Original Research Article

KNOWLEDGE OF SEXUALLY TRANSMITTED INFECTIONS AND RISK PERCEPTION AMONG UNDERGRADUATES OF UNIVERSITY OF IBADAN, IBADAN, SOUTH WEST, NIGERIA

ABSTRACT

Background: The increase in the incidence of Sexually Transmitted Infections (STIs) among young adults is a public health concern. The study assessed the knowledge and risk perception of STIs among undergraduate students in the University of Ibadan, Nigeria.

Method: A total of 1085 students were assessed using a self-administered questionnaire to collect data on socio-demographic characteristics, perceived risk and knowledge on STIs. Data was entered into IBM-SPSS version 23 and analyzed using descriptive statistics and Chi-square test was used to evaluate categorical variables, $p < 0.05$ considered significant.

Results: Out of 1085 questionnaires distributed, 1050 were returned giving a response rate of 96.8%. Human Immuno-deficiency Virus (HIV) was the most frequently mentioned STI (898, 86.3%). Majority (967, 94.0%) agreed that some STIs manifest with symptoms. The most identified symptom was abnormal vaginal/penis discharge (731, 78.0%). Majority (1006, 97.4%) indicated that STI treatment should be sought first from hospital. Majority (1007, 96.5%) recognized sexually active persons with multiple sex partners are at high risk of STI acquisition, 522 (51.1%) recognized oral sex as a risky behavior. The mean knowledge score of the participants was 8.8±2.7. **Conclusion**: Participants identify sexual risky behaviors and practices as predisposal to STIs. There is a knowledge gap of STIs among participants which may be improved by reviewing the educational curriculum of a mandatory course which was participants' main source of education on STI.

Keywords: Sexually transmitted infections, Human immunodeficiency virus, Students, Knowledge

INTRODUCTION

Globally, the World Health Organization (WHO) estimates that more than 1 million sexually transmitted infections (STIs) are acquired every day and over the past decade, the incidence of STIs among young adults' ages 15-24 years old has greatly increased. This population is responsible for over half of the 20 million new STIs cases diagnosed each year and over 16 billion dollars in healthcare expenditures annually.[1] Similarly, in developing countries, STIs and their complications rank in the top five infection categories for which adults seek healthcare.[2] In the West African sub-region, Nigeria has the highest prevalence rate of STIs and the third highest prevalence of any country in the world, with a five percent population prevalence rate, that is, over 3.6 million people.[3]

The most common STIs are bacterial infections such as chlamydia, syphilis, gonorrhoea and viral infections such as human papillomavirus (HPV), human immunodeficiency virus (HIV) and hepatitis B.[3] It has been reported that the incidence declines with age and that adolescents and young adults experience the highest risk of exposure to STIs.[4,5] The high prevalence of STIs in Nigeria has been attributed to sexual promiscuity, prostitution, homosexuality, lack of sex education, self-medication and drug abuse.[6]

The age group of 20-24 years has been reported to have highest prevalence of STIs worldwide seconded by age group 25-30years.[7] Report reveals that about 50% of new diagnosed HIV infections in Nigeria occur among people between 15-25 years of age.[8] This age group constitutes young people, who make up the highest population in Nigerian universities. It is therefore, important to assess university students' knowledge of STIs being a high risk population of the diseases and may be exposed to the ill-effects of STIs which include HIV, spontaneous abortions, stillbirths, perinatal and neonatal morbidities, chronic pelvic pains, dyspareunia, infertility, increased risk of ectopic pregnancy and even death.[9,10,11,12,13]

Studies on knowledge of STIs among young adults is rare especially among undergraduate students, and the few ones were on secondary school adolescents.[14,15] Despite interventions to prevent and reduce STIs and their complications, there is still evidence that many young adults lack adequate knowledge.[16]

Undoubtedly, sound knowledge of STIs encourages safer sexual behaviours and the timely seeking of treatment.[17]

