

SERO – PREVALENCE OF HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION AMONG ANTENATAL CLINIC ATTENDEES IN St LUKE'S HOSPITAL, UYO, AKWA IBOM STATE, NIGERIA

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ABSTRACT

The prevalence of human immunodeficiency virus (HIV) infection was estimated among pregnant women attending clinic at St. Luke's Hospital, Anua – Uyo in Akwa Ibom State. A total of 281 samples were tested serologically by the serial algorithm method using three standard kits namely Abbott Determine HIV1/2, the Chembio HIV1/2 STAT-PAK assay and the Trinity Biotech UniGold HIV tests. Results indicated that 24(12.1%) were infected with HIV. The percentage prevalence by educational status was: women with no formal education 37.5%; those with secondary education, 11.3% and women with tertiary education 5.7%. Estimates of HIV prevalence by age indicated that the age range of 15-29 was the most affected with a prevalence of 37.8%, followed by 30-40 with a prevalence of 17.7% and 41-49 with 0%. HIV prevalence by parity showed 15.5% in the first pregnancy, 8.5% in the second and 10.5% in those with two or more pregnancies. Analysis also revealed that the unmarried and unemployed were more affected than the married and employed. It is evident that HIV infection prevailed most in the least educated, most tender in age, unmarried and unemployed. Therefore, periodic survey and targeted intervention programmes should be harnessed to help control and mitigate the impact of HIV/AIDS among pregnant women.

KEY WORDS: HIV, sero- prevalence, Antenatal attendees

INTRODUCTION:

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) pandemic have constituted the greatest health challenge of our time. Although Africa has just 10% of the world's population, she carries about 75% of the burden of this epidemic (Akpa and Oyeloja 2008). Nigeria, the most populous country in Africa with an estimated population of about 134 million was adjudged to have the third largest burden of HIV in the world after South Africa and India (FMH, 2005).

HIV is an enveloped virus with 72 spikes projecting from it. The spikes are formed mainly from the proteins gp 120 and gp 41. Below the viral envelope is the matrix, made up of protein p17. The bullet-shaped core contains protein p24, two strands of RNA and three enzymes namely reverse transcriptase, integrase and protease required for HIV replication (Noble, 2008).

Gynecological problems in women positive for the virus include chronic vaginal candidiasis, vaginitis, colpitis genital folliculitis and dermatitis, herpes genitalis, cervical atypia, chronic pelvic infection and menstrual abnormalities (Adrain, 1992).

In just over two decades, the virus has killed more than 20 million people and infected over 42 million people globally with the yearly infection of over 6 million (Mahender, 2006).

AIDS was first reported in Nigeria in 1986 and about 2.9 million Nigerians are infected (FMH 2005). The HIV prevalence in Nigeria had been on a consistent

increase from 1.8% in 1991 to 5.8% in 2001, before a marginal decline to 5% in 2004, 4.4% in 2005 and another rise to 4.6% in 2007. (FMH 2007). It is to be noted that although no state in Nigeria is spared this epidemic, there are wide variations in the prevalence between states and between urban and rural areas across the country.

In the African region, active HIV sero-surveillance in/among pregnant women attending antenatal clinic is used as the survey population in line with World Health Organization (WHO) and the Joint United Nations Programme on HIV and AIDS (UNAIDS) recommendation. This is because they represent a healthy, sexually active, easily defined and accessible population.

According to the 2005 sentinel report (FMH 2005), the highest site-specific prevalence (14.7%) in Nigeria was recorded at Iquita – Oron, a rural site in Akwa Ibom State, while the state ranked second in HIV prevalence (8.0%) in the country. In 2007 (FMH 2007), Akwa Ibom State ranked fourth, but with an increasing prevalence of 9.7%.

Presently, a high percentage of persons are aware of HIV/AIDS through media campaigns and public awareness, but accurate knowledge on how to prevent infection is limited. Attitudes towards risk of infection are also rather limited. According to WHO/UNAIDS/UNICEF (2007), a survey in 2003 revealed that 6% of women and 4% of men had ever been tested and received result while in 2005; only 1%

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well as create more awareness of the threat of HIV/AIDS and its possible consequences to maternal and infant health in the Nigerian environment.

MATERIALS AND METHODS

Pre-test Information

In line with the World Health Organization (WHO) guidelines on rapid HIV testing (WHO, 2004), antenatal attendees were informed that their blood will be tested for HIV, for purpose of research on HIV prevalence. They were assured that their identity would be kept confidential; and that they have the right to decide whether to participate or not.

Blood and Data Collection

The clients were given questionnaires to complete, and these were retrieved just before collection of blood, such that an identity code given a client is written both on her questionnaire and the 5ml K₃EDTA bottle. An unlinked anonymous method of testing was used. The skin of each attendee was sterilized with cotton wool moistened with Methylated spirit, and a sterile needle and syringe used to collect 3ml of blood by venipuncture. The blood was transferred to the 5ml K₃EDTA bottle bearing the client's identity code, swirled, and allowed to sediment on the laboratory bench.

