The Burden of HIV Infection among Women Attending Antenatal Clinic in a Semi-urban Nigerian Town

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ABSTRACT

Background: Stable heterosexual relationships are a major determinant of the HIV epidemic and seroprevalence rate of HIV amongst antenatal women is a reflection of what is happening in the larger society.

Objectives: This study aims to determine the HIV seroprevalence rate and to identify factors responsible for this rate among pregnant women.

Method: The study was a three-year (July 2008–June 2011) cross-sectional evaluation of cases of HIV in pregnancy. Data were collected with the aid of a closed structured self-administered questionnaire for all the positive women and randomly selected negative cases. The study was carried out at Niger Delta University Teaching Hospital in Bayelsa State, Nigeria.

Results: The seroprevalence rate during the study period was 4.9%. Parity, age at first coitus, educational status, marital status and occupation do not seem to increase the risk. However, partner being unemployed, hospital/clinic delivery, the route of last delivery, previous induced abortion and the number of lifetime partners were identified as risk for HIV seropositivity (all p-values < 0.005).

Conclusion: Sex education on the dangers of sexual promiscuity, availability of barrier methods of contraception, delivery with strict adherence to the principles of universal precaution and routine screening of all pregnant women during the antenatal period will help to decrease the prevalence of HIV in our environment.

Keywords: Antenatal care, HIV, Niger Delta, risk factors

Dimensión del Problema de la Infección por el VIH entre las Mujeres que Asisten a la Clínica Prenatal en un Pueblo Nigeriano Semiurbano

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RESUMEN

Antecedentes: Las relaciones heterosexuales estables son un factor determinante importante de la epidemia de VIH, y la tasa de seroprevalencia de VIH entre las mujeres prenatales es un reflejo de lo que está sucediendo en la sociedad en general.

Objetivos: Este estudio persigue determinar la tasa de seroprevalencia de VIH, e identificar los factores responsables de este índice entre las mujeres embarazadas.

Método: Se llevó a cabo un estudio de tres años (julio 2008 – junio 2011) consistente en una evaluación transversal de casos de VIH en el embarazo. Se recogieron datos con la ayuda de un cuestionario autoadministrado estructurado cerrado aplicado a todas las mujeres positivas así como a casos negativos seleccionados al azar. El estudio se hizo sólo en el Hospital Docente Universitario de Niger Delta, en el estado de Bayelsa, Nigeria.

Resultados: La tasa de seroprevalencia durante el periodo de estudio fue de 4.9%. La paridad, la edad al primer coito, la escolaridad, el estado civil, y la ocupación, no parecen aumentar el riesgo. Sin embargo, la pareja desempleada, el parto en el hospital o la clínica, el desarrollo del último parto, un

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aborto previo inducido, y el número de parejas durante toda la vida, fueron identificados como riesgos de seropositividad de VIH (todos los valores de p *< 0.005).*
Conclusión: *La educación sexual acerca de los peligros de la promiscuidad sexual, la disponibilidad de métodos anticonceptivos, el parto bajo la estricta observancia de los principios de precaución universal, y el tamizaje de rutina de todas las mujeres embarazadas durante el período prenatal, ayudará a disminuir la prevalencia de VIH en nuestro medio ambiente.*

Palabras claves: Atención prenatal, VIH, Delta del Níger, factores de riesgo

INTRODUCTION

One of the major methods of studying the HIV epidemic in most countries in Africa is through the surveillance of human immunodeficiency virus (HIV) infection among pregnant women attending antenatal clinics (ANC). This was the finding from several studies in the past which showed that prevalence levels in the general population of men and women aged 15–49 years are a reflection of ANC based prevalence rates. The validity of prevalence rates based on national ANC surveillance systems will, however, depend on how accurate the whole population is represented (1–5).

More than 90% of children below the age of fifteen years with HIV become infected as a result of mother to child transmission (MTCT) of the HIV virus. This is more so in Africa where the majority of people living with HIV in sub-Sahara Africa (61%) are women (6). Women are particularly vulnerable through heterosexual transmission due to large mucosal exposure to semen, biology of the HIV virus, unknown or high-risk behaviour of partners, poverty/low socio-economic status, high prevalence of non-consensual sex, unprotected sexual intercourse and other socio-economic and cultural reasons (7).

