

Prevalence of HIV-1 and HIV-2 Antibodies among Secondary School Students in Port Harcourt, Nigeria

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ABSTRACT: This study determines the prevalence of HIV -1 and HIV- 2 antibodies among secondary school students in Port Harcourt, Nigeria. A total of 100 students aged 13-18 years in government and private secondary schools respectively in Port Harcourt, Nigeria were used for this study. Determine® HIV-1/2 test cards and HIV -1/2 Stat- Pak® Assay kits were used for the detection of HIV-1 and HIV-2 antibodies in the collected blood samples. The overall prevalence for HIV in this study was 2.0%. Age-group 16-18 years had the highest prevalence of HIV (3.9%) compared to age group 13-15 years (0.0%). HIV antibodies were more prevalent among females (3.3%) than their male counterparts (0.0%). HIV antibodies were more prevalent among students from government secondary schools (4.1%) than their counterparts from private secondary schools (0.0%). Three risk factors (age, gender and location) pertinent to transmission of HIV were studied, each appeared to be significantly associated ($P < 0.05$) with HIV-1/2 antibodies prevalence among the study population. This study however, further confirmed the presence of HIV-1 and HIV-2 antibodies among secondary school students in Port Harcourt, Nigeria. This calls for the need for an extensive HIV awareness programmes in secondary schools. General surveillance and public health education to stop the spread of the infection from this group is also advocated.

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1. INTRODUCTION

Students in secondary schools are adolescents and young adults, who are at an age when sexual activity is often beginning or has already begun, and potentially they may be putting themselves at risk for acquisition of HIV and other STDs unless they are properly informed consider themselves at risk and undertake safer sexual practices (Maluwa-Banda, 1999). Most of the new HIV/AIDS infections are heavily concentrated among young people aged between 15-24 years i.e., youths (Lwelamira et al., 2012). Youths account for 60% of people living with HIV/AIDS and 40% of new infections in Africa (Joint United Nations programme on HIV/AIDS, 2006; Okonta, 2007; Bankole et al., 2007; Lwelamira et al., 2012).

Young people are central to any discussion about sexuality and acquired immunodeficiency syndrome (AIDS) all over the world (Maluwa-Banda, 1999, 2010). Young people are particularly vulnerable to HIV infection because of the physical, psychological, social and economic attributes of adolescence (Earl, 1995; Oppong Asante and Oti-Boadi, 2012). A more serious challenge today, is the growing infection rates among the adolescents in sub-Saharan Africa (Oppong Asante and Oti-Boadi, 2012). Research has shown that the highest group found to be infected with the virus is the age group 15

to 24 (UNICEF, UNAIDS, WHO, 2002; Oppong Asante and Oti-Boadi, 2012).

There is great concern about the spread of HIV epidemic in or within the adolescent population (Maluwa-Banda, 1999, 2010). It has been concluded internationally that adolescent sexual activity is characterized by early on set, multiple sexual partners, and a low incidence of Condom use (Logue et al., 1986; Bandawe and Foster, 1996; Maluwa-Banda, 1999, 2010; Kaiser Family Foundation, 2008). Most teenagers engaged in sex without proper protection and awareness about sexually transmitted infections (Srivastava and Srivastava, 2011). According to Srivastava and Srivastava (2011) most youths become sexually active before marriage, many while still in their teens.

Monitoring of HIV/AIDS epidemic has become extremely significant not only for the purpose of a assessing the magnitude and spread of the problem, but also for the purpose of planning and designing appropriate and relevant intervention strategies (Chitsulo, 1996). Most secondary school in Nigeria is potentially at risk for contracting HIV through unprotected sexual intercourse.

Most Adolescents in Nigeria, like many others in Africa, are potentially at risk for contracting HIV through unprotected sexual intercourse (Musa et al., 2008). Most adolescent in Nigeria become sexually active before marriage, many while still in their

studies (Unuigbo et al. 1999; Fawole et al. 1999; Musa et al., 2008) had begun sexual activity. Studies have shown that 50 percent of unmarried young people aged 15-19 years had begun sexual activity (Musa et al., 2008) while in their studies. Most teenagers engage in sex without proper protection (Musa et al., 2008).

