HIV Risk Factors among Pregnant Women in a Rural Nigerian Hospital
EA Etukumana¹, TD Thacher², AS Sagay³

ABSTRACT

Objective: Specific risk behaviours and practices promote the spread of HIV/AIDS. Identification of those at risk of the Human Immunodeficiency Virus (HIV) infection is an important step toward prevention of both vertical and horizontal transmission of HIV. This study sought to identify risk factors for HIV infection in pregnant women attending a rural antenatal clinic in Northern Nigerian.

Methods: A cross-sectional descriptive study of pregnant women attending antenatal clinic at a rural mission hospital in Northern Nigeria between June and October 2005 was conducted. Data were collected with a structured questionnaire. HIV screening and confirmation were done for the pregnant women after voluntary counselling.

Results: The study enrolled 350 pregnant women with a mean (± SD) age of 26.8 ± 6.4 years. HIV infection was not associated with smoking habits in women, alcohol intake in the women or their partners, prior blood transfusion, history of sexually transmitted infection or history of scarification. In multiple logistic regression, HIV infection was independently associated with suspecting their partner of extramarital sex (adjusted odds ratio 3.8, 95% CI 1.6, 9.0), post-primary education (AOR 2.4, 95% CI 1.1, 5.3), multiple sexual partners (AOR 2.4, 95% CI 0.97, 6.2) and cigarette smoking by a partner (AOR 3.0, 95% CI 0.95, 9.4).

Conclusion: Multiple partners and extramarital sex remain a hindrance to the fight against HIV infection. Promoting the ABC approach (abstinence, be faithful, condom) may reduce risky behaviour as it has in other parts of Africa.

Key words: Africa, HIV, pregnancy risk

Factores de Riesgo de VIH entre las Mujeres Embarazadas en un Hospital Rural Nigeriano
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RESUMEN

Objetivo: Las prácticas y los comportamientos de riesgo específicos promueven la propagación del VIH/SIDA. La identificación de quienes se encuentran en riesgo de infección por el virus de la inmunodeficiencia humana (VIH) es un paso importante hacia la prevención de la transmisión vertical y horizontal del VIH. Este estudio buscó identificar los factores de riesgo de infección de VIH en las mujeres embarazadas que asisten a una clínica prenatal rural en el norte de Nigeria.

Métodos: Se llevó a cabo un estudio descriptivo transversal de mujeres embarazadas que asisten a la clínica prenatal en un hospital rural misionero en Nigeria Norte, entre junio y octubre de 2005. Los datos fueron recogidos mediante un cuestionario estructurado. El pesquisaje y confirmación del virus de la inmunodeficiencia humana fueron realizados para las mujeres embarazadas tras recibir consejamiento voluntario.

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INTRODUCTION
Every day, more than 6800 persons worldwide become infected with HIV and over 5700 die from AIDS (1). Sub-Saharan Africa remains the most affected region in the global AIDS epidemic with more than two thirds (68%) of the total number of persons living with HIV. 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 African 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, Nigeria, reported a prevalence rate of 8.9% (5).

Several factors are associated with the spread of HIV and these include unprotected sex, multiple sexual partners, intravenous drug use, cigarette smoking and blood transfusion (6). A study of urban dwellers in Northern Nigeria identified multiple marriages, having a husband with other partners and being married to a banker/accountant as high risk factors for HIV infection in pregnancy (7). Other predictors of HIV were perceived risk of HIV, sexually transmitted infection (STI), candidiasis and bacterial vaginosis. Christian women of Catholic and Pentecostal denominations were also more likely to be HIV-infected compared with Moslem women. Urbanization, family disruption, poor socio-economic status and higher levels of education have also been identified as risk factors for HIV infection (8–10). Identification of those at risk of HIV infection provides potential opportunities for HIV prevention.

A cross-sectional study was carried out to determine the risk factors of HIV infection among pregnant women attending antenatal clinic in a rural Northern Nigerian hospital.

SUBJECTS AND METHODS
The study was carried out in Zawan, a rural settlement about 20 kilometers outside the city of Jos, Nigeria. The majority of inhabitants are ethnic Berom that share similar cultural beliefs and practices. The major occupations in this community are farming and tin mining. The study was conducted at the antenatal clinic of the Our Lady’s of Apostles Hospital, Zawan. The hospital has a 90-bed capacity and provides primary and secondary healthcare. The antenatal clinic attends to a daily average of 20 women.

A cross-sectional descriptive study was carried out between June and October 2005. Consecutive pregnant women who presented at the antenatal clinic and gave voluntary written informed consent were included in the study. Pregnant women who were severely ill were excluded from the study. Each woman was given information regarding the research objectives in English or the local language (Hausa or Berom) as appropriate. Data were collected with a structured questionnaire to assess potential risk factors associated with HIV infection. The questionnaire 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 and HIV-2 using a rapid assay kit (Abbott Determine HIV-1/2; Abbott Laboratories, Abbott Park, Illinois, USA). The positive blood samples were confirmed in the AIDS Prevention in Nigeria laboratory at the Jos University Teaching Hospital with Western blot (Qualicheck HIV-1/2 western Blot Kit; Immunetics Inc, Boston, MA, USA).

