

Retroviral seroprevalence and sociodemographic parameters of the ante-natal pregnant women in a pre-tertiary health facility

Abstract

Background: Foetus can be infected by HIV-positive pregnant women. A research to assess the seroprevalence and socio-demographic parameters of antenatal pregnant women in a pre-tertiary health facility, Uyo was carried out

Methods: Standard serological and statistical methods were employed.

Results: As we previously presented in a conference: "A total of 184 pregnant women were screened and thirty-seven (20.1%) of them were HIV-positive. The ages of all the women ranged from 17-44 years, out of which the age group 35-39 years had the highest prevalence (41.2%) of HIV-positive women, followed by 25-29years (24.4%) while <20 years and ≥40years had none. Married pregnant women had the highest overall prevalence of 14.1% while individual who registered in the hospital as divorcees had highest prevalence (70%) within group. Working pregnant women were more affected (21.9%) than unemployed counterparts (17.8%), just as the educated were more affected (23.9%) than the uneducated (17.9%). None of the pregnant women was undergoing prevention of mother to child transmission (PMTCT) programs. Unmarried youth, underage and those who registered as divorcee were more than the pregnant women".

Conclusions: There is need to further emphasize HIV screening among pregnant women in developing countries to commence PMTCT promptly. As we also concluded in a conference presentation, "the urgent need for PMTCT programme in this study area becomes obvious due adverse maternal and foetal outcome associated with HIV positive participants."

Keywords: seroprevalence, pregnancy, HIV, employment, education, PMTCT

Volume 13 Issue 1 - 2022

Adegoke AA, Divine-Anthony O, John OUM
Department of Microbiology, University of Uyo, Uyo, Akwa Ibom State, Nigeria

Correspondence: Dr. Anthony A Adegoke, Department of Microbiology, University of Uyo, Uyo, Akwa Ibom State, Nigeria, Tel +234 (0) 806 296 9757, Email aayodegoke@gmail.com; anthonyadegoke@yahoo.co.uk

Received: January 20, 2022 | **Published:** January 31, 2022

Abbreviations: HIV, human immunodeficiency virus; AIDS, acquired immune deficiency syndrome; PMTCT, prevention of mother to child transmission; PLWHA, people living with HIV/AIDS

Background

Nigeria has one-third of African total population and the human immunodeficiency virus (HIV) prevalence of 4.1%.¹ The official HIV prevalence in Nigeria is 3.2%.² The spread of HIV among neonates and infant largely depends on their mother's status during pregnancy and lactation.³ According to United Nations Programme on HIV/AIDS (UNAIDS) report of 2012, women and children are the most affected by the scourge of HIV/acquired immune deficiency syndrome (AIDS). About 49.1 % of the globally infected population were women; 71.7 % of these infected women population died. This has worsened the trend of poverty, illiteracy via school dropout and suicide via discrimination.⁴

Before now, lack of sufficient information has been reported as the predisposing factor responsible adduced for the dissemination of HIV/AIDS in developing countries.⁵ With high commitment to information dissemination by government and non-governmental organizations, there has indeed been reduction in the infection rate. The reduction, meanwhile, has been affected by factors including poverty, unemployment, prevailing value systems in the area and, to some extent, civilization.⁶⁻⁸ Parkhurst⁷ closely linked HIV with the value system in an area. Attitude to premarital sex, fidelity in marriage and drug abuse are closely connected to the spread of HIV in an area.

