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Sero Prevalence of Human Immunodeficiency Virus among Some Fresh Nigerian Graduates

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Abstract: The objectives of this prospective study were to identify the infection rates of human immunodeficiency virus among different age groups, sex, of fresh Nigerian Graduates, generate data for intensive campaign against the dreaded HIV/AIDS in high institutions of Learning. We determined the HIV prevalence among young Nigeria graduates, who are currently carrying out their one-year National Youth service. In a cross section, a registrar was opened and these graduates willingly visited the register for free HIV testing and counseling. We evaluated the prevalence rates from October-November, 2007. Positive patients were referred to nearby treatment centers. Out of 167 fresh graduates, 8 (4.79%) had HIV infection and all of them do not have any prior information about their HIV statuses. We recommend that Government and non-Governmental bodies introduce free HIV testing and counseling in Universities in the world and campaigns against HIV/AIDS should also be directed to Universities where most of the sexually-active lie.

Key words: HIV/AIDS, sero prevalence, sexual intercourse, Graduates, Universities

INTRODUCTION

Discovered in 1983, the Human Immunodeficiency Virus (HIV) is a retrovirus identified as the etiologic agent for acquired Immunodeficiency syndrome (AIDS) (Madigan and Martinko, 2006). It is characterized by decrease in the population of T-cell lymphocytes that play a key role in immunity of intact hosts (Nwachukwu and Okereke, 2004). In infected hosts, the virus causes depletion of T-helper cells which keep such hosts susceptible to other concomitant microbial infection such as malaria, Tuberculosis (Nicoll and Gill, 1999). The major routes of transmission include sexual contacts, contamination by blood or blood products and mother to child transmission (Valdiserri *et al.*, 1999).

The world Health organization estimated that by the end of 2005, 40.3 million people were living with HIV/AIDS, an increase from nearly 37.5 million in 2003 (UNAIDS, 2005) The distribution of the virus is global but appears that the incidence rate in them past few years has gone down (Essex, 1999). Generally, two types of the HIV exist, they are HIV-type 1 and HIV-type 2 they elicit the production of specific antibodies after infection of an intact host (Kovacs and Rusheed., 1995). Different researches on the prevalence of HIV among different populations have been documented in recent time in the World. Brodine and Richard (1999) reported that out of 1050 military personnels screened for the human immunodeficiency virus in United States, only 95 were positive. Similarly in another study, Gayle *et al.* (1999) reported that in USA, students in 19 universities were screened for the Human Immunodeficiency Virus. Out of 16, 863 students serodiagnosed, 30 (0.2%) were positive to HIV.

In Saudi Arabia, in a cross sectional study, it was observed that 6046 HIV infections were diagnosed of which 1285 (21.3%) were Saudi Citizens. It was also reported that infections were

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common among age group 20-24 years. The modes of transmissions being documented in Saudi Arabia were heterosexual contacts, blood transfusion, perinatal transmissions, homosexual contacts, intravenous drug use and other unknown sources (Madani *et al.*, 2004). He also reported that at diagnosis, some infected persons do not have prior knowledge of their HIV status.

In African countries such as Zimbabwe and South Africa, 20% of adults are infected with HIV. However, the use of diaphragms and lubricants by South African women brought the incidence rate to 4% per 100 women (Padian *et al.*, 2007).

Children are not left out in the global threats of the dreaded HIV, as Ali (2007), reported HIV and tuberculosis co infections among children in Ethiopia.

The objectives of this prospective study were to identify the infection rates of Human Immunodeficiency Virus (HIV) among different age groups, sex, of fresh Nigerian Graduates, generate data for intensive campaign against the dreaded HIV/AIDS in high institutions of Learning in Africa and other parts of the world.

MATERIALS AND METHODS

Study Design

This was a cross sectional sero-analyses to determine the prevalence rate of HIV infection among fresh Nigerian Graduate from October-November, 2007. The study was carried out in collaboration with a private laboratory in Osun State, Nigeria. Fresh Nigerian Graduate carrying out the compulsory one year service were allowed to willingly report at the laboratory for free HIV testing. Patients who were not youth corps members were diagnosed but excluded from the study, so as to achieve the specific objectives of the study.