In battle against the spread of HIV and other STD, adolescent have been singled out as being nude vulnerable to the transmission of HIV because of their penchant for risk-taking behaviour and feelings of immorality (Maluwa-Banda, 1999, 2010). This knowledge has resulted in a change of emphasis. A popular slogan “zip up” meaning sexual abstinence is now on bill boards and used as jingles on the radio and television word wide (Maluwa-Banda, 1999, 2010; Youths and United Nations, 2005).

In line with other reports, during the early years of HIV infection in Nigeria, social stigma was very high and treatment was not easily available (Eboko, 2008; Nsagha et al., 2012). With the availability of free HIV/AIDS drugs (Baggaley, 2001), many people are willing to go for VCT and treatment. Thus, this study determines the prevalence of HIV-1 and HIV-2 antibodies among secondary school students in Port Harcourt, Nigeria.

2. MATERIALS AND METHODS

2.1. Study population

A total of one hundred (100) students aged 13-18 years in government and private secondary schools respectively in Port Harcourt were recruited for this study. The schools were randomly selected. The two schools were exclusively for both girls and boys and the two schools were mixed. There were 39 males and 61 females used in this study, 19 males from private secondary school and 20 from government secondary school while 32 females were from private secondary school and 29 from government secondary school. Permission and approval was sought from the school authorities. Pre-test counseling was given to the students and those who consented were recruited for the study, and a structural questionnaire was used to collect demographic information.

2.2. Sample collection and analysis

The method of blood sample collection employed was venipuncture technique. The samples of blood were collected into EDTA bottle. The specimens were transported in a commercially available collection and transport system for HIV to the Medical Microbiology Laboratory, Department of Microbiology, University of Port Harcourt, Port Harcourt, Nigeria for analysis using standard laboratory procedures. All the consented students were screened for antibodies to HIV-1 & -2 using two

enzyme-linked immunosorbent assay (ELISA) rapid screening kits, based on World Health Organization (WHO) systems-2 for detecting antibodies to HIV-1 & 2. DETERMINE® HIV-1/2 (Abbott laboratories) and HIV-1/2 STAT-PAK® (Chembio Diagnostic Systems, Inc.)', ELISA based kits, were used. The kits were designed primarily to test for the presence of HIV-1 and/or HIV-2 antibodies in the blood. This ELISA based kit is both sensitive and specific (99-100%). All tests were carried out according to the manufacturer's specifications.

2.3. Data Analysis

The prevalence for HIV-1 and HIV-2 antibodies was calculated by using secondary school students with positive samples as numerator and the total numbers of students enrolled in this study as denominator. The data generated from this study were presented using descriptive statistics. The data was subjected to Fisher's Exact Test for comparison of proportions to determine any significant relationship between infection rate, age, gender and location.

3. RESULT ANALYSIS

A total number of one hundred (100) students were used for this study. Sixty-one percent of the students were females and 39.0% were males. Of the 100 students examined, 2 tested positive to HIV antibodies thereby giving an overall prevalence of 2.0%. Table 1 shows the sero-prevalence of HIV in relation to the demographic characteristics of subjects. The age-specific prevalence showed that HIV antibodies were only present among students 16-18 years of age. The gender-specific prevalence showed that HIV was only present in females used in this study. The location-specific prevalence showed the prevalence of HIV was higher among students from government secondary school compared to their counterparts in private secondary schools.

Table 1: Sero- Prevalence of HIV in relation to sexes and ages of subjects

Characteristics	No. Tested (%)	No. Positive (%)
Age group (years)		
13-15	49(49.0)	0 (0.0)
16-18	51(51.0)	2(3.9)
Sex		
Females	61 (61.0)	2 (3.3)
Males	39 (39.0)	0 (0.0)
School		
Government	49(49.0)	2(4.1)
Private	51(51.0)	0 (0.0)
Total	100 (100.0)	2(20.0)

4. DISCUSSION

This study was carried out to determine the sero-prevalence of HIV among private and government secondary school in Port Harcourt, Nigeria. The students were generally aged 13-18 years. This is the usual age range of secondary school children in Nigeria. Most of the student showed an inclination to one form of religion or another, majority of them being practicing Christians that is behaving and living according to the Christian doctrines. Therefore the significant improvements in HIV surveillance systems are evident in various countries including Nigeria. But the issue of how to help school going teenagers to avoid risky sexual behaviour is still of serious arguments within the society (Srivastava and Srivastava, 2011).