Various risk factors including risk behaviours and practices have been associated with the spread of HIV/AIDS. Some of these factors have been listed by Etukumana, et al.⁹ and they include smoking, extramarital sex, multiple sexual partners etc. Smoking of cigarette predispose women in the rural settings to several risky behaviour leading HIV/AIDS.⁹⁻¹¹ This was presumed to be a facilitator to other risky behaviour leading to HIV transmission.⁹ In terms of marital infidelity, the high risk of HIV in these categories of people might therefore be a repertoire of loss in African value systems, morals and sanctity of marriage.^{12,13}

In 2012, seroprevalence of 3.4% in Nigeria was reported.¹⁴ There was a report of 25-40% spread of infection from the mothers to children. This spread has long accounted for 90% of all paediatric cases.¹⁵ The study hospital is a referral centre for several hundreds of thousands within the hospital catchment. Unlike the developed nations, where prevention of mother to child transmission (PMTCT) of HIV strategy is being effectively practised, reducing or eliminating transmission from pregnant women or nursing mothers to their children, PMTCT has not been effectively implemented to achieve the expected success in many areas in Nigeria.¹⁶ The study objectives were to screen for the HIV seroprevalence among the pregnant women in ante-natal clinics as well as the sociological indices that predicate the trend in Uyo metropolis, Nigeria.

Methods

Study area and population

This study based on pregnant women from Uyo and its suburbs

who attend ante-natal clinic in a secondary health facility in Uyo. Uyo: “the capital city of Akwa Ibom State in South-Southern (S/S) part of Nigeria”. Demographic and other social information about each person screened was obtained. The information of interest were age, marital status and level of education. The study received ethical approval from the University of Uyo where the final analysis was carried out. Confidentiality was appropriately embraced in handling the data.

Sampling procedure

All the pregnant women that consented to be involved within the study period were considered. The pregnant women who did not consent were excluded from the study. Five millilitre of peripheral blood samples were drawn (by the laboratory scientists) through venous puncture with the aid of syringe and needles from July-November, 2014 using the methods of Akinjogunla and Adegoke.¹⁷ Blood flow was temporarily restricted by tourniquet-tie and the vein position on the skin surface was disinfected. Sample per patient were collected with separate needle and syringe before being transferred into sterile transport tubes containing acid citrate dextrose (ACD). These samples were maintained at room temperature (20–25°C) till arrival in the laboratory for instant processing. Following appropriate spinning of blood specimens (3000rpm; for 10 min), serum was extracted and inoculated into the sample window of the kits while the buffer was also applied. The results were read as instructed by the manufacturer. Samples whose processing was delayed for ≤12h after collection were stored frozen at -20°C.

Some of the demographic/social pieces of information were culled from the patients’ file, while few more intimate pieces of information were obtained through interaction with the patients by one of the hospital staff. Those described as educated were at least Secondary School Leavers while those that dropped out along were classified uneducated. Also, those without any job at all were defined as unemployed while those with at least small-scale jobs were classified as employed.

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’ which is an ELISA based kit was used. This ELISA based kit is both sensitive and specific (99 - 100%) and was used according to the manufacturer’s instructions.

Maintenance of patients privacy

The information was disclosed to the participants in person (privately) on their subsequent clinic visit. The document was sealed and handed over to each of them in private. This was followed by further personal counselling as well as education on PMTCT.

Statistical analysis

The prevalence of HIV/AIDS was determined from the proportion of positive individuals to the total number of individuals under consideration, and it is expressed as a percentage. One-way analysis of variance (ANOVA) was used to test for significance in difference (p<0.01) with regards to age, occupation and marital status.

Results

The overall HIV prevalence of women included in the study was 20.1% (N=184). With respect to age group in years, there were highest seroprevalence (ratio of HIV positive to HIV negative) among the pregnant women within the age group 35-39 years, with

the seroprevalence of 4.2% (n=17), but this group had lower seroprevalence (3.8%) when estimated with respect to (wrt) total number of the pregnant women. The youngest age group 15-19 years and the oldest age group 40-44 years had no HIV positive patients. The 25-29 years had the highest seroprevalence (6.5%) wrt the total number of pregnant women. When the estimation was narrowed down to proportion within the HIV positive patients only, the age group 25-29 years had 32.5% (n=49) in all, making this age group the most affected (Table 1).