Procedures

One milliliter of blood samples was taken from each Graduate and allowed to stand for 1 h to obtain the serum. Five milliliter of the serum was pipette with a standard pipette and transferred into the source point of chembio Kit, followed by addition of 100 μ L of buffer.

Each sample was simultaneously examined with HIV-1 and 2 reactive controls non-reactive controls. Results were read not later than 5 min after addition of buffer.

Positive results were later confirmed using the Immunocomb techniques kits (Abbot Laboratories, Minato-ku, Japan).

Principle of the HIV Testing Techniques Used for this Study

The techniques employ a unique combination of a specific antibody binding protein, which is conjugation to colloidal gold dye particle and HIV1/2 antigens, which are bound to membrane solid phase.

The buffer promotes the binding of antibodies of antibodies to antigens. If present, the antibodies bind to the gold conjugated antibody binding protein. In a reaction sample, the dye conjugated-immune complex migrates on the nitrocellulose membrane and is captured by the antigens immobilized in the TEST (T) area producing pink or purple colour. In the absence of HIV antibodies, there is no pink colour in the test (T) areas.

Cross Reactivity

No cross reaction was observed from Hepatitis B Virus, Rheumatoid factor (280 μ L) and HCG (500 μ L) with the Chembio HIV 1 and 2 Kits, In addition no interference from bilirubin, hemoglobin and triglycerides was observed.

Precision of Kits

Within run Precision had already being determined by the manufacturer of Kits used (Chembio diagnostic system, 3661 Horseblock Road-Medford, USA). Inter assays and Intra assays were carried out with 10 replicates of specimen with different levels of antibodies. The reactive and non-reactive were correctly identified 100% of the running time.

RESULTS AND DISCUSSION

Out of a total number of 267 corps members screened, 8 were positive to either HIV-1 or HIV 2, giving a prevalence of 3.05%. A male corp member and 7 female corps members were positive to the HIV. The female corpse members had higher prevalence of the infection than their male counterparts. Age distribution shows that members within 20-24, 23-30 years of age had 37.50 and 62.5% Sero prevalence rates, respectively (Table 1). Worthy of note is the fact that the positive graduates were all visitors in their state of primary assignments and hadn't stayed up to 2 month in Osun state. They were from different states of Nigeria such as delta, Ebonyi, Rivers, Bayelsa, Eungu and Imo States (Table 2).

In a population of 167 graduates carrying out their national Youth Service to Nigerian Government, 8 were positive to either HIV-1 or HIV-2 this gives a prevalence rate of 3.05%. Males and females had Prevalence rates of 12.50 and 87.50%, respectively. The higher prevalence rate observed in females is not surprising, as it appears the female counter parts are more vulnerable to the human immunodeficiency virus. Graduates within the age brackets 20-24, 25-30 years had prevalence rates of 37.50 and 62.50%, respectively. The higher prevalence rate observed among graduates within 25-30 years is not surprising, as they may have had higher exposure to casual and unprotected sexual intercourse than the former.

Table 1: Study population characteristics of 167 Nigerian Graduates, September-November, 2007

Characteristics	HIV negative participants prevalence (n = 159)	HIV positive participants prevalence (n = 8)
Sex		
Male	71 (44.70)	1 (12.50)
Female	96 (60.40)	7 (87.50)
Age (years)		
20-24	88 (55.34)	3 (37.50)
25-30	71 (44.65)	5 (62.50)
Religion		
Christians	105 (66)	5 (62.50)
Muslims	42 (26.4)	2 (25.00)
Others	12 (7.55)	1 (12.50)
Marital status		
Single	145 (91.20)	8 (100)
Married	14 (8.80)	-(0)

Numbers in Brackets are in percentages

Table 2: Cohort studies of HIV positive fresh Nigerian graduates, October-November, 2007