The first case of AIDS in Nigeria was reported in a 13-year old girl in 1986. Since then, the epidemic has continued to increase at an alarming rate. The prevalence among pregnant women has increased from 1.8% in 1991 to 5.8% in 2001 but dropped to 4.4% in 2005 and 4.1% in 2010. Nigeria is responsible for 30% of the global burden of MTCT of HIV, and is one of the 22 focal countries of the Global Plan to Eliminate MTCT. This is in contrast to the developed countries like Australia and The Netherlands where MTCT is 0.23 per 100 and 0.26 per 100, respectively (8–11).

Evidence suggests that pregnancy has little or no effect on HIV progression in asymptomatic women or women with early infection. When HIV is more advanced, it results in an increase in certain pregnancy complications such as intrauterine growth retardation, preterm birth, and low birthweight. Obstetric factors like low parity, a history of termination of pregnancy, early age at first coitus and hospital delivery were identified as risk factors for HIV infection among pregnant women (12–15).

A public health approach based primarily on information and educational programme focussed on ways of preventing HIV acquisition by women of the reproductive age group and their partners remains the gold standard for tackling the HIV epidemic and its associated problems, Secondarily, this includes tackling the unmet needs of contraception among HIV positive women and the prevention of mother to child transmission of HIV (16).

This descriptive study sought to highlight the prevalence and risk factors associated with HIV infection in pregnant women in our environment in order to proffer measures that can help curtail this continuing global pandemic.

SUBJECTS AND METHODS

The study was a three-year cross-sectional descriptive study of all cases of HIV in pregnancy detected during the antenatal period at Niger Delta University Teaching Hospital (NDUTH), Okolobiri, a tertiary hospital in Bayelsa State. The study examined cases from July 1, 2008, to June 30, 2011.

The diagnosis was made on the basis of patients' HIV test result. HIV testing is offered as part of routine testing in the antenatal clinic to consenting women after counselling. Venous blood samples from each woman were screened for HIV-1 and 2 using a rapid assay kit. The patients with positive result had comprehensive individual post-test counselling. All the patients were tested and diagnosed for the first time during their index pregnancy.

Stratified random sampling was used to select two HIV negative women who booked for antenatal care during the same period for every HIV positive woman using the antenatal register as a sampling frame. Data collected were analysed; patients' baseline sociodemographic and behavioural risk factors for HIV were assessed with the aid of a closed structured questionnaire. The information obtained was coded and transferred onto a profoma already designed for the study. Statistical analysis was performed with the Statistical Package for Social Sciences (SPSS) software, version 11 where nominal data were compared using the Chi-squared test (x^2) and the difference between means determined by the Student's t-test with the level of significance set at $\alpha < 0.05$ ($p < 0.005$). Approval for this work was given by the Ethical Committee of the Niger Delta University Teaching Hospital.

RESULTS

During the period of study, 2661 women booked for antenatal care; a total of 2437 pregnant women consented to HIV screening. A total of 224 refused screening and did not indicate any reason for their refusal. Out of the 2437 pregnant women who were screened, 120 of them were HIV positive, giving an HIV seroprevalence rate of 4.9%.

A total of 360 respondents were thus reviewed for this study out of which 120 (33.3%) were HIV positive and the remaining 240 (66.7%) were HIV negative. Table 1 shows

