

*Full Length Research Paper*

# Sero-prevalence of human immunodeficiency virus (HIV) 1 and 2 infections in Uyo metropolis, Akwa Ibom State

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The seroprevalence of human immunodeficiency virus (HIV), the causative agents of Acquired Immune Deficiency Syndromes (AIDS), was investigated from January 2008 to June 2008. Three hundred and sixteen (316) blood samples were screened presumptively for presence of HIV-1 and HIV-2 using a third generation ELISA kit called "Determine". Out of the 316 samples screened, immunoglobulin M (IgM) antibodies to HIV were found present in 108 (34.2%) patients of which 40(12.7%) were males and 68(21.5%) were females. The prevalence of HIV infection in the study population was 34.2% and the prevalence of the viral infection in relation to sex was 39.2% for males and 31.8% for females. The prevalence of viral infection also varied with the highest prevalence rate recorded in age group 31–45 years with 43 (13.6%) while the age group 1-15 years had the lowest percentage positivity with 5 (1.58%). The findings of this study emphasize the more urgent need for intervention measures like sex education, health education and preventive education among the general populace.

**Key words:** AIDS, seropositivity, seroprevalence, HIV, Uyo.

## INTRODUCTION

Human immunodeficiency virus (HIV) is the aetiological agent of the Acquired Immunodeficiency Syndromes (Georges and Georges-Courboj, 1990; Talaro and Talaro, 1996; Prescott et al., 1999). HIV is one of the human T-cell lymphotropic retroviruses (human T-cell leukemia virus types I and II), of the family Retroviridae and sub family Lentivirinae (Gallo et al., 1983; Fleming, 1984; Abimiku et al., 1994; Murray et al., 1998). The human immunodeficiency virus (HIV) epidemic continues to be a burden globally and presents serious public health problems in developing countries especially in Nigeria. HIV-II antibodies were present in the samples taken in Africa as early as 1966, and convincing evidence from Europe has linked HIV-1 to HIV-like diseases occurring in the late 1950s. The investigation conducted by Olaleye et al. (1993) showed HIV 1 to be more prevalent in Nigeria. It has also been reported that HIV-1 is more pathogenic and is found in Asia, East and Central Africa, Europe and United States, while HIV-2 is mainly

limited to West Africa. The AIDS pandemic claimed an estimated 2.1 million (range 1.9-2.4 million) lives in 2007 of which an estimated 330,000 were children under 15 years. Globally, an estimated 33.2 million people lived with HIV in 2007, including 2.5 million children and estimated 2.5 million (range 1.8–4.1 million) people were newly infected in 2007, including 420,000 children (Pennap et al., 2006). Sub-Saharan Africa remains by far the worst affected region. In 2007, it contained an estimated 68% of all people living with AIDS and 76% of all AIDS deaths. Unlike other regions, most people living with HIV in sub-Saharan Africa in 2007 (61%) were women. Adult prevalence in 2007 was an estimated 5.0%, and AIDS continued to be the single largest cause of mortality in this region (Weiss, 1993; Holmes et al., 2003; Weiss, 2007). The majority of HIV infections are acquired through unprotected sex, blood transfusion, contaminated hypodermic needles, exchange between mother and baby during pregnancy, childbirth, or breast-feeding, or other exposure to one of the above bodily fluids (Johnson and Laga, 1988; N'galy and Ryder, 1988; Deschamps et al., 1996; Kuby, 1997)

HIV/AIDS is also the leading cause of death in sub-Saharan African and it is the fourth biggest killer world

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wide. Nigeria's epidemic is characterized as one of the most rapidly increasing rates of new HIV/AIDS cases. Several factors have contributed to the rapid spread of HIV in Nigeria and these include sexual networking practices such as polygamy, a high prevalence of untreated sexually transmitted infections, low condom use, poverty, low literacy, poor health status, low status of women (Pennap et al., 2006). The Joint United Nations programme on HIV/AIDS estimated that 3.5 millions Nigerian adults and children were living with HIV/AIDS as at the end of 2001. HIV prevalence in adults increased from 1.8% in 1991 to 5.8% in 2001. There are scanty data on the prevalence of HIV/AIDS at the Local Government Areas of Nigeria. This study was therefore aimed at investigating the prevalence of HIV/AIDS in Uyo local Government Area, Akwa Ibom.

## MATERIALS AND METHODS

### Study area and population

This study was designed to cover individuals from Uyo metropolis. Uyo is the capital city of Akwa Ibom State in South-South (S/S) part of Nigeria. Demographic information about each person screened was obtained. Such information included sex, age, occupation and address. All information about persons screened was kept confidential.

### Samples collection

Five milliliter (5 ml) of peripheral blood samples were collected by venous puncture using sterile syringes and needles following informed consent from January to June, 2008. Using this method, the arm of each individual was first tied with a tourniquet and the position of the vein disinfected with cotton soaked with methylated spirit. A separate needle and syringe was used for each sample collection. The blood samples were transferred into sterile universal bottles. Serum was extracted by centrifugation of blood specimens at 3000 rpm for 10 min and stored frozen at -20°C until analyzed in the laboratory.

### Detection of virus

For the detection of the presence of HIV-1 and/or HIV-2 antibodies in the blood samples collected, a World Health Organization (WHO) approved kit called 'Determine', an ELISA based kit, was used. The kit was 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%) and was used according to the manufacturer's instructions. The kit is made up of strips impregnated with selenium colloid HIV antigen conjugate at one end and two reaction windows labeled as patient and control windows, respectively, at the other end. The kits were stored at 4°C.

