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Knowledge of Sexually Transmitted Infections with Focus on HIV/AIDS and Hepatitis B among Secondary School Adolescents in Ekiti State, Nigeria

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ABSTRACT

Introduction

Sexually transmitted infections (STI) are a serious public health issue among adolescents because they often have limited knowledge and insufficient access to health services. Good knowledge of STIs, hepatitis B (HB) and the risk of developing diseases is essential to engage in preventive actions. The aim of this study is to assess the knowledge of STIs, including HIV/AIDS and HB among adolescents attending secondary school education in Ekiti State.

Methods

A cross-sectional study design was used in selecting 669 participants among secondary school adolescents from Ekiti State, Nigeria, through a multistage sampling technique. Data was collected using semi-structured, pre-tested, self-administered questionnaires. SPSS version 26 was used for data analysis. The descriptive statistics involved percentages, sample mean, and frequency tables. Inferential statistics such as Chi-square were used to test for associations between categorical variables. P-values < 0.05 were considered significant.

Results

The study included a total of 357 females (53.4%) and 312 males (46.6%), with 256 (38.3%) of participants below 14 years old, and 407 (61,7%) older than 14 years old.611 (91.3%) subjects had awareness of HIV/AIDS, and 233 (34.8%) of participants were aware of the Hb virus. 330 (49.3%) of students had good knowledge of STIs, and the remaining 339 (50.7%) of subjects were poorly informed on this topic. Being a male and age 14 years and above were significantly associated with good knowledge of STIs.

Conclusions

Awareness of HB infection is very low among adolescents from Ekiti state, Nigeria, and their knowledge of STDs is poor as well. Being a male and older adolescents are factors associated with having more knowledge of STIs. It is recommended that comprehensive education concerning STIs and sexually transmitted diseases and associated diseases should be started much earlier in life and especially for female adolescents.

Keywords: Knowledge of STIs, Hepatitis B, HIV/AIDS, Adolescent, Ekiti State, Health Literacy

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INTRODUCTION

Adolescence is a critical developmental stage that marks the transition from childhood to adulthood. According to the World Health Organization (WHO), adolescents are persons between the ages of 10 and 19 years[1]. Individuals in this stage experience significant physical, emotional, and social changes, often engaging in unsafe sexual exploration[1]. This increases their vulnerability to sexually transmitted infections (STIs) due to factors such as unprotected sexual activity with multiple partners, limited knowledge, and insufficient access to sexual health services[2,3,4]. In regions like sub-Saharan Africa, adolescents are at higher risk of STIs due to limited access to education and healthcare, cultural norms, discouraging early sexual health education, and socio-economic disadvantages[2]. Often, adolescents are not adequately informed about safe sexual practices or the consequences of unprotected sex, increasing their susceptibility to STIs[2].

Sexually transmitted infections, historically referred to as venereal diseases, are primarily spread through sexual contact including vaginal, anal, and oral sex[5]. Common STIs include HIV/AIDS, Hepatitis B, syphilis, gonorrhoea, chlamydia, and trichomoniasis. Despite global efforts and progress, STIs remain a significant public health issue, with HIV/AIDS and Hepatitis B being particularly severe and incurable[5].

HIV attacks the body's immune system, specifically the CD4 cells (T cells), which can lead to acquired immunodeficiency syndrome (AIDS) if not treated. In 2022, the WHO estimated over 1 million new non-viral STIs occur daily among the 15-49 years age group, with adolescents being particularly vulnerable. It was reported that 1 in 20 adolescents is infected with curable STIs excluding viral ones[6]. In Nigeria, approximately 1.98 million people, including many adolescents, are living with HIV, with a national prevalence rate of 1.3%, and significant regional variations. Despite strategies like the National Strategic Framework for HIV/AIDS (2023-2027) by the National Agency for the Control of AIDS (NACA), challenges such as harmful cultural practices, low awareness, poor healthcare infrastructure, and limited access to diagnostic and treatment services persist[7].

