

GENDER DIFFERENCES IN THE ATTITUDE OF IMO STATE UNIVERSITY STUDENTS TOWARDS PREVENTIVE MEASURES OF SEXUALLY TRANSMITTED INFECTIONS (STIs)

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Abstract

Sexually Transmitted Infections (STIs) are a major global cause of acute illness, infertility, long-term disability and death with serious medical and psychological consequences of millions of men, women and infants, as a result are contemporary public health concerns. Recent data has shown that both young men and women are heavily affected by STIs but young women face the most serious long-term health consequences. Due to their high prevalence, particularly in developing settings, STIs result in substantial productivity losses for individuals and communities, particularly where the majority of the population is less than 40 years of age. STIs are serious problems for adolescents and young people. Thus, the objective of this study is to determine the gender differences in the attitude of Imo State University students towards preventive measures of STIs. Understanding factors (e.g. knowledge, attitudes and skills) influencing sexual behaviours of university students are critical to develop targeted and tailored risk reduction interventions for this vulnerable population. This study employed the descriptive cross sectional research design. A survey sample consisted of 1140 university students, 475 (41.6%) of male and 665 (58.3%) female of Imo State University, Owerri were randomly selected. The instrument of data collection was the questionnaire and the method of data analysis was quantitative with simple percentage employed for measurement. The study finds out that to protect adolescents from these diseases, there is a need to educate them on STIs prevention by providing them with relevant information and equipping them with the right skills that will enable them put knowledge into practice. It is recommended that STIs-prevention programmes should take into account sex differences.

Keywords: Attitudes, Gender differences, Sexually Transmitted Infections, University Students.

Introduction

The term Sexually Transmitted Infections (STIs) is used to denote a variety of clinical conditions that are caused by pathogens which can be embraced and transmitted through sexual activity (Casey, Rutledge, Boyd & Starr, 2010). Sexually Transmitted Infections (STIs) according to F. Zeeb, Spallenek and H. Zeeb (2011) are major health problems affecting mostly young people not only in developing, but also in developed countries. In a similar thought, Myles, (2001) averred that sexually transmitted diseases are those diseases caused by variety of organisms which are capable of being transmitted sexually. STIs are transmitted predominantly through unprotected sexual contact, which includes vaginal, oral, and anal sex. Some of STIs can also be transmitted through childbirth or breastfeeding, and via blood products and tissue transfer as well as by sharing needles during injecting drug (Lazarus, Sihvonon-Riemenschneider, Laukamm-Josten, Wong, and Liljestrang, 2010). The researchers define sexually transmitted diseases as diseases that can be contacted through unprotected sexually activities.

STIs are caused by more than 30 different kinds of pathogens including bacteria, virus, protozoa, and fungus. The common classical STIs include gonorrhoea, syphilis, chancroid, lymphogranuloma venereum, chlamydial infection, and trichomoniasis. Sexually Transmitted Infections (STIs) can be generally recognized as ulcerative and non-ulcerative, and can be classified as curable and no-curable but

preventable. The common curable STIs include gonorrhoea, syphilis, chlamydial infection, chancroid, trichomoniasis and lymphogranuloma venereum. STIs that are non-curable but preventable are the viral STIs that include Human Immuno Deficiency Virus (HIV), Human Papilloma Virus (HPV), hepatitis B virus and Herpes Simplex Virus (HSV) (Matkins, 2009).

It is estimated that nearly one million people contract STIs every day worldwide. In Western Europe, 17 million new cases of curable STIs occur annually. World Health Organization (WHO) estimated new cases for the four common sexually transmitted infections (STIs) to be 498.9 million, in the year 2008, which holds 105.7 million cases of *C. trachomatis*, 106.1 million cases of *N. gonorrhoea*, 10.6 million cases of syphilis, and 276.4 million cases of *T. vaginalis* in people aged 15-49 annually. Out of this male victim accounts for 266.1 million (53%) while 232.8 (47%) were female victim. The number of adults with one or more infection however is less than the sum of the four infections as some individuals have had multiple infections. There was also reported many millions of persistent viral STIs, including some 5 million new cases of HIV infections, Human Herpes Viruses (HHV), HPV and HSV.

The annual occurrence of STIs, including HIV, accounts for the loss of more than 51 million years of healthy life among men, women and children worldwide (WHO, 2013; Matkins, 2009; Cossio et. al. 2012). Globally, an estimated 35.3 (32.2-38.8) million people were living with HIV in 2012. There were an average of 2.3 (1.9-2.7) million new HIV infections globally, showing a 33% decline in the number of new infections from 3.4 (3.1-3.7) million in 2001 (UNAIDS, 2013). Center for Disease Control and Prevention (CDC, 2007, 2013) estimates that nearly 20 million new STI cases occur every year in America half among young people aged 15-24 years, accounting for almost \$16 billion in health care costs. In America surveillance data showed that signs of potential progress in reducing chlamydia and gonorrhoea among young people aged 15-24 year. It is estimated that undiagnosed STIs cause 24,000 women to become infertile each year.

In developing countries, STIs account for 17% of economic losses (CDC, 2007; Kassie, Shume, and Kloos, 2006). STIs have a negative effect on sexual/reproductive health. Although many of sexually transmitted infections are not fatal, they lead to complications of pregnancy, infertility, and deterioration of general health status, as well as play a role as a predisposing factor for transmission of HIV/AIDS infections. The young adults are usually at risk for STIs (Gewirtzman, 2011). STIs and lack of knowledge about the way of transmission lead to high rate of infections in young people. Many young people provide information on these issues from their friends, television and magazines. STIs, throughout the world, are seen mostly in the age group of 20 to 24 years, followed by the age group of 25 to 29 years. Development of healthy sexual living behaviour is even more significant in sexually active young people (Yacobi, et. al. 1999). The young age group, in which sexual behaviours and health habits are begun to be shaped, is important for the identification and elimination of the lack of relevant information.

