

## HIV Sero-Prevalence among Pregnant Women in A Resource Constrained Setting, South East Nigeria

EZUGWU EC,<sup>1,2</sup> MBBS, FWACS, AGU P<sup>1,2</sup> MBBS, FWACS, OHAYI SAM<sup>3</sup> MBBS, FMCPATH,  
OKEKE TC<sup>1</sup> MBBS, FWACS, DIM C C<sup>1,2</sup> MBBS, FWACS, FMCOG, OBI SN<sup>1</sup> MBBS, FWACS,

<sup>1</sup>Department of Obstetrics & Gynaecology University of Nigeria Teaching Hospital, Ittuku-Ozalla Enugu state, Nigeria

<sup>2</sup>Department of Obstetrics & Gynaecology Enugu state university Teaching Hospital, Parklane Enugu state, Nigeria

<sup>3</sup>Department of Histopathology, Enugu State University (ESUT) Teaching Hospital, Parklane, Enugu, Nigeria

### ABSTRACT

**INTRODUCTION:** HIV infection and AIDS is a public health problem worldwide, particularly affecting the populace in resource constrained settings like in sub-Saharan Africa. Women of reproductive age are most affected and infected with the disease.

**METHODOLOGY:** A descriptive study of pregnant women presenting for the first time at the obstetrics booking clinic of ESUTTH, Parklane from 1st April, 2009 to 31<sup>st</sup> March, 2010. Socio-demographic characteristics, sexual behavior, pregnancy history and STI related symptoms were obtained using already prepared proforma. HIV Screening test was conducted in a serial two step approach using Determine HIV test kits and Stat- Pak HIV kits after obtaining an informed consent. Discordant results were subjected to Western blot for confirmation.

Data were entered and analyzed using Epi-info statistical software. P Value <0.05 were assessed as statistically significant at 95% confidence interval.

**RESULT:** A total of 1306 women were recruited, 66 women were HIV positive, giving a prevalence rate of 5.1%. Their mean age was 28.79 ± 5.06 years. Majority of them were married (9%). The mean gestational age at booking was 26.2 ± 6.8 weeks.

Alcohol intake, history of 3 or more sexual partner in the last 5 years, abnormal vaginal discharge in the last 12 months, history of genital ulcer in last 12 month, had a statistically significant association with prevalence of HIV infection (p value < 0.005)

**CONCLUSION:** HIV infection prevalence rate in among antenatal attendants in Enugu is still high. A multi-sectoral approach is required for effective prevention and control of the disease to ensure achievement of Millennium development Goals 5&6

**KEY WORDS:** HIV in Pregnancy, booking visit, low resource setting, Nigeria

**Date Accepted for Publication:** 18th August, 2012

NigerJMed 2012:338-342

Copyright ©2012. Nigerian Journal of Medicine

### INTRODUCTION

Human immunodeficiency virus infection and Acquired Immunodeficiency Syndrome is a public health problem worldwide, particularly in sub-Saharan Africa which bears the greater burden of the disease, particularly

among women and children. Globally, the disease is recognized as a major contributors to maternal mortality<sup>1,2</sup>. Worldwide, it is a recognized leading cause of death in women of reproductive age<sup>3</sup>.

An estimated 34 million people were living with HIV globally at the end of 2010, including 3.4 million children less than 15. There were estimated 2.7 million new HIV infections globally, about 390,000 among children less than 15 years<sup>2</sup>.

Although sub-Saharan Africa constitutes only 12% of the global population, about 68% of all people living with HIV reside in the region. An estimated 1.9 million people became infected with HIV in 2010 in the sub-region and an estimated 250,000 children less than 15 died from AIDS related causes<sup>2</sup>.

Since the first case of AIDS was reported in Nigeria in a 13 year old girl in 1986, HIV has become a major public health problem. The National HIV sero-prevalence rate increased from 1.8% in 1991 to 5.8% in 2001 and declined to 4.6% in 2008<sup>1</sup>. It is currently at 4.1%<sup>4</sup>.

