Awareness of Sexually Transmitted Infections (STIs) Including HIV/AIDS Among Undergraduate Students of University of Abuja, Nigeria

***Makwe Edith[1], Adenyuma Mercy Ovaioza[2]**

[1,2]Department of Geography and Environmental Management, University of Abuja, PMB 117, Abuja Nigeria

ABSTRACT

Aims: To assess knowledge of students of the University of Abuja about sexually transmitted infections (STIs) including HIV/AIDS by determining their knowledge about the types, routes of transmission and symptoms of STIs including HIV/AIDS and the preventive measures available.

Study design: Descriptive cross-sectional study of non medical undergraduate students.

Place and Duration of Study: University of Abuja, Nigeria. Between September, 2012 and February, 2013

Methodology: Stratified random sampling method was used in the administration of a detailed semi structured questionnaire which identified socio-demographic characteristics, knowledge of STIs including HIV/AIDS, routes of transmission, symptoms and preventive measures. Data obtained were analysed using descriptive statistics as well as cross tabulation of some of the variables.

Results: Knowledge about STIs (87.4%) and HIV/AIDS (91%) was relatively high; most known types of STIs were gonorrhea (89.3%) and syphilis (81.2%). Television was the highest source of knowledge (82%), then school education (81.5%). Knowledge of routes of transmission was varied with sexual intercourse (93%), blood transfusion (90.7%) and sharing sharp objects (83.7%) having the highest values. 23.6% of the respondents had the misconception that STIs and HIV/AIDS can be transmitted through sharing toilets, eating utensils, witchcraft and kisses. Knowledge about symptoms of HIV/AIDS were shared but more respondents chose weight loss (84.3%), fever off and on (74.4%) and itchy skin rash (68.3%); there was varied knowledge of preventive measures with condom use (88.2%), abstinence (86.2%) and faithfulness to one uninfected partner (79.8%) having higher values.

Conclusion: The students' knowledge about STIs and HIV/AIDS was high with some misconception about the routes of transmission. There should be incorporation of STIs and HIV/AIDS education in the University curriculum by making it part of the General Studies courses in the universities in Nigeria.

Keywords: Undergraduates, Knowledge, HIV/AIDS, STIs, Symptoms, Prevention, Nigeria

1. INTRODUCTION

Adolescents, defined by World Health Organization as persons between 10 and 19 years of age, constitute about 20% of the world's population [1]. In Nigeria, as in other parts of the world, adolescents constitute a significant proportion of the population. Estimation from the 1991 census indicates that

adolescents and young adults, aged between 15-24 years account for approximately 20.4% of the Nigerian population [2].

Studies also revealed that over 90% of adolescents and young adults have become sexually active by the age of 20years in Nigeria, with a large proportion of these occurring with casual and non- conjugal relationships, thereby increasing their vulnerability to several sexual and reproductive problems [3]. Emerging data about the high incidence of sexual activity among adolescents suggest that factors that influence this include, socio- economic deprivations, parental inadequacies, peer pressure, effects of cultural changes and modernization and media influence [4,5].

Sexually transmitted infections (STIs) are infections that are spread primarily through person-to-person sexual contact. There are more than 30 different sexually transmissible bacteria, viruses and parasites with the most common ones being Gonorrhea, Chlamydia infection, Syphilis, Trichomoniasis, Cancroids, Granuloma inguinale, Candidiasis, Genital herpes, Genital warts, Human immunodeficiency virus (HIV) infection and Hepatitis B infection [5]. Several, in particular HIV and syphilis, can also be transmitted from mother to child during pregnancy and childbirth, and through blood products and tissue transfer. The clinical features of these diseases are varied with many being asymptomatic. On the other hand, HIV/AIDS may be accompanied by symptoms such as fever, weight loss, chronic diarrhea, skin rash and other non specific symptoms [6].

Sexually transmitted infections including HIV/AIDS have been reported to be disproportionately high among young people in Nigeria. Report reveals that about 50% of new HIV infections in Nigeria occur in people between 15-25 years of age [7]. A deluge of intervention activities that focus on increasing awareness and encouraging changes in behaviour have been put in place. However, there is evidence that many still lack adequate information about STIs and HIV/AIDS [8].

