

Prevalence of HIV-1 and HIV-2 antibodies in a cohort of street-involved youths in Oyigbo, Rivers State, Nigeria

Frank-Peterside N, Nneji LC, Okerentugba PO, Okonko IO

Medical Microbiology Unit, Department of Microbiology, University of Port Harcourt, P.M.B. 5323, Choba, East-West Road, Port Harcourt, Rivers State, Nigeria;

E-mail address: iheanyi.okonko@uniport.edu.ng, Tel: +2348035380891

ABSTRACT: This study was carried out to determine the prevalence of HIV-1 and HIV-2 antibodies in a cohort of street-involved youths in Oyigbo local government area of Rivers State, Nigeria. 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 blood samples. Overall prevalence rate of HIV-1 and HIV-2 was 9.0%. HIV antibodies were more prevalent among female youths (13.6%) than their male counterparts (2.4%). Age group 21-28 years of age had the highest prevalence of HIV (11.9%) compared to age group 15-20 years (3.0%). Two risk factors (age and gender) pertinent to transmission of HIV were studied, each appeared to be significantly associated ($P < 0.05$) with HIV-1 and HIV-2 seropositivity. This study however, further confirmed the presence of HIV-1 and HIV-2 antibodies in a cohort of street-involved youths in Oyigbo, Rivers State, Nigeria. This calls for the need for more and extensive HIV awareness programmes in Oyigbo Local Government Area of Rivers State, Nigeria.

[Frank-Peterside N, Nneji LC, Okerentugba PO, Okonko IO. **Prevalence of HIV-1 and HIV-2 antibodies in a cohort of street-involved youths in Oyigbo, Rivers State, Nigeria.** *World Rural Observ* 2013;5(4):33-36]. (ISSN: 1553-9865) <http://www.sciencepub.net/rural>. 6

Keywords: Antibodies, Cohort, Youths, HIV, seropositivity, risk factors

1. INTRODUCTION

There is great concern about the spread of HIV epidemic in or within the adolescent population (Maluwa-Banda, 1999, 2010). 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). 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).

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).

Most teenagers engaged in sex without proper protection and awareness about sexually transmitted infections (Srivastava and Srivastava, 2011). According to Unuigbo et al. (1999), Fawole et al. (1999), Musa et al. (2008) and Srivastava and Srivastava (2011), most youths become sexually

active before marriage, many while still in their teens had begun sexual activity. Thus, this study was carried out to determine the prevalence of HIV-1 and HIV-2 antibodies in a cohort of street-involved youths in Oyigbo local government area of Rivers State, Nigeria.

2. MATERIALS AND METHODS

2.1. Study population

A total of one hundred (100) street youths aged 15-28 years in Oyigbo local government area of Rivers state, Nigeria were recruited for this study. The youths were randomly selected. There were 41 males and 59 females used in this study. Permission and approval were sought from the community leaders in Oyigbo local government. Pre-test counseling was given to the street youths 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 bottles. The blood samples 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 youths 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 street youths with positive samples as numerator and the total numbers of youths 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 and gender.

3. RESULT ANALYSIS

Of the one hundred (100) youths screened for HIV-1 and HIV-2 antibodies, 9 (9.0%) tested positive for HIV. Table 1 shows the sero-prevalence of HIV in relation to sex and age of the youths. The sex-specific prevalence showed significant difference (13.6 vs. 2.4, $P < 0.05$) between sex and HIV seropositivity. Females youths (13.6%) had higher prevalence of HIV compared to their male counterparts (2.4%), used in this study. The age-specific prevalence showed significant difference (11.9 vs. 3.0, $P < 0.05$) between age and HIV seropositivity. Youths within age group 21-28 years (11.9%) had higher HIV prevalence compared to age group 15-20 years (3.0%).

