

## ORIGINAL RESEARCH

# Prevalence Of Hepatitis B Surface Antigen (HbSAg) In Bidar District Karnataka State; A Hospital Based Study

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## ABSTRACT

**Introduction:** Hepatitis B, one of the major and common infectious diseases of the liver caused by a small enveloped DNA virus, the hepatitis B virus (HBV). (The virus was first discovered as 'Australia antigen' later named as Hepatitis B surface antigen (HBsAg). It is estimated that more than two billion people have been infected by HBV worldwide and 350 million people have chronic infection. In India every year 100,000 Indians die due to HBV infection related illness.

**Materials and Methods:** The study was conducted in the Department of Microbiology, Bidar Institute of Medical Sciences, Bidar, Karnataka state from February 2014 to February 2015 for a period of one year. Total 10485 samples were tested by one step Immunochromatographic method for rapid detection of HBsAg and to diagnose the infection.

**Results:** Among 10485 samples tested, 207 samples were positive for HBsAg with prevalence rate of 1.97 %. Age, gender and month wise distribution of infection was studied.

**Conclusion:** This study highlights the prevalence and burden of HBV infection in Bidar district of North Karnataka. Which provide reference to future studies on the epidemiology of HBV infection in this region.

**Keywords:** Australia antigen, Endemicity, Immunochromatography, Hepatitis B, Prevalence

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## INTRODUCTION

Globally viral hepatitis is respectable for 1.4 million deaths every year (compared to 1.5 million deaths from HIV / AIDS and 1.2 million deaths from each of malaria and tuberculosis) and around 500 million people are currently living with viral hepatitis.<sup>1</sup>

In India, it is estimated that there are 40 million people chronically infected with hepatitis B and Hepatitis B Virus (HBV) causes a spectrum of disease from self-limiting hepatitis to acute fulminant and chronic hepatitis which may result in liver cirrhosis and hepatocellular carcinoma. 30% of the world population (about 2 billion people) have serological evidence of current or past HBV infection and an estimated 350 million people have chronic infection.<sup>2</sup> World Health Organisation (WHO) has classified HBV prevalence in to high endemicity (>8%), intermediate (2-7%) and low endemicity (<2%). HBV prevalence in India is in intermediate range. 100,000 Indians die due to HBV infection related illness every year.<sup>3</sup>

HBV infection can occur parenterally, sexually and perinatally. Hepatitis B spreads most commonly from mother to child at birth. The development of chronic infection is very common in infants infected from their mother or before the age of 5 years.<sup>1</sup> It also spread through saliva, vaginal, and seminal fluid. Infection in adulthood leads to chronic hepatitis in less than 5% of cases. HBV is also one of the transfusion transmissible infection. Singh et al studied the low Seroprevalence of hepatitis B virus infection among blood donors of coastal Karnataka, India.<sup>4</sup> Many studies have also shown the hepatitis B infection among pregnant women in India. This study was carried out to estimate the burden of HBV infection in Bidar district of North Karnataka.

## MATERIALS AND METHODS

**Study area:** The study was carried out in the Department of Microbiology, Bidar Institute of Medical Sciences, Bidar from February 2014 to February 2015.

Samples included from inpatients, outpatients, and patients attending ART centres and pregnant women attending ANC clinic and the patients for whom HBsAg test and detection was sought as the basis of clinical findings and socio economic risk factor and for preoperative evaluation of HBsAg status. Permission was taken from Institutional ethical committee to conduct this study. Blood sample was collected by venepuncture and serum was separated as per standard procedure. All samples were tested by rapid one step immunochromatographic assay (IMA) kit for the qualitative detection of hepatitis B surface antigen (HEPACARD - J. Mitra & Co Pvt. Ltd).

Immunochromatographic assay are rapid and sensitive for detection of HBsAg. They are economical and easy to perform and give fast results within 20 min and have been recommended for routine use in clinical microbiology laboratories.<sup>5</sup>

### STATISTICAL ANALYSIS

SPSS version 21 was used to generate graphs. Only descriptive statistics was used to generate results.