By the end of 2008, an estimated 2.95 million people were living with HIV/AIDS<sup>\*\*\*</sup>. The statistics has not changed much, as according 2010 HIV epidemic update, Nigeria has the second highest number of people living with HIV in the world after South Africa<sup>4</sup>.

There has been concerted effort in Nigeria towards the control of this epidemic at the national, State and Local government levels with major support from international Donor agencies/partners and other non-Governmental organizations.

As part of an effort towards tackling the HIV menace in Enugu state, South East Nigeria, a center for the Prevention of Mother to Child transmission of HIV (PMTCT) was established at Enugu State University Teaching Hospital (ESUTH), Parklane, in October 2008 with support from AIDS Relief, a non developmental organization. The center offers HIV counseling and testing, antiretroviral therapy for treatment and prevention of mother to child transmission as well as Paediatric HIV treatment.

With the establishment of PMTCT services at Enugu State University Teaching Hospital (ESUTH), Parklane,

there was a need to conduct a pilot study to establish the baseline prevalence of HIV Infection among pregnant women in Enugu as well as determine factors associated with its occurrence, as these will be of value in strategic planning and policy implementation as well as monitoring of progress in the prevention of mother to child transmission of HIV strategy.

ESUT Hospital, Parklane, is a tertiary health institution located in Enugu metropolis, the capital of Enugu State, South-eastern Nigeria. It serves an estimated 6 million people of Enugu state and neighbouring states of Anambra, Ebonyi, Imo and Abia. It was upgraded to a tertiary health institutions in 2006. Although it is now a tertiary health institution it still offer both primary and secondary health care.

## METHODOLOGY

A descriptive study of all pregnant women presenting for the first time at the Obstetrics and Gynaecology unit (booking clinic) of Enugu State University of Science & Technology Teaching hospital (ESUTTH), Parklane for a twelve months period; from 1st April, 2009 to 31<sup>st</sup> March, 2010. Obstetric Booking clinics are held every Thursday of the week. HIV counseling and testing is offered to all pregnant women booking for antenatal care with opt out option. The PMTCT programme includes pretest and post test counseling by trained counselors and HIV testing by trained laboratory scientists.

At each booking clinic during the study period, all the pregnant women who gave consent for the study were recruited. Using an already prepared and pre-tested proforma and ensuring confidentiality, information on their socio-demographic characteristics, sexual behavior, pregnancy history, Sexually Transmitted infections (STI) related symptoms were obtained. Pre-test counseling was offered by trained counselors. About 2mls of blood were taken from each subject using aseptic procedure for the test. HIV testing was conducted only by qualified laboratory scientist. The test was conducted in a serial two step approach. Determine HIV test kits were used to screen all specimens. Non reactive specimens were reported as negative. Reactive samples were subjected to a second test using Stat- Pak HIV kits. Specimen which were both positive to the two test were reported as positive. In cases of discordant results between the two screening test, the sample was then sent for confirmation using western blot.

HIV positive pregnant women who gave consent for th were recruited into the PMTCT programme and HAART offered either for treating the woman or for PMTCT depending on their CD4 count.

For those that are HIV negative, post test counseling included implication of a negative result.

Data were entered and analyzed using Epi-info statistical software version 3.5.3, statistical relationships were assessed using Chi-square, student t- test and fisher's exact test where appropriate. P Value <0.05 were assessed as statistically significant at 95% confidence interval.

## RESULTS

A total of 1306 women were recruited for the study with 66 HIV positive, giving the prevalence rate of 5.1%. The age range of participants was between 17 to 44 years, with mean age of  $28.79 \pm 5.06$  years. Age group 25-29 years had the highest prevalence of HIV of 7.0% (p Value=0.04). The mean age of HIV positive and HIV negative pregnant women were not significantly different;  $28.03 \pm 3.87$  years and  $28.82 \pm 5.1$  years respectively, p Value=0.2154.