A survey carried out at the University of Abuja, Nigeria among undergraduates, reported awareness of STIs (87.4%) and HIV/AIDS (90.7%). Furthermore, there was a high level of knowledge (87.4%) with a moderate (23.6%) misconception about the routes of transmission of STIs including HIV/AIDS, in which some responded to witchcraft and hand shaking as routes of transmission.[17] The main sources of information about STIs among university students in a study by Eksi and Komurci in Turkey, were book-magazine-newspaper (female 82.4% and male 76.5%), radio-TV (female 66.7% and male 57.1%), internet (female 37.1% and male 50.9%) and friends (female 36.7% and male 36.5%). While 19.3% of the students stated education from school was their source of information about STIs, indicating inadequate education provided at school.[7]

University education serves as an opportunity to acquire comprehensive knowledge on STIs because of its incorporation into curriculums as in the case of University of Ibadan, where a course title GES 107 on Reproductive health, Sexually Transmitted Infections, and Human Immunodeficiency Virus, is taken as a mandatory course by students in the University. Many young people lack adequate knowledge of STIs and HIV/AIDS, despite numerous interventions.[16] Knowledge and perception of STIs among young people are important in planning preventive and treatment strategies. Similarly, it will also provide baseline information for designing, implementing and monitoring targeted interventions by stakeholders. This study therefore, aimed at assessing the knowledge and risk perception of STIs among undergraduate students of the University of Ibadan, Nigeria.

METHODS

STUDY SITE

The study was carried out at the University of Ibadan, Ibadan, Oyo state, Nigeria. The institution occupies over 1,032 hectares of land and was originally established on the 17th of November, 1948 as an external

University College of the University of London. It was called University of Ibadan in 1962 and has 13 faculties.

STUDY POPULATION

According to the management information system, the population of undergraduate students in the university as of 2016/2017 session is 14354. Therefore, the study population is approximately 14400. The population for the study consisted of students of selected (5) faculties in the University of Ibadan.

STUDY DESIGN

The study was a descriptive cross-sectional study of undergraduates of the University of Ibadan carried out between November and December 2019.

SAMPLE SIZE

According to the University Management Information System (MIS), the average population of the University of Ibadan undergraduates is 14400 as of 2016/2017 session. The desired sample size according to the population of undergraduates was determined using the Yamane sampling method equation below.

$$n=\frac{N}{1+N(e)^2}$$

Where n= required sample size, N= population size, and e=Margin of error, e=0.05 based on the research condition

Where N=14400, the sample size would be:

$$n=\frac{14400}{(1+14400\,(0.05)^2}$$

n=389.1892

Adjusting the sample size for 10% non-response

$$n_f = \frac{n}{1-N_r}$$

$$n_f = \frac{389}{1-10\%}$$

$$n_f = \frac{389}{0.9}$$

$$n_f = 432.2222$$

To cover for a larger sample size relative to the number of students in the University, and also to get a valid number of responses 1085 questionnaires were administered.

SAMPLING TECHNIQUES

The sampling technique adopted was the stratified random sampling method. Nine of the faculties not related to health sciences were listed, each written on a separate piece of paper, placed in a box, afterwards, five faculties were then selected at random. The selected faculties were arranged alphabetically, and departments of each of the selected faculties were listed, 2 departments were selected randomly by ballot. The five Faculties of the University of Ibadan selected were; the Faculties of Agriculture, Education, Social Sciences, Technology, and Arts.

INCLUSION CRITERION:

Consenting non-medical undergraduate students of the University of Ibadan were eligible.

INSTRUMENT FOR DATA COLLECTION

A pretested questionnaire was used to obtain information from the study participants. The questionnaire was structured in 3 sections. Section A: Socio-demographic characteristics of the respondents. Section B: Perceived knowledge and risk perception on STIs and their management. Section C: Knowledge of STIs.

PRETEST

The questionnaire was pretested among students of department excluded from the main study in order to assess clarity and comprehensiveness of content. After the pretest, modifications made included restructuring of some questions for clarity before being administered to the participants for this study.

DATA COLLECTION PROCEDURE

Students of selected department were approached in their respective lecture hall prior to their lectures. The objectives of the study were explained to them and the questionnaire was distributed to consented

individuals. Participation was voluntary, and participants' confidentiality was assured. The questionnaire was collected immediately after the individual has filled it, which to about 10minutes to complete.

DATA ANALYSIS

Data were entered into SPSS version 23.0 for analysis. Descriptive measures of statistics were used to summarize data. Pearson Chi-square was used to investigate for significant association between socio-demographic characteristics and knowledge level. The results were considered statistically significant at a P value set at < 0.05, that is, at a 95% confidence interval. Knowledge score was categorized into poor, fair and good knowledge; < 8 for poor, ≥ 8 to < 13 for fair and ≥ 13 for good knowledge.