Table 1: Prevalence of HIV in relation to sex and age of youths

Characteristics	No. tested (%)	No. Positive (%)	No. Negative (%)
Sex			
Males	41(41.0)	1(2.4)	40(97.6)
Females	59(59.0)	8(13.6)	51(86.4)
Age groups (years)			
15-20	33(33.0)	1(3.0)	32(97.0)
21-28	67(67.0)	8(11.9)	59(88.1)
Total	100(100.0)	9(9.0)	91(91.0)

4. DISCUSSION

This study was carried out to determine the prevalence of HIV-1 and HIV-2 antibodies in a cohort of street-involved youths in Oyigbo local government area of Rivers State, Nigeria. This is because these

youths belong to the age group that drives the HIV/AIDS pandemic (15-28 years). While other studies have been done on the subject of HIV among youths, the present study became necessary because awareness campaigns have increased over the years. It is therefore assumed that these youths are more aware of HIV/AIDS.

The overall prevalence rate of HIV-1 and 2 in this study was 9.0%. This is higher than the 4.0% reported by Mutinta and Govender (2012) among students. It is also higher than the 5.5% reported by by Holm-Hansen et al. (2007) among students at the urban schools in Tanzania. It is higher than the 4.8% reported by Nwachukwu and Orji (2008) among fresh graduates and all of them do not have any prior information about their HIV status. It is also higher than the 1.0% reported by Holm-Hansen et al. (2007) among students at the rural schools in Tanzania. It is higher than the 2.0% reported in our previous studies among secondary school students in Port Harcourt, Nigeria (Frank-Peterside et al., 2013a) and the 0.9% reported by Mbakwem-Aniebo et al. (2012) among university freshmen students. However, it is lower than the 11.0% previously reported among undergraduate students (Frank-Peterside et al., 2013b). In this study, HIV antibodies were more prevalent among female youths (13.6%) than their male counterparts (2.4%). This compared favourably with the study of Laah and Ayiwulu (2010) reported higher seroprevalence rate of HIV in females in Nasarawa State, Nigeria. It is also inconsonance with our previous study among secondary school students in Port Harcourt, Nigeria (Frank-Peterside et al., 2013a). Azuonwu et al. (2011) observed a higher female gender predisposition to HIV infection.

This present finding deviated from the findings of some studies in Nigeria. Mbakwem-Aniebo et al. (2012) reported no significant association with the sex of subjects. Frank-Peterside et al. (2013b) reported no significant association with the sex of undergraduate students in Port Harcourt, Nigeria. A few studies have however, documented higher prevalence of HIV/AIDS among males (Celikbas *et al.*, 2008; Avert, 2010). However, our present finding also agrees favourably with what was reported by UNAIDS (2010) and Frank-Peterside et al. (2013c) who showed that females are more prone to HIV and UTI than males. Also in this study, youths within age group 21-28 years of age had the highest prevalence of HIV (11.9%) compared to age group 15-20 years (3.0%). This might be attributed to their sexual behaviors (Mulwo 2009; HEAIDS 2010; Mutinta and Govender, 2012). Our present finding of age associated HIV prevalence is comparable to the findings of previous studies in some parts of Nigeria and outside Nigeria. Mbakwem-Aniebo et al. (2012) reported that HIV

prevalence was higher among age group 20-25years. Laah and Ayiwulu (2010) who reported higher seroprevalence rate of HIV in age group 20-34 years. Macpherson *et al.* (2006) reported in a higher prevalence of HIV among children greater than 15 years of age in Canada. The study by Middelkoop *et al.* (2011) showed a high force of infection among adolescents, positively associated with increasing age. Also, Frank-Peterside *et al.* (2013b) reported a significant correlation ($p < 0.05$) between the age groups and the prevalence of HIV among undergraduate students ages 20-35 years old in Port Harcourt, Nigeria.

