per school. This resulted to total of 2004 participants across the six (6) selected schools.

## 2.4 Sampling Technique

Multistage sampling method was used. Sample frame used was list of secondary schools from Ebonyi State secondary education board [6]. By simple random sampling (balloting), 2 senatorial districts (Ebonyi north and central) in the State were selected. Also by balloting, 2 government schools (1 rural and 1 urban) were selected in each of the 2 senatorial districts. The selection was done using four ballot boxes; two boxes (1 rural and 1 urban) were assigned to each senatorial district. One box contained names of rural mixed government schools written in folded pieces of paper while the second is that of urban schools. One paper each was picked from each of the boxes, 1 rural and 1 urban area of the 2 senatorial districts making a total of 4 schools. Thus 502 participants were selected per school (of 4 schools); 668 per rural and 668 per urban schools, all amounting to 2008 study participants.

## 2.5 Study Instruments

Questionnaire used for the study was a self-guided questionnaire adapted from Family Life HIV Education (FLHE) training manual and from Centre for Disease prevention and Control (CDC) HIV behavioural risk assessment tool.

**Questionnaire for HIV/AIDS Knowledge and behavior risk assessment among adolescents and young adults:** Questionnaire was self-

administered and comprised of 6 questions on demographic characteristics; 12 questions on knowledge, 29 questions on behaviour and 4 indirect questions on reasons for behaviours. Questions from both FLHE manual and CDC behaviour risk assessment tool were adapted to elicit responses on sexual behaviors related to sexually transmitted infections including HIV infection; behaviors that contribute to alcohol and other drug use. Also responses on demographics of participants: age, sex, class and school setting, HIV/AIDS knowledge and HIV/AIDS behaviour risk; sexual related behaviour; condom use; non-sexual related behaviour; and willingness to improve behaviour were elicited.

## 2.6 Pre-Test and Validity of Instrument

Study instruments were pre-tested, validated and used in previous studies. [8,9] and thus considered pre-tested and valid for this study.

## 2.7 Data Management and Data/Statistical Analysis

Data was analyzed using SPSS version 20.0. Categorical data were displayed in the form of rates, and measurement data were presented as means for knowledge and behavior risk scores. Descriptive statistics (mean, percentages and frequency count) was used for analysis of demographics. ANOVA was applied to compare the means of groups, t test applied to compare knowledge and behavior risk scores within each group, while independent chi square was applied to test significance in nominal variables.

## 3. RESULTS

Two thousand and six (2006) students were recruited for study. Completed data were obtained on 1831 students (91% of the original pretest sample). The average non-response/attrition rate for all groups was 9%.

The Table 1 below; displays demographic characteristics of participants for the study. The highest age range of the total population is 16-20. Also there were more females (68.8%) than males (31.2%) participants. Proportions of participants in classes and settings are relatively similar.

**Table 1. Demographic characteristics of respondents**

Variable	Total n=1831 Frequency (%)
<b>Age</b>	
11-15	767(41.9)
16-20	913(49.9)
21-24	149(8.1)
<b>Gender</b>	
Male	572(31.2)
Female	1259(68.8)
<b>Class</b>	
SS1	605(33.0)
SS2	623(34.0)
SS3	601(32.8)
<b>School setting</b>	
Rural	905(49.4)
Urban	926(50.6)

Table 2 displays analysis of difference in knowledge mean scores among participants across socio demographics of respondents. Females showed higher knowledge at 52.2±20.1 than males at 47.5±20.3 (with p<0.001). Highest knowledge was found among age 21-24(49.0±20.6) and lowest among age 11-15 (47.3±19.2). Among school setting, the urban settings had higher knowledge (47.1±20.8) than rural schools (41.3±20.3).

**Table 2. HIV knowledge mean scores by socio demographics of respondents**

Social demographic variables	Total Mean ±SD (n=1831)
<b>Sex</b>	
Male	47.5±20.3
Female	52.2±20.1
t test (P value)	376.47(<0.001) *
<b>Age</b>	
11-15	47.3±19.2
16-20	48.8±25.7
21-24	49.0±20.6
ANOVA (P value)	44.20(<0.010) *
<b>School setting</b>	
Rural	41.3±20.3
Urban	47.1±20.8
t test (P value)	243.29(<0.001) *

Table 3 shows analysis of difference in behaviour risk mean scores among participants across socio demographics. Males had higher behaviour risk at 44.8±24.5 than female counterpart at 39.9±24.6 at p<0.001. Highest behaviour risk

was observed in age 16-20 years (51.2±25.8) and lowest among age 11-15 (34.5±22.7). Also, schools in urban setting had higher behaviour risk (56.1±25.5) than rural schools (41.3±23.7).

