

# Seroprevalence Of Hepatitis B Surface Antigen Among Prospective Blood Donors In An Urban Area Of Benue State

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## Abstract

Background: Hepatitis B virus (HBV) infection with its associated sequelae is a disease of major public health importance world wide. There is paucity of data on the seroprevalence of HBV infection among prospective blood donors in Benue State. This study analyzed the results of HBsAg screening among blood donors in General Hospital, Otukpo, an urban area of Benue State, over a three-year period (2006 – 2008), with a view to establishing the prevalence rate in this region of the Middle Belt of Nigeria. Methods: Results of HBsAg screening from the blood bank unit of the General hospital Otukpo for the three year period (2006 – 2008) were reviewed. The subjects consisted mainly of prospective blood donors. Screening was done using latex agglutination kits manufactured by Biotec laboratories, USA. Results: A total of 2,500 samples were screened for HBsAg over the three year period. The seropositivity rate among donors tested was 20%. Conclusion: Hepatitis B surface antigenaemia is common in Otukpo, an urban area of Benue State. Therefore adequate screening of blood donors and the institution of adequate public health measures is advocated in order to reduce the transmission of this virus.

## INTRODUCTION

Hepatitis B virus (HBV) infection with its associated sequelae is a disease of major public health importance worldwide. Globally, it is estimated that about 320 – 350 million individuals are chronic carriers of hepatitis B virus (HBV) and about 1.5 million people die annually from HBV-related causes.<sup>1</sup> It is based on this high prevalence, and the various sequelae of HBV infection, especially liver cirrhosis and primary liver cell carcinoma (PLCC) that makes HBV infection to continue to remain a public health concern.<sup>2,3,4,5</sup>

HBV infection occurs frequently in Nigeria.<sup>6,7</sup> In fact, it is estimated that about 12% of the total Nigerian population are chronic carriers of HBsAg.<sup>8,9</sup> Studies from different parts of Nigeria have reported varying prevalence rates among selected groups.<sup>10,11,12,13,14,15</sup> However, there has been a paucity of information on the prevalence of HBsAg in Benue State. This study therefore analyzed the results of HBsAg screening among blood donors at the General Hospital, Otukpo, an urban area of Benue State over a three-year period, 2006 – 2008, with a view to establishing the prevalence rate in this part of the Nigerian middle Belt.

## SUBJECTS AND METHODS

Subjects consisted of all prospective blood donors who reported to the blood bank of the General Hospital under study for bleeding over the three-year period, 2006 – 2008. Their blood samples were screened for HBsAg. Routine screening for HBsAg was part of the criteria for donor selection. Any donor who tested negative would normally be bled, while donors with positive results would normally not be bled but counseled.

All tests were done using kits manufactured by Biotec laboratories, USA. The kit is based on latex agglutination methodology. The test kit contains latex particles coated with antibody to HBsAg. Serum containing the viral antigen will cause the latex particles to agglutinate. In the absence of viral antigens, the latex particles will remain homogeneous. Both positive and negative control sera were run along with the test samples, using the same procedure.

## RESULTS

Over the three-year period under study, a total of 2,500 samples / donors were screened. The age range was between 18 and 60 years with a mean of 39 years. The modal age range of the study population was 41 – 50 years,

representing 43% of the study population (Table 1). Five hundred donors (20%) were positive for HBsAg: four hundred and fifty five males (91%) and forty five females (9%). The peak age prevalence was in the “41 – 50” year age group (24.2%) and prevalence was lowest in “31 – 40” years age bracket (15.3%) (Table II).

**Figure 1**

Table 1: Age and Sex Distribution of Donors

Age (in years)	Total		Male		Female	
	No	%	No	%	No	%
0 - 10	-	-	-	-	-	-
11 - 20	10	0.4	10	100	-	0
21 - 30	433	17	420	96.9	13	3.1
31 - 40	859	34.4	835	97.2	24	2.8
41 - 50	1076	43.3	1066	99.1	10	0.9
51 - 60	122	4.9	119	97.5	3	2.5
Total	2500	100	2450	98	50	2.0

**Figure 2**

Table 2: Age and sex Distribution of HBsAg positive Donors

Age (in years)	No screened	No positive	% Positivity	Sex distribution of positive donors	
				Males	Females
0 - 10	-	-	-	-	-
11 - 20	10	2	20	2	-
21 - 30	433	88	20.3	85	3
31 - 40	859	131	15.3	105	26
41 - 50	1076	260	24.2	245	15
51 - 60	122	19	15.6	18	1
Total	2500	500	20	455	45

## DISCUSSION

The results of this study have highlighted the fact that Hepatitis B infection is common in Otukpo, an urban area of Benue State. Over the three-year period under study, the seroprevalence rate of HBV infection among the blood donors was 20%. These blood donors were mostly males (98%) between the ages of 18 and 60 years and comprised mostly relatives and friends of hospital in-patients and some touts (paid donors) in some instances. The blood donors represent a largely “well” segment of the adult population and is expected to mirror closely the overall prevalence of

HBsAg in the general adult population.

The mean prevalence rate of 20% among blood donors in this study is significantly higher than that found in blood donors in some other towns and cities in Nigeria such as Ibadan (5.10%), Zaria (11.40%), Benin (10.40%), Enugu (3.70%) and Port Harcourt (1.57%)<sup>1112131415</sup>. Going by the results of this study, Otukpo, and its environs in Benue State therefore appear to be one of the areas with the highest prevalence of Hepatitis B surface Antigenaemia in Nigeria. It also suggests clearly that the rejection rate of blood donors in this region of the Middle Belt of Nigeria based on HBsAg Positivity is likely to be very significant.

The reason for this higher prevalence of HBsAg in this urban area of Benue State, as compared to these other Nigerian cities, is not clear for now. As a matter of fact, it would have been expected that the prevalence rate of HBV infection will be lower in this urban area as compared to these other more industrialized and more cosmopolitan cities. This is even more so considering the fact that the assay method for HBsAg in this urban study was latex agglutination technique, which clearly has a lower sensitivity, compared to the enzyme-linked immunosorbent assay (ELISA) that presumably may be the assay in use in these more industrialized parts of Nigeria. This factor is critical, as by inference, it means that higher prevalence rate of HBV infection is in fact likely to have been obtained assuming the screening/assay was done with ELISA, rather than the latex agglutination methodology. However, in critically analyzing and discussing the results of this study, one must bear in mind the fact that Benue State has the highest prevalence of the Human Immunodeficiency virus (HIV) in Nigeria<sup>16</sup>. It is known that both HIV and HBV infection have similar pattern and routes of transmission, which include sexual promiscuity among others. Could this high prevalence of HBV infection in this part of Benue State simply be a reflection of the high burden and rate of sexually transmitted diseases in the state as a whole? If this is the case, then the results of this study may not be entirely surprising.

In conclusion, the results of our study show that the prevalence of HBV infection among prospective blood donors in Otukpo, an urban area of Benue State is considerably higher than what has been reported in most other cities and studies in Nigeria. This calls for adequate screening of blood donors to reduce the transmission of the infection. Other general measures like public awareness programmes to educate the public on modes of transmission

of HBV infection (including sexual promiscuity) and Hepatitis B vaccination, are therefore necessary. In addition, there is a need for the health authorities in Benue State to undertake a properly designed population study to clearly define the disease burden so that proper public health measures could be instituted.

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