With the unsavory picture painted above, it becomes pertinent, if not urgent to invigorate activities targeted at curtailing the menace of poor knowledge to sexual issues among undergraduates. Targeting of the undergraduates in the University of Abuja that constitute a major collection of young adults could be of major strategic importance in checking the menace of poor knowledge. This study therefore seeks

to assess the level of awareness of the students about the types, routes of transmission, symptoms as well as the preventive measures available for STIs including HIV/AIDS.

2. MATERIAL AND METHODS

2.1 Study Area

The study was carried out in the University of Abuja, located in Gwagwalada town, Federal Capital Territory (FCT) of Nigeria. Gwagwalada is one of the six Area Councils of the Federal Capital Territory located about 40kilometers away from the Federal Capital City, Abuja. Its location between latitude $8^{o}55'$N and $9^{o}00'$N and longitude $7^{o}00'$E and $7^{o}00'$E makes it to be centrally located within the FCT. Gwagwalada Area Council is bounded by Kuje Area Council to the East, Abaji Area Council to the West Kwali Area Council to the South and Abuja Municipal Area Council to the North East and Suleja Local Government of Niger State to the North [9]. The University of Abuja is the major and largest tertiary educational institution in the Federal Capital Territory.

2.2 Study Population

As at the time of this study, the University had a population of Sixteen Thousand Two Hundred students in the ten faculties that exist in the school. The population for the study consisted of students of eight faculties of the University of Abuja.

2.3 Study Design and Period

This was a descriptive cross sectional study carried out on the non medical undergraduate students of the University of Abuja, Nigeria, for a period of six months.

2.4 Sample Size Determination

The minimum sample size was determined using the formula for single proportion:

$$n = \frac{Z^2 (P) (1 - P)}{E^2}$$

Based on the estimated awareness level of 80% [10], 95% confidence level (Z-score value: 1.96) and 5% precision level, the estimated minimum sample size was approximately 245 (Z = 1.96; P = 0.8; E = 0.05).

However, 405 students were sampled given a sampling fraction of 0.025 to allow for non-response [10][11].

2.5 Sampling Technique and Procedure

The sampling technique adopted was stratified random sampling method. Eight Faculties of the University of Abuja were randomly selected. These were: Faculties of Agriculture (1,850), Arts (2,550), Education (1,600), Management Sciences (3,650), Natural Science (1,490), Social Sciences (2,840), Law (1,280) and Veterinary Medicine (920). Samples were taken from each faculty as follows: Agriculture (46), Arts (64), Education (40), Management Sciences (91), Natural Sciences (37), Social Sciences (71), Law (32) and Veterinary Medicine (23). A total of 405 questionnaires were then administered in all the faculties. Random sampling was used to select departments and levels for administration of data instrument. The following departments were utilized: Agricultural Economics, English, History, Theatre Arts, Environmental Science Education, Social Studies, Public Administration, Accounting, Physics, Biological Sciences, Sociology, Political Science, Public and International Law and Veterinary Medicine. Medical students were excluded from the study because by virtue of their training, they have more knowledge of the subject matter and also to avoid any bias that could arise from such knowledge. Simple random sampling method was used to select participants.

2.6 Questionnaire

The questionnaire was self designed and based on the Adolescent AIDS knowledge scale by Zimet [12] and the request of knowledge about HIV/AIDS prevention for young people by the United Nations General Assembly Special Session [13]. The questionnaire is made up of eighteen semi structured questions which were grouped into 3 sections.

Section A: Socio- demographic characteristics of the respondents.

Section B: Knowledge about STIs including HIV/AIDS.

Section C: Knowledge about routes of transmission and prevention of STDs including HIV/AID.

2.6.1 Pretesting of Questionnaire

Pretesting of the questionnaire was carried out in Nasarawa State University Keffi, Nigeria, this was done in order to identify and correct errors in the questionnaire and also to ascertain the relevance, importance and adequacy of the questionnaires in collecting the required information from respondents. The questions and the answers were in English language. Eligible students were given an explanation about the purpose and objectives of the study before being asked for consent and to fill in the questionnaire. Twenty questionnaires were administered randomly to students of the University. This helped to ensure that the questions in the instrument were in line with the objectives of the study. The pre-testing was carried out by the researcher. The result of the pretest shows that the students have a relatively high knowledge of STIs including HIV/AIDS as well as some level of knowledge about the types, symptoms, modes of transmission and preventive measures of STIs including HIV/AIDS.