Some 578 (44.3%) women were primigravida while 728 (55.7%) were multiparous. Most of them were married (92.5%) and 3.1% of them were Single

Majority of the women 1303 (99.7%) had formal education with highest prevalence of 6.1% among secondary school graduates.

The gestational age at booking ranged from 7 weeks to 37 weeks, with mean gestational age at booking of  $26.2 \pm 6.8$  weeks.

Majority of the pregnant women were married (92.5%). The prevalence of HIV was higher among the single than the married (8.1% v 5.1%; p value = 0.03).

The entire respondent claimed that they do not smoke cigarette. Those that drink alcohol had significantly higher prevalence of HIV compared to those that do not drink (7.8 v 3.9%; odds ratio = 2.08).

With increasing number of sexual partner in the last 5 years, the prevalence of HIV significantly increased (chi square for linear trend= 28.122; p Value= 0.0001). Those who had 3 and above sexual partner in the last 5 years had highest prevalence of 13.8% (p Value = 0.0011; odds ratio=5.0).

Women who admitted to have had abnormal vaginal discharge in the last 12 months had significantly higher prevalence of HIV (10.5% v 2.5%, p Value 0.0001 odds ratio= 4.83. Those who also admitted to having had genital ulcer in the last 12 months also had significantly higher prevalence of HIV (22 % v 3.6%, p Value= 0.0001; odds ratio= 7.65)

**Table I: Distribution of the Respondents characteristics based on their HIV status**

	HIV Status= Positive (%)	HIV Status =Negative(%)	TOTAL	p-Value
<b>AGE</b>				
d19	1(2.9)	33(97.1)	34	1.00
20-24	12(5.2)	231(94.8)	243	0.30
25-29	28(7.0)	372(93.0)	400	0.04
30-34	21(4.7)	429(95.3)	450	0.69
35-39	3(2.0)	147(98.0)	150	0.07
e40	1(3.6)	28(96.4)	29	1.0
<b>Parity</b>				
Primigravida	37(6.4)	541(93.6)	578	
Multigravida	29(4.1)	699(95.9)	728	0.056
<b>Marital status</b>				
Single	3(8.1)	37(91.9)	40	0.45
Married	59(5.1)	1149(94.9)	1208	0.33
Others *	4(7.4)	54(92.6)	58	0.55
<b>Level of Education</b>				
No formal education	0(0)	3 (100)	3	1.000
Primary	6(5.5)	103 (92.8)	109	0.643
Secondary	39(6.4)	570 (93.6)	608	0.016
Tertiary	21(3.6)	565 (96.9)	586	0.074
<b>Do you drink alcohol</b>				
Yes	30(7.8)	355(92.2)	385	0.005
No	36(3.9)	885(96.1)	921	0.005
				(Odds ratio=2.08)
<b>Number of sex partners in last 5 years</b>				
1	29(3.2)	888(96.8)	915	0.0001
2	16(7.2)	221(92.8)	235	0.1935
>3	10(15.4)	55(84.6)	65	0.0011
Dont know	11(13.8)	80(86.2)	91	0.0045
<i>Chi square for linear trend=28.122; p Value= 0.0001</i>				
<b>History of abnormal vagina discharge in last one year</b>				
No				
Yes				0.0001(1.00)
Dont know	21(2.5)	837(97.5)	849	0.0001(4.83)
	40(10.5)	330(89.5)	379	0.589(2.73)
<b>History of genital ulcer in the last one year</b>				
No	5(6.4)	73(93.6)	78	
Yes				0.0001(1.0)
Dont know	42(3.6)	1138(96.3)	1180	0.0001(7.65)
	20(22)	71(78)	91	0.028(3.5)
	4(11.2)	31(88.8)	35	

\* Others included Divorced, Separated, Widowed

## DISCUSSION

The prevalence of HIV infection among pregnant women attending antenatal for the first time at ESUTH was 5.1%. This value is greater than the Nigerian national average HIV prevalence rate of 4.1%<sup>4</sup>. When compared to other states in Nigeria, it is higher than 1.0% recorded in Kebbi state but far lower than 12.7% recorded in Benue state. It

is also lower than 37.7% reported in South Africa<sup>4</sup>. Although there was no statistically significant difference between the mean age of the HIV positive pregnant women and that of HIV negative pregnant women from the study, the age group 25 -29 years had the highest prevalence. Previous reports in Nigeria have also reported highest prevalence amongst this age group<sup>5</sup>.