**Table 3. Behavior risks mean score by respondents' socio demographics**

Social demographic variables	Total Mean ±SD
<b>Sex</b>	
Male	44.8±24.5
Female	39.9±24.6
t test (P value)	15.301(<0.001) *
<b>Age</b>	
11-15	34.5±22.7
16-20	51.2±25.8
21-24	41.0±24.4
ANOVA (P value)	25.144(<0.001) *
<b>School setting</b>	
Rural	41.3±23.7
Urban	56.1±25.5
t test (P value)	16.302(<0.001) *

\*Statistical significance

Table 4 shows that out of the three main categories of Knowledge (HIV transmission, detection and prevention) assessed, knowledge of HIV transmission was highest as 63.8% of the respondent scored ≥50 in 5 questions assessing knowledge of HIV transmission. This is followed by knowledge on detection as 54.5% of respondents scored ≥50 in 4 questions assessing detection while least knowledge was on prevention as only 35.6% scored ≥50 in 3 questions assessing knowledge on prevention.

**Table 4. HIV knowledge across assessment categories**

Assessment categories	Total (N=1831) Frequency (%)
HIV transmission	1168(63.8)
HIV detection	998(54.5)
HIV prevention	651(35.6)

Table 5 displays sexual risk score across assessment categories. While 43% have ever had sex, 38% of them have had sex before 15 years and 31% are currently having sex (<3 months ago). Sixty two percent (62%) of the population who are currently having sex have only one sexual partner whereas 38% have more than one partner. Sixty seven percent (67%) have sex has frequent as more than ones a

months and very low number (2%) fall into category of MSM.

Table 6 displays condom use assessment, a major HIV behaviour risk indicator. It shows that 48% (370) of the 778 participants who ever had sex had used condom. However, only 30% (171) of the 568 persons currently having sex are currently using condom. Moreover, only 5% (16 out of 352) and 12% (25 out of 216) are consistent in use of condom with regular partner and more than one partner respectively.

According to Table 7, non-sexual risks are low. Barely 5% (92/1831) of the total population reported to have had sex under influence of alcohol. Only 0.1% are sharing drug injection needles as a risk for HIV infection.

As displayed in Table 8, while 50% (915/1831) of the total population are willing to abstain from sex till marriage, 39% (714/1831) are willing to have only one sexual partner while as low as 9% (165/1831) are willing to consistently use condom.

**Table 5. Sexual risk among respondents**

<b>Assessment categories</b>	<b>Total Frequency (Percentage)</b>
Ever had sex (among all population)	(n=1831) 778(43%)
Early sexual debut (at <15 years) (among population who ever had sex)	(n=778) 298(38%)
Currently having sex (<3 months) (among all population)	(n=1831) 568(31%)
Currently have only 1 regular sexual partner (among population currently having sex)	(n=568) 352(62%)
Currently have more than 1 sexual partner (among population currently having sex)	(n=568) 216(38%)
Current frequency of sex>1 per month (among population currently having sex)	(n=568) 383(67%)
Current having same gender sex(MSM) (among population currently having sex)	(n=568) 12(2%)

**Table 6. Condom use among respondents**

<b>Assessment categories</b>	<b>Total Frequency (Percentage)</b>
Ever used condom (among population ever had sex)	(n=778) 370(47.5%)
Currently using condom (among population currently having sex)	(n=568) 171(30.1%)
Consistently using condom with the one regular sexual partner (among population currently having one regular sexual partner)	(n=352) 16(4.5%)
Consistently using condom with more than one regular sexual partner (among population currently having more than one regular sexual partner)	(n=216) 25(11.6%)

**Table 7. Non-sexual risks among respondents**

<b>Assessment categories</b>	<b>Total (N=1831) Frequency (%)</b>
Sharing of drug injection needles	1(0.1)
Have sex under influence of alcohol or drug	92(5.0)

**Table 8. Willingness to improve behaviour among respondent**

Assessment categories	Frequency (%) (N=1831)
Willingness to abstain till marriage	915(50.0)
Willing to have only one sexual partner	714(38.9)
Willingness to consistently use condom	165(9.0)

The above Fig. 1 displays reasons for having sex among respondents. Highest reason being that they enjoy sex, 46.0% (842/1831), followed by being told to do it by friends at 19.0% (348/1831), then showing they are matured at 15.0% (275/1831), to make their partner happy at 14.0% (256/1831), being forced to at 2.0% (37/1831) and no reasons at 4.0% (73/1831) being because they enjoy it and 2% being because they are forced to.