2.7 Data Collection

Students of the University of Abuja were the respondents. To administer the questionnaires, eight research assistants (one from each faculty) were employed. They were adequately trained and mobilized for the exercise. The research assistants were final year students of their respective faculties and they assisted in the administration and retrieval of the questionnaires from their various faculties.

2.8 Data Analysis

Data analysis was done using the SPSS software (version 13). Simple descriptive statistics were adopted for the analysis. The objective, which dealt with knowledge of Undergraduates of sexually transmitted infections, was analyzed using simple descriptive measures (Frequency, percentages and mean). Cross tabulation of some of the variables were also made.

3. RESULTS AND DISCUSSION

A total of Four Hundred and Five (405) questionnaires were administered and Three Hundred and Sixty Seven (367) questionnaires were retrieved. Out of this number, eleven (11) questionnaires were rejected due to poor filling. The data analysis was therefore carried out with Three Hundred and Fifty Six (87.9%) questionnaires (Table 1).

The socio demographic characteristics of the students as shown in Table 1 indicate that 44.6% of the respondents are below 30years of age. Among the students that indicated their sex, the males are over two and a half times more than the females. Nine out of every ten of the respondents are single. In terms of the academic year study they are almost evenly distributed (Table 1).

Table 1: Socio-Demographic Characteristics of the Students.

Characteristics	Frequency	Percentage
Age		
<15	0	0
15 – 19	25	7
20 – 24	99	27.8
25 – 29	35	9.8
30 and above	7	2
No response	190	53.4
Total	356	100
Sex		
Male	251	70.5
Female	98	27.5
No response	7	2
Total	356	100
Religion		
Christianity	279	78.4
Islam	68	19.1
Traditional	4	1.1
No response	5	1.4
Total	356	100
Ethnic group		
Ibo	94	26.4
Hausa	27	7.6

Yoruba	88	24.7
Others	140	39.3
No response	7	2
Total	356	100
Marital Status		
Single	335	94.1
Married	16	4.5
Separated	2	0.6
Divorced	2	0.6
No response	1	0.3
Total	356	100
Year of Study		
1st	92	25.8
2nd	101	28.4
3rd	81	22.8
4th	82	23.0
Total	356	100

3.1 Knowledge of HIV/AIDS

On the knowledge of the respondents about HIV/AIDS, the result reported a relatively high knowledge (91%) of HIV/AIDS. This finding is encouraging and needs to be further strengthened by the establishment of HIV/AIDS youth clubs in the University. Few (1%) reported not having heard of the infection, while Eight percent (8%) did not respond. This result is higher than that obtained in Historically Black Colleges and Universities which reported 82% knowledge of HIV/AIDS among the students [14]. It is however lower than the 100% recorded in a similar study in a Kenyan University [15].

3.2 Knowledge about Sexually Transmitted Infections (STIs)

Adequate knowledge is of utmost importance in the fight against the rampaging effects of STIs, particularly, HIV/AIDS. The results in Table 1 reveal a relatively high level of knowledge of STIs among the respondents.

Table 2: Distribution of Students' Knowledge about STIs

Respondents who have heard of STIs	Frequency (N)	Percentage
Yes	311	87.4
No	28	7.8
No response	17	4.8
Total	**356**	**100**

However, almost eight percent (7.8%) (Table 2) of the respondents said they have never heard of STIs. This was probably because they were not well informed. The result obtained from this study is lower than that (100%) reported by a similar study in Benin City, Nigeria [16]. This was probably because some of the types and names of STIs were translated into their local language. The result is also lower than those from a similar study in Wuhan, China, and in Abeokuta, Nigeria, which reported knowledge level of 99% and 98% respectively [17][18]. This could be due to the amount of information they are exposed to. Comparing the results from the knowledge of STIs (87.4%) (Table 2) and HIV/AIDS (90.7%), it is obvious that more of the respondents have knowledge about HIV/AIDS than they do about the other STIs. This is probably due the greater publication given to HIV/AIDS by the different information media. Notwithstanding, the knowledge of the respondents for both HIV/AIDS and STIs was relatively high, but there is the need to increase the student' awareness about other STIs. The association between HIV and other STIs also needs to be highlighted in educational programmes on HIV/AIDS.

3.3 Knowledge about Types of STIs

The conventional STIs include Gonorrhea, Syphilis, Cancroids, Herpes Genitalis, Chlamydia infection etc. Figure 1 shows the distribution of knowledge of STIs according to types among the respondents. The

figure showed that the most known types of STIs among the 87.4% (Table 2) respondents were Gonorrhea and Syphilis while the least known STI was cancroids, which accounted for 25% (Figure 1). In a related study in Kampala, Uganda, more female (33.5%) students had heard about Trichomonas vaginalis than males (23%) [19].