Test Procedure

The protective wrappers or foils of the required number of test devices were removed, and they were placed on the laboratory bench. The plasma was used as the test sample. Testing was carried out as specified by the manufacturer of the test device. The samples were tested using the serial testing algorithm method (WHO; 2004) with the Abbott Determine HIV-1/2, (Abbott Japan Co. Ltd.) the Chembio HIV 1/2 STAT-PAK Assay, (Chembio Diagnostic System Inc, USA) and the Trinity Biotech Uni-Gold HIV test (Trinity Biotech PLC, Ireland).

The samples were first tested with Determine HIV- 1/2. If the test result was negative, no further tests were performed and the client was considered HIV negative. If the test result was positive, the same sample was tested again using the STAT-PAK Assay (confirmatory test). If the second test is also positive, the client was considered HIV infected. But if the second test was negative, a third, the tie-break test was performed using Uni-Gold. The results of the tie-break tests were considered definitive.

Data Management

Data forms were checked for completeness to identify errors. Analysis focused on determining the prevalence rates of HIV infection by independent variables: educational status, age group, occupational

status, parity, and marital status. Prevalence rates were determined by expressing the number of positive samples as a percentage of the number involved. Free statistical analysis for MsDos (www.quantitativeskills.com) was used in determining the confidence intervals (CI), Odds Ratios (OR) and p-values at 95% confidence interval, by Chi-square method.

RESULTS

Out of the 281 sera tested for HIV, 34(12.1%) were positive. Analysis of HIV prevalence by educational status (Table 1) showed that the virus was most prevalent among women with no formal education (37.5%) and least among those with tertiary education (5.7%). Statistical analysis of HIV prevalence by educational status gave significant p-values of 0.050 and 0.028 for women with no formal education and those with tertiary education respectively, while the p-values for women with primary education (0.164) and women with secondary education (0.079) were not significant. However, the O.R. values of 4.684 (no formal education), 1.502 (secondary), 0.899 (primary) and 0.366 (tertiary) indicate a decreasing susceptibility pattern, respectively.

The result of HIV prevalence by age group is presented in Table 2. Individuals in the age bracket of 25 – 29 were observed to be the most affected (13.3%). Age group of 15-19 and 20-24 also had high HIV prevalence of 12.5% and 12.0% respectively, while a prevalence of 0% was observed among those in the range of 41-49. Statistical analysis indicates the prevalence of 12.5% (15-19 years), and 5.9% (35-40 years) are significant while O.R. values points to the age range of 25-29 as being the most susceptible. The age range 30-34 (OR = 0.962) was almost as susceptible as 20-24 (OR = 0.993). Susceptibility to HIV was observed to be reducing with advancing age as follows: 30-34 (OR = 0.962), 35-40 (OR = 0.438) and 41-49 (OR = 0).

HIV prevalence by parity (Table 3) indicated a prevalence of 15.3% among women in their first pregnancy, but 8.5% with those in their second pregnancy. Those with more than one pregnancy had a prevalence of 10.5%.

The results of HIV prevalence by occupation (Table 4) showed that women with no occupation were more affected (13.9%) compared to the students (9.7%), business women (12.6%) and civil/public servants (8.3%).

Table 5 shows HIV prevalence by marital status. The married had prevalence of 11.5% while the single had 19.1%. Equal p-value of 0.146 (insignificant) was obtained for both single and married women. However, the values of the OR indicated that the single were more susceptible (OR = 1.804) than the married (OR = 0.554).

Table1: HIV Prevalence By Educational Status

Educational Status	Number Involved n=281,(%)	Number Positive n=34,(%)	CI	OR	p-value
Primary	71 (25.3)	8(11.3)	0.432-1.918	0.899	0.164
Secondary	132(47.0)	19 (14.4)	0.758-2.699	1.502	0.079
Tertiary	70 (24.9)	4 (5.7)	0.147-1.101	0.366	0.028
No Formal Education	8 (2.8)	3 (37.5)	1.272-8.574	4.684	0.050

Chi-square: 95%CI, CI: Confidence Interval, OR = ODDs Ratio

Table2: HIV Prevalence By Age Group

Age (years)	Number Involved n=281,(%)	Number Positive n=34,(%)	CI	OR	p-value
15 - 19	24 (8.5)	3 (12.5)	0.342-3.141	1.042	0.250
20 - 24	83 (29.5)	10 (12.0)	0.500-1.985	0.993	0.159
25 - 29	105 (3.4)	14 (13.3)	0.619-2.223	1.200	0.131
30 - 34	51 (18.2)	6 (11.8)	0.447-2.098	0.962	0.188
35 - 40	17 (6.0)	1 (5.9)	0.068-3.236	0.438	0.261
41 – 49	1 (0.4)	0 (0)	0 - ∞	0	0.879