STIs are a major public health problem in most African countries on account of their frequency, their associated morbidity and mortality, their impact on maternal and infant health, as well as their economic cost. The total incidence of selected curable STIs for the WHO African regions was estimated to be 92.6 million for four STIs: with 8.3 million cases of *C. trachomatis*, 21.1 million cases of *N. gonorrhoea*, 3.4 million cases of syphilis and 59.7 million cases of *T. vaginalis* (Cossio, et. al. 2012). STIs cause life-threatening and the most serious health consequences of STI other than HIV tend to occur in men, women and newborn baby if there is delay in diagnosis and treatment of STI at an early stage of the disease. The long-term effect of STI is more common and serious in younger women when compared with older women or males. Complications that commonly happen in younger women include cancer, Pelvic Inflammatory Disease (PID) resulting in infertility, chronic abdominal pain and associated maternal mortality. If left untreated, 55%-85% of women with PID have the chance to become infertile. An infection that occurs during pregnancy can produce chorioamnionitis, spontaneous abortions or premature birth. Genital infections that exist at delivery can result in maternal puerperal sepsis as well as neonatal and infantile infections (CDC, 2007; Aral, Over, Manhart and Holmes, 2006).

Thus, a major goal of STIs prevention programmes is to delay sexual debut. Prevention of STIs and HIV pose a great challenge to nations of the world in general and to Nigeria in particular. Alutu (2002)

claims that this challenge stems from the fact that about 20 years into the epidemic millions of young people know little about STIs/HIV. Adolescents especially university students in Nigeria, are the group at high risk in the rapidly growth of STIs and HIV pandemic, and there is the need to broaden their knowledge and attitude towards these infections. However, the main thrust of this study is to examine the gender differences in the attitude of Imo state university students towards preventive measures of Sexually Transmitted Infections (STIs). Thus, the following research questions beg for urgent answers: 1) What knowledge do Imo state university students have about STIs? 2) What are Imo state university students' attitudes towards STIs? 3) Is there a difference between female and male university students about knowledge and attitudes towards STIs?

STIs: Why is it a problem?

Sexually Transmitted Infections (STIs) in general, and among young population in particular, are of paramount concern as they are the 'silent killers'. According to the World Health Organization (WHO); Department of Child and Adolescent Health and Development (CAH), "the highest reported rates of STIs are found among people between 15 and 24 years; up to 60% of the new infections and half of all sero-positive people globally are in this age group" (Dehne & Riedner, 2005). Globally, over 100 million Sexually Transmitted Infections (STIs) occur each year in people under the age of 25 years old (UNAIDS, 2008), and an estimated 11.8 million people aged 15-24 were living with HIV by mid-2002. Further, about half of all new HIV infections worldwide, or nearly 6,000 cases per day, occur in young people (UNAIDS, 2008). This particular statistics becomes even more alarming considering the fact that diseases like Gonorrhoea, Chlamydia and Herpes show an ice-berg phenomenon and therefore go virtually undetected. Reproductive health of young adults has to be recognized as a vital prerequisite for fulfilling our commitment towards achieving the Millennium Development Goals. Thus, it is essential to evaluate the level of awareness regarding STIs in the population.

More so, in the 2013 Demographic and Health Survey (the most recent available), Nigeria has the second largest HIV epidemic in the world. Although HIV prevalence among adults is remarkably small (3.1%) compared to other sub-Saharan African countries such as [South Africa](#) (19.2%) and [Zambia](#) (12.9%), the size of Nigeria's population means 3.5 million people were living with HIV in 2015. National data suggests that 4.2% of young people (ages 15-24) are living with HIV. Young women have a higher HIV prevalence and are infected earlier in life than men of the same age group. In 2013, more than 34,700 young women were infected with HIV compared to 19,900 young men. Young people, especially women 20-24 years old, are increasingly vulnerable. Other affected groups include sex workers and people with tuberculosis. Low levels of condom use, especially among mobile populations, a high prevalence of untreated sexually transmitted infections, poverty, stigma and discrimination, low rates of literacy, poor health status, low status of women, prevalence of polygamy and low perceptions of risk among vulnerable groups have contributed to the rapid spread of the epidemic. Yet, Nigeria is an enormous country where HIV infection remains an issue that demands a systematic and highly tailored intervention. Young people are particularly vulnerable to STIs and consequent health problems. This is because: 1) They lack information about how to prevent STIs; 2) They are less likely to seek proper information or treatment due to fear, ignorance, shyness or inexperience; 3) Early sexual experience can result in trauma to vaginal tissue, increasing adolescent women's vulnerability to STIs; 4) Adolescents who begin sexual activity early are more likely to have a greater number of lifetime sexual partners.

Other risk factors for adolescents are: 1) Unprotected sex (without condoms). 2) Sex with multiple (sequential) partners. 3) Having a partner who has other sex partners. 4) Having a partner with STI symptoms. 5) Sex with a new partner or more than one partner in the last three months. 6) Sex with strangers or sex in exchange for money. 7) Vulnerability to sexual violence, coercion and abuse.

Conceptual Framework

Sexually Transmitted Disease (STDs) also known as Sexually Transmitted Infections (STIs) or Venereal disease (VD) is an illness that has a significant probability of transmission between humans or animals by means of sexual contact, including vaginal intercourse, oral sex, and anal sex. While in the past, these illnesses have mostly been referred to as Sexually Transmitted Disease (STDs) or Venereal disease (VD), in recent years the term Sexually Transmitted Infection (STI) has been preferred, as it has a wider range of meaning, a person may be infected, and may potentially infect others without showing signs of disease. Sexually Transmitted Infections have been well known for hundreds of years (Morton, 1999).