The relative prevalence of asymptomatic and untreated STIs in those less than 30 years favor HIV transmission and acquisition and may account for the higher prevalence as do their increased risk of sexual activity<sup>6</sup>

Although married women have been reported to be 50 to 59% more likely than the unmarried to become HIV infected from African studies<sup>7,8,9</sup>, the single mother had a higher prevalence of HIV although this was not statistically significant. This portrays the socioeconomic implication of the HIV epidemic in resource constrained setting; as the older rich men “sugar daddy” entice younger girls with their riches for unprotected sexual intercourse, increasing the risk of disease acquisition.

A significant number of these women booked for antenatal care in the third trimester, with the mean gestational age at booking of  $26.2 \pm 6.8$  weeks. This has a negative implication on the PMTCT of HIV/AIDS as a significant number of these pregnant women present at an advanced stage of pregnancy, some delivering shortly after commencement of antiretroviral drugs. This results in a higher risk of transmission of the virus to the baby in utero or during delivery. WHO recommends access to HIV test in pregnancy as early as possible to allow women with HIV to benefit from evidence based interventions to minimize risk of MTCT and the uninfected supported to remain unaffected<sup>10,11</sup>.

Women with a history of multiple sexual partners had a higher prevalence of HIV infection with increasing trend as number of sexual partners increased. Worldwide, it has been reported that majority of the new HIV infections are sexually transmitted, the rate of transmission being higher in women than men<sup>12</sup>. Report has shown that women are twice as likely to contract HIV from unprotected sexual intercourse as their male partners<sup>13</sup>. Women who had 3 or more sexual partners in the last five years had a significantly higher prevalence than other subjects [15.4% v 3.2% p Value = 0.0011; odds ratio=5.0). Multiple sexual partnership increases the risk of acquiring sexual transmitted disease including HIV infection.

Women who had history of genital ulcers had higher prevalence of HIV infection as previously reported<sup>5</sup>. Ulcerative lesions of the genitals serve as portal of entry for HIV as well as activate HIV susceptible cells<sup>14</sup>. There was also significantly higher prevalence of the disease in subjects with a history of abnormal vaginal discharge. Abnormal vaginal discharge is a likely indication of an underlying genital infection/ inflammation which is also believed to weaken the vaginal epithelial integrity promoting HIV transmission<sup>5</sup>. All these further buttress the need to educate and promote safer sex practices amongst our people. Barrier method of contraception should be encouraged as this will prevent unwanted

pregnancy as well as protect against acquisition of sexually transmitted infections, including HIV.

It has been reported that HIV infection when untreated leads to poorer maternal and fetal outcome due to HIV itself as well as its complication, making the disease a leading cause of death in women<sup>11, 15</sup>. HIV positive pregnant women had a six fold increased risk of maternal death usually due to opportunistic infections compared to HIV negative pregnant women from clinical study in Johannesburg, South Africa<sup>16</sup>. This also has direct effect on childhood survival as maternal survival is key to the infant's survival<sup>17, 18</sup>. Other reported complications include increased risk of spontaneous abortion, low birth weight (LBW<2500 kg), small for gestational age, stillbirth and preterm birth.

Nigeria being a country with high maternal and perinatal morbidity and mortality, the HIV epidemic if unchecked will worsen the already unacceptable situation. Strengthening HIV services for pregnant women has been reported as a veritable tool in the reduction of maternal mortality rate in especially the sub-Saharan African region<sup>19</sup>.

