

Prevalence of Syphilis among Pregnant Women Attending State Specialist Hospital Maiduguri, Borno, Nigeria

M. A. Isa; H. S. Bello; A. Mustapha; H. K. Mangga & M. I. Abbas

Department of Microbiology University of Maiduguri, P.M.B. 1069, Borno State, Nigeria

Corresponding Author: Mustafa Alhaji Isa,

Email: mustafaalhajiisa@gmail.com

ABSTRACT

Syphilis is a sexually transmitted infection (STI) caused by the Treponema pallidum spirochete. This study was aimed to determine the prevalence of Syphilis among pregnant women attending State Specialist Hospital Maiduguri. Out of one hundred and eight (108) serum samples tested only 2(1.9%) were positive. Also, social demographic variable such as age, gravidity, trimester and history of blood transfusion which are considered as risk factors for acquiring syphilis infection were used in this study, although, none of this variable could be clearly established as a risk factor because of statistical insignificant of the variables. However, among the different age groups, those between 20- 24years and 30- 34years were found positive for syphilis infection, indicating these groups are sexually active, therefore they have high risk of contracting the disease. Also pregnant women who were in third trimester were found positive for syphilis infection, indicating serious threat for congenital syphilis if prompt treatment is not undertaken. Therefore, routine screen for Treponema pallidum during antenatal care is encourage in this study.

Key Words:

STI; Hospital; Prevalence ; Syphilis

INTRODUCTION

Syphilis is a sexually transmitted infection (STI) caused by the *Treponema pallidum* spirochete. The route of transmission of syphilis is almost always by sexual contact, although there may be congenital syphilis via transmission from mother to child in utero. If not treated, syphilis can cause serious effects such as damage to the aorta, brain, eyes, and bones. In some cases these effects may be fatal (Olokoba *et al.*, 2009). Syphilis, a chronic systemic infection caused by *Treponema pallidum* subspecies pallidum, is a gram-negative, very mobile bacterium sexually transmitted with untreated cases in pregnancy resulting in transplacental transmission (Onwuezobe *et al.*, 2010; Eccleston *et al.*, 2008). Globally, around 340 million cases of curable new STI occur every year. Of these, syphilis accounts for an estimated 12million cases, 2 million of them among pregnant women (Singh and Romanowski, 1999). Syphilis remains a major cause of reproductive morbidity and poor pregnancy outcomes in developing countries. Syphilis in pregnant women can result in adverse outcomes of pregnancy in up to 80% of cases, such as stillbirth and spontaneous abortion (40%), perinatal death (20%), and serious neonatal infections and low-birth weight babies (20%) (Shazia *et al.*, 2012). STIs are widespread in the

developing countries and constitute a major public health problem in Sub - saharan Africa. More recently, there has been a resurgence of syphilis (Olokoba *et al.*, 2008). Testing for syphilis in pregnancy and labour is medically indicated because of the potential risk for congenital infection and foetal loss (Ratnam *et al.*, 1982) Syphilis has also acquired a new potential for morbidity and mortality through association with increased risk for HIV infection (Olokoba *et al.*, 2008). Pregnant women should have serologic test for syphilis at the time of the first prenatal visit. In women suspected of being at increased risk for syphilis or for populations in which there is a high prevalence of syphilis, additional tests should be performed during the third trimester at twenty eight weeks and again at delivery women should be considered infected and should be treated unless prior treatment with fall in antibody titre is medically documented Information regarding syphilis infection in pregnancy in Nigeria shows a wide geographical variation in seroprevalence. Several models have been proposed to estimate adverse pregnancy outcomes in women infected with syphilis, with resulting estimates ranging from 50% to 80% (Saloojee *et al.*, 2004). Transmission occurs more commonly in the last two trimesters, but the spirochete can cross the placenta at any time during pregnancy (Berman, 2004). Fetal death and morbidity due to congenital syphilis are preventable if the infected mother is identified and treated appropriately by the middle of the second trimester. Because of the serious complications of syphilis in pregnancy, WHO has recommended universal antenatal screening. WHO further recommended screening for syphilis at the first antenatal visit, as early as possible in pregnancy, repeating in the third trimester if resources permit, to detect infection acquired during pregnancy. The effectiveness of such

antenatal syphilis screening and its treatment for the prevention of adverse pregnancy outcomes has been well documented (Shazia *et al.*, 2012; Watson *et al.*, 2002). In 1993 World Development Report (WDR) noted that antenatal syphilis screening was one of the most cost effective ways to improve children's health (Terris-Prestholt *et al.*, 2003). Thus, this study was aimed to determine the prevalence of Syphilis among pregnant women attending State Specialist Hospital Maiduguri.

