Original Article

Seroprevalence of Human Immunodeficiency Virus, Hepatitis B Virus, and Syphilis Infections among Pregnant Women Booked for Antenatal Care at Kogi State Specialist Hospital, Lokoja, Nigeria

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Abstract

Background: Sexually transmitted infections (STIs) among pregnant women are an important health issue in Nigeria, but its prevalence in Lokoja is not known. **Objective:** The objective of this study is to establish the seroprevalence of the human immunodeficiency virus (HIV), hepatitis B virus (HBV), and syphilis infections among pregnant women booked for the antenatal clinic in Kogi State Specialist Hospital, Lokoja, Nigeria, and determine risk factors associated with the infections. **Methods:** We prospectively screened three hundred pregnant women booked for antenatal care between January 1, 2016, and December 31, 2016, for HIV, HBV, and syphilis. Their demographic data, risk factors, and results of the screening tests were analyzed using the SPSS version 20 and presented in simple charts, tables, and percentages. **Results:** Thirty nine (13%) out of the 300 pregnant women tested seropositive for either HIV (28, 9.3%), HBV (10, 3.3%), or syphilis (one, 0.3%). The most common identifiable risk factor for these infections was multiple sexual partners which accounted for 38.4%. **Conclusions:** The seroprevalence of STIs in this study was 13% and the most common risk factor for the infections was multiple sexual partners. Therefore, effective preventive strategies for HIV, HBV, and syphilis are advocated.

Keywords: Hepatitis B virus, human immunodeficiency virus, Nigeria, pregnancy, screening, seroprevalence, syphilis

Introduction

Sexually transmitted infections (STIs) are common health problems in developing nations. Their effects on maternal and neonatal health have been highlighted.[1]

Routine antenatal screenings for human immunodeficiency virus (HIV), hepatitis B virus (HBV), and syphilis infections are important aspects of reproductive health. Once the diagnosis is established early enough, interventive measures to reduce the spread of these infections from mother to child can be instituted.[2-4]

The risk of pregnant mothers transmitting HIV infections to their children during the antenatal period has been established via the placenta, intrapartum via the birth canal, and postpartum via the breast milk.[4-6] Adequate counselling and treatment of mothers infected with HIV following diagnosis may decrease the risk of transmission from mother to child.[7,8] It may be desirable for every nation to put in place a universal policy to screen all pregnant women for STIs as part of standard maternal and child health care.[9,10]

For instance, pregnant mothers infected with HBV may transmit the disease to their children. They are also prone to developing chronic liver cirrhosis and hepatocellular carcinoma with increased morbidity and mortality.[4,11,12]

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Syphilis on the other hand is a rare but serious infection in pregnancy. The disease is notorious for causing spontaneous abortion and prenatal death, although it is a treatable disease if diagnosed early.[13] Deliberate screening for diagnosis and treatment in early pregnancy may be the appropriate means of reducing perinatal morbidity and mortality.[2,3]

Despite the challenges of STIs in pregnancy, there is a paucity of data on their prevalence in Nigeria and no study from Lokoja, the capital city of Kogi State so far. Therefore, we carried out this project to establish the seroprevalence of HIV, HBV, and syphilis among pregnant women booked for antenatal care in the hospital.

Methods

This is a single tertiary health center prospective study of the seroprevalence of HIV, HBV, and syphilis infections among pregnant women booked for antenatal care in the hospital. This is a prospective study carried out from January 1, 2016, to December 31, 2016. Three hundred consecutive booked pregnant women who gave consent for the study were recruited. Their demographic data and pattern of risk behavior were recorded. Blood samples were obtained for HIV, HBV, and syphilis assays. All booked cases for antenatal care during the study period were screened and there were no exclusion criteria.

The blood samples of all patients booking for the first time for antenatal care were used for the study. Five mls of blood sample was obtained by venepuncture, 1 ml of the blood in an ethylenediaminetetraacetic acid bottle was used for packed cell volume and ABO blood grouping, while 4 mls was used for HIV, HBV, and syphilis tests.