The seroprevalence also varied with relationship status of the women. 1.6% (n=184) of them were underage and had not reached the legal marriageable age (18 years), 15.2% (n=184) were single. 70.1 % (n=184) were married legally. Information on records and observations showed that 5.5% (n=184) were divorcees and some of them were aware through previous tests in National Agency for the Control of AIDS (NACA) centre already and are awaiting PMTCT. Highest numbers of HIV seropositive pregnant married women (14.1%) were observed among the pregnant women, but this constituted low prevalence (20.2) wrt total number of the married pregnant women in the study. However, seven out of the 10 who registered for ante-natal as divorcees (70%) were HIV seropositive. Overall, married pregnant women showed the highest prevalence of seropositive individuals. The detail is in Table 2. In all the categories, marriage and HIV in this study shows no significant positive correlation (p<0.01)

In terms of education and employment, working women had higher prevalence (21.9%) than unemployed women (17.8%) while educated pregnant women had higher seroprevalence (23.9%) than the uneducated (17.9%) as depicted in Figure 1 and Figure 2.

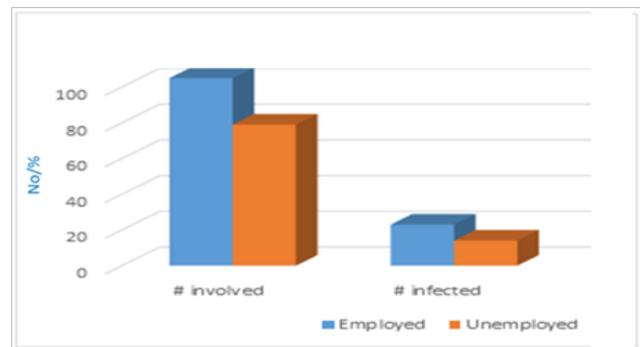


Figure 1 Employment status of the patients docx.

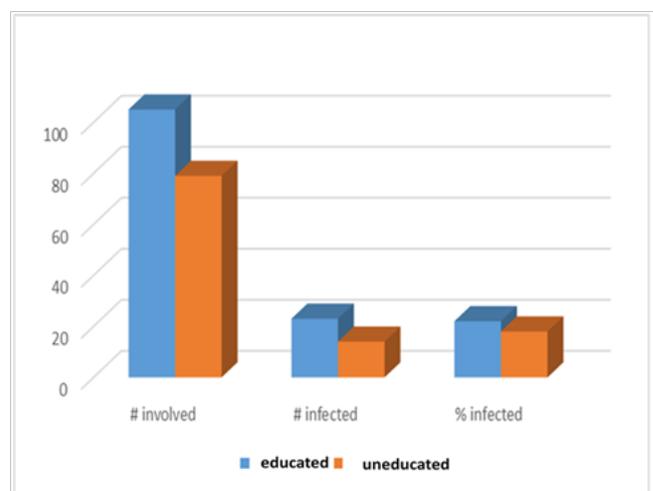


Figure 2 Educational status of patients.

Table 1 Age distribution among the positive and negative patient

Age group (Years)	Total # of pregnant women	Total HIV I and II positive #	% HIV I and II positive wrt age group	% HIV I and II positive wrt other positive patients	% HIV I and II positive wrt overall total # tested
15-19	9	0	0	0	0
20-24	49	11	24.4	29.7	6
25-29	49	12	24.5	32.5	6.5
30-34	46	7	15.2	18.9	3.8
35-39	17	7	41.2	18.9	3.8
40-44	14	0	0	0	0
Total	184	37		100	20.1

Table 2 Marital status of the pregnant women and their HIV status

Status	Total no (%)sampled	No of HIV positive	% of HIV positive wrt status	Overall % of HIV positive
Single/underaged	3(1.6)	0	0	0
Single/marriageable	28(15.2)	3	10.7	1.6
Married	129(70.1)	26	20.2	14.1
Divorcee	10(5.5)	7	70	3.9
Unknown	14(7.6)	1	7.1	0.5
TOTAL	184	37		20.1