Enrolled women were assured of confidentiality of the study data and HIV status. Confidential post-HIV test counselling was provided. The study was approved by the Ethical Committee of the Jos University Teaching Hospital and by the management of Our Lady’s of Apostles Hospital, Zawan. Sample size was estimated by assuming a HIV prevalence rate of 8.9% (5) and a sampling error of 3%. The calculated sample size was 346 women which was rounded up to 350.
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 characteristics of enrolled women are shown in Table 1. The majority of pregnant women (98.3%) were married and the mean age was 26.8 ± 6.4 years, with a minority over 30 years of age. Nearly all enrolled women (96%) had at least some primary education and most women (65.4%) did not work outside the home.

The prevalences of potential risk factors for HIV infection are shown in Table 1. Few women (1.1%) and their partners (5.7%) smoked. Alcohol intake was reported in 13% of women and in 37% of their male partners. There was no intravenous drug use or needle sharing among the subjects. A minority of subjects had a history of STI (15%), tribal scarification marks (14%) or blood transfusion (6%). The majority of women (67%) had a history of multiple sexual partners and 11% of the women suspected their partners of extramarital sex. The partners of most women (80%) did not use condoms.

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The univariate associations of HIV infection with potential risk factors are shown in Table 2. The risk of HIV infection was not associated with age but advancing educational attainment was identified as a potential risk factor (\(p < 0.01\)). In women with a history of STI, 15.1% had HIV infection compared to 10.1% of those without such history (\(p = 0.28\)). In women with history of a single sexual partner, 5.1% had HIV infection whereas 13.7% of subjects with multiple partners had HIV infection (\(p < 0.001\) for linear trend). The prevalence of HIV infection was 11.8% in women who did not use condoms and 7.1% among women who reported any condom use (OR 0.58, 95% CI 0.19, 1.63). Of those who suspected their male partners of extramarital sex, 27% had HIV infection compared with 8.9% of those who did not suspect their partners (\(p < 0.001\)). HIV infection was not associated with scarification mark (\(p = 0.54\)).
In multiple logistic regression, suspecting their partner of extramarital sex (adjusted odds ratio 3.8, 95% CI 1.6, 9.0), post-primary education (AOR 2.4, 95% CI 1.1, 5.3), multiple sexual partners (AOR 2.4, 95% CI 0.97, 6.2) and cigarette smoking by a partner (AOR 3.0, 95% CI 0.95, 9.4) were independently associated with HIV infection.

**DISCUSSION**

Specific risk behaviours and practices are responsible for the spread of HIV/AIDS (11). Suspection of extramarital sex by their partners, multiple sexual partners, post-primary education, and cigarette smoking by a partner independently predicted the risk of HIV infection in rural Nigerian women presenting for antenatal care. We have previously reported the association of HIV with advancing educational attainment in this population (10). The present study confirms the association of HIV infection with cigarette smoking by a partner, as reported by others (5, 6). Cigarette smoking is more likely to be an indicator of high risk behaviour associated with transmission of HIV than it is a direct facilitator of HIV transmission.

Prior blood transfusion was not associated with HIV in this study similar to findings in Rwanda (12) but in contrast to previous studies (5, 13). This difference in the findings in this study may be attributed to the current pre-transfusion
blood screening and avoidance of unnecessary blood transfusion of patients.

In contrast to other studies (13–15), there might have been a failure to confirm an association of HIV with a history of STI due to reluctance to report such infections. However, failure to recognize the symptoms of STI, the frequent occurrence of asymptomatic STI in women or recall bias could also account for a lack of association. Some studies have reported a higher prevalence of HIV infection among those who had tattoos and scarification compared to those who did not (13, 16). Scarification was not identified as a risk factor for HIV infection in the present study and this was similar to the study of Berkley et al (17). Scarification practices were not common among the population in the present Nigerian series of study.

Alcohol consumption was not identified as a risk factor of HIV infection in this study in contrast to a study which found that women with male sexual partners who drank alcohol were at risk of HIV infection (18).

History of multiple sexual partners and suspected extra-marital sex in subjects’ partners were identified as strong risk factors of HIV infection in agreement with other studies (18–21). The higher the number of past sexual partners, the greater the risk of HIV infection found in this study in agreement with previous studies (19, 20). Women with a history of many past sexual partners, not necessarily multiple sexual partners at a particular time, were at risk of having HIV infection.

Interestingly, HIV infection risk increased with increasing level of education in agreement with similar studies which identified a high level of education as HIV risk factor (22, 23). Condom use was not associated with a lower risk of HIV in this study. Only twenty per cent of women reported any condom use, despite a high level of HIV awareness in this population (24).

One limitation of this study was being hospital-based rather than community based. Thus, only rural women who chose to obtain antenatal care and gave consent were represented in the study. Another limitation may be the reluctance of women to report their sexual behaviour accurately. Increased reporting of risk factors would likely strengthen rather than dilute the positive association we describe.

In conclusion, multiple sex partners and extra-marital sex remain a hindrance to the fight against HIV infection. Promoting the ABC (abstinence, be faithful, condoms) approach may lead to a decline in multi-partner sexual behaviour and a decline in HIV prevalence as it did in Uganda (25).

REFERENCES