Sexually Transmitted Infections as a concept has been defined from the many perspectives of authors, but all definitions still tilt towards the same goal. According to Longman (2003), Sexually Transmitted Infections (STIs) is a disease that is passed on through sexual intercourse via bacteria and viruses. These infections can be passed from one person to another during intimate physical contact. They are so common and can affect the person whether the person is a gay or engages bisexual relationship. You don't need to have sex with lots of people to be at risk of catching any STIs - just one brief encounter with an STI carrier may be enough. Sexually Transmitted Infections (STIs) including HIV (Human Immunodeficiency Virus) mainly affects sexually active young people (Young adults aged 15-29 years) (Mukherjee, 2007). This group of infection remains the major global cause of acute illness, infertility, long-term disability and death with serious medical and psychological consequences despite of the development of advance in diagnosis and treatment (Workowski, 2006; Casey et. al. 2010; Cossio et. al. 2012).

There are more than 30 bacterial, viral and parasitic pathogens that have been identified to date that can be transmitted sexually. Most STIs are sub-clinical and asymptomatic, making them a hidden epidemic (Matkins, 2009). Bacterial pathogen that causes STIs includes *Neisseria gonorrhoea*, *Chlamydia trachomatis*, *Treponema palidum*, and *Haemophilus ducreyi* which cause gonorrhoea, chlamydia, syphilis and chancroid respectively. Viral pathogens that are causes of STIs comprises of human papillomavirus, herpes simplex virus, hepatitis B virus and HIV which causes Genital warts and cervical mainly-cancer, Genital herpes, Hepatitis B and AIDS respectively. Parasitic pathogens includes: *Trichomonas vaginalis* which cause Trichomoniasis and *Phthirus pubis* which cause Pubic lice (Diez and Diaz, 2011). WHO (2007) estimates the total number of new cases of the four STI named syphilis, *Trichomonas vaginalis*, *Neisseria gonorrhoea*, and *C. trachomatis* to be 498.9 million each year in adults aged 15-49 years. Millions of viral sexually transmitted infections also occur annually, attributable mainly to HIV, human herpes viruses, human papilloma- viruses and hepatitis B virus with the largest proportion in the region of south and south-east Asia, followed by sub Saharan Africa, and Latin American and the Caribbean (Cossio et. al. 2012).

Nearly a million people acquire a Sexually Transmitted Infections (STIs) including HIV every day. The presence in a person of other STIs such as syphilis, chancroid ulcers or genital herpes simplex virus infection greatly increases the risk of acquiring or transmitting HIV. New research suggests an especially potent interaction between very early HIV infection and other STIs. This interaction could account for 40% or more of HIV transmissions (WHO, 2007; CDC, 2009). **Syphilis** is a genital ulcerative infectious disease caused by bacteria called *Treponema palidum* which is solely a human pathogen and does not occur in other species. It has two forms primary and seconder syphilis. The diagnosis of syphilis is confirmed by identification of *T. palidum* on dark field examination of ulcer exudates or by a serologic test for syphilis performed at least 7days after onset of ulcers. The primary mode of transmission occurs via sexual contact but can also spread by exposure to blood product and transferred in to utero. Sexual transmission of *T. palidum* is thought to occur only when muco cutaneous syphilitic lesions are present. The 2015 CDC STD treatment guideline supports the use of penicillin as preferred drug for treating all stages of syphilis (Workowski, 2006; CDC, 2009).

Gonorrhea is caused by a gram negative bacteria called *Neisseria gonorrhoea* and spread through sexual contact or via vertical transmission during child birth. Urethral infections caused by *N. gonorrhoea* among men can produce symptoms that cause them to seek curative treatment soon enough to prevent sequel, but often not soon enough to prevent transmission to others. Among women, gonococcal infections are commonly asymptomatic or might not produce recognizable symptoms until complications like (e.g., PID) which commonly have occurred in *Chlamydia trachomatis*. PID can result in tubal scarring that can lead to infertility and ectopic pregnancy. Culture and nucleic acid amplification test (NAAT) are available for the detection of genitourinary infection with *N. gonorrhoea* culture requires endo cervical (women) or urethral (men) swab specimens. CDC recommends that all patients with gonorrhoeal infection also be treated for presumed co infection with *Chlamydia trachomatis*. First line dual drug therapy is indicated on CDC STD treatment guideline 2015 which is ceftriaxone 250mg IM single dose plus azithromycin 1g per single dose (Workowski, 2006; CDC, 2013).

***Trichomonas vaginalis* (TV)** is a flagellated protozoan that is a parasite of the genital tract. In adults it is almost exclusively sexually transmitted. Due to site specificity, infection only follows intra vaginal or intra urethral inoculation of the organism. Some infected men have symptoms of urethritis, epididymitis, or prostatitis, and some infected women have vaginal discharge that might be diffuse, malodorous, or yellow-green with or without vulvar irritation ideally, all women presenting with abnormal vulvar or vaginal symptoms should be tested and the diagnosis of TV confirmed by identification of TV on cervical cytology. Among women, NAAT is highly sensitive, often detecting three to five times more *T. vaginalis* infections than wet-mount microscopy. Metronidazole 2gm a single dose or tinidazole 2gm a single is recommended for treatment (Workowski, 2006; Sherrard et. al., 2011).

Chlamydia trachomatis is the most common cause of curable bacterial STI worldwide. It manifests primarily as urethritis in males and endo cervicitis in females. Untreated chlamydial infection in man can cause epididymitis and proctitis. Though most women with *Chlamydia* infection are asymptomatic or have minimal symptoms, some develop salpingitis, endometritis, (PID), ectopic pregnancy and tubal factor infertility. Pregnant women infected with *Chlamydia* can pass the infection to their infants during delivery, potentially resulting in neonatal ophthalmia and pneumonia. *Chlamydia* infections show a distribution similar to gonorrhoea infections and have a major role in infertility cases (CDC, 2013; Akin, 2006; Malhotra et. al., 2013).