RESULTS

In total 1085 questionnaires were distributed, 1050 questionnaires were satisfactory filled and the responses were analyzed.

Table 1: Socio-demographic characteristics and distribution of respondents across faculties and levels

The majority of the respondents were females 563(53.6%) and single 768(73.1%). Most of the respondents, 55.1%, were within the age group of 16-20 years. The mean age of the respondents was 20.7±2.8years. Most of them are from the Faculties of Agriculture and Social sciences, 275(26.2%) and 248(23.6%), respectively. All other socio-demographic characteristics were shown in table 1.

Table 2: Participants' responses to STIs education and sexual status

Most of the respondents are not sexually active, 608(59.8%). The percentage of respondents that affirmed to have been educated on STIs was 1032 (98.2%). And 998 (98.0%) affirmed to have taken GES 107 course (general studies course on Reproductive Health, STIs and HIV) at the university. Other details were shown in Table 2.

Table 3: Participant's responses on their perceived knowledge of definition, types, causes, symptoms, and diagnosis of STIs

The percentage of respondents who correctly answered that STIs are infections transmitted through sexual activity was 621(62.4%). While the most known STIs by the respondents were; HIV 898 (86.3%), gonorrhoea 848 (81.5%) and syphilis 819(78%). While 967 (94.0%) of the respondents agreed that some STIs show symptoms in an infected patient. Further details were presented in Table 3.

Table 4: Perceived responses by respondents on where STIs treatment can be sought, and barriers to seeking medical care

The majority of the respondents, 861 (84.1%), indicated that patients with STIs may not seek medical care because of stigmatization. Four hundred and seventy-two (46.0%) suggested healthcare service from a pharmacist if going to the hospital is not the first place of choice, while 273 (26.6%) of them made no suggestion other than going to the hospital. Details were presented in Table 4.

Table 5: Perceived responses on the group of persons at risk of contracting STIs

One thousand and seven (96.5%), 973 (93.6%), 937 (90.8%) and 880 (85.1%) respondents, acknowledged that sexually active persons; with multiple sex partners, who do not use protection, unmarried, and who inject drugs are at high risk of a sexually transmitted infection respectively (Table 5). Four hundred and fifteen (40.6%) of the students felt engaging in oral sex puts a person at low risk of STI, while 85 (8.3%) said no risk is associated with oral sex.

Table 6: Summary of responses on Knowledge of STIs

Almost two-thirds, 622 (59.5%) believe that the use of condoms protects individuals from all forms of STIs. And 460 (43.8%) are unaware that untreated STIs can lead to infertility, 399 (38.0%) are unaware of the availability of vaccines for some STIs (Table 6).

Table 7: Categories of knowledge level with cut-off score

Of the respondents, 316 (30.1%) had poor knowledge of STIs, 656 (62.55%) had fair knowledge and 78 (7.4%) had good knowledge (Table 7).

Table 8: Association of socio-demographics and knowledge of STIs among participants

There was no significant association between categorical socio-demographics variables such as sex, age, sexual status, and the level of knowledge of participants on STIs (Table 8).

Table 1: Socio-demographic characteristics and distribution of respondents across faculties, departments and levels

Socio-demographic characteristics	Frequency, n=1050, %
Age	
16-20 years	579 (55.1)
21-25 years	414 (39.4)
>25 years	57 (5.4)
Mean ± standard deviation	20.7± 2.8
Gender	
Male	487 (46.4)
Female	563 (53.6)
Tribe	
Yoruba	866 (82.5)
Igbo	110 (10.5)
Hausa	13 (1.2)
Others	61 (5.8)
Religion	
Christianity	866 (82.5)
Islam	176 (16.8)
Others	8 (0.8)
Family structure (n=1035)	
Single parent	146 (14.1)
Remarried	51 (4.9)
Both parents	823 (79.5)
Others	15 (1.4)
Relationship status	
Single	768 (73.1)
Dating	206(19.6)
Married	32 (3.0)
Divorced	13 (1.2)
Others	31 (3.0)
Faculty	
Agriculture	303 (28.9)
Social sciences	275 (26.2)
Education	248 (23.6)
Arts	128 (12.2)
Technology	96 (9.1)
Level	
100	303 (28.9)
200	258 (24.6)
300	202 (19.2)
400	203 (19.3)
500	84 (8.0)