### Interpretation of test results

When two red bars appeared in both control and patient windows of the strip, the test was interpreted as positive. However, the appearance of only one red bar in the control window of the strip and the absence of the red bar in the patient window was interpreted

as a negative test.

## Statistical analysis

The prevalence of HIV/AIDS was determined from the proportion of positive individuals to the total number of individual under consideration, and it is expressed in percentage.

## RESULTS AND DISCUSSION

Out of the total 316 samples screened, IgM antibodies to HIV were found present in 108 (34.2%) patients of which 40(12.6%) were males and 68(21.5%) were females. (Table1).The prevalence of HIV infection in the study population of Uyo was 34.2%. There was a significant difference in the sex of the individuals with the viral infection and the prevalence of the viral infection in relation to sex was 39.2% for males and 31.8% for females respectively (Table 2). The prevalence of viral infection also varied with age, the highest prevalence rate was recorded in age group 31-45 years with 43(13.6%) out of 316 subjects being positive. The age group 1-15 years had the lowest percentage positivity (Table 2). This study revealed that highest incidence of HIV infection in males and females was found in the age group of 31-45 years (Table 1). The trend in the prevalence of HIV infection was high in January and very low in April (Figures 1 and 2).

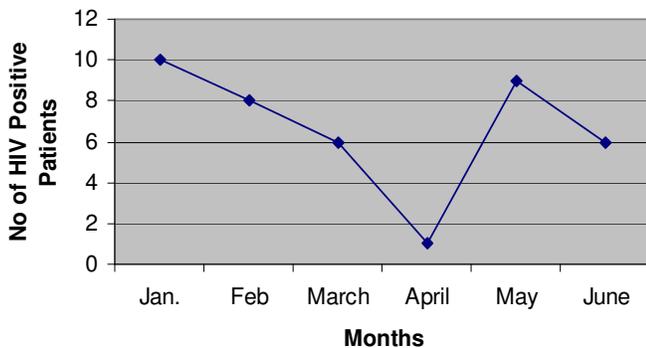
The sero-prevalence of HIV infection from January 2008 to June 2008 was 34.17%, which is an indicative of a higher prevalence among different groups of populations. The prevalence rate recorded in this study is in conformity with the research conducted by Pennap et al. (2006). The results of this study assumed significance and is also an indicative of an emerging epidemic in Uyo. As the World enters the third decade of the HIV/AIDS epidemic, the evidence of its impact is undeniable, robbing countries of both human and natural resources. Nigeria, like other countries of the world is also affected, with an estimated average infection of about 6% out of a population of 150 million. In this study, the HIV infection was found to be significantly higher in males (39.2%) than in females (31.8%), which is also in agreement with the study conducted by Kreiss et al. (1993).This high percentage recorded among the males could be attributed to more risky sex behavior practiced by males and females due to prevailing socio-cultural-economic scenario. One study done in Malawi showed the highest prevalence was in a younger age group (25-34 years) in 1994 and shifted to an older age group (35-44 years) in 1998. In view of the above, it was apparent that more cases were being detected in older age groups. From the present study, it is very clear also that in Uyo, the HIV infection is taking roots in the older age group population which represents the sexually active as well as the ones most likely involved in risky nonsexual practices such as ear piercing, tattooing, intravenous drug usage, scarifi-

**Table 1.** Gender and age-specific prevalence of HIV infection in the study participants.

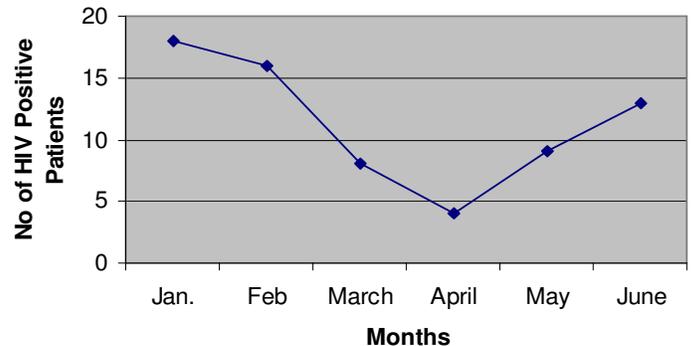
Age group	No. of patients screened	Sex distribution		No. of positive	No. of negative
		Male	Female		
1-15	28	11	17	05	23
16-30	85	28	57	24	61
31-45	110	39	71	43	67
46-60	59	16	43	18	41
60 above	34	08	26	12	22

**Table 2.** The incidence of HIV with sex.

Sex	Total No. (%)	No. Positive (%)	No. Negative (%)
Male	102 (32.3)	40 (39.2)	62 (60.8)
Female	214 (67.7)	68 (31.8)	146 (68.2)
Total	316 (100.0)	108 (34.2)	208 (65.8)



**Figure 1.** Trends in HIV prevalence among male screened.



**Figure 2.** Trend in HIV prevalence among female patients screened.

cation marks, barbing, and manicure/pedicure with shared unsterilized instruments. Other contributing factor to sustained spread of HIV/AIDS was that pre-marital and extra-marital sexual contacts were common in Uyo.

The findings of this study emphasize the more urgent need for intervention measures like sex education, health education and preventive education among the general populace to reduce spread of HIV infection. We hereby recommend voluntary screening of everyone in order to establish their HIV status. All women who are at high risk of HIV infection should go for HIV testing. Finally, all levels of government should create employment opportunities, a decent and alternative means of living for those driven into commercial sex business due to poverty.

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