5. CONCLUSION

It is evident from this study that HIV is affecting our street-involved youths in Oyigbo, Rivers State, Nigeria. This study however, further confirmed the presence of HIV-1 and HIV-2 antibodies in a cohort of street-involved youths in Oyigbo, Rivers State, Nigeria. Two risk factors (age and gender) pertinent to transmission of HIV appeared to be significantly associated ($P < 0.05$) with HIV-1/2 seropositivity. This calls for the need for an extensive HIV awareness programmes in a cohort of street-involved youths. General surveillance and public health education to stop the spread of the infection among youths is also highly advocated.

Correspondence to:

Iheanyi O. Okonko

Department of Microbiology,
University of Port Harcourt,
PMB 5323 Uniport Post Office, Choba,
East-West Road, Port Harcourt, Nigeria;
E-mail: mac2finney@yahoo.com;
iheanyi.okonko@uniport.edu.ng
Tel.: +234 803 538 0891

REFERENCES

1. Avert, 2010. HIV and AIDS in Nigeria. Retrieved from: www.avert.org/aids.htm. (Accessed date: February 18, 2010).
2. Bankole, A., A. Biddlecom, G. Guiella, S. Singh and E. Zulu, 2007. Sexual behaviours, knowledge and information sources of very young adolescents in 4 Sub-Saharan African countries. *Afr. J. Reprod. Health*, 11(3): 28-43.
3. Celikbas, A., O. Ergonul, N. Baykam, S. Eren, H. Esener, M. Eroglu and B. Dokuzoguz, 2008. Epidemiologic and clinical characteristics of HIV/AIDS patients in Turkey, where the prevalence is the lowest in the region. *Journal of International Association of Physician. AIDS Care*, 7(1): 42-45.
4. Earl D. Re-examination of the paradigm of HIV risk reduction in Adolescents. *Journal of the American Osteopathic Association* 1995; 95(12): 725-728.
5. Fawole, IO, Asuzu, MC, Oduntan, SO, and Brieger, WR. (1999). A school based AIDS education programme for secondary schools in Nigeria. *Hlth Education Res.*, 14(5): 675 – 683.
6. Frank-Peterside N, Chukwugozim-Umejuru R, Okerentugba PO, Okonko IO. 2013c. HIV-1 & -2 Co-Infections with Multi-Drug Resistant (MDR) Uropathogens in Port Harcourt, Nigeria. *Nat Sci*;11(11):11-20
7. Frank-Peterside N, Joshua RA, Okerentugba PO, Okonko IO. 2013a. Prevalence of HIV-1 & HIV-2 Antibodies Among Undergraduate Students Of Uniport, Nigeria. *Academia Arena*, 5(10):48-52
8. Frank-Peterside N, Okerentugba PO, Akpan HR, Okonko IO. 2013b. Prevalence of HIV-1 and HIV-2 Antibodies among Secondary School Students in Port Harcourt, Nigeria. *Researcher*;5(in press)
9. HEAIDS 2010. HIV Prevalence and Related Factors: Higher Education Sector Study, South Africa, 2008-2009. Pretoria: HEAIDS.
10. Holm-Hansen C, Nyombi B, Nyindo M. 2007. Saliva-based HIV testing among secondary school students in Tanzania using the OraQuick rapid HIV1/2 antibody assay. *Ann N Y Acad Sci.*, 1098:461-466.
11. Joint United Nations programme on HIV/AIDS, 2006. Report on the Global AIDS Epidemic: A UNAIDS 10th Anniversary Special Edition. Joint United Nations Programme on HIV/AIDS, Geneva, pp: 24, ISBN: 9291735116.
12. Laah, J.G., and Ayiwulu, E., 2010. Socio-Demographic Characteristics of Patients Diagnosed with HIV/AIDS in Nasarawa Eggon. *Asian Journal of Medical Sciences* 2(3): 114-120
13. Lwelamira J, Sarwatt A and Masumbuko I. 2012. Knowledge and Practices Related to HIV/AIDS Infection among Youths in Mining Areas of Central Tanzania: A Case of Londoni and Winza Mining Areas. *Asian Journal of Medical Sciences* 4(4): 134-144
14. Macpherson, W.D., M. Zencorich and B.D. Gushulak, 2006. Emerging pediatric HIV Epidemic related to migration. *Emerging Infectious Diseases*, 12: 612-615.
15. Maluwa-Banda DW. 1999. HIV/AIDS-Related Knowledge and Self-Reported Sexual Behaviour of Secondary School Students in Southern Malawi: Implications of AIDS Education and Counselling. A PhD Thesis University of Malawi Educational Foundations Department, Chancellor College, Zomba, MALAWI, pp1-25