Hepatitis B infection is caused by hepatitis B virus (HBV) which can be either self-limited or chronic. The primary risk factors associated with infection among adolescents and adults are unprotected sex with an infected partner, multiple partners. No specific therapy is available for persons with acute hepatitis B; treatment is supportive. Persons with chronic HBV infection should be referred for evaluation to a provider experienced in the management of chronic HBV infection. Hepatitis B- vaccine was identified to protect against HBV infection which was tested in men who have sex with men in the USA (Workowski, 2006).

Herpes Simplex Virus causes a chronic viral recurrent genital infection. It exists as two types, HSV₁ and HSV₂, which is distinguished by antigenic differences in their envelope proteins. Genital HSV-₁ infection is associated with less severe disease and fewer symptomatic recurrences and subclinical shedding than genital HSV-₂ infection HSV infection results in lifelong infection, which can be asymptomatic or present with recurrent lesions. Viral culture is the most frequently used routine diagnostic method but Polymerase Chain Reaction (PCR) has greater sensitivity than viral culture. There are currently three oral antiviral drugs licensed for the treatment of Genital Herpes. Acyclovir, a thymidine nucleoside analogue, was the first drug introduced to treat HSV. HIV; is a viral sexually transmitted infection which is asymptomatic over long periods of time; early signs can include fatigue, fever, night sweats. it takes two forms HIV-₁ and HIV-₂. If left untreated it can end with full-blown AIDS (Workowski, 2006; Azwa and Barton, 2009).

Methodology

Research Design This was a descriptive cross sectional study carried out on the non medical undergraduate students of the Imo state university Owerri, Nigeria, aimed at collecting data specifically on the opinions, attitudes and views of the subject on sexually transmitted infections (STIs). A descriptive survey according to Nworgu (2006) are those studies which aim at collecting data on, and describing in a systematic manner, the characteristics features or facts about a given population.

Study Area The study was carried out in Imo State University (IMSU), located in Owerri town, State Capital of Imo State, Nigeria. Imo is one of the 36 states of Nigeria. Its other major cities are Orlu and Okigwe. Located in the South-Eastern region of Nigeria, it occupies the area between the lower River Niger and the upper and middle Imo River. Imo State is bordered by Abia State on the East, River Niger and Delta State to the West, Anambra State on the North and Rivers State to the South. The state lies within latitudes 4°45'N and 7°15'N, and longitude 6°50'E and 7°25'E with an area of around 5,100 sq km. Imo State University (IMSU) Owerri, is the major and largest tertiary educational institution in Imo State.

Study Population As at the time of this study, the University had a population of Fifteen Thousand students in the eleven faculties that exist in the school. The population for the study consisted of students of nine faculties of the University.

Sampling Technique and Procedure The sampling technique adopted was stratified random sampling method. Nine Faculties of the Imo state university were randomly selected. These were: Faculties of Agriculture (790), Veterinary Medicine (445), Business Administration (2220), Education (2130), Engineering (2170), Environmental Sciences (1070), Humanities (1370), Law (1205), and Social Sciences (3600), A total of 1195 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, Civil Engineering, 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. The authors' aim was to involve a large group of participants to get a representative result; criteria for selection were that the participants were willing to participate voluntarily and that they were all students of Imo state university, Owerri.

Questionnaire Design and Administration The survey instrument was designed based on the STIs-related information available on the US Centers for Disease Control and Prevention (CDC) and World Health Organization (WHO) websites. Thus, the study had employed a pretested and structured self administered questionnaire after adapting the question from different literature and making the necessary modification accordingly. It comprises of three parts: (1) Questions regarding Socio-demographics background of students, (2) Question concerning knowledge of students about STIs (3) Question assessing attitude of students towards preventive measures of STIs

Data Collection To administer the questionnaires, nine 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.

Data Analysis The data were analyzed using Statistical Package for the Social Sciences (SPSS) version 13.0 statistical software and % percentages and the chi-square tests were performed.

Results and Discussion

Demographic Characteristics of Respondents A total of 1195 students of Imo State University were surveyed. The responses of 1140 (95.4%) participants were valid; the rest of 55 (4.6%) survey forms were rejected because they were not completely filled by the participants. The participants consisted of n=1140 university students from Imo state university, Owerri in Nigeria. The demographic characteristics (age,

gender, religion, status and living conditions) are presented in table 1. The socio-demographic characteristics of the students surveyed are shown in Table

Table 1: DEMOGRAPHIC BACKGROUND OF THE STUDENTS SURVEYED

Characteristics	N	%
Participants/Gender	1140	100
Male	475	41.6
Female	665	58.3
Age		
15-20	760	66.7
21-25	380	33.3
Religion		
Christianity	1123	98.5
Islam	2	0.17
Traditional	10	0.87
Others	5	0.43
Current Educational Year		
First Year	285	25.0
Second Year	320	28.0
Third Year	265	23.2
Fourth Year	270	23.6
Do you have a partner?		
Yes	590	51.7
No	550	48.2
With whom do you live?		
Parents/family	690	60.5
Friends/friend	107	9.38
By myself	310	27.1
Others	33	2.89

The participants were aged between 15-25 years and the mean age was 20.29 (SD= 1.548). Regarding gender, 475 (41.6%) of the participants were male and 665 (58.3%) were female. The majority of the students were Christians (n=1123, 98.5%). Every other participant had a partner (n=590, 51.7%). The most common living situation was living with your parents (n=690, 60.5%) followed by living by themselves (n= 310, 27.1%).

Table 2: KNOWLEDGE OF CAUSES, DISEASES, ROUTES, SYMPTOMS AND COMPLICATIONS OF STIS AMONGST IMO STATE UNIVERSITY STUDENTS

In order to gain comprehensive understanding of the situation, STI related knowledge was tested.