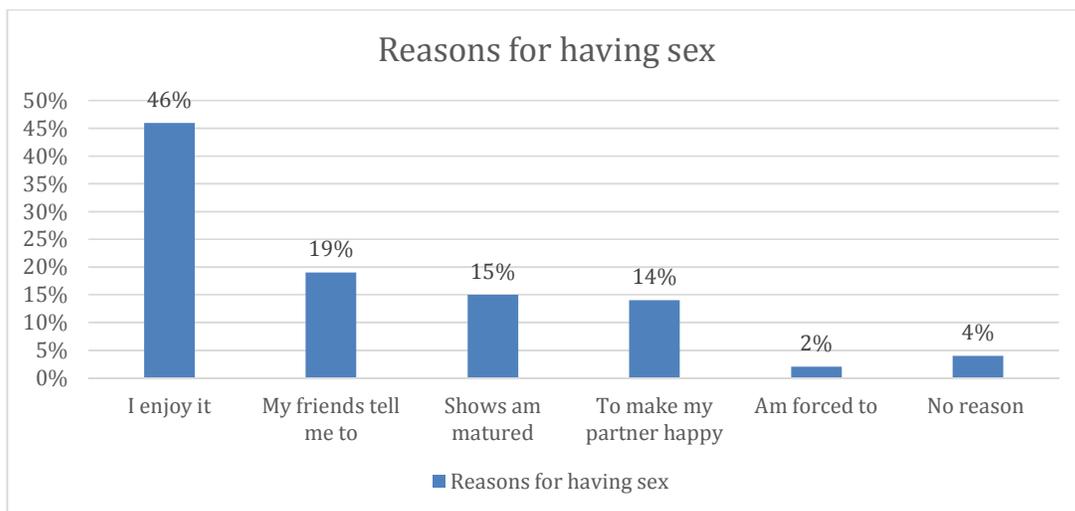
Fig. 2 shows that the highest reason for inconsistent condom use was feeling shy to buy condom, 24.9% (457/1831), followed by condom reducing sexual pleasure, 18.9% (347/1831), then not having money to buy condom, at 13.9% (256/1831), condom meaning lack of trust for partner, 12.9% (/1831), can't talk about condom with partner 12.0% (220/1831), ends up having sex without planning on time to get condom, 10.9% (/1831) and no reason at 5.9% (/1831).

**4. DISCUSSION**

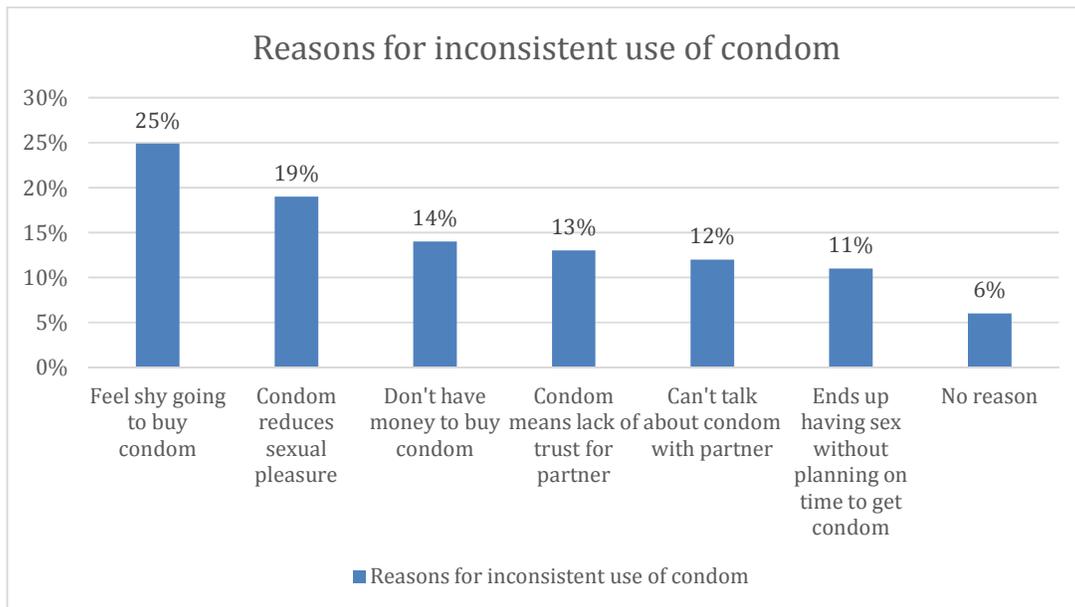
Majority of participants fell within age range of 16 to 20 years with more of the participants in SS2 classes. There were more females than males. Number of students in urban school settings that completed the study were relatively similar to the

number in rural school settings. Demographic characteristics of participants were also relatively similar but with differences in age and sex. No difference was found in class and school setting. The difference found among age could be because the groups were made up of different age groups and sexes that could not be controlled during random selection of participants.