Table 2: Participants response on STI education, sexual status, risk of contracting HIV and routes of HIV transmission

STI education, sexual status, risk of contracting HIV and routes of HIV transmission	Frequency n (%)
Did you take GES 107 course on STIs and HIV (n=1018)	
Yes	998 (98.0)
No	5 (0.5)
Not yet	15 (1.5)
Can you say you were adequately educated through the course (n=867)	
Yes	536 (61.8)
No	44 (5.1)
A little	287 (33.1)
Have you ever been educated on STIs before? (n=1050)	
Yes	1032 (98.3)
No	18 (1.7)
Where were you last educated on this (n=1047)	
Secondary school	190 (18.1)
University	840 (80.2)
Church	3 (0.3)
Internet	4 (0.4)
Social media	3 (0.3)
Seminar	2 (0.2)
Television	2 (0.2)
Magazines	1 (0.1)
Primary school	1 (0.1)
Hospital	1 (0.1)
How would you describe your sexual life (n= 1017)	
Active	409 (40.2)
Not active	608 (59.8)
Do you ever feel you are at risk of contracting HIV (n=1030)	
Yes	146 (14.2)
No	771 (74.9)
Maybe	113 (11.0)
Routes of HIV transmission n=1042**	
Blood transfusion	889 (85.3)
Sharing of needles/syringes	880 (84.5)
Sexual intercourse	929 (89.2)
Kissing	99 (9.5)
Mother to child transmission	35 (0.3)
Sharing of sharp objects like clippers	3 (3.4)

** denotes multiple responses
HIV (Human immunodeficiency virus)
STI (sexually transmitted infections)
GES 107 Course (general studies course Reproductive Health, STIs and HIV)

Table 3: Participant's responses on perceived knowledge on types, causes, diagnosis, and symptoms of STIs

Definition, types, causes, diagnosis, and symptoms of STIs	Frequency, n (%)
What STIs (n=995)	
Correct	621 (62.4)
Incorrect	374 (37.6)
Names of common STIs you know** N=1040	
Gonorrhea	848 (81.5)
Chlamydia	341 (32.8)
Syphilis	819 (78.8)
HIV	898 (86.3)
Cystitis	75 (7.2)
Trichomoniasis	201 (19.3)
Genital herpes	557 (53.6)
Pyelonephritis	30 (2.9)
Hepatitis	436 (41.9)
HPV	247 (23.8)
Candidiasis	282 (27.1)
Causes of STIs** n=1204 n=973	
Bacteria	206 (21.2)
Fungi	156 (16.0)
Viruses	813 (83.6)
Parasites	17 (1.7)
Worms	12 (1.2)
How a person can confirm being infected with STI** n=1021	
From previous experience	119 (11.7)
Searching through the internet	102 (10.0)
Being informed by sex partner	198 (19.4)
Being informed by a doctor	866 (84.8)
Being informed by a pharmacist	119 (11.7)
Through residual knowledge from school	131 (12.8)
From TV shows	1 (0.1)
Through a medical test	19 (1.9)
Some STI show symptoms(n=1029)	
Yes	967 (94.0)
No	62 (6.0)
Some of the symptoms you know** n=937	
An abnormal discharge from vagina/penis	731 (78.0)
An abnormal discharge from vagina/penis with foul smell	708 (75.6)
A discharge with color	547 (58.4)
What type of color-white	94 (10.0)
What type of color-yellow	286 (30.5)
What type of color-green	60 (6.4)
What type of color-brown	64 (6.8)
What type of color-red	7 (0.2)
What type of color-cream	2 (0.7)

Pain during urination	702 (74.9)
Itching	606 (64.7)
Abdominal pain	307 (32.8)
Genital rash	549 (58.6)
Fever	230 (24.5)
Pain during sex	424 (45.3)

** denotes multiple responses HPV- Human Papillomavirus

Table 4: Perceived responses by respondents on where STI treatment can be sought for, and barriers in seeking medical care

