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Research Article

# The Awareness and Knowledge of Sexually Transmitted Infections among Secondary School Adolescents in Enugu East Local Government Area, Enugu State, Nigeria

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## ABSTRACT

The objective of this study is to determine the level of awareness and knowledge of sexually transmitted infections among secondary school adolescents in Enugu East local government area, Nigeria. The study was a descriptive cross-sectional design. Three hundred and seventy-two adolescents selected from public and private secondary schools in Enugu East Local Government Area of Enugu state were recruited for the study using a simple random sampling technique. A total of 90% respondents were aware of sexually transmitted infections. 30% of those surveyed in the majority admitted to receive their news from radio and/or television. In general, the most popularly known type of STI amongst the population were HIV, 52.3% and gonorrhoea, 20%. From the study, the most popularly known modes of transmission were unprotected sexual intercourse, 56% and the three most known symptoms in decreasing order of importance were discharge from the genitals, 31%; body rashes, 20.7%; and painful urination, 15%. Overall, a greater percentage of 60% of the respondents had a good knowledge of sexually transmitted infections, and the rest had fair and no knowledge at all of sexually transmitted infections. The study concluded from survey findings that secondary school adolescents in Enugu East Local Government Area are mostly aware of sexually transmitted infections. Beyond HIV/AIDS, attention should be given to other STIs like *Trichomonas*, *Gonorrhoea*, and *Herpes Simplex Virus*.

**Keywords**: *Adolescents, STIs, Secondary schools, HIV/AIDS, Herpes Simplex Virus*

## INTRODUCTION

STIs (sexually transmitted infections) are diseases that are spread primarily through sexual contact. Amongst these diseases are treatable infections like chlamydia, gonorrhoea, and syphilis and the untreatable ones like Human Immune Virus (HIV), Human Papilloma Virus (HPV), and Hepatitis B infections (Nsuam *et al.,* 2010; WHO, 2013). According to WHO (2013), Some STIs can be transmitted non-sexually, such as by blood or blood products and via mother-to-child transmission during pregnancy and childbirth, including hepatitis B, Human Immune Virus, chlamydia, syphilis, gonorrhoea, herpes, and Human Papilloma Virus. However, sexual intercourse has been linked to the transmission of over 30 different germs, viruses, and parasites. Eight of these viruses have been associated with the highest rates of sexually transmitted infections. Syphilis, gonorrhoea, chlamydia, and trichomoniasis are the four illnesses that are currently treatable. Hepatitis B, herpes simplex virus (HSV), HIV, and human papillomavirus are the other four viral illnesses that are incurable (HPV). Treatment can help to alleviate or modify the symptoms or sickness caused by lethal viral infections (WHO, 2021).

The frequency of these sexually transmitted infections (STIs) has apparently reached a level of concern among stakeholders (UNAIDS, 2016). This is due to the fact that adolescents, who are the most vulnerable to these diseases, account for a significant proportion of the total global population (Mobey, 1996). STIs are a critical worldwide public health concern, and their effects, particularly in sub-Saharan Africa, dramatically increase population morbidity and death. (Shewarega *et al.,* 2022).

Sexually transmitted disease (STD) is a global public health issue in Nigeria and across the world. The World Health Organization (WHO) defines, an adolescent as any person between the age of 10 and 19. In Nigeria, Adolescents make up a significant fraction of the population (22%) and are particularly vulnerable to STDs due to peer pressure and the desire to try new sexual activities (Akokuwebe *et al.,* 2016). According to a Nigerian survey on the prevalence and correlates of early sexual debut among adolescents, 18.6 percent experienced sexual debut before their 15th birthday - 16.6 percent in boys and 20.2 percent in girls (Fehintola *et al.,* 2018). In 2012, 498.9 million cases of STIs were reported among adults aged 15–49 years (Newman *et al.,* 2015), while two-thirds of new HIV infections occurred among youths, mostly young women aged 15–24 (Newbern *et al.,* 2013). Young people are at greater risk of contracting an STI for a variety of reasons, including biological predisposition in young women's bodies to sexually transmitted diseases (STDs), a lack of access to healthcare, worries about confidentiality, and multiple sexual partners, among others (CDC, 2018). This study was carried out to assess the level of awareness and knowledge of adolescents in Enugu, Nigeria, about sexually transmitted infections and various sources of information.