MATERIALS AND METHODS

STUDY AREA

The study was carried out in Borno state, situated in the Northeastern part of Nigeria lies in latitude 10⁰ N and 13⁰E. It occupies the greater part of the Chad basin in the Northeastern part of the country and shares international border with the republic of Niger to the North Chad to the Northeast and Cameroon to the east. Most important to the country is the state strategic location as a gate-way in the neighbouring state of Adamawa to the south Yobe to the west and Kano to the Northwest and Gombe to the Southwest. The state has an area of 69,435 square kilometres, about 7.69% of the total land area of the country. Base on 2006 census figure, the state has a population of 4,151,193 with population density of approximately 60 inhabitants per square kilometre (NPC, 2006).

Questionnaire

Questionnaire was used in this study to obtain information about socio-demographic variable which considered as a risk factor of acquiring the syphilis infection. The information include sex, Age, educational status, marital status and history of blood transfusion

COLLECTION OF SAMPLE

About 5ml of blood sample was aseptically collected by venipuncture from each subject and transferred into EDTA bottles. The blood samples were left to clot after which plasma samples were separated from the clot by centrifuging at 2000rpm per 10minute. Plasma was then be separated from the clots and stored at room temperature in labelled bottle until assay.

DETERMINATION OF SYPHILIS

Syphilis were determined in plasma using syphilis rapid test Elisa that uses recombinant proteins and synthesised peptides derived from core and structure region of syphilis to detect the present of syphilis in plasma. The test was carried out and interpreted as recommended by the manufacturer.

STATISTICAL ANALYSIS

The chi-square test was employed to determine the relationship between gender, age, education status, marital status history of blood transfusion with syphilis infection. P values of < 0.05 were considered to be statistically significant.

RESULT

The results of seroprevalence of Syphilis among pregnant women attending State Specialist Hospital Maiduguri showed that out of one hundred and eight (108) serum samples tested only 2(1.4%) were positive. This includes 1(2.8%) from patients between aged of 20 – 24 years and 1 (3.7%) between aged of 30- 34 years. However, no statistically significant different was observed between the age and the prevalence of the infection (X-squared = 1.5283, df = 5, p-value = 0.9098) (Table 1).

Table 1: Distribution of Syphilis among pregnant women attending State Specialist Hospital Maiduguri based on age

Age	Total (%)	Positive	Positive (%)
13 – 19	15(13.9)	0	0.0
20 – 24	36(33.3)	1	2.8
25 – 29	21(19.4)	0	0.0
30 – 34	27(25.0)	1	3.7
35 – 39	8(7.5)	0	0.0
40 – 44	1(0.9)	0	0.0
Total	108(100)	2	1.9

(X-squared = 1.5283, df = 5, p-value = 0.9098)

The social characteristic of the studied pregnant women (Educational attainment) were presented on Table 2. Of the 108 pregnant women studied, 47(43.5%) were

undergone formal education while 61(56.5%) have not attained formal education. An inverse relationship between the educational status of the patients and the

prevalence of Syphilis was observed. All the positive samples were among those have not attained formal education, although no statistically significant difference was

observed between the educational status and the prevalence of the Syphilis (X-squared = 0.2843, df = 1, p-value = 0.5939) (Table 2).

Table2: Distribution of Syphilis among pregnant women attending State Specialist Hospital Maiduguri based on Educational Status

Educational Status	Total (%)	Positive	Positive (%)
Formal Education	43(43.5)	0	0.0
Non-Formal Education	61(56.5)	2	3.3
Total	108(100)	2	1.9

(X-squared = 0.2843, df = 1, p-value = 0.5939)

The distribution of Syphilis among gravidity showed that Primigravidae had the higher prevalence 1(2.3%) of Syphilis than

Multigravidae 1(1.5%), even though, it is not statistically significance (X-squared = 0.1866, df = 1, p-value = 0.6657) (Table 3).

Table3: Distribution of Syphilis among pregnant women attending State Specialist Hospital Maiduguri based on Gravidity

Gravidity	Total (%)	Positive	Positive (%)
Primigravidae	43(39.8)	1	2.3
Multigravidae	65(60.2)	1	1.5
Total	108(100)	2	1.9

(X-squared = 0.1866, df = 1, p-value = 0.6657)

The distribution of Syphilis among pregnant women with respect to trimester showed that those in third trimester have more prevalence than of 1(10%), followed by second trimester 1(1.5%) while no

prevalence was recorded among those pregnant women that were in first trimester. However, no statistical significant difference was observed between different trimester

and the prevalence of Syphilis (X-squared = 4.3106, df = 2, p-value = 0.1159) (Table 4).