Where STI treatment can be sought for, and barriers in seeking medical care **	**Frequency n (%)**
Where a person with symptoms of STI should seek help n=1033	
Hospital	1006 (97.4)
Pharmacy	116 (11.2)
Friend	19 (1.8)
Media	30 (2.9)
Parent	38 (3.7)
School	21 (2.0)
Sex partner	22 (2.1)
Internet	43 (4.2)
Suggested alternatives to where a person with STI symptoms can seek help n=1025	
Seek help from sex partner	79 (7.7)
Seek help from a friend	64 (6.2)
Use herbs or non-drug therapies	77 (7.5)
Use same drugs prescribed for a previous infection	252 (24.6)
Find some drugs through the internet	103 (10.0)
Seek help from a pharmacist	472 (46.0)
None of the listed options other than medical help	273 (26.6)
Reasons why medical care would not be sought for n=1019	
Unawareness of where to go	332 (32.6)
Unfriendly health professional	350 (34.3)
Being ashamed	861 (84.5)
Most health institutions are open during school hours	85 (8.3)
Others-fear	4 (0.3)

** Denotes multiple choice responses

Table 5: Responses on group of persons at risk of contracting STIs

Group of persons at risk of STIs	Are you at high risk Frequency n (%)	Are you at low risk Frequency n (%)	Are you at no risk Frequency n (%)
Individuals engaged in sex and are unmarried n=1032	937 (90.8)	83 (8.0)	12 (1.2)
Sexually active persons with multiple sex partners n=1043	1007 (96.5)	34 (3.3)	2 (0.2)
Individuals who do not use condom or protection during sex n=1039	973 (93.6)	59 (5.7)	7 (0.7)
Persons who inject drugs and share needles/syringes n=1034	880 (85.1)	124 (12.0)	30 (2.9)
Pregnant women n-=1010	214 (21.2)	594 (58.8)	202 (20.0)
Homosexual (gays and lesbians) n=1025	684 (66.7)	299 (29.2)	42 (4.1)
Persons in a relationship with a single partner n=1030	107 (10.4)	687 (66.7)	236 (22.9)
Persons who engage in oral sex n=1022	522 (51.1)	415 (40.6)	85 (8.3)

Table 6: Summary of responses on knowledge of STIs (n=1050)

S/N	Statement	True	False	Correct Answer Frequency n (%)
1	Sexually active persons are more susceptible to STI	894 (85.1)	156 (14.9)	894 (85.1)
2	STIs are more easily transmitted from males to females	571 (54.4)	479 (45.6)	571 (54.4)
3	The single greatest risk factor for contracting STIs is the number of sexual partners	743 (70.8)	307 (29.2)	743 (70.8)
4	Symptoms of common STIs such as Gonorrhea may not occur in women compared to men.	404 (38.5)	646 (61.5)	646 (61.5)
5	If neither person has ever had a sexually transmitted infection, a monogamous couple can engage in oral-genital or anal sex without fear of getting HIV	438 (41.7)	612 (58.3)	612 (58.3)
6	A sexually active person who has no symptoms does not have to worry about STIs	195 (18.6)	855 (81.4)	855 (81.4)

7	A person can only have one type of sexually transmitted infection at a time	168 (16.0)	882 (84.0)	882 (84.0)
8	It is important for both sex partners to be treated in an advent of STI?	851 (81.0)	199 (19.0)	851 (81.0)
9	A person can have reoccurrence of a previous STI even after treatment?	677 (64.5)	373 (35.5)	677 (64.5)
10	There are some vaccines for some of the STIs	651 (62.0)	399 (38.0)	651 (62.0)
11	STIs can be prevented by washing one's genitals after sex	175 (16.7)	875 (83.3)	875 (83.3)
12	An individual can have sex during the period of treatment for an STI	228 (21.7)	822 (78.3)	822 (78.3)
13	Use of condom can protect against contracting any kind of STIs	622 (59.2)	428 (40.8)	428 (40.8)
14	Whens STIs are not treated can lead to infertility	590 (56.2)	460 (43.8)	590 (56.2)
15	A pregnant women with STI can transmit the infection to her child	688 (65.5)	362 (34.5)	688 (65.5)
16	Having any kind of STI increases one's risk of HIV transmission	582 (55.4)	468 (44.6)	582 (55.4)