Knowledge of STIs	Total	Male	Female	p-value ¹
	n=1140	n=475	n=665	
	n (%)	n (%)	n (%)	
What are possible causes of STIs?				
Bacteria *	950 (83.3)	409 (82.5)	541 (81.3)	NS
Virus *	880 (77.1)	392 (82.5)	488 (73.3)	NS
Fungus *	870 (76.3)	414 (87.1)	456 (68.5)	0.027
Bad hygiene of woman	910 (79.8)	395 (83.1)	515 (77.4)	NS
Bad hygiene of man	910 (79.8)	407 (85.6)	503 (75.6)	NS
Using unclean water	841 (73.7)	351 (73.8)	490 (73.6)	NS

Sex during menstruation	423 (37.1)	134 (28.2)	289 (43.4)	NS
Having sex after giving birth	50 (4.3)	21 (4.4)	29 (4.3)	NS
Blood transfusion *	690 (60.5)	305 (64.2)	385 (57.8)	NS
Infected swimming pool water	438 (38.4)	189 (39.7)	249 (37.4)	NS
Don't know	15 (1.31)	6 (1.2)	9 (1.35)	NS
Which diseases are STIs?				
TBC	353 (30.9)	132 (27.7)	221 (33.2)	NS
Gonorrhoea *	717 (62.8)	307 (64.6)	410 (61.6)	NS
Syphilis *	709 (62.1)	312 (65.6)	397 (59.6)	NS
HIV/AIDS *	920 (80.7)	405 (85.2)	515 (77.4)	NS
Hep B *	438 (38.4)	189 (39.7)	249 (37.4)	NS
Hep C *	440 (38.5)	158 (33.2)	282 (42.2)	NS
Chlamydia *	50 (4.3)	19 (4)	31 (4.6)	NS
Herpes *	694 (60.8)	308 (64.8)	386 (58.0)	NS
Don't know	17 (1.4)	7 (1.4)	10 (1.5)	NS
Others	10 (0.8)	7 (1.4)	3 (0.4)	NS
What are routes of STIs?				
Sexual intercourse *	823 (72.1)	342 (72)	481 (72.3)	NS
Blood transfusion *	717 (62.8)	307 (64.6)	410 (61.6)	NS
Sharing needle *	709 (62.1)	312 (65.6)	397 (59.6)	NS
Sharing clothes/things	17 (1.4)	7 (1.4)	10 (1.5)	NS
Sharing food	15 (1.31)	6 (1.2)	9 (1.35)	NS
Mother to child *	720 (63.1)	312 (65.4)	408 (61.3)	0.01
Don't know	10 (0.8)	7 (1.4)	3 (0.4)	NS
Others	11 (0.96)	4 (0.84)	7 (1.0)	NS
What are signs/symptoms of STIs?				
Abdominal pain *	699 (61.3)	301(63.3)	398 (59.8)	NS
Discharge from penis/vulva *	718 (62.9)	309 (65.0)	409 (61.5)	NS
Itching in genital area *	736 (64.5)	314 (66.1)	422 (63.4)	NS
Burning pain on urination *	724 (63.5)	316 (66.5)	408 (61.3)	NS
Pain during intercourse *	617 (54.1)	270 (56.8)	347 (52.1)	NS
Genital ulcers or open sores *	743 (65.1)	315 (66.3)	428 (64.3)	NS
Swelling in genital area *	698 (61.2)	299 (62.9)	399 (60)	NS
Blood in urine *	714 (62.6)	301 (63.3)	413 (62.1)	NS
Failure to urinate *	353 (30.9)	132 (27.7)	221 (33.2)	NS
Loss of weight *	690 (60.5)	305 (64.2)	385 (57.8)	NS
Weakness *	438 (38.4)	189 (39.7)	249 (37.4)	NS
Don't know	17 (1.4)	7 (1.4)	10 (1.5)	NS
What are complications of STIs if untreated?				
Infertility *	150 (13.1)	45 (9.4)	105 (15.7)	NS
Premature birth *	353 (30.9)	132 (27.7)	221 (33.2)	NS
Still birth *	150 (13.1)	45 (9.4)	105 (15.7)	NS
Ectopic pregnancy *	362 (31.7)	158 (33.2)	204 (30.6)	NS
Miscarriage *	617 (54.1)	270 (56.8)	347 (52.1)	NS
Cervix cancer *	870 (76.3)	214 (45.0)	656 (98.3)	0.002
Don't know	350 (30.7)	64 (13.4)	286 (43)	0.001
From where have you received information on sexually transmitted infections?				
Friends	709 (62.1)	312 (65.6)	397 (59.6)	NS
Family	617 (54.1)	270 (56.8)	347 (52.1)	NS
Youth club	353 (30.9)	132 (27.7)	221 (33.2)	NS

School/college	910 (79.8)	407 (85.6)	503 (75.6)	NS
Television	736 (64.5)	314 (66.1)	422 (63.4)	NS
Radio	34 (2.98)	21 (4.42)	13 (1.95)	0.02
Magazine	699 (61.3)	301(63.3)	398 (59.8)	NS
Internet	870 (76.3)	414 (87.1)	456 (68.5)	NS
Hospital/clinic	720 (63.1)	312 (65.4)	408 (61.3)	NS
Others	10 (0.8)	7 (1.4)	3 (0.4)	NS

More than one answer could be chosen in these questions. The star (*) marks a correct answer. $p < 0.05$ = significant difference and $p > 0.05$ = non-significant difference (NS)

1 Chi-square statistics compares male and female groups.

There was no significant difference between men and women regarding knowledge on STIs ($p=0.189$). The mean score for men on knowledge was 27 points and 28 points for women. Regarding possible causes of STIs 68.5% ($n=456$) of the women and 87.1% ($n=414$) of the men knew the alternative “fungus” as a possible cause. There was a significant difference between genders on this question ($p=0.027$). When it came to the alternative “sex during menstruation” as a possible cause of STIs stated 28.2% of the men ($n=134$) and 43.4% of the women ($n=289$) is to be correct.