Discussion

As observed in this research, notable serological prevalence of HIV amongst pregnant women in the South-south part of Nigeria. Uneka et al.¹⁸ remarked “women of reproductive age make up 57% of adults living with HIV in South-southern Nigeria”. In our study, a total seroprevalence of 20.1% was observed while the age group 25-29 years and 20-24 years formed 32.5% and 29.7% of the HIV positive patients and had prevalence of 24.5% and 24.4% respectively. This was higher than what was reported by Lawoyin¹⁹ from his research conducted in 2005, reported 13.5% in patients of age range 15-29. The figure was a departure from a national figure of 4.6% from some pregnant women in year 2008 by Federal Ministry of Health, Nigeria.²⁰

Lack of HIV knowledge and/or carefree attitude reportedly fuel dangerous heterosexual behaviour resulting in elevated HIV incidence among the youth in the sub-Saharan Africa.²¹ This might be linked properly with premarital sex done without adequate protection, leading to pregnancy or sometimes HIV. The report of Joint United Nations Programmes on HIV/AIDS^{21,22} tallies with this study. An observation of 10.7% (n=8) of the young women (underage) were HIV positive. Teenage pregnancies are related to poverty and lack of good education.²³ These two factors are among the factors propagating HIV infection²⁴. This might also be a factor in this study area as 63.6% of the pregnant women were uneducated. This report is in tandem with the remarks of Imoh et al.²⁵

If this trend continues in this study area, the HIV/AIDS among seropositive women or women with seropositive sexual partners may acquire drug resistant HIV. Though marriage here was not statistically significant with HIV infection (p<0.01) in this study, but the status of partners remains a factor anywhere.²⁶ Foetus may acquire the infection from the mother.²⁷ Pietro et al.²⁸ confirmed that some opportunistic viral infections are prevalent in pregnant women. The effect of these opportunistic infections has forced some women to easily yield to medical advice to be tested. Obi et al.²⁹ observed high prevalence of such opportunistic infection among pregnant women in Nigeria due to the effect of HIV and pregnancy on immune system.

High prevalence of HIV infection among the married and gainfully employed pregnant women in this study area might be a result of civilization and growing trend of promiscuity among the working-class city women globally.^{6,30,31} Higher prevalence of HIV

has generally been reported among young married women than young unmarried women.^{30,32,33} This is in tandem with the report of Munsch³⁴ that women in some developed countries who work for long hours can surreptitiously harness the opportunities for infidelity, since their spouse would believe they are at work. Some researchers^{35,36} also noted that breadwinning working wives, sometimes, become less intimate to their spouse due to their financial contributions, which may include the choice of extra-marital relationships. It might also be infidelity on the part of the husband when the breadwinning wife is away. As observed in our study, HIV increase in these categories of people might therefore be a repertoire of loss in African value systems in marriage.³⁰

No other known risk factor could be ascertained for the observed level of HIV acquisition in the study areas as the barbing and hairdressing salons are adhering to proper practice of tools’ disinfection.^{37,38}

Conclusion

The observed 20.1% HIV positive status among the pregnant women assessed in this study showed that HIV prevalence is still high in the study area. Pregnancy among the minors/ underage and the women who registered themselves as divorcees showed prevention or contraceptives are either not used at all, or not effectively used. The trends in the study area also showed the educated and the gainfully employed women were unexpectedly more affected.

Recommendations

Adequate care, counselling and management of those already infected i.e. people living with HIV/AIDS (PLWHA) and PMTCT should be readily accessible by the PLWHA during pregnancy. Finally, the government at all levels should intensify enlightenment among youth to reduce teenage pregnancies and the spread of HIV.

Acknowledgments

Not applicable.

Ethical approval and consent to participate: The research was done in line with ethical guidelines of the University of Uyo. Informed consent of the patients was secured before their involvement in the study. Verbal consent of the patients was taken, because some of them

were uneducated and could neither read nor write. Only those patients that agreed were considered for the study.