Table 7: Categories of knowledge level with cut off score

Knowledge level	Cut off Score	Frequency n (%)
Poor knowledge	<8	316 (30.1)
Fair knowledge	8 to 12	656 (62.5)
Good knowledge	>12	78 (7.4)
Mean score on the sixteen items	8.8±2.7	8.8±2.7

Table 8: Association of participants' in this study identified socio-demographics, educational and knowledge level

Variable (n=1050)	Poor knowledge Frequency n (%)	Fair knowledge Frequency n (%)	Good knowledge Frequency n (%)	χ^2	p-value
Age group(years)				1.366	0.850
16-20	179 (30.9)	361 (62.3)	39 (6.7)		
21-25	122 (29.5)	258 (62.3)	34 (8.2)		
>25	15 (26.3)	37 (64.9)	5 (8.8)		
Sex				1.277	0.528
Male	139 (28.5)	309 (63.4)	39 (8.0)		
Female	177 (31.4)	347 (61.6)	39 (6.9)		
Level				5.855	0.663
100	79 (26.1)	196 (64.7)	28 (9.2)		
200	82 (31.8)	158 (61.2)	18 (7.0)		

300	59 (29.2)	130 (64.4)	13 (6.4)		
400	69 (34.0)	120 (59.1)	14 (6.9)		
500	27 (32.1)	52 (61.9)	5 (6.0)		
Sexual status				0.441	0.802
Active	117 (28.6)	262 (64.1)	30 (7.3)		
Not active	184 (30.3)	377 (62.0)	47 (7.7)		
Religion				1.715	0.788
Christianity	256 (29.6)	544 (62.8)	66 (7.6)		
Islam	58 (33.0)	106 (60.2)	12 (6.8)		
Others	2 (25.0)	6 (75.0)	0		

No significant association at $p > 0.05$

DISCUSSION

Knowledge level, risk perception on STIs and the impact of sexual health education on knowledge of STIs were evaluated among non-medical undergraduates of the University of Ibadan in this study. The majority of the respondents acknowledged that they were adequately educated on STIs, hence had sufficient knowledge of STIs. This finding is higher compared to the 16.0% response reported in a study among university students in Istanbul, Turkey and a little lower than 67% reported among adolescents in Zaria, Nigeria.[7, 19]

HIV is the most identified STI among the participants and this is consistent with the 83.6% reported by Adigun *et al* (2017) among university students in Malaysia. Gonorrhea and syphilis were known among the students, which are similar to findings reported by Zhang *et al* (2013) among Chinese university students in Guangdong, China. HIV being the most known could be due to the frequent awareness programs on HIV than on other STIs in the country.

Genital herpes, hepatitis and chlamydia were also identified by more than one-third of the participants, while less than a quarter identified HPV, trichomoniasis and candidiasis as STIs. This shows that awareness of these STIs is very low. The poor awareness of trichomoniasis can be further supported by the few students who knew that parasites are agents of STIs transmission, a similar finding was found by Adigun *et al* (2017). Participants in this study identified virus as most causative organism of STIs; this could be influenced by ongoing publicity campaigns and global awareness initiatives on infectious

diseases that are virulent and incurable as such diseases become global burdens for example Human Immunodeficiency Virus, Hepatitis B and C Viruses, Human Papilloma Virus, among others. After HIV, bacteria and fungi were most known by majority. This was similar to the findings among college students from India, Africa, and New Guinea.[22] Abnormal discharge from the vagina/penis was the symptom of STI most identified by the students, similar to the findings in India.[22, 23] This finding could be because it is the most stated and obvious sign of an STI, presented by majority of Patients. Possibly some of the respondents have had such experiences, this is supported by Thairu *et al* (2014) study in Abuja, which reported that 59.28% of university students who were diagnosed of STIs had discharges.[23]

However, the ability of the respondents to recognize risk situations for STIs is remarkable. The majority of the respondents were able to recognize risky behaviours; such as multiple sex partners, sex without protection, homosexuality, drug use and its associated practices, these findings are consistent with a study in secondary schools in Northern Italy.[24] It is expected that since most people are aware of these, safer sex practices should be cultivated by them. Yet it is known that having sufficient knowledge alone does not always guarantee a person to have appropriate behavior.[25]

More than half of the participants perceived persons who engage in oral sex are at high risk, this can be attributed to knowledge limits of the routes of transmission of other kinds of STIs, and findings are similar to that by Bergamini et al (2013). Majority also believed that unmarried persons who are sexually active are more susceptible to STIs. In the study, more than one-third of sexually active students as indicated are therefore aware of their risks of STIs.