Nearly 63.1% ($n=720$) of the students knew that mother to child is a route of STI. There was a significant difference between genders regarding that question ($p=0.01$), where 65.4% of the men ($n=312$) and 61.3% of the women ($n=408$) knew that it is a possible route of STIs. There was a significant difference ($p=0.002$) between genders regarding cervix cancer as a complication of an untreated STI 98.3% of the women ($n=656$) and 45% of the men ($n=214$) knew it to be a complication. In addition, more men than women did not know about STI complications if left untreated ($p=0.001$). See table 2.

More men than women reported that they have received information on STIs from radio ($p=0.02$). The question regarding from where the students had received information about STIs had ten different alternatives to choose from. The most frequently chosen alternative was “school/college” (79.8%, $n=910$), followed by “Internet” (76.3%, $n=870$), and “hospital/clinic” (64.5%, $n=736$). Almost half of the students (62%, $n=709$) had received information from their family (see table 2).

Table 3: ATTITUDES OF IMO STATE UNIVERSITY STUDENTS TOWARDS PREVENTIVE MEASURES OF STIS

Attitudes to STIs among students	Total	Male	Female	p-value ¹
	n=1140 n (%)	n=475 n (%)	n=665 n (%)	
STIs are not dangerous because they can be cured	718 (62.9)	309 (65.0)	409 (61.5)	NS
It is necessary to avoid a person who has contracted an STI because they can transmit it to other people	617 (54.1)	270 (56.8)	347 (52.1)	NS
People who are infected with an STI must get treatment	717 (62.8)	307 (64.6)	410 (61.6)	NS
A person who believes that he or she has gotten an STI but is unsure about the symptoms should directly contact health personal	950 (83.3)	409 (82.5)	541 (81.3)	NS
Young people should get information/knowledge about STIs in order to prevent these diseases	1104 (96.8)	312 (65.6)	792 (119.0)	0.003
Young people should be educated on knowledge of STIs at school to prevent these diseases	1100 (96.4)	310 (65.2)	790 (118.7)	0.006
A person who does not want to become infected with an STIs should	1107 (97.1)	454 (95.5)	653 (98.1)	NS

use condom when having sexual intercourse *				
A person who does not want to become infected with an STI should use emergency contraception pills	353 (30.9)	132 (27.7)	221 (33.2)	NS
How worried are you that you might catch an STI?				
Not worried at all	150 (13.1)	45 (9.4)	105 (15.7)	NS
Worried a little	440 (38.5)	158 (33.2)	282 (42.2)	NS
Worried a lot	793 (69.5)	336 (70.7)	457 (68.7)	NS
When having unprotected sex I am most concerned about				
Getting HIV	870 (76.3)	414 (87.1)	456 (68.5)	NS
Getting STIs	699 (61.3)	301(63.3)	398 (59.8)	NS
Becoming pregnant	353 (30.9)	132 (27.7)	221 (33.2)	NS
Others	17 (1.4)	7 (1.4)	10 (1.5)	NS

$p < 0.05$ = significant difference and $p > 0.05$ = non-significant difference (NS)

¹ Chi-square statistics compares male and female groups.

Again, there were no significant differences between genders; both male and female students were positive towards contracting health personal when being unsure about symptoms of STIs. All of the women (52.1%, n=347) agreed on that statement, and the numbers for men were also high (56.8%, n=270) see table 3.

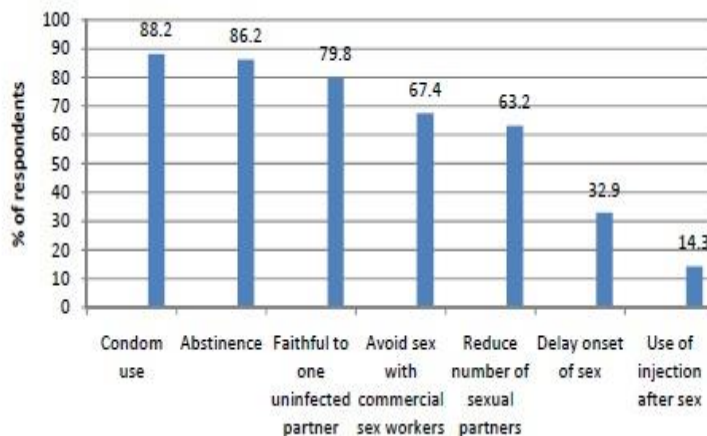
One thousand hundred four participants (96.8%) stated that they thought young people should get more information on STIs in order to prevent these diseases. There was significant difference in gender in this question, where 119% (n=792) of the women thought that more information on STIs was important, and only 65.6% (n=312) of the men. Many of the participants (n=1100, 96.4%) also stated that they should receive this information from school, and more women than men reported that young people should be educated on knowledge of STIs at school to prevent the disease (p=0.006).

Discussion of Results The mean age of the students that participated in the study belongs to the “young people” age group that has been defined by the WHO. The young people group of (19 to 24 years) is often called as the ‘generation of hope’ is a period in which sexual behaviours and decisions that affect the future life are being shaped (Yacobi, et. al., 1999). It plays a vital role for the present as well as future health status of a nation. This is because the behaviours, attitudes and beliefs of these youth are shaping the societies of the future and their health is an important determinant of the nation’s productivity. Many young people around the world are sexually active and affected by early and unprotected intercourse because they enter into an active sexual life without considering the consequences. In addition, in many cases, early sexual intercourse has been known to be experienced forcibly and enforcedly (Yacobi, et. al., 1999). Sexually Transmitted Infections (STIs) in general, and among young population in particular, are of paramount concern as they are the ‘silent killers’.