Consent to publish: The patients gave approval to have studies on them published, so far their names are not mentioned.

Availability of data and materials: The data is available but the materials for HIV diagnosis are not usually stored in this study area, due to facility and infrastructural shortfalls.

Authors' contributions: Research and manuscript development was done by AAA.

Special notice: Observation in this study does not conclude the overall seroprevalence in the study state, but in the study location at the time of study.

Funding

The study was funded with personal income of the researchers.

Conflicts of interest

The authors report no conflicts of interest. Dr. Anthony A. Adegoke is also of Department of Microbiology, University of Uyo, Uyo, Nigeria.

References

1. Abimiku AG, Zwanndo G, Kyari N, Opajobi S, Ibanga S, Guyit A. HIV-1 not HIV-2 is present in Nigeria: Need for consideration in vaccines plans. *Vaccine Res.* 1994;3(2):101–103.
2. UNAIDS Spectrum Estimate and Projection Package; United Nations Joint Program on AIDS, National Agency for the Control of AIDS, Abuja, Nigeria; 2014.
3. McGowan JP, Shah SS. Prevention of perinatal HIV transmission during pregnancy. *J Antimicrob Chemother.* 2000; 46(5): 657–668.
4. UNAIDS report on the global AIDS epidemic. Geneva: Joint United Nations Programme on HIV/AIDS; 2012.
5. Hellandendu JM. Contributory factors to the spread of HIV/AIDS and its impacts in sub-Saharan African countries. *Eur Sci J.* 2011;8(14):144–156.
6. Shisana O, Davids A. Nigerian women and HIV transmission. *Bull. World Health Organ.* 2004;82:812.
7. Parkhurst JO. HIV prevention, structural change and social values: the need for an explicit normative approach. *Journal of the International AIDS Society* 2012;15(Suppl 1):17367.
8. Mufune P. Poverty and HIV/AIDS in Africa: Specifying the connections. *Social Theory and Health.* 2015;13:1–29.
9. Nelson T. The new monogamy. *Psychother Networker.* 2010;34(4):21–27.
10. Turner BJ, Hauck WW, Fanning TR, Markson LE. Cigarette Smoking and maternal-child HIV transmission. *J Acquir Immune Defic Syndr Hum Retroviral.* 1997;14:327–337.
11. Kyalo P. A Reflection on the African traditional values of marriage and sexuality. *Int J Acad Res Prog Edu Dev.* 2012;1(2):211–219.
12. Idang GE. African culture and values. *Phronimon.* 2015;16(2):97–111.
13. Federal Ministry of Health [Nigeria]. National HIV & AIDS and Reproductive Health Surveys 2012. (NARHS Plus). Federal Ministry of Health, Abuja, Nigeria. 2013.
14. The working group on mother – to – child transmission of HIV. Rates of mother-to-child transmission of HIV I in Africa, America and Europe: Result from 13 perinatal studies *J. Acquir Immune Defic Syndr Hum Retroviral.* 1995;8:506–510.
15. Agboghroma OC. Prevention of mother -to-child transmission of HIV/AIDS. In: Okonofua FE. *Confronting the challenge of reproductive health in Africa: A Textbook for students and development practitioners.* Benin: WHARC, 2014:345–366.
16. Akinjogunla OJ, Adegoke AA. Seroprevalence of Human Immunodeficiency Virus (HIV) 1 and 2 Infections in Uyo Metropolis, Akwa Ibom State. *Sci Res Essays.* 2009;4(6):590–593.
17. Uneka CJ, Duhlinska DD, Igbinedion EB. Prevalence and public health significance of HIV infection and anaemia among pregnant women attending ante-natal clinics in southern Nigeria. *J Health Popul Nutr.* 2007;25(3):328–335.