## MATERIALS AND METHODS

**Background of the Study Area**

Enugu East Local Government Area is one of the seventeen Local Government Areas in Enugu State. It has its headquarters in the town of Nkwo Nike. It comprises of twelve (12) wards which includes: Abakpa I, Abakpa II, Amorji, Ibagwanike/edem, Mbulu-njodo East, Mbulu-njodo West, Mbuluiyiukwu Mbuluowehe, Trans-ekulu Ugwugo, Nike Umuchigb, Umuenwene. It has a total size of 383 km2 and a population of 279,089 people, according to the 2006 census. The postal code area is 400. The Nike people, who are the original inhabitants, constitute the bigger part of the population. Traders, artisans, and transporters make up the majority of the population; farmers and civil servants are also present. There are numerous public and private elementary and high schools in the area including tertiary institutions within Enugu East Local Government Area.

**Target Population**

Both male and female students in private and public secondary schools in Enugu East local government area were targeted for this study.

**Study Population**

The study involved students in SS1-SS3 of public and private secondary school students in Enugu East Local Government Area. According to the annual school census report conducted by the Enugu State Ministry of Education in 2013, the summary of public senior secondary enrolment by sex and LGA has a total population of 5,095 students in Enugu East LGA, with boys numbering 1,577 while girls are 3,518.

**Study Design**

This study was a prospective cross-sectional descriptive survey.

**Sample Size Determination**

The Taro Yamane's model for determining sample size was used to select the 372 respondents for the study. The total number of students in secondary school in Enugu East is 5,095. Therefore, the sample size formula

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

Was used, where *n* is the Sample size to be determined, *N* is the Total population size, *e* is Margin of error at 0.05 or 5%, and *1* is the Theoretical constant.

$$n = 5095/1+ 5095\ (0.05)^2 = 372$$

**Sampling Technique**

Simple random sampling technique was employed for this study. In order to determine the population, 12 schools with an average population of 31 students in senior classes were randomly selected.

The overall sample size was shared among selected classes by proportionate allocation using the formula

$$\text{Class sample size} = \frac{\textit{Total Class Size}}{\textit{Total School Size (SS1 to SS3)}} \times \text{Total sample size.}$$

**Data Collection Instruments and Methods**

A pretested self-administered questionnaire was used for data collection. The questionnaire obtained information on the respondents' sociodemographic traits as well as their

awareness of sexually transmitted illnesses. Pretested questionnaires were presented to students whose schools were not selected for the study, thus serving as the pilot study.

**Data Analysis**

Data obtained from the survey was analyzed using the Statistical Package for the Social Sciences (SPSS).

**Ethical Issues**

Anonymity of the respondents was assured and ensured. The confidentiality of the information they gave was also maintained. All records and pertinent materials were kept in lockable cabinets with only authorized workers having access.

Ethical clearance was obtained from the Ethics and Research Committee of the National Open University of Nigeria. Permission to conduct the study was obtained from the Ministry of Education as well as principals of several schools. The respondents' written informed consent was also collected.

## RESULTS

A total of 372 questionnaires copies of questionnaires were distributed, and 300 were properly filled and returned. Respondents of ages 10 through to 19 were represented, with a large number in the 15 – 19 bracket and accounting for 255 (85%) of the respondents (Table 1). 45 (15%) were aged between 10 –to- 14. A total of 120 respondents (40%) were in SS1, while both SS2 and SS3 had 90 respondents with 30%, respectively. One hundred and seventy (170) (56%) respondents were females; 292 (97.3%) were Christians, and 284 (94.7%) were members of the Ibo ethnic group (Table 1).

