

*Full Length Research Paper*

# Trend of seroprevalence of HIV among antenatal clinic attendees at the university of Maiduguri teaching hospital, Nigeria

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Apart from heterosexual route, mother-to-child transmission is the next most important route of HIV transmission accounting for over 90% of infections in children. This retrospective study is aimed at assessing the prevalence trend of HIV infection among pregnant women attending the antenatal clinic of University of Maiduguri Teaching Hospital in Northeast Nigeria within a five year period, 2005-2009. Pregnant women who consented to HIV testing after receiving voluntary counseling were tested for HIV using the parallel rapid testing algorithm with support PEPFAR (President's Emergency Program for AIDS Relief). Of a total of 9018 pregnant women tested, 722 (8.0%) were found to be HIV positive with the highest prevalence occurring in 2007 (9.5%) while, the lowest was noted in 2009 (6.2%). The rate of decline in HIV prevalence between 2008 and 2009 was about 2-fold compared to previous years. There was an initial increase in the HIV prevalence in 2005 (7.1%), peaked at 9.5% in 2007 and then decline in 2009 (6.2%). There was a consistent increase in HIV prevalence with age. However, teenage pregnant women within the age bracket of 10 – 14 years had the highest rate of infection (23.5%) over the years. In conclusion, HIV prevalence increased by about 4-fold higher than the earlier reports. The implication of early marriage in this part of the country vis-à-vis teenage pregnancy as observed in this study has grievous implications to the success of HIV prevention programmes. Innovative strategies and approach such as integration of reproductive health and HIV services is hereby recommended to cater for cases of early marriage and teenage pregnant mothers. Efforts should be consolidated to further stem the HIV scourge among pregnant women.

**Keywords:** HIV prevalence, pregnant women, Northeast Nigeria

## INTRODUCTION

Human immunodeficiency virus (HIV) infection is transmitted vertically from mother to child (Pitkin *et al.*, 2003). In 2005, the World Health Organization (WHO) and Joint United Nations Program on HIV/AIDS (UNAIDS) (Ref.) estimated that the total number of people living with HIV worldwide was just over 40 million and women represents half of the people infected with HIV (De Cherney *et al.*, 2006).

In most developed countries, the proportion of HIV-infected women attributable to injection drug use has declined and the proportion of those infected through heterosexual route has increased considerably, especially among young women (Karon *et al.*, 1996). In Sub-saharan Africa, including Nigeria, the dominant mode of transmission of HIV is by heterosexual route, accounting for 80% of cases FMOH, Abuja. Mother-to-child transmission is the next most important route of HIV transmission accounting for over 90% of infections in children (UNAIDS, 1997). Maternal transmission of HIV can occur transplacentally before birth, peripartum by

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exposure to blood and body fluid at delivery, or postpartum through breastfeeding (De Cherney *et al.*, 2006).

HIV infection has been reported as one of the most common complications of pregnancy in some developing countries (WHO/UNAIDS, 1998). Infection among pregnant women therefore poses great risks to their family, offspring and health workers at the time of delivery and the major concern, due to its attendant consequences of morbidity and mortality, is the potential vertical transmission (Karim *et al.*, 2002). Currently, women are encouraged to deliver normally and breastfeed their babies while taking antiretroviral drugs. This approach increases the HIV-free infant survival (WHO 2010). Despite these interventions, mother-to-child transmission of HIV has been observed to be a continuing source of HIV infections among infants in Africa (Sable *et al.*, 2008). Hence, HIV testing in pregnancy has remained an important component of the Prevention of Mother-To-Child Transmission (PMTCT) intervention in many maternal health care facilities in Nigeria as a way to identify infected mothers and provide appropriate strategy to reduce the rate of maternal transmission.

This retrospective study is aimed at assessing the trend of prevalence of HIV infection among pregnant women attending the antenatal clinic of University of Maiduguri Teaching Hospital in Maiduguri, Northeast Nigeria within a five year period, 2005-2009.

## MATERIALS AND METHODS

### Study Area

The study was conducted at the University of Maiduguri Teaching Hospital, a tertiary health facility situated in Maiduguri, the capital of Borno state in the north eastern zone of Nigeria.

