

*Full Length Research Paper*

# **Seroprevalence of hepatitis B infection in pregnant women at the Ekiti State University Teaching Hospital, Ado-Ekiti, Southwest Nigeria**

**<sup>1</sup>Ajayi Akande Oladimeji, <sup>2</sup>Ade-Ojo Idowu Pius, <sup>1</sup>Ajayi Ebenezer Adekunle, <sup>3</sup>Adegun Patrick Temi, <sup>4</sup>Ojo Abiodun, <sup>2</sup>Aduloju Olusola Peter, <sup>2</sup>Olofinbiyi Babatunde**

<sup>1</sup>Department of Medicine, Ekiti-State University Teaching Hospital, P.M.B 5355, Ado- Ekiti, Nigeria

<sup>2</sup>Department of Obstetrics & Gynecology, Ekiti-State University Teaching Hospital, P.M.B 5355, Ado- Ekiti, Nigeria

<sup>3</sup>Department of Surgery, Ekiti-State University Teaching Hospital, P.M.B 5355, Ado- Ekiti, Nigeria

<sup>4</sup>Department of Hematology & Blood transfusion, Ekiti State University, P.M.B 5355, Ado – Ekiti, Nigeria.

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**Hepatitis B virus (HBV) is a worldwide public health problem. It is endemic in many regions of the world including Africa. The aim of this study was to determine the seroprevalence of HBV infection and the risk factors in pregnant women accessing antenatal care at the Ekiti State University Teaching Hospital (EKSUTH), Southwest Nigeria. 1627 pregnant women who attended the antenatal clinic at EKSUTH from May 2009- April 2010 were recruited into this study. Each patient was tested for hepatitis B surface antigen (HBsAg) and those positive were further tested for hepatitis B e antigen (HBeAg). The seroprevalence of HBsAg in pregnant women in this study was 3.9%. The highest prevalence was found in the age group 26-30 years. Risk factors identified included previous histories of surgical procedures, delivery outside the hospital and blood transfusion. Due of the high risk of developing chronic HBV infection among infants born to HBsAg –positive mothers, administration of HBIG in combination with hepatitis B vaccine as post-exposure prophylaxis is of paramount importance. Universal free HBsAg screening for all pregnant women and women of child bearing age in Nigeria is advocated.**

**Key words:** HBsAg, pregnant women, seroprevalence, Southwest Nigeria.

## **INTRODUCTION:**

Hepatitis B infection (HBV) is endemic in Nigeria. It is a serious health problem worldwide and a major cause of chronic hepatitis, cirrhosis and hepatocellular carcinoma (HCC) (Maynard JE et al., 1988). Transmission occurs mainly from mother to child at the time of parturition, as well as person-to-person (horizontal) transmission among children < 5 years of age (Kumar ML et al., 1987). There are three possible routes of transmission of HBV from infected mothers to infants: transplacental transmission in utero, natal transmission during delivery or postnatal transmission during care of infants or through breast milk (Zhang SL et al., 2004, Beasley RP et al., 1983). In endemic areas, most individuals are infected by vertical transmission or early childhood (Wright TL et al.,

2006). Viral hepatitis during pregnancy is associated with a high risk of maternal complications, has a high rate of vertical transmission causing foetal and neonatal hepatitis and has been reported as a leading cause of maternal mortality (Dafallah SE et al., 2003). Epidemiological data on HBV infection are important to program managers and health planners, to plan vaccination and other preventive strategies. Without intervention, the risk of peri-natal HBV transmission is greatest for infants born to HBeAg-positive mothers, with infectivity rate of 70% to 90% at 6 months of age, and about 90% of these children remain chronically infected (McMahon BJ et al., 1985). In developed countries, pregnant women are routinely screened for HBV infection. Routine universal vaccination of all persons has also been established in several countries of high and intermediate endemicity (Davilla G et al., 2003). There is neither a screening policy in our environment nor routine vaccination or measures to protect the at risk po-

\*Corresponding author E-mail: [dejajayi@yahoo.co.uk](mailto:dejajayi@yahoo.co.uk).

**Table 1.** Prevalence of HBsAg in the different age groups.

Age group (years)	Number of pregnant women	HBsAg positive	Percentage (%)
15-20	30	2	6.7
21-25	601	22	3.7
26-30	698	28	4.0
31-35	288	11	3.8
36-40	10	-	-

**Table 2.** Prevalence of HBsAg in the different parities.

Parity	Number of pregnant women	HBsAg positive	%
1	180	7	3.9
2	620	24	3.8
3	775	30	3.9
4	52	2	3.8

pulation. This study was carried out to determine the prevalence of HBsAg among the pregnant women attending Ekiti State University Teaching Hospital Southwestern Nigeria using hepatitis B surface antigen marker, identify newborns who will require protection against perinatal HBV infection, to identify the possible risk factors and to add more weight to the clarion call for routine screening and vaccination to the at risk population.

## MATERIALS AND METHODS

1627 pregnant women who attended the antenatal clinic of the Ekiti State University Teaching Hospital (EKSUTH) from May 2009- April 2010 were recruited after obtaining an inform consent into this study. 4ml blood was taken from each patient and tested for HBsAg and those who were positive for HBsAg were further tested for HBeAg using enzyme linked immunosorbent assay Abbott Laboratories (ELISA). Age and parity status and possible risk factors such as previous blood transfusion, surgery, abortions, tattooing and sharing of needles were sought and recorded. An ethical clearance for this study was obtained from the EKSUTH Ethical and Research committee. Data obtained were analyzed using the statistical package for social sciences (SPSS, version 15) statistical software.