The overall prevalence of HIV in this study is 2.0%. This is lower compared to what has been reported previously among students. Mutinta and Govender (2012) reported that HIV prevalence rate is at 4.0% among students and behaviour that makes students susceptible to HIV infection is widespread and it takes place at all universities (Mulwo 2009; HEAIDS 2010; Mutinta and Govender, 2012). The 2.0% overall prevalence of HIV reported in this study is also lower than the 5.5% reported by by Holm-Hansen et al. (2007) among students at the urban schools in Tanzania and the 3.0% reported by Fischer et al. (1993) among children in southwest Nigeria. However, it is higher than the 1.0% reported by Holm-Hansen et al. (2007) among students at the rural schools in Tanzania.

In a study by Fischer et al. (1993) among children, a high prevalence of samples negative for HIV-1 antibody by ELISA were repeatedly reactive (11%, 8/70) or indeterminate (46%, 32/70) by Western Blot. Fischer et al. (1993) also reported that two sera (3.0%) were positive for anti-HIV-1 by both ELISA and Western blot among the same children.

In this study, females showed higher sero-prevalence of 2(2.9%) than their male counterparts who showed a zero sero-prevalence. This difference may be as a result of lack of information about HIV/AIDS or lack of family background of the student, lack of sex education from parent and school, awareness of contraception of youth for the prevention of HIV/AIDS and the knowledge about transmission of HIV/AIDS (Society for Family Health, 2003). This finding agrees favourably with what was reported by UNAIDS (2010) and Frank-Peterside et al. (2013) who showed that females are more prone to HIV and UTI than males. In a study by Azuonwu et al. (2011), a higher female gender predisposition to HIV infection was observed. This

finding parallels data obtained from other sub-Saharan African countries which indicated a female gender vulnerability to HIV infection (Gupta, 2002; Akani et al., 2005a; Azuonwu et al., 2011).

It is conservatively estimated that the HIV infection rates in the 15-49 age group (The Strategic Planning Unit, 1999). Musa et al. (2008) reported that the most affected age-group are young people aged 15- 24. In this study, the difference in sero-prevalence of HIV in the two age groups indicates that this factor plays an important role in the prevalence of HIV. Females ages 16-18 years showed the highest sero-prevalence (3.3%). This may be as a result of high level of sexual activity within these age brackets (16-18 years). This is similar to what was reported by Frank-Peterside et al. (2013), who found that females and older age groups have the likelihood of being infected with HIV. Our findings agrees with results of UNAIDS (2009), that the HIV prevalence in Nigeria is more amongst people aged 15-49 years. Our findings also agrees with that of the Nsagha et al. (2012) who reported that most infected were in the 20-29 and 30-39 years age brackets. According to Nsagha et al. (2012), the HIV prevalence in Cameroon is also more amongst people aged 15-49 years. Previous report has found a higher HIV prevalence in the 20-24 years age group (Akani et al., 2005b; Azuonwu et al., 2011). Lengwe's (2009) study found that the HIV prevalence amongst students increases sharply with age as they progress from their late teens to early 20s and even more so after the 25-year mark.

HIV infection is considerably more widespread among students attending urban rather than rural schools (Holm-Hansen et al., 2007). In this study, the location-specific prevalence showed that HIV antibodies were higher among students from government secondary schools (4.1%) compared to their counterparts in private secondary schools (0.0%).

A study by Bhagwanjee (2006) and Breier (2010) found that although students became sexually active at a very early age before joining university, little is known about how they viewed sex and relationships. The adolescent are more vulnerable when it comes to HIV infection (Maluwa-Banda, 1999, 2010). There is also the most promising agent of behavioral change (Maluwa-Banda, 1999, 2010). Hope for changing the course of HIV pandemic may therefore lies in their living in the environment where adult shows responsible behavior (Maluwa-Banda, 1999, 2010).

5. CONCLUSION

In conclusion, it is evident from their study that HIV is affecting our adolescents in Nigeria. This

study however, further confirmed the presence of HIV-1 and HIV-2 antibodies among secondary school students in Port Harcourt, Nigeria. This calls for the need for an extensive HIV awareness programmes in secondary schools. General surveillance and public health education to stop the spread of the infection from this group is also advocated. Though HIV studies have not yet been made part of the secondary school curriculum, there is need to introduce and emphasized school-based HIV/AIDS prevention programme in secondary schools.

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