The hepatitis B virus is the cause of one of the major groups of hepatitis that can be transmitted through sexual activity. This virus poses significant health threats, affecting millions worldwide. Hepatitis B affects approximately 296 million people globally, with a significant concentration in Africa, including significant adolescent populations[8]. The virus can lead to chronic liver disease, cirrhosis and liver cancers, if not properly managed. According to Ajuwon et al. (2021), Nigeria is one of the hyperendemic HB zones with a pooled prevalence of 9.5%[9]. Low vaccination and treatment coverage, coupled with stigma and misinformation, contribute to the high prevalence and significant health burden of these infections[8].

Knowledge about STIs is crucial for adopting preventive measures among adolescents. Many behavioural theorists suggest that understanding a disease and its prevention is essential for individuals to engage in preventive actions[10]. Despite efforts from various local, regional, and international agencies to increase awareness, studies indicate that adolescents in Nigeria still possess low levels of awareness about STIs, including HIV/AIDS and Hepatitis B[11,12,13,14]. This knowledge gap is often coupled with risky sexual behaviours such as unprotected sex, multiple sexual partners, and early sexual debut, which heightens the risk of STI transmission[10].

In Ekiti State, no recent studies have assessed the awareness levels of STIs with focus on incurable ones such as HIV/AIDS and HB among adolescents. This gap in research hinders the development of effective strategies to combat STI transmission and improve sexual health outcomes. Adolescents in Ekiti State face unique challenges and barriers that need to be understood to tailor interventions effectively. Without a clear understanding of the specific issues and barriers faced by high school adolescents, efforts to reduce STI transmission and improve sexual health outcomes will remain ineffective. This study aims to fill this gap by providing a comprehensive analysis of STI knowledge among

high school students in Ekiti State with focus on HIV/AIDS and HB. The findings will help enhance health outcomes, support evidence-based policy development, and lead to targeted educational campaigns.

Methods

Ekiti State is one of the states in southwestern part of Nigeria, with its capital in Ado-Ekiti. Ekiti State has sixteen Local Government Areas (LGAs) of which Ado-Ekiti is one (one town LGA). In Ekiti, students spend 6 years in secondary school. These six years are divided into junior secondary School (JSS 1 – 3) and senior secondary school (SSS 1 – 3).

The study population included students in JSS1 – SSS3 attending public secondary school. The chosen design was a cross-sectional descriptive study which used surveys as the means for data collection.The study was conducted in a public secondary school in Ekiti-State and a multistage sampling technique was used. Two LGAs were selected by simple random sampling by balloting, then a school was selected per LGA through the same technique. Simple random sampling (balloting) was used to select one arm in each of the classes from JSS 1 to SSS 3, as well. The sample size was shared among the selected arms by proportionate allocation and systematic random sampling was used to select the participants in each arm using a table of random numbers.

A pre-tested, semi-structured, self-administered questionnaire was used. Its sections were on sociodemographic characteristics and knowledge on STIs (HIV/AIDS and Hb). Questions on knowledge were on mode of transmission, symptoms and methods of prevention. Every correct answer was given 1 point, and incorrect answers were given the score 0. The mean was used to categorise the level of knowledge. The point below the mean was categorized as "low", and the mean and above as "high".

The data was analysed using SPSS version 26. The descriptive analysis was done using frequency tables, percentages, mean and standard deviation. Associations between sociodemographic characteristics and knowledge of STIs were determined using the Chi-square test.

Ethical approval was obtained from the Ethics and Research Committee of Ekiti State University Teaching Hospital, Ado-Ekiti, with protocol number EKSUTH A67/2023/05/017. Permission was equally obtained from the Ministry of Education and from the principal of the school. Consent was obtained from the participants, and they were informed that they can withdraw from the study at any time.

Results

As shown in Table 1, the total number of males was 312 (46.6%), while that of females was 357 (53.4%). 256 (38.3%) of the respondents were under 14 years old, and 407 (61.7%) were 14 years and above. The mean age was 14.1 ± 2.17. Those in Senior Secondary School were 340 (50.8%), and 598 (89.4%) came from Christian homes. Among the respondents, 505 (75.5%) were from nuclear families, while 51 (7.6%) were from polygamous families.