Table 1:   Sociodemographic characteristics of patients

Characteristic	HIV Positive n = 120 Frequency (%)			HIV Negative n = 240 Frequency (%)	Total (%)
Age (years)					
≤ 19	4 (3.3)			22 (9.2)	26 (7.2)
20 – 25	23 (19.2)			47 (19.6)	70 (19.4)
26 – 30	52 (43.3)			85 (35.4)	137 (38.1)
31 – 35	27 (22.5)			54 (22.5)	81 (22.5)
> 35	14 (10.8)			32 (13.3)	46 (12.8)
Mean age ($\bar{x}$ ± SD)	29.3 ± 5.1 2			28.8 ± 5.9	
		t = 0.79	α = 0.05	p = 0.429	
Parity					
0	19 (15.8)			56 (23.3)	75 (20.8)
1 – 3	74 (61.7)			133 (54.4)	207 (57.5)
≥ 4	27 (22.5)			51 (21.3)	78 (21.7)
		χ^2 = 2.761	df = 2	p = 0.251	
Educational status					
Nil	14 (11.7)			42 (17.5)	56 (15.6)
Primary education	31 (25.8)			68 (28.3)	99 (27.5)
Secondary education	59 (49.2)			94 (39.2)	153 (42.5)
Tertiary education	16 (13.3)			36 (15.0)	52 (14.4)
		χ^2 = 3.968	df = 3	p = 0.265	
Marital status					
Married	81 (67.5)			133 (67.5)	214 (59.5)
Cohabiting	23 (19.2)			61 (19.2)	84 (23.3)
Single	16 (13.3)			46 (13.3)	62 (16.2)
		χ^2 = 4.885	df = 2	p = 0.087	
Occupation					
Civil servant	29 (24.2)			51 (24.2)	80 (22.2)
Housewife	23 (19.2)			34 (19.2)	57 (15.8)
Business	13 (10.2)			37 (10.2)	50 (13.9)
Petty trader	21 (17.5)			49 (17.5)	70 (19.4)
Farmer	13 (10.8)			42 (10.8)	55 (15.3)
Unemployed	21 (17.5)			27 (17.5)	48 (13.3)
		χ^2 = 7.800	df = 5	p = 0.168	
Partner's occupation					
Civil servant	31 (25.8)			94 (39.1)	125 (34.7)
Petty trader	11 (9.2)			21 (8.8)	32 (8.9)
Business	26 (21.7)			54 (22.5)	80 (22.2)
Farmer	20 (16.6)			18 (7.5)	38 (10.6)
Marine diver	8 (6.6)			29 (12.1)	37 (10.3)
Unemployed	24 (20.0)			24 (10.0)	48 (13.3)
		χ^2 = 18.789	df = 5	p = 0.002	
Partner's educational status					
Nil	22 (18.3)			32 (18.3)	54 (15.0)
Primary education	31 (25.8)			48 (25.8)	79 (21.9)
Secondary education	41 (34.2)			92 (34.2)	26 (21.6)
Tertiary education	68 (21)				
		χ^2 = 4.311	df = 3	p = 0.230	

the sociodemographic characteristics of the patients and reveals no statistically significant difference between the age group for HIV positive patients and that of HIV negative cases (t = 0.79; α = 0.05; p = 0.429), the parity of the patients (x^2 = 2.761; df = 2; p = 0.251), the educational status (x^2 = 3.968; df = 3; p = 0.265), their marital status (x^2 = 4.885; df = 2; p = 0.087) and their occupation (x^2 = 7.800; df = 5; p = 0.168). There was no statistically significant difference in the educational status of the partners/spouses of the respondents (x^2 = 4.311; df = 3; p = 0.230). However, there was a statistically significant difference in the occupation of the partners/spouses of the patients (x^2 = 18.789; df = 5; p = 0.002) revealing that 20% of the partners of HIV positive patients were unemployed against 10% for the partners/ spouses of the HIV negative patients.

When the obstetric characteristics of the patients were considered (Table 2), there was no statistically significant difference for the age at first intercourse between the two groups of patients (t = 1.14; α = 0.05; p = 0.255), the majority (57.8%) having had their first sexual exposure above 19 years. However, there was a statistically significant difference considering the place of last delivery (x^2 = 9.849; df = 3; p = 0.020), the route of last delivery (x^2 = 5.154; df = 1;

p = 0.023), the number of lifetime partners (x^2 = 41.530; df = 2; p = 0.000) and history of previous induced abortions (x^2 = 72.890; df = 3; p = 0.000) between the two groups of patients. It is worthy of note that the majority of the HIV positive patients (90.9%) have a history of previous induced abortions while only 53.3% of the HIV negative patients have had at least one previously induced abortion.

DISCUSSION

HIV seroprevalence rate of 4.9% among this group of pregnant women is within the 0.2% to 8.2% reported by other workers in Nigeria. HIV seroprevalence rate, as shown by this study, is highest among women aged 20–30 years, accounting for 62.5% of the total number of HIV positive patients in this study. This agrees with previous studies which reveals that women in their sexually active years and at the peak of their child bearing years are the most affected as the major route of transmission of the virus is through heterosexual intercourse in our environment (17, 18).