Gender differences in the attitudes of Imo State University students toward preventive measures of STIs

Prevention remains the mainstay strategy in the fight against STIs 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 1 below; condom use was the most known preventive measure, accounting for 88.2%. The result obtained is higher than the report of another work in Accra, Ghana, which reported 78% condom use and 70% abstinence (Asante, 2013). It is however lower than that obtained in a similar study in Kampala, Uganda which recorded more than 90% condom use (Sekirime,

2001). This is probably because as at the time of the study in Uganda, the prevalence of HIV/AIDS was very high thereby making more people to be aware of the disease and its preventive measures.



Regarding gender, there was no major difference concerning attitudes of students towards preventive measures of STIs, in accordance with the study from Paz-Bailey (2003) which also did not find any gender differences. Overall the female students got higher points on the attitude part than the male students, yet with only a small margin; the mean score for women was 28 points and 27 points for men. Almost every student in the school system has a particular attitude towards the STIs especially Acquired Immune Deficiency Syndrome (AIDS). Though, most of the students tend to be positive, some are also negative. Malcolm (1996) indicated that attitudes of people towards STIs these days are improving especially when it comes to student’s opinion in the university. Unlike before when students are not anxious of HIV virus, most students tend to avoid anything that would make them to be infected with the disease. That is properly why students tend to use condom regularly for sex and other protective measures to make sure that they do not contract the STIs including HIV/AIDS virus (Arms, 1992).

When the Imo state university students were asked about using condoms as a way to prevent STIs 97.1% of the women reported that condom should be used to prevent STIs. These are good numbers, and it might indicate that young women have a better attitude towards condom-use. Thus, women have more favourable attitudes towards condom use, perceiving more benefits and fewer costs in their use than their male peers. These results tie in with those obtained by other researchers (Campbell, Pepalu & DeBro, 1992; Parsons et al., 2000; Sacco, Rickman, Thompson, Levine & Reed, 1993,). In addition, they see themselves as more skilful in the negotiation of condom use with the partner and to ensure its use in particularly difficult situations, which had also been found by other researchers (Dekin, 1996; Kvaem & Træen, 2000; Murphy et al., 1998; Parsons et al., 2000). In line with the aforementioned point, they also have a greater intention of using the condom in their sexual relations. The study by Rondini and Krugu (2009) showed that the female students would not purchase condoms out of fear of being judged as “bad girls” and the male students claimed that they wouldn’t accept a condom from a girl, because “the girls is not to be trusted”.

This study is important because there is 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. A positive outcome is that they present wanting to learn more about these issues, and wish to do so in school.

Conclusion

In accordance with other studies on the same subject, this study showed that Imo state university student’s awareness about STI including HIV/AIDS was relatively high. The study indicates that Imo state

university students need more information on STIs. Their attitudes showed that they had many misconceptions regarding these issues, although many showed a positive attitude toward learning more about STIs. There were no big differences in gender regarding knowledge of and attitudes to STIs.

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 preventive strategies.

References

- Alutu, A. N. G (2003). In F. Onuekwe, M. F. E Oiejomaoh, & D. Donaonkar (Eds.), *Psychosocial Dimension of People Living with HIV/AIDS in Africa: Care and Support; Trends in HIV/AIDS Care*. Nigeria: Mindex Publishing.
- Anwar, M., Sulaiman, S.A., Khan, T.M., (2010) A Survey of Knowledge of Sexually Transmitted Infections among Patients at a Public Hospital in Pulau Pinang, Malaysia: *Med Princ Pract* 19: 312-318.
- Aral, S., Over, M., Manhart, L., Holmes, K., (2006). Sexually Transmitted Infections. *Issues in Adolescent Health and Development*. World Health Organization: p.311-330.
- Armstrong, G.T. (1992). *Everyone Should Know*. Lagos: Simarch Nig. Ltd.
- Asante, K.O., (2013). HIV/AIDS Awareness and Uptake of HIV Counseling and Testing among Undergraduate Private University Students in Accra, Ghana. *Reproductive Health*.
- Azwa, A., and Barton, S.E., (2009). Aspects of Herpes Simplex Virus: a Clinical Review. *Gr.bmj.com*. 35(4):2-7.
- Britannica, (1997), *The New Encyclopedia Britannica* (15th ed Vol. 1) Chicago: Online Publication
- Campbell, S.M., Peplau, I.A., & DeBro, S.C., (1992). Women, Men, and Condoms: Attitudes and Experiences of Heterosexual College Students. *Psychology of Women Quarterly*, 16, 273-288.
- Casey, C.G., Rutledge, T.F., Boyd, M.F., Starr, T.M., (2010) *Morbidity and Mortality Weekly Report Sexually Transmitted Diseases Treatment Guidelines, 2010* Department of Health and Human Services. *Sex Transm Dis* 2010;59 (RR-12):1-110.
- Center for Disease Control and Prevention (CDC). (2007). *Sexually Transmitted Infections in Developing Countries, Current Concepts and Strategies on Improving STI Prevention, Treatment, and Control*. Geneva, Switzerland: Center for Disease Control and Prevention.
- Centers for Disease Control and Prevention (CDC). (2009). *Sexually Transmitted Disease Surveillance 2007, Supplement, Syphilis Surveillance Report. Data Management in 2009*.
- Centers for Disease Control and Prevention (CDC). (2013). *CDC Global HIV/AIDS Milestones: On the Path to an AIDS Free Generation*. http://www.cdc.gov/globalaids/Global-HIVAIDS-at-CDC/pdf/DGHA_Timeline.pdf, Retrieved August, 30 2017.
- Cossio, M.L.T., Giesen, L.F., Araya, G., Pérez-Cotapos, M.L.S., Vergara, R.L., Manca, M., (2012). Global Incidence and Prevalence of Selected Curable Sexually Transmitted Infection. *Uma ética para quantos*2012;XXXIII(2):81-7.
- Dehne, K.L., & Riedner, G., (2005). Sexually Transmitted Infections among Adolescents: The Need for Adequate Health Services, <http://whqlibdoc.who.int/publications/2005/9241562889.pdf> Retrieved 5 September, 2017.
- Dekin B. (1996). Gender Differences in HIV-Related Self-reported Knowledge, Attitudes, and Behaviours among College Students. *American Journal of Preventive Medicine*, 12, 61-66.
- Díez, M., and Díaz, A., (2011). Sexually Transmitted Infections : Epidemiology and Control. *World Health* 2011;58-66.
- Gewirtzman, A., Bobric, B., Conner K., Tyring S.T., (2011). *Epidemiology of Sexually Transmitted Infections*, Ed:Gross G., Tyring S.K., *Sexually Transmitted Infections and Sexually Transmitted Disease*, Berlin: Springer-Verlag.
- Johnson, L.S., Rozmus, C., Edmisson, K., (1999). Adolescents' Sexuality and Sexually Transmitted Diseases, Attitudes, Beliefs, Knowledge, and Values. *J Pediatr Nurs*. 14:177-185. doi: 10.1016/S0882-5963(99)80006-2. [PubMed] [Cross Ref]
- Kassie, A., Shume, A., and Kloos, H., (2006). *Sexually Transmitted Infectious: The Epidemiology and Ecology of Health and Disease in Ethiopia*
- Kvalem, I.L., & Træen, B. (2000). Self-efficacy, Scripts of Love and Intention to Use Condoms among Norwegian Adolescents. *Journal of Youth and Adolescence*, 29, 337-353.

