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**RISK FACTORS FOR HEPATITIS B VIRUS INFECTION DURING PREGNANCY IN SOUTH EASTERN NIGERIA**  
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## RISK FACTORS FOR HEPATITIS B VIRUS INFECTION DURING PREGNANCY IN SOUTH EASTERN NIGERIA

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### ABSTRACT

**Objective:** To determine the seroprevalence of hepatitis B surface antigen (HBsAg) and possible risk factors in pregnant women.

**Design:** A cross-sectional serological survey of women attending antenatal clinics.

**Setting:** Five antenatal clinics in Aba, South Eastern Nigeria.

**Subjects:** Eight hundred and ten consecutive and consenting antenatal clinic attendees over the period 15 June- 15 November 2010.

**Main Outcome measures:** For each pregnant woman, the medical and sociodemographic data were documented. Hepatitis B surface antigen seropositivity determined.

**Results:** Twenty two (2.7%) of the 810 subjects were found to be HBsAg seropositive and asymptomatic. Maternal age, parity, educational level attained, marital status, history of blood transfusion, intravenous drug use, tattooing, jaundice in the past and Human Immunodeficiency Virus seropositivity did not show any association with HBsAg seropositivity.

**Conclusion:** HBsAg seropositive women in the study were asymptomatic and showed no association with the medical and sociodemographic characteristics examined. These findings affirm the recommendation for universal HBsAg screening in pregnancy and imply that screening on the basis of the presence of risk factors alone may be insufficient.

### INTRODUCTION

Human infection with Hepatitis B virus (HBV) is a global health problem (1). Approximately 400 million people are chronically infected with HBV worldwide (2) and almost half have acquired their infections either through mother to infant transfusion or in the early childhood, especially in countries where HBV has intermediate to high prevalence (3). This is due to the high rates of HBsAg positivity in women of child-bearing age in these parts of the world and the transmission of infection from these women to their newborns (4).

The principal screening test for detecting maternal HBV infection is the serological identification of HBsAg. The knowledge of the seroprevalence of HBsAg and possible medical and sociodemographic risk factors in pregnant women will assist in developing a strategy to inform and educate the

public regarding HBV.

Diagnosis of HBV in the context of pregnancy-specific screening opens the opportunity for individuals who might otherwise have not ever been tested to receive appropriate care. Further, other benefits of detection of infected pregnant women include the identification not only of infants who require prophylaxis but also of sexual and household contacts of the infected pregnant women who will benefit from testing, counseling, vaccination or therapy if indicated. Hence, the need for this study.

### MATERIALS AND METHODS

This was a cross-sectional survey involving 810 consecutive and consenting antenatal clinic attendees at five antenatal clinics in Aba, South-Eastern Nigeria over the period 15 June – 15 November, 2010.

A structured pre-tested questionnaire

administered by research assistants was used to collect and record data on the medical and sociodemographic characteristics of the subjects.

Blood samples were collected from the consenting antenatal clinic attendees and tested for HBsAg using rapid test Elisa kits (Acon laboratories, USA).

Data analysis included descriptive statistics for demographic data and calculation of the seroprevalence of HBsAg in the pregnant women. Association of HBsAg seropositivity with potential medical and sociodemographic risk factors was assessed. Statistical analysis were performed using Epi-info version 6 statistical package.  $P < 0.05$  was

considered significant. Ethical approval for the study was obtained from the research and ethical committee of Abia State University Teaching Hospital, Aba.

## RESULTS

Table 1 shows the sociodemographic characteristics of the antenatal attendees studied.

A total of 810 antenatal attendees took part in this study. The modal age of the women was 24 years and the average age 26.5 years. The majority of the women were multiparous and of the Igbo ethnic group in Nigeria.

**Table 1**  
*Medical and socio-demographic characteristics of participants*

Demographic characteristics	No. = 810	Percentage
Maternal age		
<19	5	0.6
20–29	437	53.9
>30	368	53.9
Parity		
Nullipara	286	35.3
Primipara	185	22.8
Multipara	339	28.3
Maternal education		
Primary	7	0.9
Secondary	317	39.1
Tertiary	486	60
Marital status		
Married	820	100
Single/ Divorced/ Widowed	0	0
Undergoing STI treatment other than HIV/AIDS		
Yes	30	3.7
No	780	96.3
Self and partner intravenous drug use		
Yes	0	0
No	810	100
Ever received blood transfusion		
Yes	44	5.4
No	766	94.6
Ever been jaundiced in the past?		
Yes	12	1.5
No	798	98.5
HIV Screening test result		
Positive	8	0.9
Negative	802	99.0

Table 2 shows the relationship between maternal variables and HBsAg seropositivity. Twenty two (2.7%) of the 810 subjects were found to be HBsAg seropositive. Maternal age, parity, educational level attained, marital status, history of having received

blood transfusion in the past, tattooing or jaundice in the past and Human Immunodeficiency virus (HIV) positivity did not show any association with HBsAg seropositivity.