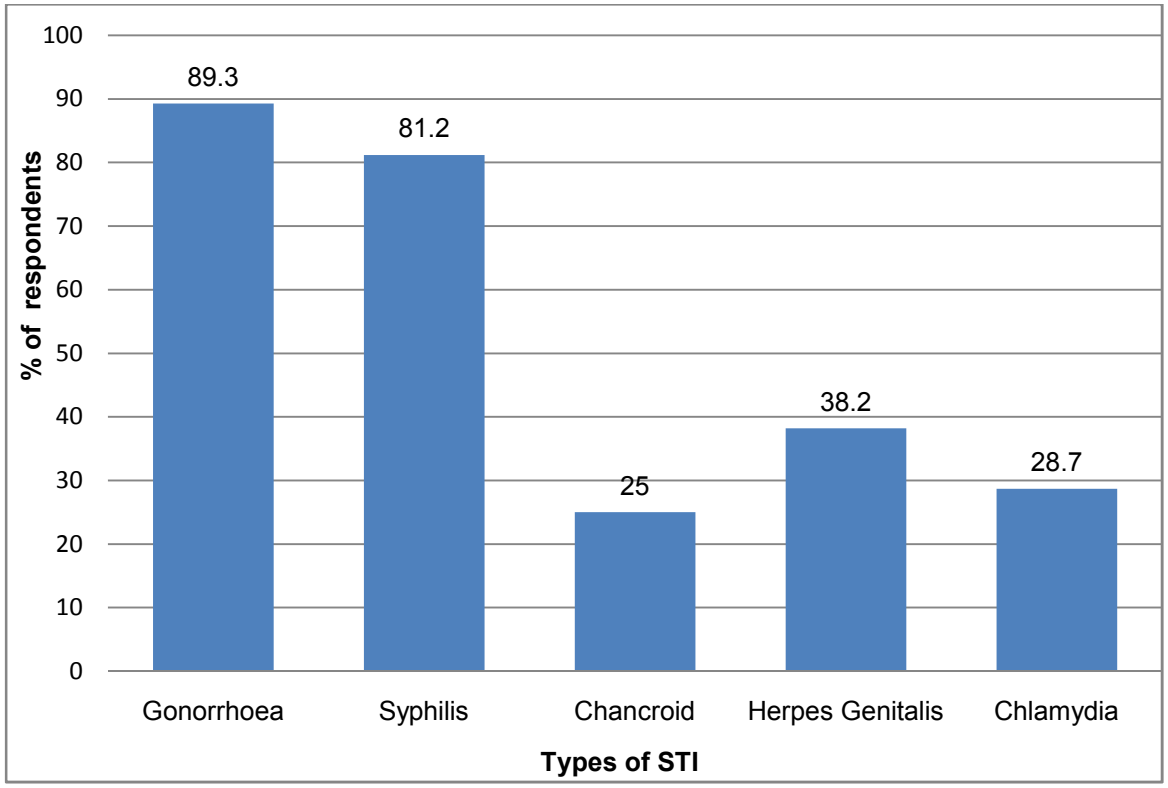

Fig 1: Distribution of Knowledge of STIs According to Types among the Respondents

3.4 Sources of Knowledge about STIs Including HIV/AIDS

Information relating to STI including HIV/AIDS can be accessed through many sources. These include; Friends (peers), parents, Teachers, Television (Mass media), Newspaper etc. Figure 2 shows varying sources of knowledge about STIs including HIV/AIDS as provided by the respondents. The results indicated that the highest source of knowledge about STI including HIV/AIDS among the respondents was from Television, accounting for 82% (Figure 2). There is agreement between this result and that obtained by Gao *et al*. in a similar study among Secondary School Students in Wuhan, China [20]. This result is however higher than those obtained in a similar studies in Gondar Town, North West Ethiopia

and elsewhere in China which reported the knowledge from television as 46.7% and 50.9% respectively [21][17].