The level of knowledge of HIV among in school adolescent and youths was nearly 50% on the average. However this is in contrast to findings of Omoyeni et al. [10] who reported that 75% of adolescents had good knowledge of HIV/AIDS. The relatively low knowledge could be due to HIV/AIDS messages not being routinely taught in participating secondary schools using the available structured FLHE training manual [11]. Moreover, highest knowledge was in HIV transmission, followed by knowledge on detection but surprisingly low in knowledge on HIV prevention. The result is slightly different from study done in Calabar [12] which demonstrated a high percentage (90%) of adolescents and young adults who knew that use of condom can prevent HIV transmission through sexual intercourse (knowledge on prevention).



**Fig. 1. Reasons for having sex among respondents**



**Fig. 2. Reasons for inconsistent use of condom**

Significant differences were observed in knowledge between males and females. It was observed that females generally showed higher knowledge level than their male counterparts. In contrast to the findings of this study, National demographic health survey of 2013 [13] and UNAIDS fact sheet 2011 [14] both reported that males are more knowledgeable about HIV than females. However, incept from Life Skills and HIV Education Curricula in Africa [15] seems to show rather high knowledge level in both females (74%) and males (62%) in Mozambique. Though this study showed increase in knowledge among females and males compared to some other studies and surveys like Nigeria national demographic health survey of 2013, it is still considered low (at about 50%) for a country with second largest global burden for HIV.

Also, knowledge was highest among the oldest age group (20-24 years) and lowest among the youngest ages group students (11-15 years). This is not in agreement with a Haitian study which stated that almost 2/3 of their study participants aged >15–19 years had low level of HIV knowledge than those<15. Findings from this study could be because 20-24 age group are older and closer to being adults and perhaps would have been in other settings outside of the schools where HIV/AIDS messages are passed and would have been exposed to the information more often than the younger ones.

Urban students demonstrated higher knowledge level than rural students, which agrees with National demographic health survey 2013 [13] that reported that urban dwellers are more knowledgeable about HIV than the rural dweller. The differences in knowledge between rural and urban dwellers may be as a result of education programs being skewed to urban settings by program implementers, due to convenience. Other factors that influence the difference in the HIV / AIDS knowledge, attitude and practice indices between rural and urban populations are greater access to information through the media, exposure to the virus (and this requires more attention) and cultural issues of each one of the profiles [16,17].

There is relatively high behaviour risk among adolescents and youths with mean score of 42.3, while 43% of participants had ever had sex and 31% were currently having sex, only 5-12% were consistently using condom either with one regular or more than one regular sexual partner. Though females showed higher knowledge than males, males were more likely to have higher behaviour risk than females. The finding is similar to one seen in a community-based Uganda study done among adolescents and young adults aged 15-25 which showed that males have higher risk that females. The study reported 13% and 42% of females and males respectively that have sexual partners. This is also in line with some studies [10,12] done in

Nigeria showing higher behaviour risk among boys than girls. This could be because men are said to be more adventurous and risk taking than women and are more likely to explore sexuality earlier than females.

This study showed that 43% of the adolescents and young adults have been exposed to sexual intercourse previously while 31% of them are currently having sex. This agrees with a study done in Nigeria by Bamidele et al. [18], which demonstrated that about 40% of adolescents and young adults had been involved in HIV risky behaviours such as sexual activities. As reported by Seu et al. [19] in their book "Science & Success in Developing Countries: Holistic Programs that Work to Prevent Teen Pregnancy, HIV & Sexually Transmitted Infections", the risk behaviours for HIV infection include; sexual behaviours and non-sexual behaviours and sexual behaviour include; time of Initiation of sex (sexual debut), abstinence (primary or secondary abstinence), number of sex partners and invariably use of condoms. Other authors [20,21,22] have also stated that sexual behaviour risks indicators among adolescents include those related to sexual activity thus; early sexual debut; multiple sexual relationships; other high risk sexual contacts like male who have sex with male (MSM); frequency in sexual contact; and low condom use (e.g. at first sex, last sex, ever). Thus an assessment of age at initiation of sex, number of sexual partners, frequency of sexual exposures, sex of sexual partner and type of sexual partner, which have also been identified by scholars/authors to affect risks of HIV exposure was carried out.