Table 3: HIV Prevalence By Parity

Parity	Number Involved n=281,(%)	Number Positive n=34,(%)	CI	OR	p-value
0	137 (48.8)	21(15.3)	0.886-3.256	1.824	0.04
1	106(37.7)	9(8.5)	0.289-1.224	0.557	0.05
>1	38(13.5)	4(10.5)	0.318-2.285	0.835	0.209

Table 4: HIV Prevalence By Occupational Status

Occupational Status	Number Involved n=281,(%)	Number Positive n=34,(%)	CI	OR	p-value
Student	31(11.0)	3(9.7)	0.253-2.403	0.757	0.22
Business	135(48.0)	17(12.6)	0.576-2.031	1.093	0.141
Civil/public	36(12.8)	3(8.3)	0.212-2.044	0.628	0.182
Servant					
No Occupation	79(28.2)	11(13.9)	0.626-2.389	1.259	0.132

Table 5: HIV Prevalence By Marital Status

Marital Status	Number Involved n=281,(%)	Number Positive n=34,(%)	CI	OR	p-value
Single	21 (7.5)	4 (19.1)	0.642-4.242	1.804	0.146
Married	260 (92.5)	30 (11.5)	0.236-1.557	0.554	0.146
Divorced or separated	0 (0)	0 (0)	∞ - ∞	∞	10 ⁷
widowed	0 (0)	0 (0)	∞ - ∞	∞	10 ⁷

DISCUSSION

The results of estimates of HIV prevalence among women attending ANC at St. Luke's Hospital, Anua, indicates a public health problem of enormous magnitude that must be given attention. An overall prevalence of 12.1% observed exceeds the 8.0% prevalence reported in Akwa Ibom, but lower than observed in Iquita – Oron which was estimated at 14.7% in the 2005 HIV/Syphilis sentinel survey (FMH, 2005).

Women with low educational status were more affected, and compares favourably with report of a study on HIV prevalence among pregnant women in thirteen (13) countries in Sub-Sahara Africa (Gerland and Eridion, 2001). This is also in line with the Federal Ministry of Health National HIV Sentinel Survey, (FMH, 2005) Abuja. Primarily, HIV/AIDS prevention and control is achieved through education (Willey *et al*, 2008). Myths and misconceptions about sex and HIV, and stigma and discrimination towards people living with HIV/AIDS prevail where there is lack of information. Improved knowledge results in improved attitudes to sexual health and reduces risky behaviours (Spink, 2008). Women with tertiary education understand risk factors and practice preventive strategies better; and this helps to reduce risk of HIV infection.

With respect to HIV prevalence by age group, the highest prevalence (13.3%) was observed within the age range of 25-29. This is in line with similar surveys carried by researchers. (FMH, 2005; Motayo *et al*, 2007; Onwuliri *et al*, 2006). The age group 15-24 represents the group at which sexual activity begins and these individuals are in their most sexually active and reproductive stage. Therefore, this age group is generally used as an index of new infections (FMH, 2005; Merson, 1993, Motayo *et al*, 2007). USAID (2007) estimated that only 18% of women and 21% of men between ages 15 and 24 correctly identify ways to prevent HIV. Matters relating to sex are widely considered private subject and discussion of sex with teenagers are seen as inappropriate.

According to Erukar and Bello (2007), 54% of girls from North-Western Nigeria marry by age 15 and 81% at age 18. These young married girls lack proper knowledge on reproductive health and are therefore more vulnerable to HIV infection within marriage.

Obi *et al* (2007) however found that women in age group 41-45 had the highest prevalence while the least was observed in 26-30 years. This shows that everyone should be screened to establish HIV status. In addition, adequate care, counseling and management of those already infected should be intensified.

HIV prevalence by parity showed that the prevalence rates of 15.3% and 8.5% were significant while 10% was insignificant. Additionally, the OR values showed that women in their first pregnancy were more susceptible.

Occupational status related HIV prevalence estimates showed that none of the prevalence rates was significant at 95%CI. However, OR values showed increasing order of susceptibility: civil/public servant <, students <, business < women with no occupation. Vogel (2007) stated that higher socio-economic status was associated with a later sexual debut. Women who have higher incomes and control over economic assets can more effectively negotiate abstinence, fidelity, and

safer sex, and can more easily avoid exchanging sex for money, food or shelter (Vogel, 2007). Wealthier individuals are more likely to have higher levels of education and a greater knowledge of HIV prevention strategies (USAID, 2007).

Estimates of HIV prevalence by marital status indicated that single women are more affected than the married and compares favourably with other related studies. According to 2005 Botswana HIV/AIDS sentinel survey; married women had a lower prevalence of 27.9% while the single and women living with partners had 35.7% and 39.9% respectively (Smart 2006). The same trend was observed among blood donors at a blood bank in Curitiba, Brazil (Neto *et al*, 2002). The behavioral characteristics of single individuals possibly provide an explanation to this trend. They have a greater variety of sexual partners and, therefore, are more exposed to the possibility of HIV contamination (Smart, 2006).

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