Table 4: Distribution of Syphilis among pregnant women attending State Specialist Hospital Maiduguri based on Trimester

Trimester	Total (%)	Positive	Positive (%)
First Trimester	33(30.6)	0	0.0
Second Trimester	65(60.2)	1	1.5
Third Trimester	10(9.2)	1	10.0
Total	108(100)	2	1.9

(X-squared = 4.3106, df = 2, p-value = 0.1159)

Table five (5) showed that out of 108 pregnant women who participated in this study, 40 (37.0) had history of blood transfusion while 68 (63.0%) had no history

of blood transfusion. Zero prevalence of Syphilis was recorded among those having the history of blood transfusion (Table 5).

Table 5: Distribution of Syphilis among pregnant women attending State Specialist Hospital Maiduguri based on History of Blood Transfusion

History of Blood Transfusion	Total (%)	Positive	Positive (%)
Yes	40(37.0)	0	0.0
No	68(63.0)	2	2.9
Total	108(100)	2	1.9

(X-squared = 0.1266, df = 1, p-value = 0.722)

DISCUSSION

In this study, one hundred and eight (108) consenting pregnant women were recruited and examined for the presence of Syphilis infection. The result showed that the prevalence rate of Syphilis infection among pregnant women attending State Specialist Hospital in Maiduguri was 1.9%. This figure is higher than the National Average of 0.3% for Syphilis among pregnant women in Nigeria (FMH, 2008). The implication of this finding is that Syphilis infection in pregnant women might result in severe impact on pregnancy outcome, primarily as spontaneous abortion, stillbirth and vertical transmission resulting in congenital syphilis (Olokoba *et al.*, 2009). The prevalence of 1.9% in this study is higher than the prevalence rate of 0.5% reported by Pennap *et al.* (2011) among pregnant women in North Central, it is also higher than 0.4% reported by Olokoba *et al.* (2009) in Northeastern, Nigeria; 0.13% reported by Ozumba *et al.* (1999) in Enugu, Southeastern, Nigeria; 1.7% reported by Aboyeji and Nwaburi (2003) in Ilorin, North Central, Nigeria; 0.10% reported by Shazia *et al.* (2012) among pregnant women in rural area of India; 0.84% reported by Sethi *et al.* (2005) in India; 0.98% reported by Mathai *et al.* (2001) also in India; 1.3% reported by Tessema *et al.* (2010) in Ethiopia and 0.2% reported by Chen *et al.* (2006) in China. Higher prevalence of syphilis infection reported in this study may be pertinent with lack of awareness among pregnant women to be screened for syphilis. In contrast, the prevalence of 1.9% reported in this study is lower than the 2.97% reported by Taiwo *et al.* (2007) in Osogbo, Southwestern, Nigeria; 5.8% reported by Buseri *et al.* (2010) in South-South, Nigeria; 4.3% reported by Creek *et al.* (2005) in Botswana; 2.2% reported by Kirakaya *et al.* (2010) in Ouagadougou; 12.5% reported by Ratnam *et*

al. (1982) among pregnant women in Zambia; 18.3% reported by Lindstrand *et al.* (1993) among antenatal care attendees in Mozambique and 5% reported by Kwiek *et al.* (2008) among pregnant women in Malawi. The limitation of this study may be the use of rapid test strip which are specific for treponemal antigen test irrespective of active or inactive infection. Some positive cases may be previously treated infection and not active infection.

The social demographic variables such as age, gravidity, trimester and history of blood transfusion which are considered as risk factors for acquiring syphilis infection were used in this study, although, none of these variables could be clearly established as a risk factor because of statistical insignificance of the variable. However, among the different age groups, those between 20-24 years and 30-34 years were found positive for syphilis infection, indicating these groups are sexually active, therefore they have a high risk of contracting the disease. Also pregnant women who were in the third trimester were found positive for syphilis infection, indicating a serious threat for congenital syphilis if prompt treatment is not undertaken.

CONCLUSION

The result of this study showed that the prevalence of 1.9% was obtained among pregnant women attending State Specialist Hospital Maiduguri. Despite the low prevalence rate of syphilis infection, routine screening for *Treponema pallidum* during antenatal care is encouraged in this study.

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