Genie 11 human immunodeficiency virus-1/human immunodeficiency virus-2

The genie 11 HIV-1/HIV-2 rapid enzyme immunoassay strip test was used for the HIV screening.[14] To start the test, the blood specimen serum was introduced to port A. Anti-HIV antibodies specifically bind with biotinylated HIV antigens and migrate along the chromatography strip. Two or three gray sports in port B indicated a positive test, while the negative test was seen only in the control sport.

Hepatitis B virus

Hepatitis B surface antigen one-step test strip, a quantitative lateral flow immunoassay for detecting HBsAg in serum, was used for the screening.[15] The test strip was dipped into the serum for 5 s and was laid flat for 10–20 min before the result was recorded. A positive result was indicated if a pink color band is seen in the test area, while a negative result occurred when only one color band is seen in the control area.

Syphilis

Anti-syphilis immunoassay strip test was used for the screening.[16] The strip was dipped into the serum with arrow downside for about 5 s. The maximum line was not exceeded. The strip was taken out and laid on a clean, dry, non-absorbent surface and left for about 10–20 min. The test was recorded as positive when a pink color is seen in the test part of the strip, and a negative result occurred when the colored band is seen only in the control part of the strip. The test is invalid if there was no color change in any region.

Data analysis

The statistical analysis was carried out using IBM SPSS (IBM Corp. Released 2011. IBM Statistics for windows, version 20.0, Armonk, NY: IBM Corp.) version 20 and the results were presented using simple charts, tables, and percentages.

Results

Within the study period, 39 (13%) of the 300 pregnant women registered at the antenatal clinic were seropositive for either HIV (9.3%), HBV (3.3%), or syphilis infections (0.3%) [Figure 1]. No patient had more than one infection.

As shown in Figure 2, 20 (51.2%) of the seropositive patients had no identifiable risk factor, but 15 (38.5%) had positive multiple sex exposures. Blood transfusion and STIs accounted for two (5.2%) each. Five patients had more than one risk factor; three of them were HBV seropositive and two were HIV seropositive. None of the patients had more than one of these infections. The risk factors such as prisoner, polygamy, and needle pricks were not identified among patients in this study.

The age distribution of patients that were seropositive for HIV, HBV, or syphilis is shown in Table 1. Majority of these

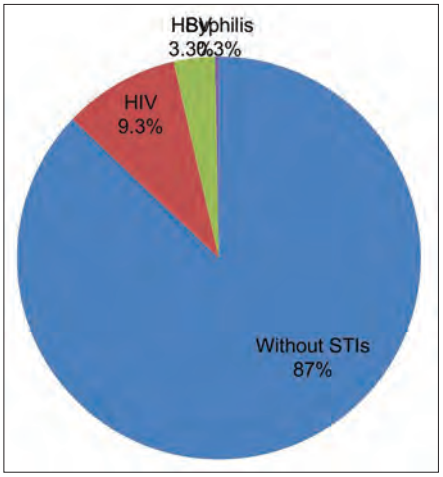

Figure 1: Seroprevalence of sexually transmitted infections among respondents

Table 1: Patients age distribution in years

Age	Number of patients, *n* (%)
21-25	9 (23.1)
26-30	18 (46.2)
31-35	11 (28.2)
36-40	1 (2.5)
Total	39 (100)

patients (46.2%) were within 26–30 years of age group, while the only patient (2.5%) above 38 years was seropositive for HIV and claimed to have contracted the infection from blood transfusion [Table 1]. There was no patient at the age of 20 years and below.

In Figure 3, 19 (48.7%) of the patients had tertiary school education, 14 (35.9%) had secondary school education, while two (5.1%) had no formal education.

In this study, 13 (33.3%) of the patients were primipara, while 10 (25.6%) were nullipara, and one (2.6%) patient was para 4 [see Figure 4].

Table 2 shows the occupational distribution of seropositive patients.

Eighteen (46.1%) of the patients were unemployed, while 15 (38.5%) were businesswomen, and six (15.4%) were civil servants.

The ethnic distribution of the seropositive patients with either

HIV or HBV or syphilis infections are presented in Table 3.