**Table 2**  
*Maternal socio-demographic characteristics by maternal Hepatitis B positivity*

Variables	Hepatitis B Negative No. = 788(%)		Hepatitis B positive No. = 22(%)	
Maternal age				
<19	5	100	0	0
20-29	423	96.8	14	3.2
>30	360	97.8	8	2.2
		$X^2 = 0.94; P > 0.05$		
Parity				
Nullipara	278	97.2	8	2.8
Primipara	180	97.2	5	2.7
Multipara	330	97.3	9	2.7
		$X^2 = 0.01; P > 0.99$		
Maternal education				
Primary	7	100	0	0
Secondary	310	97.8	7	2.2
Tertiary	471	96.9	15	3.1
		$X^2 = 0.76; P > 0.68$		
Undergoing STI treatment other than HIV/AIDS				
Yes	28	93.3	2	6.7
No	760	97.4	20	2.6
		$X^2 = 0.62; P > 0.43$		
Ever received blood transfusion				
Yes	44	100	0	0
No	744	97.1	22	0.1
		$X^2 = 0.44; P > 0.5$		
Ever been jaundiced in the past				
Yes	12	100	0	0
No	776	97.2	22	2.8
		$X^2 = 0.10; P > 0.75$		
HIV screening test result				
Positive	7	87.5	1	12.5
Negative	781	97.4	21	2.6
		$X^2 = 0.38; P > 0.53$		

The prevalence of maternal HBsAg seropositivity is 2.7%.

## DISCUSSION

The sero-prevalence of HBsAg in pregnant women was found to be 2.7% in this study. This is within the range of 2 and 12% found by other authors in Nigeria but lower than the seroprevalence of 11.0% in Makurdi, North Central Nigeria, 11.6% in Maiduguri, North Eastern Nigeria and 13.8% in Lagos, Western Nigeria (5,6,7). The seroprevalence found in our study is also lower than that of greater than 8% reported for Africa, Asia and the western pacific but higher than the less than 2% obtained in Western Europe, North America, Japan and Australia (8).

The wide variations in the seroprevalence of HBsAg in pregnant women from the literature may be due to geographical variation, differences in cultural practices, sexual behavior, practices and differences in the test methods employed to detect HBV infection (9).

HBsAg seropositivity in this study showed no association with known selected medical and sociodemographic risk factors examined. Further, all the HBsAg seropositive pregnant women in our study were asymptomatic and unaware of their infection. There can be two approaches to screening for HBsAg during pregnancy namely, universal or at risk. Universal screening approach means that all pregnant women are screened for HBV infection whereas the at risk approach relies on the historical "risk factors" (eg intravenous drug use, promiscuous heterosexuals, commercial sex workers, sex partners of HBsAg –positive persons) to determine whom to screen (10). In some parts of the world, generally there is no consistent policy with respect to testing of women with HBV infection during pregnancy and many countries rely on "historical risk factors" to determine the indications for screening.

Thus, universal screening as opposed to risk factor based screening of all pregnant women for HBV is justified in our setting since risk factor-based screening results in missing as many as 50% HBsAg seropositive individuals in some populations as shown by a study from Denmark (11). Furthermore the perinatal screening allows for identification of infants requiring immunoprophylaxis with HBV vaccine and hepatitis B immune globin (HBIG), antiviral treatment of pregnant carriers if indicated, and counseling of sexual and household contacts (12).

Strengths of our study include the fairly large sample size. Limitations include possible selection bias as the participants were volunteers and not selected randomly.

In conclusion, our study showed that HBsAg seropositive pregnant women were asymptomatic and showed no association with known selected medical and sociodemographic risk factors examined. These findings affirm the recommendation for universal HBsAg screening in pregnancy and imply that screening on the basis of the presence of risk factors alone may not be sufficient in our setting. It is recommended that studies with much larger sample sizes in Aba and other communities in Nigeria and the rest of Africa are warranted to confirm these findings. There is need for a national HBsAg screening programme in pregnancy.

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