Table 1: Socio-demographic characteristics

Characteristics	Frequency N = 669	Percentage
Gender		
Male	312	46.6
Female	357	53.4
Class		
Junior Secondary School	329	49.2
Senior Secondary School	340	50.8
Age in years		

< 14 years	256	38.3
≥ 14 years	407	61.7
X ± S.D.	14.1 ± 2.17 yrs	
Religion		
Christianity	598	89.4
Islam	69	10.3
Traditionalist	2	0.3
Family type		
Single parent	112	16.9
Nuclear	505	75.5
Polygamous	51	7.6
Others	1	0.1
Lives with		
Both parents	552	82.5
Mother only	58	8.7
Father only	15	2.2
Guardian	44	6.6

Table 2 shows that the majority of participants, 611 (91.3%), were aware of HIV/AID compared with HB, where only 233 (34.8%) were aware. Out of all respondents, 366 (68.4%) were aware of gonorrhoea, and only 50 (9.3%) were aware of herpes simplex.Among the respondents, 106 (15.8%) ever had an STI, 328 (77.0%) and 123 (28.9%) respectively knew that pain during urination and penile discharge are symptoms of STI.

Table 2: Awareness of types and symptoms of STI

Variables	Frequency	Percentage
Heard of HIV/AIDS?	611	91.3
Heard of Hepatitis B?	233	34.8
What other STIs do you know		
Gonorrhoea	366	68.4
Syphilis	223	41.7
Trichomoniasis	83	15.5
Herpes Simplex	50	9.3
Multiple sexual partners increases chance of contracting STI		
Yes	429	64.1
No	74	11.1
I don't know	166	24.8
Symptoms of STI		
Pain during urination	328	77.0
Penile discharge	123	28.9
Ulcers/sores in the genital area	79	18.5
I don't know	182	29.9
Ever had an STI?		
Yes	106	15.8
No	563	84.2

As shown in Table 3, 465 (69.5%) of the respondents agreed that condoms will reduce the risk of being infected with an STI and only 225 (33.6%) said that it is not embarrassing for them to obtain a condom. Three hundred and seventy-nine (56.7%) were aware that there is a vaccine for preventing Hepatitis, and out of these, only 152 (40.2%) were sure that they had gotten the vaccine.

Table 3: Knowledge of Preventing STIs

Variables	Frequency N = 669	Percentage
Abstinence, the most effective means of avoiding STIs		
Yes	404	60.4
No	265	39.6
Ever seen a condom		
Yes	354	52.9
No	315	47.1
Condoms can reduce the risk STIs		
Yes	465	69.5
No	204	30.5
It's embarrassing for me to obtain condoms		
Yes	444	66.4
No	225	33.6
Aware of the vaccine for Prevention Hepatitis?	**N = 669**	
Yes	379	56.7
No	290	43.3
If aware, have you been vaccinated?	**N = 379**	
Yes	152	40.2
No	227	59.8

Looking at the overall knowledge, 330 (49.3%) had good knowledge while 339 (50.7%) had poor knowledge, as Figure 1 suggests.