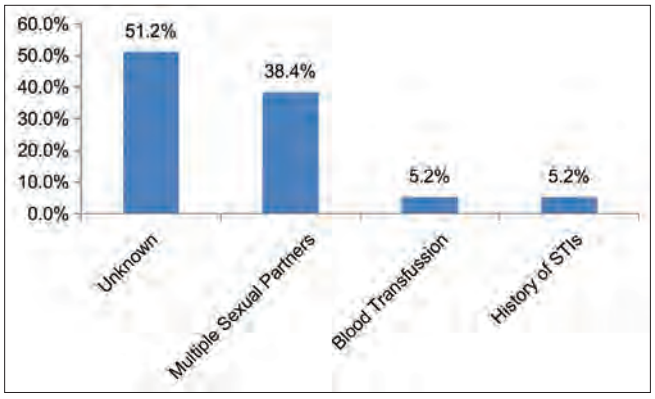

Figure 2: Risk factors for sexually transmitted infections among the respondents

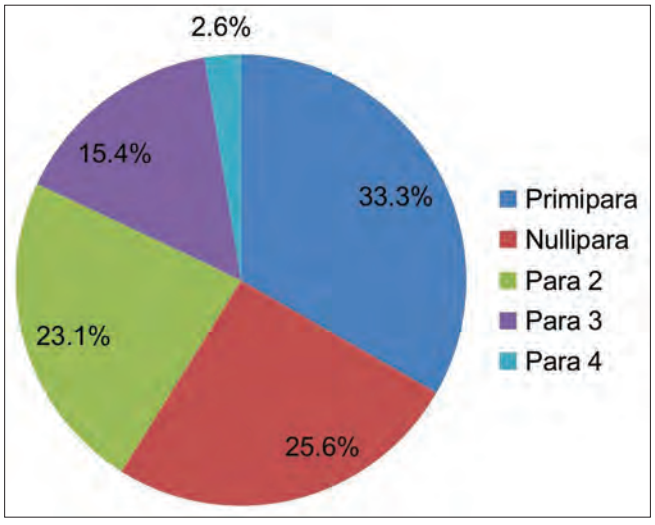

Figure 4: Parity distribution of patients with sexually transmitted infections

The Igala ethnic group accounted for 16 (41.0%) of the patients, this was followed by the Yoruba and Ebira which accounted for four (10.3%) each; Bassa and Nupe accounted for one (2.6%) each.

All the 39 (100%) seropositive patients who were either HIV or HBV or syphilis were formally married and living with their spouses. Majority (37, 94.9%) of their spouses tested positive for either HIV or HBV or syphilis and two (5.1%) had discordant spouses that tested negative for HIV in particular.

Twenty (51.3%) were aware of their seropositivity for either HIV or HBV or syphilis, while 19 (48.7%) got to know their seropositive status for the first time in the course of this study [Figure 5].

Discussion

The seroprevalence of HIV, HBV, and syphilis is of great

Table 2: Occupational distribution of seropositive patients

Types of occupation	Number of patients, *n* (%)
Business	15 (38.5)
Unemployed	18 (46.1)
Civil servants	6 (15.4)
Total	39 (100)

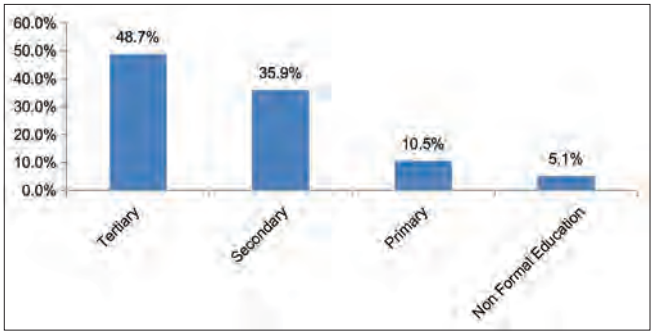

Figure 3: Educational status of the patients with sexually transmitted infections