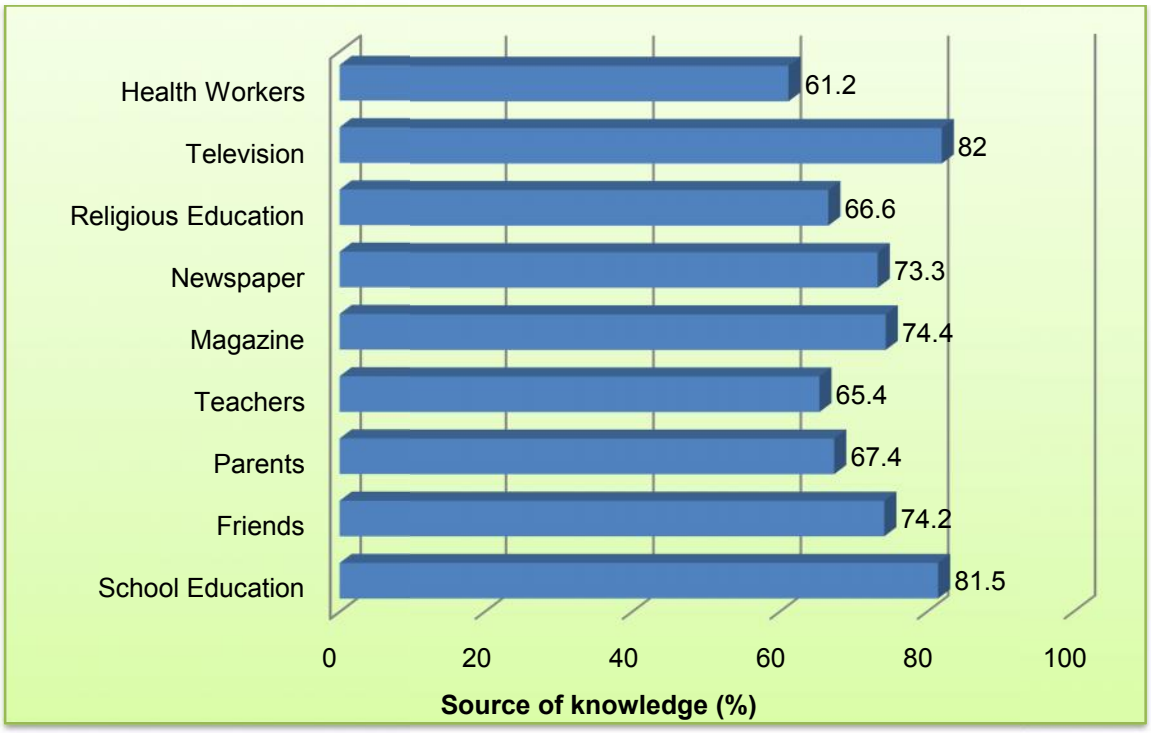

Figure 2: Distribution of source of knowledge about STIs including HIV/AIDS

3.5 Knowledge about Routes of Transmission of STIs including HIV/AIDS

Transmission of HIV/AIDS can be through many ways. Whatever route, the basic denominator is the admixture of body fluids. Consequently, the infection could be transmitted through sexual intercourse, blood transfusion, Mother to unborn child, sharing sharp objects like needle, razor etc. Table 3 shows the distribution of knowledge of routes of transmission of STIs including HIV/AIDS.

Table 3: Distribution of Respondents' Knowledge about Routes of Transmission of STIs including HIV/AIDS

Responses	Route of transmission (Frequency and %)							
	Sxi	Blt	Muc	Sht	Sso	Seu	Wtc	Kss
Yes	333(93.5)	323(90.7)	277(77.8)	17(4.8)	298(83.7)	7(2.0)	24(6.7)	53 (14.9)
No	2(0.6)	2(0.6)	18(5.1)	176(49.4)	11(3.1)	181(50.8)	172(48.3)	153 (43.0)
No response	21(5.9)	31(8.7)	61(17.1)	163(45.8)	47(13.2)	168(47.2)	160(44.9)	150 (42.1)
Total	356(100)	356(100)	356(100)	356(100)	356(100)	356(100)	356(100)	356 (100)

Key: Sxi: Sexual intercourse; Blt: Blood transfusion; Muc: Mother to unborn child; Sht: Sharing toilet; Sso: Sharing sharp objects; Seu: Sharing eating utensils; Wtc: Witchcraft; Kss: Kissing;