A total of 270 (90%) respondents were aware of sexually transmitted infections, while 30 (10%) respondents were not aware (Table 2). A majority of 90 (30%) respondents affirmed getting their information from TV/Radio, 63 (21%) from the internet/social media, 50 (18%) from Friends/Relations, and a mere 12 (4%) respondents were informed through Newspaper and Public talks/seminar respectively (Table 2).

**Table 1**. Demographic characteristics of the respondents among secondary school adolescents in Enugu East Local Government Area, Enugu state, Nigeria.

| Characteristics | Frequency | Percentage (%) |
|---|---|---|
| **Age (Years)** | | |
| 10 - 14 | 45 | 15.0 |
| 15 - 19 | 255 | 85.0 |
| Total | 300 | 100.0 |
| **Sex** | | |
| Males | 130 | 44.0 |
| Females | 170 | 56.0 |
| Total | 300 | 100.0 |
| **Class** | | |
| SS 1 | 120 | 40.0 |
| SS 2 | 90 | 30.0 |
| SS 3 | 90 | 30.0 |
| Total | 300 | 100.0 |
| **Religion** | | |
| Christianity | 292 | 97.3 |
| Islam | 8 | 2.7 |
| Traditional | 0 | 0.0 |
| Total | 300 | 100.0 |
| **Ethnicity** | | |
| Ibo | 284 | 94.7 |
| Yoruba | 13 | 4.3 |
| Hausa | 03 | 1.0 |
| **Total** | **300** | **100.0** |

**Table 2.** Awareness of Sexually Transmitted Infections among secondary school adolescents in Enugu East Local Government Area, Enugu state, Nigeria.

| Awareness of Sexually transmitted infections | Frequency | Percentage (%) |
|---|---|---|
| Aware | 270 | 90 |
| Not aware | 30 | 10 |
| Total | 300 | 100 |

| S/No | Sources of Information | Frequency *n* = 270 | Percentage (%) |
|---|---|---|---|
| 1 | TV/Radio | 90 | 30 |
| 2 | Newspaper | 12 | 4 |
| 3 | Internet/social media | 63 | 21 |
| 4 | Billboards/Posters | 15 | 5 |
| 5 | Hospital/Health workers | 28 | 10 |
| 6 | Friends/Relations | 50 | 18 |
| 7 | Public talks/seminar | 12 | 4 |
| | **Total** | **270** | **100** |

In general, the most popularly known type of STI amongst the population were HIV 157 (52.3%) and gonorrhea, which has 60 respondents representing 20% of the population, with Human Papillomavirus 8 (2.7%) being the least known type (Table 3)

**Table 3.** Different types of sexually transmitted infections among secondary school adolescents in Enugu East Local Government area, Enugu State, Nigeria

| S/No | Name of Sexually transmitted infection | Frequency | Percentage (%) |
|---|---|---|---|
| 1 | HIV | 157 | 52.3 |
| 2 | Hepatitis B | 35 | 11.7 |
| 3 | Syphilis | 13 | 4.3 |
| 4 | Herpes simplex virus | 9 | 3 |
| 5 | Human | 8 | 2.7 |
| 6 | Papillomavirus | 11 | 3.7 |
| 7 | Chlamydia | 7 | 2.3 |
| 8 | Trichomonas Gonorrhoea | 60 | 20 |
| | **Total** | **300** | **100** |

From the study, the most popularly known modes of transmission were unprotected Sexual intercourse 168 (56%); followed by infected blood and blood products 50 (16.7%); and sharing infected needles and syringes 40 (13.3%) (Table 4).