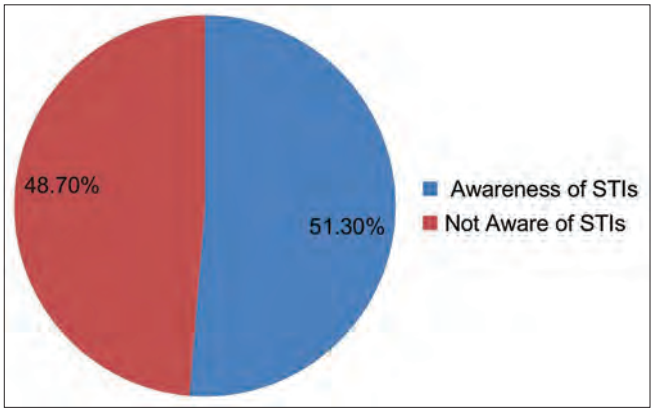

Figure 5: Awareness of sexually transmitted infections status among respondents

Table 3: Ethnic group distribution of seropostive patients

Ethnic group	Number of patients, *n* (%)
Igala	16 (41.0)
Yoruba	5 (12.8)
Ebira	4 (10.3)
Igbo	4 (10.3)
Egbura koto	3 (3.7)
Etsako	3 (3.7)
Tiv	2 (5.0)
Bassa	1 (2.6)
Nupe	1 (2.6)
Total	39 (100)

values in the management of maternal and child health and has the potential of providing vital information for effective reproductive health care[17] in Nigeria.

All the 300 pregnant women recruited for the study were screened for HIV, HBV, and syphilis and 39 patients tested seropositive for either HIV or HBV or syphilis making the seroprevalence of these STIs 13%.

The HIV seroprevalence of 9.3% reported in our study is comparable with seroprevalence of 9.6% reported among pregnant women in north west Ethiopia[18] but higher than HIV seroprevalence of 3% in Nigeria[12] and 0.3% in Victoria.[20]

The relatively higher seroprevalence in our study may be due to the high risk of multiple sex partners in our setting.

The HBV seroprevalence of 3.3% found in this study is lower than the HBV seroprevalence of 11% found in Makurdi[19] and 4.6% in Enugu.[20]

The seroprevalence of syphilis in our study was 0.3%. This is lower than 1% reported in Ethiopia and 2.1% in Argentina,[21] but it is comparable to the 0.24% reported in Burkina Faso.[3] The low seroprevalence of syphilis in this study may be due to frequent abuse of antibiotics for minor complaints and easy availability of drugs for self-medication in the state capital metropolis.[22]

The most common identifiable risk factor in this study was multiple sexual partners (38.4%). Majority of the patients, 51.2%, could not identify the risk factors responsible for their infections. This might be due to denial, a common experience in our setting to avoid stigmatization.

An identifiable risk factor for the one case of syphilis in this study was multiple sexual partners.

Majority of the patients, 46.2%, were within the age group of 26-30 years, while 28.2% were between 31 and 35 years of age. Only one patient was 38 years and she was seropositive for HIV and claimed to have contracted the infection from blood transfusion.

Over 48% of the seropositive patients for HIV, HBV, or syphilis have tertiary education; this was followed by secondary education in which accounted for 35.9% of the patients. Only two (5.1%) had no formal education. Multiple sex exposures and STIs were found among patients with formal education. It appears as if having a formal education is a risk factor for STI in our environment. This may be attributable to change in social status, inculturation, and the influence of western civilization.

In this study, it was observed that 33.3% of the seropositive patients were primipara, while 25.6% were nullipara. The seroprevalence of these STIs among multiparous women was low accounting for 2.6%.

This shows that women of less parity were the more vulnerable group. While 50.9% of the seropositive patients were engaged in gainful jobs, 46.1% were unemployed. The Igala ethnic group accounted for 41% of the seropositive patients. This is not surprising because they are the majority tribe in the study area.

All the 39 (100%) seropositive patients were formally married and leaving with their spouses. About 95% tested seropositive for either HIV or HBV or syphilis and 5.1% had discordant spouses that tested seronegative for HIV in particular. The plausible reasons for the discordant spouses may be due to the availability of highly active antiretroviral therapy and individual immunity.

Conclusions

The prevalence of HIV, HBV, and syphilis in this study is 13%. The most common risk factor was multiple sex exposures among young educated women. We therefore recommend that effective preventive strategies for STIs should be advocated. Counselling and education on reproductive health services that target young women should be encouraged to further keep the prevalence of HIV, HBV, and syphilis even lower. Multicentre studies are required to further elucidate the problems of STIs in Nigeria.

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Conflicts of interest

There are no conflicts of interest.

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