All efforts must therefore be geared towards the prevention of HIV infection in women of reproductive age group. HIV counseling and testing during pregnancy for early detection of HIV positive women with effective treatment and support services definitely will represent a step in the right direction if the country hope to achieve Millennium Development Goals 4, 5 & 6.

## REFERENCE

1. National guideline for prevention of mother to child transmission of HIV (PMTCT) 2010. Federal ministry of health, Nigeria
2. WHO/UNAIDS/ UNICEF Global HIV/AIDS response; Epidemic update and health sector progress towards Universal Access, 2011 Progress Report.
3. Riberio SP, J acobsen HK, Mathers DC, Garcia-Moreno C. Priorities for women's health from the global burden of disease study. *Int. J Gynecol Obstet* 2008;102: 82-90
4. National HIV Sero-prevalence Sentinel Survey Among Pregnant Women Attending Antenatal Clinics in Nigeria. Technical report 2010; Federal ministry of health
5. Sagay AS, Kapiga SH, Imade GE, Sankale JL, Idoko J, Kanki P. HIV infection among pregnant women in Nigeria. *Intern J Gynec. Obstet* 2005;90:61-67
6. Laga M, Schwartlander B, Pisani E, Sow PS, Caraei M To Stem HIV in Africa, prevent transmission to young women *AIDS* 2001;15:885-98
7. Tang J, Nour NM, HIV and pregnancy in resource Poor setting. *Rev Obstet Gynaecol.* 2010; 3(2): 66-

- 77 doi: 10.3909/riog0118
8. Glynn JR, Carael M, Auvert B, et al why do young women have a much higher prevalence of than young men ? A study in Kisumu, Kenya and Ndola, Zambia AIDS.2001;15:S51-S60
  9. Kelly RJ, Gray RH, Sewankambo NK, et al. Age difference in sexual partners and risk of HIV-1 infection in rural Uganda. *J Acquir Immune defic Syndr.* 2003;32:446-451
  10. WHO. Rapid HIV tests. Guidelines for use in HIV testing and counseling in resource constrained setting. 2004
  11. WHO. Towards universal assess; Scaling up priority HIV/AIDS interventions in the health sector; progress report 2009. [www.who.int/hiv/pub/2009progressreport/en/.2009](http://www.who.int/hiv/pub/2009progressreport/en/.2009)
  12. Joint united nations programme on HIV/AIDS and world health organization . Global AIDS Epidemic update: December 2005. Geneva:UNAIDS;2005
  13. Nicolosi A, Correa Leite MI, Musicco M, et al. the efficiency of male to female and female to male sexual transmssiion of human immunodeficiency virus: a study of 730 stable couples. Italian study group on HIV Heterosexual transmission. *Epidemiology.* 1994;5:570-757
  14. Flemming DT, Wasserheit JN. From epidemiological synergy to public health police and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV-1 infection. *Sex Transm infect* 1999;75:3-17
  15. Mepham SO, Bland RM, Newell M-L. Prevention of Mother to Child transmission of HIV in resource-rich and poor settings. *RCOG* 2011;118:202-218
  16. UNAIDS/WHO. AIDS epidemic update: November 2009. WHO Library Cataloguing in Publication Data.2009
  17. Newell LM, Coovadia H, Cortina-Borja M, Rollins N, Gaillard P, Dabis F. Mortality of infected and uninfected infants born to HIV- infected mothers in Africa: a pooled analysis. *Lancet* 2004; 364:1236-43
  18. Ndirangu J, Newell LM, Tanser F, Herbst JA, Bland R. Decline in early life mortality in a high HIV prevalence rural area of south Africa: evidence of HIV prevention or treatment impact? *AIDS* 2010;24:539-602
  19. Moodley J, Pattinson RC, Baxter C, Sibeko S, Abdool Karim Q. Strengthening HIV services for pregnant women: an opportunity to reduce maternal mortality rates in southern Africa/sub-saharan Africa; *BJOG* 2011;118 :219-225