Educational status, occupation, parity and age at first coitus were not identified as risk factors of HIV infection in this study; this is in variance with other studies performed in similar institutions which identified these as risk factors of HIV infection (12–14, 17)

Table 2:   Obstetrics characteristics of the patients

Characteristic	HIV Positive n = 120 Frequency (%)		HIV Negative n = 240 Frequency (%)	Total (%)
Age at first coitus (years)				
< 15	8 (6.7)		28 (11.7)	36 (10.0)
15 – 19	49 (40.8)		67 (27.9)	116 (32.2)
>19	63 (52.5)		145 (60.4)	208 (57.8)
Mean (x ± SD)	23.86 + 6.52		24.7 + 6.615	
	t = 1.14	α = 0.05	p = 0.255	
Place of last delivery				
Same hospital (NDUTH)	31 (25.8)		93 (38.8)	124 (34.4)
Health centre	39 (32.5)		67 (27.9)	106 (29.4)
TBA	37 (30.8)		46 (19.2)	83 (23.1)
Home	13 (10.8)		34 (14.1)	47 (13.1)
	χ^2 = 9.849	df = 3	p = 0.020	
Route of last delivery				
Spontaneous vaginal delivery	107 (89.2)		191 (79.6)	298 (82.8)
Caesarean section	13 (10.8)		49 (20.4)	62 (17.2)
	χ^2 = 5.154	df = 1	p = 0.023	
Number of lifetime partners				
1	22 (18.3)		127 (52.9)	149 (41.4)
2–4	67 (55.8)		67 (27.9)	134 (37.2)
≥ 5	31 (25.8)		46 (19.2)	77 (21.4)
	χ^2 = 41.530	df = 2	p = 0.000	
History of previous induced abortion				
0	11 (9.1)		112 (46.7)	123 (34.2)
1	47 (39.2)		78 (32.5)	125 (34.7)
2–4	29 (24.2)		33 (13.8)	62 (17.2)
≥ 5	33 (27.5)		17 (7.0)	50 (13.9)
	χ^2 = 72.890	df = 3	p = 0.000	

The fact that the majority (81, 67.5%) of the HIV positive women in this study were married, with secondary level of education, (59, 49.2%) worked as civil servants (29, 24.2%) and had their first coitus after the age of nineteen years (63, 52.5%) may explain these differences since NDUTH is a referral centre, and is thus open and accessible to all calibre of patients.

Unsafe abortion with the risk of HIV infection in addition to its other complications is usually seen in this environment among the unmarried, uneducated, unemployed, nulliparous and students (19). This may explain why the HIV-positive patients had significantly more induced abortions (x^2 = 72.890; df = 3; p = 0.000), which is similar to findings from previous studies (12).

High risk sexual partners is a recognized risk for transmission of HIV infection as was seen in this study where 20% of the partners of HIV positive patients were unemployed against 10% for the partners/spouses of the HIV negative patients and 16.6% of HIV positive patients had spouses who were farmers against 7.5% for the partners/spouses of the HIV negative patients. It is possible that in the absence of their wives/partners, they may be involved in high-risk sexual activities.

The place of last delivery was found to be a risk factor in this study. The majority of the patients who were HIV positive had their last delivery in a primary healthcare centre (39, 32.5%), which is similar to findings from a previous study in this country (15). Furthermore, women with post primary level of education are said to be more likely to deliver in hospitals. Due to lack of attention to asepsis, surgery with unsterile instruments, and the absence of principles of universal precaution in most peripheral clinics and hospitals, these women are thus exposed to the risk of HIV infection (20). Another finding from this study which is related to the above is the route of delivery, 107 (89.2%) of the HIV-positive patients had spontaneous vaginal delivery. However, this is not independent of their place of last delivery. Larger epidemiological studies are needed to answer some of these questions.

Most of the patients who were HIV positive have had between two to four lifetime partners (55.8% in HIV-positive patients compared to 27.9% in HIV-negative patients) and five or more (25.8% in HIV positive patients compared to 19.2% in HIV negative patients). This is similar to findings from other studies as heterosexual intercourse is the major route of transmission of HIV in our environment (21).

CONCLUSION

This study has revealed some identifiable sociodemographic and obstetrics risk of HIV infection in the Niger delta and this should lead to the modification of our obstetrics practices especially in the primary and secondary healthcare facilities: routine screening of all pregnant women during the antenatal period and labour, attention to asepsis during surgery, and the application of the principles of universal precaution. More over, focus on sex education, on the dangers of sexual promiscuity, availability of barrier methods of contraception and tackling the menace of unsafe abortion is very vital to curtailing this global pandemic in our society.

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