### RESULTS

Serums of 10,485 patients were tested for HBsAg for a period of one year from February 2014 to February 2015. 207 patients tested positive with prevalence of 1.97%. Whole study year, the prevalence showed 2-3% except in the month of October 2014 which was 11% (Table-1). The infection is more in female (59.90%) as compared to male (40.05%) and among age group between 21-30 which is 47.34% out of 207 positives (Table-2). 30.91% of the positivity found among pregnant women attending ANC clinic and 4.83% among HIV AIDS patients attending ART centre.

### DISCUSSION

Our study is hospital based comprised of large number of samples and the prevalence of HBsAg was 1.97%. The study was conducted for only one year duration and exposes the prevalence rate of HBsAg among Bidar population and every year wise study also can be done to check the prevalence rate retrospectively. Many studies have done in India and Karnataka on HBsAg prevalence. Patil et al studied prevalence of HBsAg in Sholapur of Maharashtra district which is nearer to our study place (150 km) and found to be 2.99% and was below intermediate endemicity.<sup>6</sup> Quadri SA et al studied the prevalence of HBsAg in Bijapur of North Karnataka and the prevalence rate was 1.63% indicating low endemicity.<sup>7</sup>

**Table-1: Prevalence of HBsAg month wise**

Month	Number of Serum tested	HBsAg positive Serum	Percentage
February 2014	1069	25	2.34
March 2014	560	12	2.14
April 2014	500	12	2.40
May 2014	1450	26	1.79
June 2014	1400	14	1.00
July 2014	100	2	2.00
August 2014	1300	20	1.54
September 2014	600	9	1.50
October 2014	100	11	11.00
November 2014	100	3	3.00
December 2014	200	4	2.00
January 2015	1506	32	2.12
February 2015	1600	37	2.31
<b>TOTAL</b>	<b>10485</b>	<b>207</b>	<b>1.97</b>

**Table-2: Age distribution of HBsAg positive patients**

Age	HbsAg positive Serum	Percentage
0-10	7	3.38
11-20	30	14.49
21-30	98	47.34
31-40	35	16.90
41-50	16	7.72
51-60	12	5.79
61& above	9	4.37

Singh et al found out the Seroprevalence of HBsAg among blood donors of costal Karnataka India and the prevalence was 0.62% which comes under low prevalence zone (<2%).<sup>4</sup> One more study was conducted by Preeti B. Mindolli and Manjunath P. Salmani in Bijapur of North Karnataka which was also a hospital based study to check prevalence in the year 2012 and 2013. The study results shown a slight increase hepatitis infection from 1.54% in 2012 to 1.65% in 2013.<sup>8</sup> Our study results also fits in low endemicity range which is <2% (2.97) but almost equal to intermediate zone as per the WHO guidelines.<sup>2</sup> These all studies shown that there is slight to intermediate endemicity of HBsAg in Bidar and North Karnataka. Our study also showed the highest infection rate in the month of October 2014 and it was high infectivity among

females as compared to other studies where it has been shown high among males i.e 35.3% and 19.3% in female in the study conducted by Datta S et al.<sup>9</sup>

The prevalence of HBV is 4% amongst the general population in India. As the infection is asymptomatic, most people are unaware of their infection but untreated chronic HBV can result in liver cirrhosis and liver cancer.

## CONCLUSION

India has documented low awareness about viral hepatitis in community and amongst population with high risk behaviour. Policies and strategies for prevention and control needs to be tailored to the specific national or sub national context. Bidar, a district in North Karnataka is one of the backward district in the state with population of 15.02 lacks and occupies a low position in economic as well as human development. Our study highlights the HBV infection rate in this district of North Karnataka which provides reference to the future studies on the epidemiology of HBV infection.

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