18. Lawoyin OO. Findings from an HIV/AIDS programme for young women in two Nigerian cities: a short report. *Afr J Rep Health.* 2007;11(2):100–106.
19. Federal Ministry of Health, Nigeria. Report on the 2008 National HIV seroprevalence sentinel survey among pregnant women attending ante-natal clinics in Nigeria 2009.
20. UNAIDS report on the global AIDS epidemic. A UNAIDS 10th anniversary special edition. 2006.
21. WHO. HIV/AIDS: Key facts. 2018.
22. Desirae MN, Karem HJ. Adolescent pregnancy in America: causes and responses. *J. Voc Special Needs Edu.* 2007;30(1):1–12.
23. Lerato ST. Poverty and HIV/AIDS in South Africa: an empirical contribution. *J Soc Aspects of HIV/AIDS.* 2006;3:365–381.
24. Imoh AN, Isaac UJ, Nwanchukwu EO. Comparative analysis of poverty status of community participation in rural development projection of Akwa-Ibom State, Nigeria. *New York Sc.* 2009;2(6):68–75.
25. Roman IM, Golin C, Wang J, et al. Venues for Meeting Sex Partners and Partner HIV Risk Characteristics: HIV Prevention Trials Network (HPTN064) Women's HIV Seroincidence Study (ISIS). *AIDS & Behaviour.* 2016;20(6):1208–1218.
26. Brooks GF, Butel JS, Morse SA. *Jawetz, Melnick and Adelbergs Medical Microbiology.* 22nd edition. McGraw-Hill USA; 2002:516–529.
27. Pietro F, Coppola N, Pisapia R, et al. Impact of occult hepatitis B virus infection in HIV patients naive for antiretroviral therapy. *J Inter AIDS Soc.* 2006;20(9):1253–1260.
28. Obi RK, Umeh SC, Okurede OH, et al. Prevalence of Hepatitis B virus infection among pregnant women in an ante-natal clinic in Port-Harcourt, Nigeria. *Afr J Clin Exp Microbiol.* 2006;7(2):78–82.
29. Shisana O, Risher K, Celentano DD, et al. Does marital status matter in an HIV hyperendemic country? Findings from the 2012 South African National HIV Prevalence, Incidence and Behaviour Survey. *AIDS Care.* 2015;28(2):234–241.
30. Cherinet Y, Berihu A, Bekele A, et al. Trend of HIV prevalence among pregnant women attending Antenatal Care Unit of Bishoftu Hospital, Ethiopia. *Ethiop Med J.* 2013;51(3):169–176.
31. Glynn JR, Caraël M, Auvert B, et al. Why do young women have a much higher prevalence of HIV than young men? A study in Kisumu, Kenya and Ndola, Zambia. *AIDS.* 2001;15 Suppl 4:S5–S60.
32. Kelly RJ, Gray R, Sewankambo N. Age differences in sexual partners and risk of HIV-1 infection in rural Uganda. *J AIDS.* 2003;32:446–451.
33. Munsch CL. Her support, his support: money, masculinity, and marital infidelity. *Am Sociol Rev.* 2015;80(3):469–495.
34. Tichenor V. Maintaining men's dominance: Negotiating identity and power when she earns more. *Sex Roles.* 2005;53(3/4):131–205.

35. Meisenbach RJ. The female breadwinner: Phenomenological experience and gendered identity in work/family spaces. *Sex Roles*. 2010;62:2–19.
36. Biadgelegn F, Belyhun Y, Anagaw B, et al. Potential risk of HIV transmission in barbering practice in Ethiopia: from public health and microbiological perspectives. *BMC Public Health*. 2012;29:12:707.
37. Ataei B, Shirani K, Alavian SM, et al. Evaluation of Knowledge and Practice of Hairdressers in Women's Beauty Salons in Isfahan About Hepatitis B, Hepatitis C, and AIDS in 2010 and 2011. *Hepat Mon*. 2013;6;13(3):e6215.