- Lazarus, J. V., Sihvonen-Riemenschneider, H., Laukamm-Josten, U., Wong, F., Liljestrand, J., (2010) Systematic Review of Interventions to Prevent the Spread of Sexually Transmitted Infections, including HIV, among Young People in Europe. *Croat Med J.* 2010;51 (1):74–84.
- Malhotra, M., Sood, S., Mukherjee, A., Muralidhar, S., and Bala, M., (2013). Genital Chlamydia Trachomatis: An Update. *Indian J Med Res.* 2013 Sep. Retrieved September 01, 2017; 138(3):303–16.
- Matkins, P.P., (2009). Sexually Transmitted Infections in Adolescents. *N C Med J*;74:48–52.
- Morton, R. (1991). *Sex Freedom and Venereal Disease*. London: Peter Owens.
- Murphy, D.A., Rotheram-Borus, M.J., & Reid, H.M. (1998). Adolescent Gender Differences in HIV-Related Sexual Risk Acts, Social-Cognitive Factors and Behavioural Skills. *Journal of Adolescence*, 21, 197–208.
- Parsons, J.T., Halkitis, P.N., Bimbi, D., & Borkowski, T., (2000). Perceptions of the Benefits and Costs Associated with Condom Use and Unprotected Sex among Late Adolescent College Students. *Journal of Adolescence*, 23, 377–391.
- Paz-Bailey, G., Klimarx, P.H., Supawitkul, S., Chaowanachan, T., Jeeypant, S., Sternberg, Griensven, F. (2003) Risk Factors for Sexually Transmitted Diseases in Northern Thai Adolescents: An Audio-Computer-Assisted Self-interview with Non-invasive Specimen Collection. *Sexually Transmitted Diseases*, 30(4):320–6.
- Sacco, W.P., Rickman, R.I., Thompson, K., Levine, B., & Reed, D.I., (1993). Gender Differences in AIDS-Relevant Condom Attitudes and Condom Use. *AIDS Education and Prevention*, 5, 311–326.
- Sekirime, W.K., Tamale, J., Lule, J.C., Wabwire-Mangen, F., (2001). Knowledge, Attitude and Practice about Sexually Transmitted Diseases among University Students in Kampala. *African Health Sciences*. 2001;1(1):16–20.
- Sherrard, J., Donders, G., White, D., & Jensen, J.S., (2011). European (IUSTI/WHO) Guideline on the Management of Vaginal Discharge, *Int. J. STD AIDS* 2011;22(8):421–9.
- UNAIDS, (2013). *UNAIDS Report on the Global AIDS Epidemic 2013*; 272 September 2013
- UNAIDS,(2014).*Global AIDS Response progressreporting*.http://www.unaids.org/sites/default/files/en/media/unaids/contentassets/documents/document/2011/JC2215_Global_AIDS_Response_Progress_Reportng_en.pdf. Retrieved August 30, 2017.
- UNAIDS, (2008). *Joint United Nations Programme on HIV/AIDS, Report on the Global HIV/AIDS Epidemic*.
- Workowski, K., and Berman, S. (2006). *Sexually Transmitted Diseases Treatment Guidelines*. Sonja A. Rasmussen, (eds.). *MMWR Recomm Rep*. U.S. Department of Health and Human Services, Atlanta, GA 30329-4027: CDC.
- World Health Organization (WHO). (2007). *Global Strategy for the Prevention and Control of Sexually Transmitted Infections: 2006–2015, Breaking the Chain of Transmission*. Geneva, Switzerland. 2007. 1 p.
- World Health Organization (WHO), (2008). *Global Incidence and Prevalence of Selected Curable Sexually Transmitted Infections—2008*, World Health Organization, Geneva, Switzerland, 2008, http://apps.who.int/iris/bitstream/10665/75181/1/9789241503839_eng.pdf.
- World Health Organization (WHO), (2013). “Sexually Transmitted Infections (STIs),” Fact Sheet no. 110, World Health Organization, 2013, <http://www.who.int/mediacentre/factsheets/fs110/en/>
- Yacobi, E., Tennant, C., Ferrante, J., Pal, N., Roetzheim, R., (1999). University Students’ Knowledge and Awareness of HPV1. *Preventive Medicine* 28, 535–541.

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