### Study Population

The study populations were pregnant women who visited the hospital for antenatal care between January 2005 and December 2009. A total of 9018 pregnant women who consented to HIV testing after receiving voluntary counseling were screened for HIV infection using the parallel rapid testing algorithm. The introduction of free screening for HIV by the Federal Government of Nigeria in 2004 and supported by the United States Government through the Harvard- AIDS Preventive Initiative in Nigeria (APIN)/PEPFAR (President's Emergency Programme For AIDS Relief) programme greatly facilitated access to PMTCT among other HIV services.

## Laboratory Method

Five milliliters of blood was collected from each patient by venopuncture into an EDTA container. The samples were centrifuged at 1000×g for 10minutes and plasma separated into sterile cryovial containers for storage at -20°C until use. HIV screening was carried out using the rapid parallel algorithm. The sample was first tested using the Determine (ABBOTT Japan) and Stat Pak (CHEMBIO DIAGNOSTIC SYSTEMS, INC. USA) test devices. Unigold (TRINITY BIOTECH PLC, IRELAND) test device was used as tie-breaker in discordant cases.

## RESULTS

The quality of information would be better if we could find out what proportion of the positive cases were actually new cases. This is because we may be recycling old cases who were previously diagnosed HIV positive, now coming with another pregnancy.

Table 1 shows the yearly distribution of HIV positive pregnant women detected in UMTH between 2005 and 2009. Of a total of 9018 women tested for HIV, 722 (8.0%) were found to be HIV positive with the highest prevalence occurring in 2007 (9.5%) while, the lowest was noted in 2009 (6.2%). The rate of decline in HIV prevalence between 2008 and 2009 was about 2-fold compared to previous years. Figure 1 indicates an initial increase in the HIV prevalence in 2005 (7.1%), peaked at 9.5% in 2007 and then a decline in 2009 (6.2%).

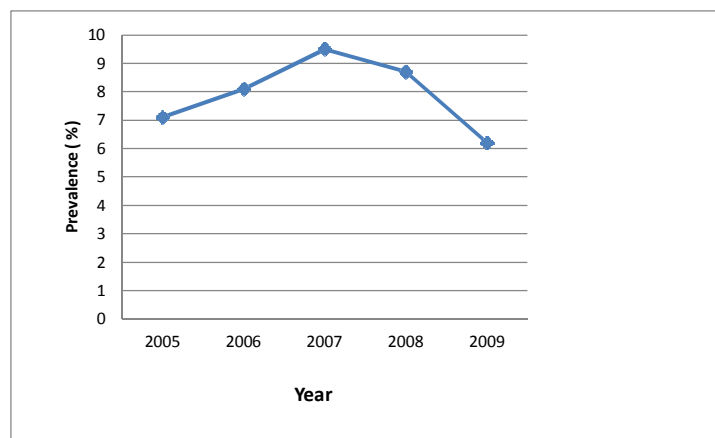
Table 2 shows the age distribution and percentage HIV positivity among the pregnant women between 2005 and 2009. A consistent increase in HIV prevalence was observed as age of the pregnant women increases. However, those within the age bracket of 10 – 14 years had the highest rate of infection over the years accounting for 23.5%. There was a statistical significant difference among age group of 10 -14 compare to other age groups.

## DISCUSSION

The result of this study carried out in Maiduguri, Northeast Nigeria between 2005 and 2009 among pregnant women attending University of Maiduguri Teaching Hospital shows an overall HIV prevalence of 8.0%. Earlier studies carried out in the same hospital between September 1988 and April 1990 (Harry *et al.*, 1992), and July 1991 - February 1993 (Harry *et al.*, 1994), indicated a lower but a rising overall HIV prevalence of 0.47% and 2.3% respectively. Harry *et al.* (1994) reported that this was 4.83 times higher than earlier periods. When compared with the result of this