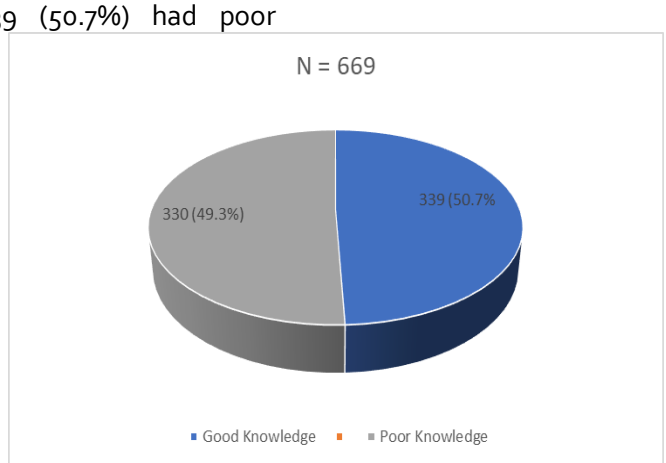

Figure 1: Overall knowledge of STI

Gender and age were associated with knowledge, where 170 (54.5%) of the males had overall good knowledge of STIs and HB, while the females with good knowledge were only 160 (44.8%). Of those that were 14 years and above, 217 (52.5%) had good knowledge and 196 (47.5%) had poor knowledge. These differences are statistically significant (Table 4). The difference in the knowledge of those from nuclear families, 256 (50.7%), and from polygamous families, was not statistically significant, as shown in Table 4.

Table 4: Relationships between sociodemographic characteristics and overall knowledge of STIs

Variables	Good Knowledge N = 330 (%)	Poor Knowledge N = 295 (%)	X^2	p Value
Gender				
Male	170 (54.5)	142 (45.5)		
Female	160 (44.8)	197 (55.2)	6.228	0.013*
Class				
Junior Secondary School	143 (43.5)	186 (56.5)		
Senior Secondary School	187 (55.0)	153 (45.0)	8.901	0.003*
Age in years				
< 14 years	113 (44.1)	143 (55.9)		
≥ 14 years	217 (52.5)	196 (47.5)	4.463	0.039*
Religion				
Christianity	295 (49.3)	303 (50.7)		
Islam	34 (49.3)	35 (50.7)		
Traditionalist	1 (50.0)	1 (50.0)	0.000	1.000
Family type				
Single parent	47 (42.0)	65 (58.0)		
Nuclear	256 (50.7)	249 (49.3)		
Polygamous	27 (52.9)	24 (47.1)		
Others	0	1 (100)	4.444	0.217
Living with				
Both parents	274 (49.6)	278 (50.4)		
Mother only	31 (53.4)	27 (46.6)		
Father only	5 (33.3)	10 (66.7)		
Guardian	20 (45.5)	24 (54.5)	2.247	0.523

Discussion

Sexually transmitted infections are a public health concern among adolescents, particularly infections with HIV and HB, as their associated diseases are incurable and only modifiable. In the current study, awareness levels of different types of STIs were shown to differ, with the most awareness directed at HIV, followed by gonorrhea and the least known being herpes simplex. This is similar to other studies' findings, where the highest level of awareness was documented for HIV[2,3,4]. The reason for this is not difficult to anticipate, as information on HIV/AIDS is all over the media space and this has heightened the awareness on STIs generally, while the information on other specific STIs is low[4]. Contrary to these results is the finding from a survey conducted by Drago et al., (2016) among adolescents in Italy where the awareness for all STIs was generally low[5].

In this study, nine out of ten students were aware of HIV, almost seven out of ten were aware of

gonorrhoea and this was followed by syphilis, in which case four out of ten were aware. When compared to the study done by Koray et al. (2022) in Ghana, who documented this same order, awareness of HIV was higher and that of gonorrhoea and syphilis were lower[4]. On the other hand, when compared with findings from a similar setting, about eight years earlier, the awareness order was the same, but the levels of awareness of all three diseases were higher[2]. Considering this, the level of awareness has increased but there is still a need for more awareness to be created for STIs other than HIV. Although it is incurable and often has serious complications, only three out of ten of the respondents were aware of hepatitis B, and about one out of ten was aware of herpes simplex. It is imperative for more awareness to be created on social media, television and radio.

Awareness of HIV is generally high in most research articles, though it varies from setting to setting, except in a few instances, but most times this level of awareness does not correspond to the depth of knowledge exhibited by the participants[6]. In this current study, the awareness level was 91.3%, which is higher than the Badru et al. (2017) findings of 72.0% in southwest Nigeria[7], and much higher than in the study of Nayak et al. (2016), 47.5% in Jabalpur District[6]. This low level might be attributable to the fact that it was conducted in a rural area. The awareness level in the current study was low compared to the Nubed report from Cameroon[8], where all the participants were aware of HIV. The reason for the high awareness is the publicity given to HIV/AIDS on television, radio, and in newspapers. Considering the disparity between awareness and knowledge, there is a need for comprehensive education, including it in our school curriculum from primary school will be necessary. This should be more detailed and age appropriate[7].