The sexual debut among the adolescents and young adults was generally early as an appreciable percentage (38%) have had sex as early as <15 years of age and the percentage increased to 50.4% by 16-20 years of age. This finding is in agreement with Laud et al. [20] study review which indicated that sexual practices among youths is a reality as engagement in sexual activity by age 18 occurs in about 60% of adolescents in Sub-Saharan Africa. Same is a UNAIDS report [23] stating that there is early sexual debut in most developing countries in which sexual activity is commenced in early adolescence before age 15 years. This finding also agrees with a study done in Chile [24] which assessed at baseline delay of sexual initiation among school-based adolescents aged 12-17 years. The study found out that delayed sexual initiation was only among 17-21% of the

population, which increase in early sexual debut among adolescents. The increase in early sexual debut could be as a result of increase in internet access which exposes the population to sensual/sexual activities early in life. Increase in access and use of drugs that affect good judgements can also result to indulging in sexual experiments/activities at an early age.

Also the book; 'Life Skills and HIV Education Curricula in Africa' [15] agrees with findings from this study. The book identified early sexual debut as a high behaviour risk of HIV infection stating significant number of adolescents become sexually active between the ages of 10 and 15, without the benefit of the necessary information, skills, and services to protect themselves from HIV. Thus HIV and sexual education programs targeting young people in and out of school should begin addressing this issue early (before 15 years) especially against sexual risky behaviours before the adolescents have already become sexually active. Though low number of the adolescents have had sex without their consent –which can otherwise be considered as rape, there is need for further researches on this for planning of appropriate intervention.

While 62% of the sex occurs with one partner only, 38% agree to have more than one partner. The finding of more than one sexual partner among adolescents was also seen in a community-based Uganda and Nigerian studies among adolescents and young adults showed that up to 42% of that population of young adults have two or more sexual partners [19,25]. This can be compared to another School-based study among youths aged 10-24 in Zimbabwe where total of 20% participants reported having more than one sexual partner. Further in Nigeria, Bamidele et al. [18] demonstrated that about 36% of the sexually active adolescents had more than one partner, a figure not far from 48% in present study. Having more than one sexual partner can also be as a result of high risks behaviour among adolescents and young adults and/or because they are young to make decisions to stay with one long-term partner. There could also be influence of older adults being among the sexual partners from whom the adolescent/young adults will need different type of assistance or attention. HIV/AIDS risk reduction intervention programs should therefore take into consideration this category of high risk among adolescents and young adults to adopt a non judgemental counselling means of identifying reasons for having multiple sexual partner.

On assessing the sex of current sexual partner, it was discovered that same sex (male) also known as men who have sex with men (MSM) constituted 2% (12) of respondents. There is however paucity of data on studies assessing sex of partner in African studies but review of studies by Kirby et al. [26] reported steady increase in men who have sex with men as measured by US studies. Paucity of data due to lack of inclusion to assess sex of partner could be because the topic on MSM (though a high risk of HIV infection) is not yet common in Africa and countries like Nigeria. This study however showed very little percentage of MSM as a behaviour risk.

Kirby et al. [26] also reported that another measure of sexual activity is the frequency of sex during a specified period of time. This includes not having sex or "being abstinent." On frequency of sex in a month among those currently having sex; 67% have sex more than once per month. Kirby et al. [26] review also showed that 52% of participants have more than once a month. Increase in frequency of sex results in increase in number of exposure to risk behaviours to HIV and should be considered while developing risk behaviour intervention programs for adolescent and young adults.

Though not common among previous studies done among adolescents and young adults, this study aimed at understanding the most important reasons for having sex among adolescents. Majority of respondents said they have sex because they enjoy it. While a good number of also said they have sex because they are influenced by friends to do so, a few but not a negligible number said they have sex because force was used. Public health researches among adolescents and youths could further expand on these reasons to aid appropriate interventions by programs implementers.

Furthermore, the above reasons on sexual exposure could help HIV educators among adolescents to focus attention on addressing major reasons for having sex in bid to promote abstinence and reduce sexual risks associated with HIV infection this population.

UNAIDS states that contraceptive use among sexually active young people is low, with consequences that can include unwanted pregnancies, induced abortions, sexually transmitted illnesses (STIs), and HIV infection [15]. Researches on adolescents' sexual

behaviour carried out in other countries had shown that a range of factors including lack of reproductive health and HIV/AIDS information and services contribute to heightened risk of HIV infection among young people [13] However, the single most important determinant of HIV infection among young people in Africa is having unprotected sex with a person who is infected [27,28,29].