**Table 4**. Modes of transmission of sexually transmitted infection among secondary school adolescents in Enugu East Local Government Area, Enugu state, Nigeria.

| **Modes of transmission** | **Frequency** | **Percentage (%)** |
|---|---|---|
| Needles and syringes | 40 | 13.3 |
| Unprotected sexual intercourse | 168 | 56 |
| Blood and blood products | 50 | 16.7 |
| Mother to child | 4 | 1.3 |
| Sharing the same towel and inner wears with an infected person | 15 | 5 |
| Exposure to cough and sneeze from infected persons | 3 | 1 |
| Sharing a restroom with an infected individual | 20 | 6.7 |
| **Total** | **300** | **100** |

The three most known symptoms in decreasing order of importance were discharge from the genitals 93 (31%); body rashes 62 (20.7%); and painful urination 45 (15%) (Table 5). In general, a greater percentage of 180 (60%) of the respondents had a good knowledge of sexually transmitted infections, and 90 (30%) had fair knowledge, while 30(10%) had no knowledge of sexually transmitted infections (Table 6).

**Table 5.** Knowledge of symptoms of sexually transmitted infections among secondary school adolescents in Enugu East Local Government Area, Enugu state, Nigeria.

| S/No | Symptoms of sexually transmitted infections | Frequency | Percentage (%) |
|---|---|---|---|
| **1** | Weight loss | 39 | 13 |
| **2** | Painful urination | 45 | 15 |
| **3** | Body rashes | 62 | 20.7 |
| **4** | Discharge from the genital area | 93 | 31 |
| **5** | Swelling/boil around the genitals | 21 | 7 |
| **6** | Wound/sore in the genital area | 40 | 13.3 |
| | **Total** | **300** | **100** |

**Table 6.** General knowledge of sexually transmitted infections among secondary school adolescents in Enugu East Local Government Area, Enugu state, Nigeria.

| Knowledge of sexually transmitted infection | Frequency | Percentage (%) |
|---|---|---|
| Very well | 180 | 60 |
| Not so well | 90 | 30 |
| Not at all | 30 | 10 |
| **Total** | **300** | **100** |

## DISCUSSION

We performed a study on secondary school students in the Enugu East Local Government Area to determine their awareness of and knowledge of sexually transmitted illnesses. The study's findings demonstrated that a high proportion of secondary school students were aware of sexually transmitted infections, with a low proportion of the population was not aware. This finding is consistent with that conducted in South Western Nigeria, in which 92.4% of the respondent's reported awareness of STIs (Amu and Adegun, 2015). It is also similar but lower than that of a study conducted in Bajhang, Nepal, in which 99.6% were aware of STIs (Thapa and Chand, 2018).

Radio and television and internet, and social media were the primary sources of information. This is in contrast to the results of a recent study in South Western Nigeria in which radio and television (electronic media), teachers, and newspapers were all crucial sources of knowledge (Amu and Adegun, 2015), and that conducted in Pulau Pinang, Malaysia in which the major sources of information were visual and print media (Anwar *et al.,* 2010) The fact that radio/television and internet/social media is the major source of information is due to the presence of televisions and/or radios in most homes, and also the fact that most adolescents have access to an internet-enabled cell phone. This gives

them access to social media where countless information about STIs are disseminated.

In the study, there is a high level of knowledge and awareness of HIV/AIDS as a sexually transmitted infection. However, the rate fell rapidly to unsatisfactory levels for other STIs. Another study conducted in Europe found similar results (Samkange-Zeeb *et al.,* 2013). This also agrees with the findings of Amu & Adegun (2016). In addition, it is supported by Samkangge & Mikolajczyk (2013) finding where 99% reported hearing of HIV/AIDS and as expected and consistent with the findings of Anwar et al. (2010). The high level of awareness may be due to the HIV/AIDS awareness programs conducted through the media (Thapa and Chand, 2018). While there is widespread publicity about HIV/AIDS, awareness and knowledge of other types of STIs might be discouraging.