About one-third of the respondents were not aware that there can be a reoccurrence of a previous infection even after treatment. This perception can be related to more than half of them who are of the notion that condom use protects against all kinds of STIs. About one-tenth of the participants, who indicated being sexually active, perceived they were in danger of contracting HIV, this response suggests that the majority of them use condoms. About two-third of the participants were knowledgeable that some vaccines existed for some STIs. According to WHO, both HPV and hepatitis B virus are preventable with vaccination.[26] This can be related to the fact only a few indicated that HPV is an STI, for which a vaccine

is available among others. Therefore, low awareness level exist for HPV vaccines, a study also reported a low awareness level among high school students in Sweden.[27] In addition, one-third did not believe a pregnant woman with STI can transmit the infection to her child. More so, more than one-third of the students were unaware that untreated STIs can lead to infertility. Thus, there is little knowledge on STIs complications and consequences among the participants, similar results were reported among university students in Thailand.[28]

Overall, less than 10% had good knowledge, while majority had fair knowledge and generally the knowledge mean is fair. The result is lower than the 31.5% who were knowledgeable, but higher than 47.5% who were fairly knowledgeable, among Seto Semero high school students in Ethiopia[29]. This might be due to differences in education and teaching methods among the study subjects. This could probably be due to the low sample size (324) used in the study in Ethiopia. [29]

From this study, there was no association between sex, age, level, sexual status and religion and level of knowledge of STIs. Out of the 78 undergraduate students in the good knowledge category, about one-third were students in their first year. This may likely be because they were currently taking the GES 107 course or had just completed the course when this study was done. This in contrast to the findings of a study by Faust *et al* (2017) where they found a significant association between education level, age and knowledge level of STIs, a study based on 2013 Nigerian Demographic and Health Survey (NDHS).[30] Furthermore, findings in this study are inconsistent with a reported significant association between religion and knowledge of STIs.[31]

More than one-fifth of the respondents indicated use of same drugs as prescribe from a previous infection in a case of an STI acquisition. A behavior that suggests self-medication by participants which can lead to drug resistance to previously susceptible organisms of a presenting infection. The prevalence of self-medication in Nigeria, is very high, and there are reports of the use of antibiotics for minor ailments, colds, and menstrual pain, increasing the spread of antibiotic resistance.[32]

The major barrier to seeking medical care as indicated by respondents was being ashamed (stigmatization) in obtaining this type of service. Young people may feel medical providers are not

discreet enough. In Zimbabwe, youth considered quack doctors more discreet than healthcare workers.[33] Second and third barriers indicated includes unfriendly health professional and then unawareness of where to go. A study revealed that young persons both male and female complain about a lack of hospitability from healthcare providers when young people are suffering from STIs.[34]

One of the limitations of the study is that information derived from a questionnaire-based study is subjective. As such, there is a limit on the quantity and accuracy of information gotten. More so, since the questions focus on some sensitive issue the respondents might not provide detailed information even if confidentiality was assured. Therefore, while interpreting the results of our study, all of the aforementioned limitations may need to be carefully taken into account, and care should be taken to avoid drawing a broad generalization.

CONCLUSION

Results show that students in the study area are fairly knowledgeable about STIs, with HIV been the most identified. Though there are still knowledge gaps, in spite of the mandatory course on sexual heath and reproduction taken by the students. With less than ten percent of the students having good knowledge, therefore, the knowledge impact of the mandatory course is insufficient. There is need to review course curriculums, effective teaching techniques and aids be introduced for better information retention by students at all levels and beyond. Majority of the participants were able to identify risky behaviours and practices that predisposes an individual to acquisition of STIs. Furthermore, knowledge level was not associated socio-demographic characteristics.

ETHICAL CONSIDERATION

Ethical approval was obtained from the University of Ibadan/UCH Research and Ethics committee with the approval number UI/EC/19/0410.

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