This study found out that less than half of population who have ever had sex agreed to have ever used condom whereas among population currently having sex, only thirty percent were using the condom. The percentage further reduces to less than five percent among those who reported to be using condom every time with regular partner and eleven percent among those reported to be using condom every time with other non regular partners. In contrast to findings from this study, a study done in China [19] demonstrated that as high as 71-74% of adolescents/young adults use condom. And to support findings from this study, an in-school study among adolescents/young adults done in Kenya reported condom use to be as low as 22% [19]. Also a study done in Nigeria reviewed by Seu et al. [19] done in Edo among over 1,800 School-based adolescent reported condom use at baseline to be 30%. Another study done in Nigeria by Bamidele et al. [18] demonstrated that though about 40% of adolescents and young adults had been involved in HIV risky behaviours such as sexual activities, only 8.6% used a condom on a consistent basis, whereas 41.9% had never used a condom at all.

The low use of condom among adolescent and young adults have been consistently demonstrated and could be due to this group feeling ashamed to ask or purchase condom at their age. The judgemental attitude of health providers or vendors as a result of use of condom at a young age could scare them away from purchasing or receiving condoms. Therefore condom use awareness campaigns for HIV control should identify more confidential means of making condom accessible and acceptable to this age group who are already sexually active.

Furthermore, low condom use among sexually active adolescents and young adults is buttressed by results from an evaluation of a condom social marketing campaign in urban Burkina Faso where fewer than half used condoms with partners, and it was thus concluded that the levels of condom use were

considerably lower than what is needed to stop the HIV epidemic [30].

This present study compared condom use among adolescents with only one sexual partner and those with more than one sexual partner and found out that consistent condom use among those with more than one sexual partner is higher (12%) than with those with only one sexual partner (5%). This finding is in agreement with the study done in Burkina Faso [30] that compared condom use among co-habiting and non-cohabiting adolescents and stated that use of condoms is higher for adolescents with more than one sexual partner than those with one sexual partner. Thus intervention programs should take this feeling of trust for one sexual partner into consideration while planning education programs and explain to this group that at least knowing the HIV negative status of that one partner is important to guide such trust.

Major reasons for not using condom was stigma attached to access to condom. Further into the reason are belief that condom reduces sexual pleasure, not having money to buy condom, belief that use of condom means lack of trust to partner and that one ends up having sex without planning on time to get condom. Part of this finding thus agrees with the Burkina Faso study [31] which also stated that low condom use could be because among adolescents, sex is usually unplanned.

In addition, the study by Georges G et al. [30] had concluded that overall, the use of condoms is low and inconsistent among adolescents with the following reasons given as reason for low use; 40% express use of condom as sign of mistrust; 54% find it embarrassing to buy condom while over 60% said not to have confidence at all to get the partner to wear condom. Other reasons for unprotected sex (low use of condom) includes; affordability as a reason for non-use; [29] difficulty in negotiation for condom use, which is seen as sign of mistrust in a sexual relationship and due to received gifts or money; dislike of condoms, and embarrassment to purchase or ask for condoms from adult providers, as a result disapproving attitudes from health service providers.

These findings of low condom use coupled with reasons for low use demonstrates increase in HIV risk behaviours among the adolescents/young adults. There is therefore need for consistent intervention programs aimed

at both education among adolescents to improve acceptance and use of condom and to health care providers to improve their acceptance and attitudes towards condom provision to adolescents. In addition, provision of adolescent friendly clinic is important to address challenges to condom access and use among adolescents and young adults.

Non-sexual related behaviour risks have been identified as sharing of sharps among Injection drug users and acting under the influence of drug/alcohol [20,21].

This study found insignificant number of non-sexual related behaviour risks among participating adolescents. While only one persons responded to having had injection drugs and sharing needle, only 5% of persons have had sex while high on alcohol/drug. Generally there is paucity of data discussing level of non-sexual behaviour -like influence of alcohol and drug or use of sharp among injection drug users-among adolescents across different countries. However, this has been reportedly on the increase in Western countries like the Unites States [27]. Findings on this kind of situation are mixed and vary by race/ethnicity. Furhter studies are encouraged in this line.

Half of the respondents were willing to improve behaviour through abstaining from sex till marriage. Since this level of willingness is demonstrated before intervention, it should be cashed on during counselling programs to further motivate adolescents and young adults on strategies for abstinence and adopting other prevention strategies.

## 5. CONCLUSION AND RECOMMENDATIONS

HIV/AIDS knowledge among in-school adolescents and youths in Ebonyi state were on average (48.8) while their behaviour risk is considered to be relatively high (42.3). This moderate HIV/AIDS knowledge has not translated into a reduced behaviour risk as one would expect.