16. Maluwa-Banda DW. 2010. HIV/AIDS-Related Knowledge and Self-Reported Sexual Behaviour of Secondary School Students in Southern Malawi: Implications of AIDS Education and Counselling. Available at <http://www.apicom.org/ids-document/>. Retrieved October 17, 2013, 04.09am
17. Mbakwem-Aniebo C, Ezekoye CC, Okonko IO. 2012. Detection of HIV-1 and -2 Antibodies Among Freshmen of the University of Port Harcourt, Port Harcourt, Southern Nigeria. *World Applied Sciences Journal* 16 (8): 1087-1092
18. Middelkoop, K., L.G. Bekker, H. Liang, L.D.H. Aquino, E. Sebastian, L. Myer, and R. Wood, 2011. Force of tuberculosis infection among adolescents in a high HIV and TB prevalence community: a cross-sectional observation study. *BMC Infectious Diseases*, 11:156. doi:10.1186/1471-2334-11-156
19. Mulwo Abraham 2009. An Analysis of Students' Responses to ABC and VCT Messages at Three Universities in KwaZulu-Natal Province. Ph.D. Thesis, Unpublished. Durban: University of KwaZulu-Natal.
20. Musa OI, Akande TM, Salaudeen AG, Soladoye OM. 2008. Family Communication on HIV/AIDS Among Secondary School Students in A Northern State of Nigeria. *Afr. J. Infect. Dis.* 2(1): 00 – 00
21. Mutinta G and Govender K. 2012. The Socio-environmental Determinants of Students' Sexual Risk Behaviour and HIV Prevention at the University of KwaZulu-Natal. *J. Hum. Ecol.*, 38(1): 17-29
22. Nwachukwu, N.C., and A. Orji, 2008. Sero Prevalence of Human Immunodeficiency Virus among Some Fresh Nigerian Graduates. *Research Journal of Immunology*, 1: 51-55
23. Okonta, P.I., 2007. Adolescent sexual and reproductive health in the Niger Delta region of Nigeria-Issues and challenges. *Afr. J. Reprod. Health*, 11(1): 113-124.
24. Oppong Asante K, Oti-Boadi M. 2012. HIV/AIDS knowledge among undergraduate university students: implications for health education programs in Ghana. *African Health Sciences* 2013; 13(2): 270 – 277
25. Srivastava B. and Srivastava A. 2011. A study on open discussion of HIV/ AIDS among secondary school students with their parents in national capital region (NCR) of India. *Elixir Soc. Sci.* 41: 6029-6031
26. UNAIDS. UNAIDS Report on the global HIV/AIDS epidemic update, 2010. Geneva: Switzerland. Retrieved from <http://www.unaids.org/en/regionscountries/countries>.
27. WHO/UNAIDS/UNICEF. Epidemiological fact sheet on HIV and AIDS. Core data on epidemiology and response Nigeria 2008 update. October 2008. 1-24. (http://apps.who.int/globalatlas/predefinedReports/EFS2008/full/EFS2008_NG.pdf) 2008.
28. Unuigbo, I E., and Osafu, O. (1999). Sexual behaviour and perception of AIDS among adolescent Girls in Benin City, Nigeria. *Afr. J. Reproductive Health*, 3(1): 39 – 44.

10/12/2013