**Table 1:** Yearly distribution of percentage HIV positive among pregnant women in UMTH (2005-2009)

Year	No. Screened	No positive	percentage positive
2005	1009	72	7.1
2006	1448	117	8.1
2007	2025	193	9.5
2008	2310	201	8.7
2009	2226	139	6.2
<b>TOTAL</b>	<b>9018</b>	<b>722</b>	<b>8.0</b>

**Figure 1.** Prevalence trend of HIV infection among pregnant women in UMTH, 2005-2009**Table 2.** Age distribution and percentage HIV positivity of pregnant women at UMTH (2005-2009)

Age groups (yrs)	No Screened	No. positive	Positive %
10-14	17	4	23.5
15-20	1473	108	7.3
21-25	2599	186	7.2
26-30	2890	232	8.0
31-35	1250	108	8.6
36-40	601	58	9.7
41-45	171	23	13.5
46-50	17	3	17.6
<b>TOTAL</b>	<b>9081</b>	<b>722</b>	<b>8.0</b>

$\chi^2 = 18.54$ ;  $df = 6$ ;  $p = 0.005$

study more than 10 years later, the prevalence has increased by about 4-fold higher than the 1994 report.

It has also been observed in this study that among the 17 teenage pregnant mothers (10-14 years) seen over the study period, 4 (23.5%) were infected with HIV accounting for the overall highest HIV prevalence among the specific age groups studied. This shows a statistical significant difference ( $\chi^2 = 18.54$ ;  $df = 6$ ;  $p = 0.005$ ). This observation has grievous implications against the

background of age long socio-cultural practice of giving out underage girls in marriage in this part of the country. In addition, most HIV programmes among pregnant women are targeted at women in the age bracket of 15-49 years, not considering situations of teenage motherhood or girls involved in early marriage. From the result of this study, possibility exists that these young and inexperienced pregnant mothers may have been infected by their older husbands who may likely be either in

polygamous marriage or multiple sexual relationships.

Generally, many African wives and mothers sometimes found themselves trapped in a hopeless situation, either because of lack of formal education, self-empowerment or enmeshed in socio-cultural practices that could not free them from the consequences of HIV infection. Hence, the risk they take while performing their natural role in the family makes them uniquely vulnerable. In an earlier survey carried out in Maiduguri among antenatal clinic attendees (Moses *et al.*, 2009), the report showed that majority of the women (62%) would not mind supporting their HIV infected spouse while, only a few of the respondents would rather separate (9%) or divorce (21%) their HIV positive partner. However, only 44% would accept the use of condom with infected partner indicating a low risk perception among these women. This may be one of the underlying reasons for the increasing HIV prevalence observed in this study.

The transmission of HIV from mother-to-child contributes largely to the HIV prevalence amongst children in both developed and developing countries, particularly in sub-saharan Africa where new childhood infections is estimated to be about 400,000 (UNAIDS, 2010). UMTN, Maiduguri is one of the tertiary health centres implementing PMTCT programme in Nigeria. This intervention programme of government, with support from the President's Emergency Program For AIDS Relief (PEPFAR), pioneered by the AIDS Preventive Initiative in Nigeria (APIN) project in 2004 has greatly boosted local efforts in this respect. One of the achievements of the project as observed in this study has been the remarkable increase in HIV counseling and Testing (HCT) uptake by antenatal attendees compared to previous years (Harry *et al.*, 1992; 1994). In addition, infant diagnosis and treatment that later commenced in the same hospital, serving as a referral centre in Northeast Nigeria, complemented this noble effort.

Findings in this study show that the majority of pregnant women (90%) belong to the sexually active and highly reproductive age bracket of 15-35 years. These pregnant women were observed to have a lower rate of HIV infection (7.7%) compared to the older women, 36 years and above (10.6%). This may as well be attributed to the success of the ongoing PMTCT intervention programme implemented in the health facility over the years. It may also mean that the older women might have been infected earlier in life when no serious HIV intervention was instituted as reported elsewhere (Helquist and Sealy, 1992). In view of the results of this study, innovative strategies such as integration of reproductive health and HIV services is hereby recommended to cater for all women within child bearing age group and without, especially girls involved in early marriage. Consolidation of effort to further reduce the HIV scourge among pregnant women and their babies is likewise emphasized.

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