Regarding the most known mode of transmission, the majority of the respondents (56%) knew STIs were transmitted through sexual contact. It can be deduced from this result that the majority of the respondents have good awareness and knowledge about the mode of transmission. A recent study backs up this conclusion in Bajhang, Nepal (Thapa and Chand, 2018)., and is similar to findings reported among adolescents in Ado Ekiti (Amu and Adegun, 2015). In a separate study of Thai university students, practically everyone realized that sexual intercourse was a way for STDs to spread (Svensson and Waern, 2013).

Regarding the symptoms, in this study, the three most commonly mentioned symptoms of STI were discharge from the genital area, body rashes, and painful urination. This contrasts with that reported among Ado Ekiti in South Western Nigeria, in which the most commonly mentioned symptoms were weight loss, painful micturition, and genital ulcer (Amu and Adegun, 2015). It also contradicts that of a study carried out on higher secondary school students in Bajhang, Nepal, in which the most popularly known symptoms of STIs were common cold, delayed wound healing, blood in urine, loss of appetite, rashes, vomiting, etc.

Overall, the major sources of their information were the TV/Radio, internet/social media. Unprotected sexual intercourse was identified as the most popularly known amongst respondents' routes of sexually transmitted infections. The major symptoms of sexually transmitted infections range from a genital discharge, painful urination, body rashes, and weight loss.

## CONCLUSION

The study concluded from survey findings that secondary school adolescents in Enugu East Local Government Area have a good awareness of sexually transmitted infections. However, more emphasis should be made on ensuring a detailed understanding of STIs. Beyond HIV/AIDS, attention should be given to other STIs like Trichomonas, Gonorrhoea, and Herpes Simplex Virus. Sex education should be improved to provide more information on other STIs that are not HIV/AIDS.

## RECOMMENDATION

Health workers should increase the awareness of these infections by organizing seminars and training students on sexually transmitted infections and also sensitize pregnant women on the benefits of antenatal care in order to avoid infections that can be transmitted from mother to child.

Stakeholders and policymakers in both the health and education sector should work jointly towards ensuring the reduction of sexually transmitted infections in the society through sustained and encouraged the teaching of morals and values to the young ones.

## AUTHORS' CONTRIBUTIONS

ENU: conceived the presented idea, developed the theory, performed the computations, contributed to interpreting the results, and wrote the manuscript. OAP: Contributed to the design and implementation of the research, the analysis of the results, and the manuscript's writing. LOA: carried out the research and contributed to the research writing. CEO: performed the analytic calculations and performed the numerical simulations. CPA: experimented and carried out the practical.

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There was no fund for this research

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest

## REFERENCES

Akokuwebe, M.E., Daini, B., Falayi, E.O., and Oyebade, O. (2016). Knowledge and attitude of sexually transmitted diseases among adolescents in Ikeji-Arakeji, Osun State, in South-Western Nigeria. *African Journal of Medicine and Medical Science*. 45(3):281– 289.

Amu, E.O., and Adegun, P.T. (2015). Awareness and knowledge of sexually transmitted infections among secondary school adolescents in Ado Ekiti, South Western Nigeria. *Journal of Sexually Transmitted Diseases*. 2(3):10-16.

Anwar, M., Sulaiman, S.S.A., Ahmadi, K., and Khan, T.M. (2010). Awareness of school students on sexually transmitted infections (STIs) and their sexual behavior: a cross-sectional study conducted in Pulau Pinang, Malaysia. *BMC Public Health*. 10:46-52

Centers of Disease Control and Prevention (2018). Sexually transmitted diseases. CDC fact sheet: Retrieved from https://www.cdc.gov/std/life-stages-populations/stdfact-teens.html. Information for teens and young adults: staying Healthy and Preventing STDs. May 21, 2021