Although most of the respondents indicate knowledge about the basic routes of transmission of STIs including HIV/AIDS as shown in Table 3, about 23.6% of the respondents also have a misconception on the routes of transmission. This is because they believe that STIs including HIV/AIDS can be transmitted through kissing, sharing of eating utensils and witchcraft. This result is similar to that obtained by Gao *et al*. [20], where about 26.73% of the respondents had the misconception that STIs including HIV/AIDS can be transmitted through mosquitoes bites, casual contact with people who live with HIV/AIDS like sharing of utensils, beddings, toilet seat and swimming pool. Over the years and with improvement in the level of awareness there is tremendous reduction in people's misconception about the various routes of transmission of STIs including HIV/AIDS. In a study conducted on street youths in Accra, Ghana, there was a high level of misconception about the routes of transmission. Most (68%) of the youths believed that transmission is possible through witchcraft, kissing, hand shaking, sharing of clothes, utensils and beddings [22]. There is therefore the need to include information on STIs including HIV/AIDS in the school curriculum so that the students will be better informed. However, in a similar study carried out in,

Wuhan, China, the main route of transmission of HIV/AIDS was considered to be sexual intercourse (40.4%) while 35.5% believed it to be by blood transfusion. [17].

3.6 Knowledge about Symptoms of HIV/AIDS

The study reported that the most known symptom of HIV/AIDS was weight loss, accounting for 84.3% of responses. This was followed by fever off and on (74.4%), Itchy skin rash (68.3%), watery stool lasting for more than two weeks (44.1%) and sore throat (43.3%). This result however, does not agree with that from Benue, Nigeria, which recorded low knowledge of symptoms with the most frequently known symptom being skin rash [23]. This is probably because this is one of the most glaring symptoms. In a related study in India, more than one third (33%) of the students had no accurate understanding about the signs and symptoms of STIs other than HIV/AIDS [24]. A similar study in Kampala Uganda reported that most of the respondents are familiar with the various symptoms if HIV/AIDS [19].

3.7 Knowledge about Preventive Measures of STIs including HIV/AIDS by Method

Prevention remains the mainstay strategy in the fight against STI including HIV/AIDS. Faithfulness to one uninfected partner, use of condom, abstinence, avoiding commercial sex workers etc are some preventive measures. The result showed that there was a relatively high level of knowledge of preventive measures as displayed in Figure 3; condom use was the most known preventive measure, accounting for 88.2%. The result equally showed that 32.9% (Figure 3) of students have never engaged in sex, which is encouragingly significant. The result obtained is higher than the report of another work in Accra, Ghana, which reported 78% condom use and 70% abstinence [25]. It is however lower than that obtained in a similar study in Kampala, Uganda which recorded more than 90% condom use [19].

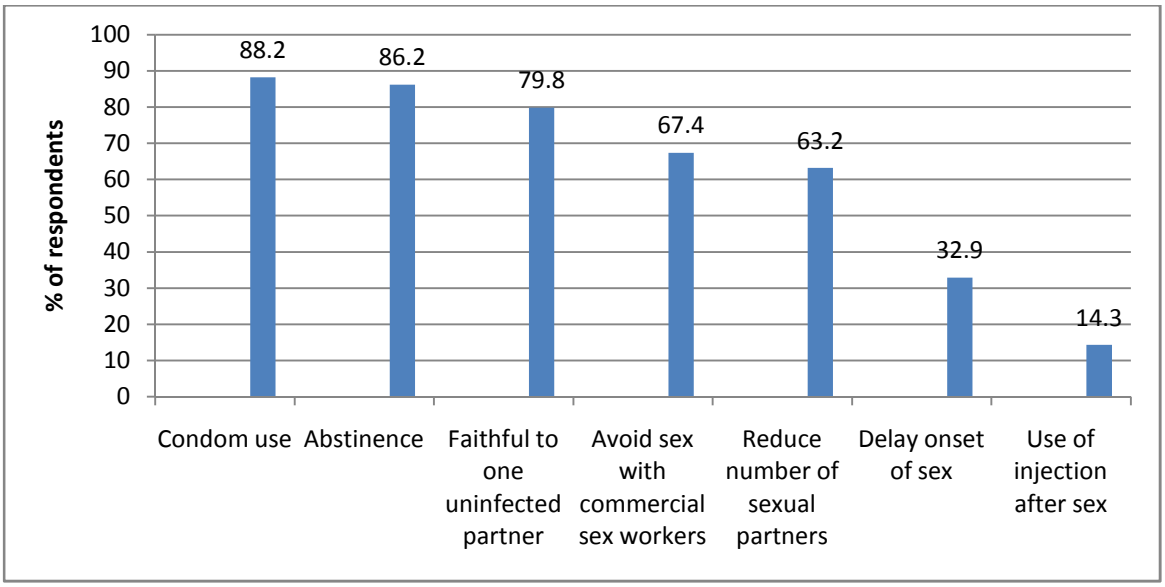

Figure 3: Distribution of Respondents' knowledge of Preventive measures by method.