The awareness of hepatitis B in the present study was three in ten, and this is comparable to the finding by Agbesanwa et al. (2023), in the same environment[9]. This level of awareness is far lower than the results from another study by Joseph et al., (2021) among undergraduate students[10], and this is understandable because the students were enrolled in a higher education institution, so it is expected that they should be more knowledgeable compared to the respondents in secondary school. Also, the same findings are low compared with findings from Sannathimappa et al., (2019) in Oman[11] and Ali et al., (2022) in Baghdad[12]. The low level of awareness in this study might be attributed to the study setting, which is an indication that there is a need for personalized and adapted interventions that will create more awareness in this environment. A little above half of the respondents were aware of the HB vaccine as a preventive measure, and only 4 in 10 out of those aware had been vaccinated. This level of HB vaccine awareness is still better than the findings documented elsewhere[9,12]. The level of vaccine awareness in this study is lower than the findings from Joseph et al., (2021), and Elegbede et al., (2022)[10, 13], though the vaccine uptake in our study is higher than in the latter. All of these factors point to the fact that there is a need for comprehensive education on HB, its potential complications, and how it can be prevented.

The majority of the respondents know that painful micturition is one of the symptoms of STIs, apart from this, other common symptoms mentioned were penile and vaginal discharge and genital ulcer. This is supported by the findings in Amu et al., (2015), except that the majority of their study participants said that weight loss is a symptom of STIs as well[2].Koray et al., (2022) in Ghana documented these symptoms as well, with the highest proportion of the respondents agreeing with penile discharge being a symptom.

Knowledge of prevention in this study is good, with 60.4% of the students answering that abstinence is a good preventive measure, and 69.5% saying that using a condom will prevent contracting STIs. Despite this knowledge, almost half of them had not seen condoms before and about seven out of them said it would be embarrassing for them to obtain condoms. The implication of this is that actual practice will be very poor. This knowledge of prevention is similar to the study done in Ghana[4], and on the contrary, a study in Italy has demonstrated far lower knowledge of prevention[5]. It is still imperative for more education on prevention,

because a little above one third of participants did not have good knowledge of this. This makes them vulnerable to STIs and the implication of high risks of contracting a virus is huge for their physical and mental health, and their fertility in the future.

In general, the overall level of good knowledge of the respondents on STI in this study is about 49.3%. This is in consonance with the findings of Koray et al., (2022) in Ghana among a similar population[16]. Our findings on the overall knowledge are different than in the report from Amu and Adegun where a lower proportion was documented in the same environment in 2015[13]. This reflects a trend of knowledge increase, though there is need for improvements. Nzoputam et al., (2022) in Southern Nigeria reported a proportion of good level of knowledge higher than in our study [26], the likely reason for this being the fact that their study was among undergraduates of a higher education institution, and it is expected that they will have a better knowledge compared to those in secondary school. This level of knowledge in this study shows that there is a need for increased media enlightenment on mode of transmission, symptoms and prevention of STIs.

The older age group had a higher level of knowledge compared to the younger ones. This is worrisome because adolescents initiate sexual intercourse at less than 15 years of age nowadays, and some even with multiple sexual partners[15]. This is an indication that there should be a proactive movement to intervene at all levels: from the government making policies that will impact knowledge, to the inculcation of sexual education into the school curriculum at the primary school level. Parents and the communities need to be part of this movement.

Conclusion

The awareness of HIV/AID is high while that of HB is low among adolescents in Ekiti state, Nigeria. The known symptoms of STI by the respondents were painful micturition, penile and vagina discharge and genital ulcer. Knowledge of preventive measures is good, but the general knowledge is poor. We recommend the development of a comprehensive, age appropriate curriculum on STIs by the government to be taught in schools from primary school to secondary school, and the involvement of parents and communities in this movement.

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