Based on our conclusion, it is recommended that HIV educators, HIV infection prevention program implementers and HIV researchers working among adolescents and young adults should adopt and intensify peer based and/or health provider-based intervention models for HIV/AIDS risk reduction education among in-school

adolescents and youths especially the males. Perhaps peer-based intervention should be emphasised to ensure sustainability of HIV/AIDS risk reduction intervention in secondary schools of Ebonyi state Nigeria.

## 6. LIMITATIONS OF STUDY

This is a questionnaire-based study without an observation checklist thus evaluation was only by self-response from participants and not by actual observation.

## CONSENT AND ETHICAL APPROVAL

Ethical approval was obtained from Ebonyi State University ethics committee. Written consent forms from Principals of selected schools were obtained while verbal informed assent was sought from participants under 18 years of age.

## FUNDING

Study was funded by Center for Clinical Care and Clinical Research Nigeria (CCCRN)- an NGO and lead implementing partner for HIV management program in Ebonyi State.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

## REFERENCES

1. Joint United Nations Programme on HIV/AIDS. AIDS Epidemic Update: 2006. Geneva, Switzerland: Joint United Nations Programme on HIV/AIDS and World Health Organization; 2016.
2. Joint United Nations Programme on HIV/AIDS. 2007 Report on the Global AIDS Epidemic. Geneva, Switzerland: Joint United Nations Programme on HIV/AIDS and World Health Organization; 2017.
3. US Department of Health and Human Services. Healthy people 2010. With understanding and improving health and objectives for improving health. Washington, DC; 2010.
4. Federal Ministry of Health. HIV sentinels survey; 2014. (Assessed December 2015) Available:[http://www.mhss.gov.na/files/downloads/12f\\_2014%20National%20HIV%20Sentinel%20Survey.pdf](http://www.mhss.gov.na/files/downloads/12f_2014%20National%20HIV%20Sentinel%20Survey.pdf).
5. National Bureau of Statistics. States with over 70% poverty rate in Nigeria. (Accessed May 2016) Available:[www.nigerianstat.gov.ng/](http://www.nigerianstat.gov.ng/)
6. Government of Ebonyi State. Ebonyi State secondary education board record. Secondary data; 2015.
7. Raosoft, Inc. version.; 2004. Available:<http://www.raosoft.com/samplesize.html>
8. Center for disease control and prevention. Youth Risk Behavior Surveillance System; 2017. (Assessed December 2015) Available:<https://www.cdc.gov/healthyyouth/data/yrbs/overview.htm>
9. Nigerian educational research and development council. National family life and HIV education curriculum for junior secondary school in Nigeria. (Accessed May 2016) Available:<http://www.actionhealthinc.org/publications/docs/jnrcurriculum.pdf>
10. Omoyeni ST, Akinyemi IA, Fatusi A. Adolescents and HIV-related behaviour in Nigeria: Does knowledge of HIV/AIDS promote protective sexual behaviour among sexually active adolescents?. African Population Studies. 2014;27(2): 331-342.
11. Nigerian educational research and development council. National family life and HIV education curriculum for junior secondary school in Nigeria. (Accessed May 2016) Available:<http://www.actionhealthinc.org/publications/docs/jnrcurriculum.pdf>
12. Oya-lta A, Ikpeme BM, Ani E, Offor JB, Enembe OO. Knowledge of HIV/AIDS among secondary school adolescents in Calabar. Annals of African Medicine. 2005; 4(1):1.
13. Federal Ministry of Health (FMoH) [Nigeria], National Demographic Health Survey; 2013. (Accessed 2<sup>nd</sup> January 2016) Available:[http://www.nigeria-aids.org/pdf/2005 SentinelSurvey.pdf](http://www.nigeria-aids.org/pdf/2005%20SentinelSurvey.pdf)
14. UNAIDS 2011. Fact Sheet; Adolescents, young people and HIV; 2011. (Accessed May 2016) Available:[http://files.unaids.org/en/media/unaids/contentassets/documents/factsheet/2012/20120417\\_FS\\_adolescentsyoungpeoplehiv\\_en.pdf](http://files.unaids.org/en/media/unaids/contentassets/documents/factsheet/2012/20120417_FS_adolescentsyoungpeoplehiv_en.pdf)

15. Office of sustainable development bureau for Africa. Life skills and HIV education curricula in Africa: Methods and evaluations. Technical Paper No 119. Africa Bureau Information Centre, operated by the Academy for Educational Development under contract to the U.S. Agency for International Development (USAID); 2003.
16. Chineke HN, Adogu PO, Uwakwe KA, Ewuzie MU. Assessment of level of adherence to antiretroviral therapy among human immune deficiency virus/acquired immune deficiency syndrome patients at Imo State University Teaching Hospital, Orlu, Nigeria. Niger J Gen Pract. 2015; 13(1):21-5.
17. Henry Chineke, Prosper Adogu, Bede Azudialu, Benedict Ezemenahi, Chukwuma Okeafor, Chukwudi Egwuatu. Prevalence and pattern of human immune deficiency virus (HIV) infection among ante-natal clients in Imo State University Teaching Hospital (IMSUTH), Orlu: A 5-Year Retrospective Study (2009 to 2013). Int. Biol. Biomed. J. Autumn. 2016; 2:4.
18. Bamidele JO, Abodunrin OL, Adebimpe WO. Young people are particularly vulnerable to unplanned sexual activities. This study sought to identify the sexual behaviors and risk of HIV among public secondary schools students in Nigeria. International Journal of Adolescent Medicine and Health. 2009;21(3):387-94.
19. Sue A, Nicole C, Debra H. Science & success in developing countries: Holistic programs that work to prevent teen pregnancy, HIV & Sexually Transmitted Infections. Advocates for Youth publication; 2005. (Accessed May 2016)  
Available:[http://www.advocatesforyouth.org/storage/advfy/documents/sciencesuccess\\_developing.pdf](http://www.advocatesforyouth.org/storage/advfy/documents/sciencesuccess_developing.pdf)
20. Laud AD. The efficacy of HIV and Sex education interventions among youths in developing countries: A review. Public Health Research. 2016;6(1):1-17.
21. Aoife MD, Sue NM, Mary LP, David AR. The sexual behaviour of adolescents in sub-Saharan Africa: Patterns and trends from national surveys. Tropical Medicine and International Health. 2012;17(7):796–807.
22. Adogu P, Udigwe I, Udigwe G, Ubajaka C. Review of problems of adolescent sexual behaviour and the role of millennium development goals 4, 5 and 6 in Nigeria. International Journal of Clinical Medicine. 2014;5:940-948.  
DOI: 10.4236/ijcm.2014.515126
23. UNAIDS. Report on the global AIDS epidemic. Geneva: Joint United Nations Programme on HIV/AIDS (UNAIDS); 2008.
24. Grizzard T, Gonzáles E, Sandoval J, et al. Innovations in adolescent reproductive and sexual health education in Santiago de Chile: effects of physician leadership and direct service. Journal of the American Medical Women's Association. 2004;59: 207-209.
25. Adogu P, Udigwe I, Nwabueze A, Adinma E, Udigwe G, Onwasigwe C. Sexual health knowledge, attitude and risk perception among in-school and out-of-school female adolescents in Onitsha, Anambra State, Nigeria SEEJPH; 2014.  
DOI 10.12908/SEEJPH-2014-25
26. Kirby D, Laris BA, and Roller L. Impact of sex and HIV education programs on sexual behaviors of youth in developing and developed countries. Youth Research Working; 2005.  
(Accessed March 2017)  
Available:[http://www.ibe.unesco.org/fileadmin/user\\_upload/HIV\\_and\\_AIDS/publications/DougKirby.pdf](http://www.ibe.unesco.org/fileadmin/user_upload/HIV_and_AIDS/publications/DougKirby.pdf)
27. Frank VM, Willem MO. Evaluation of HIV/AIDS secondary school peer education in rural Nigeria. Health Education Research. 2009;24(4):1.
28. Adogu PU, Olisa SN. Knowledge, attitude and willingness to teach sexuality education among secondary school teachers in Nnewi, Nigeria. British Journal of Education, Society and Behavioural Science. 2015;7(3):184-193.
29. State University. Risk behaviors - HIV/AIDS and its impact on adolescents - Prevention, Sexual, Percent, and Sex. (Accessed May 2016)  
Available:<http://education.stateuniversity.com/pages/2371/Risk-Behaviors-HIV-AIDS-its-impact-on-adolescents.html#ixzz47nHs4I2R>.

30. Georges G, Nyovani JM. HIV/AIDS and sexual-risk behaviors among adolescents: Factors influencing the use of condoms in Burkina Faso. *African Journal of Reproductive Health*. 2007;11(3):1-15.
31. Samuelsen H. Love, lifestyles and the risk of AIDS: The moral worlds of young people in Bobo- Dioulasso, Burkina Faso, Culture, Health & Sexuality. *African Journal of Reproductive Health*. 2008;8(3):211–224.

© 2020 Chizoba et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*  
*The peer review history for this paper can be accessed here:*  
<http://www.sdiarticle4.com/review-history/63510>