## RESULTS

Of the 1627 enrolled for the study, 63 were found positive for HBsAg, giving a prevalence of 3.9%. The age of the subjects ranged from 18 to 40 years with a mean of 28±6.5 years. The highest prevalence was found in the age group 26-30 years (28/698; 4.0 %), closely followed by the 21-25 year age group (22/601; 3.7%), [Table 1]. The prevalence was found to be the same irrespective of

the parity; 3.9% in parity 1, 3.8% in parity 2, 3.9% in parity 3 and 3.8% in parity 4 (Table 2). 5 of the 63 positive for HBsAg were HBeAg positive. Of this 5, 2 were jaundiced and had deranged liver function tests. Risk factors identified included previous history of surgical procedures [30/63 or47.6%] (cesarean sections, dilatations and curettage for miscarriage and retained placenta), previous delivery outside the hospital [21/63 or 33.3%] (homes, traditional birth attendants [TBAS], mission houses where unsterilized equipment are more likely to be used) and previous blood transfusion (12/63 or19%).

## DISCUSSION

HBV infection affecting pregnant women may result in severe disease to mother and chronic infection to the newborn. In this study, a seroprevalence of HBsAg in pregnant women attending EKSUTH, Ado Ekiti, Southwest Nigeria was 3.9%. This shows an intermediate endemicity of HBV infection according to World Health Organization criteria (WHO) (WHO/EPI 1990). The seroprevalence found in this study was in agreement with some of the previous studies done in Southeast Nigeria by Mbamara et al <sup>10</sup> (2.2%) and the study of Obi et al <sup>11</sup> (2.9%) in the Southsouth Nigeria. The result obtained here was lower than the rates obtained in the studies from the Northerneast Nigeria by Olokoba et al (2011) (8.2%) and in the North Central by Mbaawuga et al (2008) (11%). Studies from the Middle East reported rates of 4.3% from Jordan (Batayneh N et al., 2002) and 2.4% from Saudi Arabia (Khalil MKM et al., 2005). Higher prevalence rates were reported from Ghana 10.5%(Damale NKR et al., 2005) and Yemen 13.2% (Al-Shamahy HA. 2000). This difference may be as a result of the type of population studied, different geographical

**Table 3.** Comparison of seroprevalence of HBsAg among pregnant women in different populations

Author	Population	HBsAg positive
Mbamara et al <sup>10</sup>	Southeast, Nigeria	2.2
Obi et al <sup>11</sup>	Southsouth, Nigeria	2.9
Olokoba et al <sup>12</sup>	Northeast, Nigeria	8.2
Mbaawuga et al <sup>13</sup>	Northcentral, Nigeria	11
Biswas et al <sup>21</sup>	India	2.3
Okoth et al <sup>22</sup>	Kenya	9.3
Al Awaidy et al <sup>23</sup>	Oman	7.1
El-Magrahe et al <sup>24</sup>	Libya	1.5
MacLean et al <sup>25</sup>	Mali	8.0
Present study	Southwest, Nigeria	3.9

regions, genetic factors and socioeconomic status. Sero-epidemiological studies of different populations show marked variations and differences (Table 3).

The highest prevalence was found in the age group 26-30 years (28/698; 4.0 %), closely followed by the 21-25 year age group (22/601; 3.7%) [Table 1]. This was not statistically significant. This age distribution was similar to the findings of Mbamara et al (2010), compared to that of Dwivedi et al (2011) who found the highest prevalence in the 21-25 age groups. The age groups 21-30 years were the most sexually active and fertile. This may explain the high prevalence of HBV infection in them. In this study, HBV infection was found to increase with age. Similar results were reported by other investigators Shamahy HA. (2000), Vazquez-Martinez JL et al. (2003), Alrowaily MA et al. (2008). Contrary to the study of Dwivedi et al (2011) who found increase in prevalence rate with increased parity, this study found no statistically significant difference in prevalence with increased parity. Similar to the findings of Al-Shamahy Al-Shamahy HA. (2000), this study showed that HBV infection in pregnant women increased with age up to the third decade. This may be due to the fact that majority of women would have completed their families by the end of the third decade, hence the observed decrease in HBV infection rate after the third decade.

It had been shown that HBeAg positivity among HBsAg positive pregnant women vary widely in different geographical regions around the world (Biswas SC et al 1989, Okoth F et al 2006). HBeAg positivity in this study was 7.9%. This was lower than that found by Dwived et al 2011 (57%) and Biswas et al 1989 (48%). The potential

risk factors identified in this study included previous history of surgical procedures [30/63 or 47.6%] (cesarean sections, dilatations and curettage for miscarriage and retained placenta), previous delivery outside the hospital [21/63 or 33.3%] (homes, traditional birth attendants [TBAS], mission houses where unsterilized equipment are more likely to be used) and previous blood transfusion (12/63 or 19%).

The seroprevalence of HBsAg in pregnant women obtained in this study was of intermediate endemicity (3.9%). Because of the high risk of developing chronic HBV infection among infants born to HBsAg –positive mothers, administration of Hepatitis B Immunoglobulin (HBIG) in combination with hepatitis B vaccine as post-exposure prophylaxis for such newborns is of paramount importance. Advocacy should be step up for universal free HBsAg screening for all pregnant women and women of child bearing age in Nigeria.

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