4. CONCLUSION

Generally it was found that knowledge about STI including HIV/AIDS was relatively high. The study also revealed that Gonorrhea and Syphilis were the most known types of STIs among the respondents; there is also a high level of knowledge with a moderate misconception about the routes of transmission of STIs including HIV/AIDS; knowledge about the symptoms of HIV/AIDS, and the preventive measures of STIs and HIV/AIDS were also high, with condom use, abstinence and faithfulness to one uninfected partner being the most known preventive measures.

Following from the study, there is therefore the need for the realignment of STIs and HIV/AIDS prevention programmes to tackle the problem of wrong or unjustified perceptions. One way of doing this may be through the incorporation of STIs and HIV/AIDS education in the University curriculum in Nigeria. STIs and HIV/AIDS education may be made part of the General Studies or Foundation Studies courses in the universities. Furthermore, greater publication should also be given to other STIs by the different media so that the students as well as the general public will be better equipped with the different types and features of sexually transmitted infections with much emphasis on the routes of transmission and prevention strategies.

ACKNOWLEDGEMENT

The author acknowledges the co-operation of the management of the University of Abuja, Nigeria and the numerous students that participated in this study. I appreciate the efforts of the research assistants (enumerators) who assisted in the collection of data and the anonymous reviewers whose comments and suggestions helped to enrich the content of the manuscript.

COMPETING INTEREST

The authors declare that there are no competing interests

AUTHORS' CONTRIBUTION

Makwe Edith designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Adenyuma Mercy Ovaioza managed the literature searches. All authors read and approved the final manuscript.

ETHICAL APPROVAL

Prior permission was sought and obtained from the authorities of the University of Abuja before the study commenced. Recruitment into the study was voluntary and nobody was coerced into participation. Confidentiality was maintained by asking respondent not to write their names.

.LIMITATIONS

The study is limited in that it was carried out in a school environment involving 356 students, thereby making the research participants very selective. Any generalization of the results of this study must be made with caution. More so, Sexually Transmitted Infections (STIs) and HIV/AIDS are sensitive topics that many young people are reluctant to talk about. As such, there could be some bias in the filling of the questionnaires.

REFERENCES

1. World Health Organization. The Second Decade: Improving Adolescent Health and Development. Programme Brochure. Department of Child and Adolescent Health and Development, WHO, Geneva. (2004)
2. National Population Commission. Numeric and Percentage Distribution of the 1991 Census Figures. Accessed online www.onlinenigeria.com/population/?blurb=133
3. Onwuezobe I.A. The attitude of Teachers to Sexuality Education in Lagos State, Nigeria. MPH Project. 2005; 7-27.
4. Briggs L.A. Parents viewpoint on reproductive health and contraceptive practice among sexually active adolescents. J. Adv Nursing. 1998; 27: 261-266.
5. Ajuwon A.J, Olley B.O, Akin-Jimoh I. and Akintola O. Experience of Sexual Coercion among Adolescents in Ibadan, Nigeria. African J. Reproductive Health 2001; 5(3): 120-131
6. WHO. Sexually Transmitted Infections. Fact sheets. Http: www.who.int/mediacentre/factsheets/fs110/en/index. Html.February 23, 2008.
7. Da Ros C.T.; Schmidt C. S. Global Epidemiology of Sexually Transmitted Infections. Asian Journal of Andrology.2008 January; 10(1): 110-114.
8. National Intelligence Council: The Next wave of HIV/AIDS: Nigeria, Ethiopia, Russia, India and China. Intelligence Community Assessment (ICA) 2002-04D In Adedimeji AA. Beyond knowledge and behaviour change: The social- structural context of HIV/AIDS risk perceptions and protective behaviour among young urban slum inhabitants in Nigeria. Takemi Programme in International Health. 2005; 3-5.
9. 10. Balogun, O. The Federal Capital Territory: A Geography of its Development. Ibadan University Press, Nigeria. 2001
10. Durojaiye OC. Knowledge, attitude and practice of HIV/AIDS: Behavior change among tertiary education students in Lagos, Nigeria. Ann Trop Med Public Health 2011;4:18-24

11. Opaleye OO, Olowe OA, Taiwo SS, Ojurongbe O, Ayelagbe OG. AIDS knowledge, attitude and behavioral patterns among high school students in south western Nigeria. Afr J Clin Experimen Microbio 2005;6:247-52.
12. Zimet G.D. Adolescent AIDS knowledge scale. In Clive, D. M.; William, Y. L.; Bauserman, R.; Schreer, G. & Davis, S. L. (Eds.). Handbook of sexuality-related measures. 1998, 365–366.
13. United Nations General Assembly Special Session UNGASS 2009 Guidelines on Construction of Core Indicators 2010 Reporting.
14. . Sutton, M.Y.; Hardnett, F.P.; Wright, P.; Wahi,S.; Pathak,S.; Warren-Jeanpiere, L. and Jones, S. HIV/AIDS Knowledge Score and Perception of Risk among African American Students Attending Historically Black Colleges and Universities. Public Health Reports. 2011. 126(5):653-663 PMCID:PMC3151182
15. . Gitonga, M; Sinyard, M and Gachuiri, G, Alcohol ans Substance Use viz a viz HIV Sexual Risk Behaviours among Freshmen Students at a Kenyan University College;Focus for Interventions. Journal of Biology, Agriculture and Healthcare. 2012. 2(8):8-12
16. Temin, M.J.; Okonofua, F.E.; Omorodion, F.O.; Elisha P. Renne, E.P.; Coplan, P.; H. Kris Heggenhougen, H.K. and Kaufman, J. Perceptions of Sexual Behavior and Knowledge About Sexually Transmitted Diseases Among Adolescents in Benin City, Nigeria. International Family Planning Perspectives. 1999.25(4): 186-189
17. Albrektsson M, Alm L, Tan X, Andersson R. HIV/AIDS awareness, attitudes and risk behavior among university students in Wuhan, China. Open AIDS Journal. 2009. 3: 55–62. doi: 10.2174/1874613600903010055. CrossRef PubMed/NCBI Google Scholar
18. Agboola, I.O. Undergraduate Students Knowledge of HIV/AIDS and Information Needs: A Study of University of Agriculture, Abeokuta, Nigeria. Quarterly Publication of Pacific Northwest Library Association (PNLA) 2010
19. Sekirime W.K, Tamale J., Lule J.C., Wabwire-Mangen F. Knowledge, Attitude and Practice about Sexually Transmitted Diseases among University students in Kampala. African Health sciences; 2001; 1(1) 16-20

20. Gao X, Wu Y, Zhang Y, Zhang N, Tang J, et al. (2012) Effectiveness of School-based Education on HIV/AIDS Knowledge, Attitude, and Behavior among Secondary School Students in Wuhan, China. PLoS ONE 7(9): e44881. doi:10.1371/journal.pone.0044881
21. . Shiferaw, Y.; Alemu, A.; Girma, A.; Getahun, A.; Kassa, A.; Gashaw, A.; Alemu, A.; Teklu, T. and Gelaw, B. Assessment of Knowledge, Attitude and Risk Behaviors Towards HIV/AIDS and other Sexual Transmitted Infection among Preparatory Students of Gondar Town, North West Ethiopia. Biomed Central Journal 2011, 4:505 doi:10.1186/1756-0500-4-505
22. Anarfi JK and Antwi P, Street youth in Accra city: Sexual networking in a high- risk environment and its implications for the spread of HIV/AIDS. Health Transition Review, 1995, 5(suppl.): 131-152.
23. Iyaniwura, CA. & Okusanya O. Sexual Practices related to STIs and HIV among Refugees at Oru camp, Ogun state. Nigerian medical Practitioner. 2005; 47(5): 87-93.
24. McManus A. and Dhar, L. Study of knowledge, perception and attitude of adolescent girls towards STIs/HIV, safer sex and sex education: (A cross sectional survey of urban adolescent school girls in South Delhi, India). *BMC Women's Health* 2008, 8:12 doi:10.1186/1472-6874-8-12
25. Asante, K. O. HIV/AIDS Awareness and Uptake of HIV Counseling and Testing among Undergraduate Private University Students in Accra, Ghana. Reproductive Health 2013, 10:17 doi:10.1186/1742-4755-10-17