Fehintola, F.O., Fehintola, A.O., Ogunlaja, O.A., Akinola, S.A., Awotunde, T. O., Ogunlaja, I. P., and Ogundele O.A. (2018). Prevalence and Predictors of Early Sexual Debut among Adolescents in Ogbomoso, Nigeria. *American Journal of Public Health Research*. *6*(3),148-154. doi: 10.12691/ajphr-6-3-4

UNAIDS/WHO Working Group on Global HIV/AIDS and STI surveillance. Surveillance of the HIV/AIDS epidemic: a comprehensive package. Geneva: World Health Organization; 2016 (http://www.who.int/hiv/pub/surveillance/2013package/en/, accessed 15 May 2014)

World Health Organization, Joint United Nations Programme on HIV/AIDS (UNAIDS), United Nations Children's Fund. Global AIDS response progress reporting 2014: construction of core indicators for monitoring the 2011 United Nations political declaration on HIV and AIDS. Geneva: UNAIDS; 2017 (http://www.unaids.org/en/media/unaids/contentassets/documents/document/2017/GARPR_2014_guidelines_en.pdf, accessed 15 May 2017)

Mobey, D. (1996). "STD Control: a key issue for productive health". *African Health*. 18, 24-25.

Newbern, E.C., Anschuetz, G.L., Eberhart, M.G., Salmon, M.E., Brady, K.A., De Los Reyes, A., Baker, J.M., Asbel, L.E., Johnson, C.C., Schwarz, D.F. (2013). Adolescent sexually transmitted infections and risk for subsequent HIV. *American Journal of Public Health*. 103(10),1874-1881

Newman, L., Rowley, J., Vander Hoorn, S., Wijesooriya, N.S., Unemo, M., Low, N., Stevens, G., Gottlieb, S., Kiarie, J., and Temmerman, M. (2015). Global Estimates of the Prevalence and Incidence of Four Curable Sexually Transmitted Infections in 2012 Based on Systematic Review and Global Reporting. *PLoS One*. 8;10(12),e0143304. doi: 10.1371/journal.pone.0143304.

Nsuam, M.J., Sanders, L.S., and Taylor, S.N. (2010). "Knowledge of sexually transmitted infections among high school students," *American Journal of Health Education*. 2010; 41(4):206–217.

Samkange-Zeeb, F., Mikolajczyk, R.T., and Zeeb, H. (2013). Awareness and knowledge of sexually transmitted diseases among secondary school students in two German cities. *Journal of Community Health.* 38:293-300

Samkange-Zeeb, F.N., Spallek, L., and Zeeb, H. (2011). Awareness and knowledge of sexually transmitted diseases (STDs) among school-going adolescents in Europe: a systematic review of published literature. *BMC Public Health*. 11:727. doi: 10.1186/1471-2458-11-727.

Shewarega, E.S., Fentie, E.A., Asmamaw, D.B., Negash, W.D., Fetene, S.M., Teklu, R.E., Aragaw, F.M., Alemu, T.G., Eshetu, H.B., and Belay, D.G. (2022). Sexually transmitted infections related care-seeking behavior and associated factors among reproductive age women in East Africa: a multilevel analysis of demographic and health surveys. BMC Public Health. 9;22(1):1714. doi: 10.1186/s12889-022-14120-w. PMID: 36085047; PMCID: PMC9463758.

Svensson L, and Waern, S. (2013). Knowledge of and attitudes to sexually transmitted diseases among Thai university students. (The bachelor of science in nursing thesis), Uppsala University, Uppsala, Sweden, 2013.

Thapa, K.B., and Chand, S.B. (2018). Knowledge and awareness about sexually transmitted infections among higher secondary school students in Bajhang, Nepal. . 7(3):101-106.

WHO. (2021). Sexually transmitted infections (STIs). Fact sheets. Retrieved from: https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis) May 21, 2021.

World Health Organization (2013). Report on global sexually transmitted infection surveillance.

World Health Organization (2013). Media centre sexually transmitted infections. Fact sheets. Retrieved from: https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis).