

ORIGINAL ARTICLE

Obstetrics Risk of HIV infection among Antenatal Women in a rural Nigerian hospital

Etukumana, E. A.¹, Thacher T. D², Sagay A. S.³

ABSTRACT

Background: Obstetrics risk and practices can lead to the spread of HIV/AIDS. Identification of such obstetrics risk of HIV infection is a useful step in the prevention of transmission of the virus. **Objective:** We sought to determine obstetrics risk of HIV infection in pregnant women attending antenatal clinic in a rural Northern Nigerian hospital.

Methods: We conducted a cross-sectional descriptive study of pregnant women attending antenatal clinic of a rural mission hospital in northern Nigeria between June and October 2005. Data were collected using structured questionnaire. HIV screening and confirmation was carried out on pregnant women after voluntary counseling. **Results:** 350 pregnant women were enrolled with a mean age ($\pm SD$) of 26.8 ± 6.4 years. The highest number of HIV infected women was observed in those who had their first coitus between 16 and 20 years. The age at first coitus was not significantly related to the HIV infection ($P=0.41$). Neither parity ($P=0.13$) nor past history of abortion ($P=0.42$) was associated with HIV infection. None of the 41 women who had their last delivery at home had HIV infection compared with 9.8% of the 194 women who delivered in the hospital or clinic ($P=0.008$). Forty percent of those who had their last delivery in primary health centre had HIV infection while 22.2% of those who delivered under the care of traditional birth had HIV infection.

Conclusion: Obstetrics practices may encourage transmission of HIV infection. This calls for re-examination of the obstetrics practices especially in our primary health centers in order to prevent transmission of HIV infection.

Key words: HIV, Africa, risk, pregnancy

INTRODUCTION

Every twenty four hours, over 5700 die from AIDS in the world, and 6800 persons become infected with HIV.¹ The most affected region in the global AIDS epidemic remains Sub-Saharan Africa with more than two thirds (68%) of the people living with HIV and 22.5 million persons living with HIV at the end of 2007.¹ Unlike other regions, the majority of people living with HIV in Sub-Saharan Africa (61%) are women.¹

Mother to child transmission accounts for over 90% of the world's HIV infected children.² It

is estimated that the number of orphans resulting from HIV infection may rise until 2010, by which time one third of Africa children may be orphaned.³

The national HIV prevalence in Nigeria among pregnant women steadily increased from 1.8% in 1991 to 5.8% in 2001 but dropped to 4.4% in 2005.⁴ An urban hospital based study in Jos, Plateau State reported a prevalence rate of 8.9%.⁵

In a literature review of HIV risk factors in pregnant women in Africa, Asia, Europe, and USA, a history of abortion and low parity were identified as risk factors for HIV infection.⁶ In another study in Zimbabwe, early coital debut was a significant predictor of HIV infection and this was independent of other identified factors in the population.⁷ In a study in Jamaica among pregnant women, pregnant women who commenced coitus at early age were at greater risk of HIV infection.⁸ We carried out a cross-sectional study to determine the obstetrics risk

¹Department of Family Medicine, University of Uyo, Uyo, Nigeria; ²Department of Family Medicine, Mayo Clinic, Rochester, Minnesota, USA; ³Department of Obstetrics and Gynecology, University of Jos, Jos, Nigeria.

Corresponding author:

Etiobong A. Etukumana
Department of Family Medicine College of Health Sciences
University of Uyo. E-mail: etukumana@yahoo.com

This work was submitted as a dissertation in part fulfillment of the Fellowship in Family Medicine of the West African College of Physicians.

of HIV infection among pregnant women attending antenatal clinic in a rural Northern Nigerian hospital.

SUBJECTS AND METHODS

This was a descriptive cross- sectional study was carried out between June and October, 2005, in Zawan community, a settlement about 20 kilometers outside Jos city, Nigeria. The inhabitants of Zawan are Berom natives, and they share similar cultural beliefs and practices. The major occupations of this community are farming and tin mining.

Consecutive pregnant women who presented at the antenatal clinic of the Our Lady's of Apostles Hospital, Zawan and gave voluntary written informed consent were included in the study. The hospital has a 90-bed capacity and provides primary and secondary health care. Pregnant women who were severely ill were excluded from the study. Each pregnant woman was given information in English or the local language (Hausa or Berom) regarding the research objectives. Data were collected with a structured questionnaire that was written in English but interpreted in the local language (Hausa or Berom) for mothers who did not speak English.

Confidential pre-HIV test counselling was offered to each pregnant woman using a counselling protocol. Venous blood samples from each woman were screened for HIV-1&2 using a rapid assay kit (Abbott Determine HIV-1/2; Abbott Laboratories, Abbott Park, IL, USA). The rapid-test positive blood samples were confirmed at the AIDS Prevention in Nigeria laboratory at the Jos University Teaching Hospital with Western blot (Qualicode HIV-1/2 western Blot Kit; Immunetics Inc, Boston, MA, USA).

The enrolled pregnant women were assured of confidentiality of the study data and their HIV status. Confidential post-HIV test counselling was provided when test results were available. The study was approved by the Ethical Committee of the Jos University Teaching Hospital and by the management of Our Lady of Apostles Hospital, Zawan. Sample size was estimated by assumed HIV prevalence rate of 8.9%⁵ and a sampling error of 3%. The calculated sample size was 346 women, which we rounded up to 350.

STATISTICAL ANALYSIS

Data entry and analysis were done with Epi Info 3.2.2 (CDC, Atlanta, Georgia, USA). All P-values less than 0.05 were considered significant.

RESULTS

A total of 350 pregnant women were recruited. The baseline demographic characteristics of the study pregnant women are as shown in Table. The majority of pregnant women (98.3%) were married and the mean age of the study pregnant women was 26.8 ± 6.4 years with a minority over 30 years of age. Nearly all pregnant women (96%) had at least primary education and most women (65.4%) did not work outside the home. The antenatal clinic

Table 1: Demographic Characteristics of Study Subjects

Characteristic	Frequency (%)	95% confidence Interval (%)
Marital status		
Married	344 (98.3)	96.1 - 99.3
Single	4 (1.1)	0.4 - 3.1
Divorced	2 (0.6)	0.1 - 2.3
Age group (yr)		
16 - 20	62 (17.7)	13.9 - 22.2
21 - 25	108 (30.9)	26.1 - 36.0
26 - 30	92 (26.3)	21.8 - 31.3
31 - 35	55 (15.7)	12.1 - 20.1
36 - 40	23 (6.6)	4.3 - 9.8
41 - 45	8 (2.3)	1.1 - 4.6
46 - 50	2 (0.6)	0.1 - 2.3
Occupation		
House wife	229 (65.4)	60.2 - 70.4
Petty trader	59 (16.9)	13.2 - 21.3
Civil servant	35 (10.0)	7.2 - 13.8
Skilled worker	12 (3.4)	1.9 - 6.1
Farmer	9 (2.6)	1.3 - 5.0
Business	6 (1.7)	0.7 - 3.9
Partner's Occupation		
Civil servant	93 (26.6)	22.1 - 31.6
Skilled worker	82 (23.4)	19.2 - 28.3
Petty trader	82 (23.4)	19.2 - 28.3
Farmer	45 (12.9)	9.6 - 16.9
Unemployed	21 (6.0)	3.8 - 9.2
Business	21 (6.0)	3.8 - 9.2
Unskilled worker	6 (1.7)	0.7 - 3.9
Educational status		
None	14 (4.0)	2.3 - 6.8
Primary	117 (33.4)	28.6 - 38.7
Secondary	170 (48.6)	43.2 - 53.9
Tertiary	49 (14.0)	10.6 - 18.2
Partner's Educational status		
None	18 (5.1)	3.2 - 8.2
Primary	80 (22.9)	18.6 - 27.7
Secondary	175 (50.0)	44.6 - 55.4
Tertiary	77 (22.2)	17.8 - 26.8

attends to an average of 20 women daily.

The obstetric characteristics of the study subjects are shown in Table II. Sixty-two percent of the subjects had their first coitus between the ages of 16 and 20 years and nearly one-third (29%) were primigravidae while 18% have had at least five deliveries. Seventeen percent of the pregnant women had at least one previous abortion. The majority (78%) of the pregnant women had their last delivery in the hospital or clinic while 17% delivered at home.

The distribution of HIV infection in the study subjects by obstetric characteristics is shown in Table 3. The highest number of HIV infected pregnant women was observed in those who had their first coitus between 16 and 20 years. The age at first coitus was not significantly related to the HIV infection ($P=0.41$). Parity was not associated with HIV infection ($P=0.13$), nor was a past history of abortion ($P=0.42$). None of the 41 women who had their last delivery at home had HIV infection compared with 9.8% of the 194 women who delivered in the hospital or clinic ($P=0.008$)

Table 2: Obstetric Characteristics of Study Subjects

Characteristic	Frequency (%)	95% confidence Interval (%)
Age of first coitus		
6 - 10	3 (0.9)	0.2 - 2.7
11 - 15	57 (16.3)	12.7 - 20.7
16 - 20	217 (62.0)	56.7 - 67.1
21 - 25	65 (18.6)	14.7 - 23.1
26 - 30	8 (2.3)	1.1 - 4.6
Parity		
0	102 (29.1)	24.5 - 34.3
1	44 (12.6)	9.4 - 16.6
2	51 (14.6)	11.1 - 18.8
3	57 (16.3)	12.7 - 20.7
4	32 (9.1)	6.4 - 12.8
5	33 (9.4)	6.7 - 13.1
>5	31 (8.9)	6.2 - 12.5
Abortion		
0	291 (83.1)	78.8 - 86.9
1	44 (12.6)	9.4 - 16.6
2	9 (2.6)	1.3 - 5.0
3	6 (1.7)	0.7 - 3.9
Place of last delivery		
Hospital/clinic	194 (77.9)	72.2 - 82.9
Primary health center	5 (2.0)	0.7 - 4.6
Traditional birth attendant	9 (3.6)	1.7 - 6.8
Home	41 (16.5)	12.1 - 21.7

Table 3: Distribution of HIV Infection by Obstetrics Characteristics

Characteristic	TOTAL (N)	HIV POSITIVE (%)	ODDS* RATIO	95% CI	P VALUE
Age of first coitus					0.41
6 - 10	3	0 (0.0)	0.00	0.00 - 104.0	
11 - 15	57	7 (12.3)	0.98	0.10 - 50.40	
16 - 20	217	19 (8.8)	0.67	0.08 - 31.85	
21 - 25	65	11 (16.9)	1.47	0.15 - 70.03	
26 - 30	8	1 (12.5)	1.00		
Parity					0.13
0	102	15 (14.7)	1.00		
1	44	5 (11.4)	0.74	0.20 - 2.36	
2	51	6 (11.8)	0.77	0.23 - 2.30	
3	57	3 (5.3)	0.32	0.06 - 1.22	
4	32	0 (0.0)	0.60	0.10 - 2.35	
5	33	5 (15.1)	1.04	0.27 - 3.35	
>5	31	1 (3.2)	0.19	0.00 - 1.37	
Abortion					0.42
0	291	32 (11.0)	1.00		
1	44	6 (13.6)	1.28	0.41 - 3.38	
2	9	0 (0.0)	0.00	0.00 - 4.27	
3	6	0 (0.0)	0.00	0.00 - 7.19	
Place of last delivery					0.008
Hospital/clinic	194	19 (9.8)	1.00		
Primary health center	5	2 (40.0)	6.14	0.48 - 56.2	
Traditional birth attendant	9	2 (22.2)	2.63	0.25 - 15.1	
Home	41	0 (0.0)	0.00	0.00 - 0.96	

DISCUSSION

Parity, history of abortion and early coitus were not identified as risk factors of HIV infection in this study in contrast to other studies which identified them as risk factors of HIV infection.⁶⁻¹⁰ Majority of the women (29%) were primigravidae, and 83% of the women had no history of previous abortion. Additionally, more than 80% of the women had their first coitus after marriage. These reasons may be responsible for the differences found in this study when compared with other studies.

Interestingly, the place of last delivery was identified as a risk of HIV infection in this study. None of the 41 women who had their last delivery at home had HIV infection compared with 9.8% of the 194 women who delivered in the hospital or clinic. Forty percent of those who had their last delivery in primary health centre had HIV infection while 22.2%

of those who delivered under the care of traditional birth had HIV infection. We previously observed association of post-primary education with HIV infection¹¹, which likely may account for the relationship of delivery in hospital with HIV infection. This is because educated women are more likely to have delivery in the hospital.¹² However, in the developing countries, Obstetrics practices in hospital/clinics, primary health centre and traditional birth attendance settings are characterized by use of used disposable equipment on patients by health workers without regard to the hazard of biological fluid such as HIV infection. It is not uncommon in rural areas to see health workers carry out obstetrics practices without personal protective equipment such as latex gloves, eye goggles and sharp disposals. Sometimes, no effort is directed toward the protection of patients. Hence, it seems safer to deliver baby at home rather than the hospital setting. There is need for the health workers in the obstetrics setting to be educated on how to handle hazardous human specimen and to observe routine universal precautions when handling biological fluids.

Research of this nature would have required a larger sample size but this was limited by lack of resources. A simple random sampling method rather than convenient sampling method would have been ideal; however, every pregnant woman who attended the clinic was offered the opportunity to participate during the study. Similar studies are encouraged in other rural setting.

In conclusion, obstetrics practices in hospital/clinics, primary health centre, and by traditional birth attendant seem to encourage HIV infection. This call for re-examination of the obstetrics practices in our health institutions in order to prevent transmission of HIV infection.

REFERENCES

1. UNAIDS/WHO. AIDS epidemic update, 2007.
2. De Cork KM, Fowler MG, Mercier F, Devincenzi I, Saba J, Hoff E, et al. Prevention of mother to child HIV transmission in resource-poor countries: translating research into policy and practice. *JAMA* 2000; 283:1175-1182.
3. UNAIDS/UNICEF. Children orphaned by AIDS: Frontline responses from Eastern and Southern Africa. Geneva: UNAIDS/UNICEF, 1999.
4. Federal Ministry of Health. 2005 HIV/AIDS sentinel seroprevalence survey in Nigeria technical report. Federal Ministry of Health, Abuja, 2005.
5. Federal Ministry of Health: Nigeria Institute of Medical Research/National Action Committee on AIDS. Nigerians contribution to regional and global meetings on HIV/AIDS/ STI, 1986-2003.
6. Smith NH, Hwang LY. Risk factors for HIV in pregnant women. *Int J STD AIDS* 1996; 7(6): 388-395.
7. Pettifor AE, Vander Straten A, Dunbar MS, Shibuski SC, Padian NS. Early age of first sex; a risk factor for HIV infection among women in Zimbabwe. *AIDS* 2004; 18(10): 1435-1442.
8. Perry D, Reid M, Thame M, Fletcher H, Mullings A, McCaw-Binns A, et al. HIV infection seroprevalence and risk factors among pregnant women attending the antenatal clinic at the University hospital of West Indies, Kingstons, Jamaica. *West Indian Med J* 2002; 51(2):80-83.
9. Alarcon JO, Johnson KM, Courtois B, Rodriguez C, Sanchez J, Watts DM et al. Determinants and prevalence of HIV infection in pregnant Peruvian women. *AIDS* 2003; 17(4): 613-618.
10. Ayisi JG, Van Eijk AM, Terkuile FO, Kolczak MS, Otieno JA, Misore AO, et al. Risk factors for HIV infection among asymptomatic pregnant women attending an antenatal clinic in Western Kenya. *Int J STD AIDS* 2000; 11(6): 393-401.
11. Etukumana EA, Thacher TD, Sagay AS. HIV prevalence in pregnant women attending a rural Hospital in Nigeria. *Int J Gynaecol Obstet* 2008; 100(2):181-182.
12. Ogunlesi TA. The pattern of utilization of prenatal and delivery services in Ilesa, Nigeria. *Internet Journal of Epidemiology* 2005, volume 2, number 2.