S/N	Sex	Age (years)	State of Residence in Nigeria	Prior SI testing	Cases of BT within Last 3 years	No. of sexual partners	Cases of SI within condom	Type of HIV	Cases of BD in the last 3 year
1	Female	25	Delta	Yes	No	2	Yes	HIV-1	No
2	Female	25	Delta	Yes	No	1	Yes	HIV-1	No
3	Male	22	Ebonyi	Yes	No	1	Yes	HIV-2	No
4	Female	27	Rivers	Yes	No	1	Yes	HIV-1	No
5	Female	24	Rivers	Yes	No	2	Yes	HIV-1	No
6	Female	27	Bayelsa	Yes	No	1	Yes	HIV-1	No
7	Female	20	Eungu	Yes	No	1	Yes	HIV-1	No
8	Female	30	Imo	Yes	No	4	Yes	HIV-1	No

N = Sample size = 167, n = No. of positive participants = 8, BD = Blood Donation, SI = Sexual inter course. BT = Blood Transfusion

Cohort studies on the HIV-positive graduates showed that all of them were from different parts of Nigeria. Out of the 8 positive graduates, 2 were from Rivers State, 2 were also from Delta State and the other 4 graduates said they resided in Bayelsa State, Eungu State, Imo and Ebonyi States during their undergraduate studies. All of them admitted that they have not been transfused with or donated blood to any recipient, within the last six years. This virtually shows that they probably may not have been infected through blood transfusion. Similarly they had not infected other persons through same transfusion, if and only if they were not infected in the last 6 years. It is also apparent from the results that Muslim and Christian graduates were all involved in the scourge. This shows that religious groups may have not done so much in churches and mosques to restructure the morales of these young graduates. This calls for more attention of the different religious groups, as they should inculcate good morals behaviours including abstinence into students in higher institutions. They could achieve this by liaising with school authorities to organize seminars on HIV among students. Students are more probable to listen to them because their words could be seen as the words of God/Allah. The singles among them had higher infection rates than the married. This may be explained by the fact that the former have more sexual partners than the later (married).

No married person was found with the infection. This shows that the married graduates have shown faithfulness with their partners. This behaviour is worthy of being encouraged among the married.

All of the infected graduates admitted they had unprotected and casual sexual intercourse without the use of condoms in the last four years and had not been transfused with blood while they were in their different Universities. This shows that they were most probably infected through sexual intercourse, or any other means, other than blood transfusion. Seven of them had HIV-1 and it was only the positive male graduate, who resided in Ebonyi State during his undergraduate studies that had HIV-2. This observation is just because HIV-1 is quite common in Nigeria. Two states in Nigeria, namely Delta and Rivers have been ranked high in the prevalence of HIV infection and this may explain why four graduates out of eight screened of the infection were from these two states. The aspect of the human immunodeficiency virus infection routes is currently receiving research attentions across the world.

Akouma *et al.* (2005) showed that out of 127 pregnant women receiving prenatal care at Sainte-Justine Hospital, Canada, 103 were HIV positive. This gives a general prevalence rate of 81%, which is quit alarming. It is apparent that pregnant women are involved in unprotected sexual intercourse leading to pregnancy. This could account for the high prevalence rate among this group.

Macpherson *et al.* (2006) reported in Canada that 256, 970 children greater than 15 years of age were screened and 36 were HIV positive. This group of children are sexually active and may not see need for the use of protective devices such as good quality condoms.

Similarly, Korenromp *et al.* (2005) discovered that HIV-I in sub Saharan African has increased the incidence of clinical malaria by 28% both in adult and pediatric cases. This is in line with the basic knowledge that HIV/AIDS is a disease of debilitation.

CONCLUSION

This study calls for collaborative efforts of Governmental and non-Governmental agencies of the World to strengthen their Campaign against the dreaded HIV/AIDS, as these campaigns should focus University undergraduates, who constitute part of the sexually active groups of our societies. Government of different countries of the world should also develop compulsory HIV screening programmes in higher institutions of learning, so as to enable undergraduates to determine their status on time. This will enable the HIV positive students to go for anti-retroviral drugs, protect themselves alongside other members of our African society and entire world.

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