

# Seroprevalence of Hepatitis B Virus Infection among OPD Patients Attending Tertiary Care Hospital

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## ABSTRACT

**Background:** Hepatitis B infection is a major global health problem. The hepatitis B surface antigen (HBsAg) in serum is the first seromarker to indicate active HBV infection either acute or chronic. The seroprevalence of Hepatitis B surface antigen among general population attending OPD at a tertiary care hospital is useful in assessing true nature of problem, which can help to estimate the magnitude of HBV infection and aid in devising preventive measures. The aim of the study was to determine the seroprevalence of Hepatitis B infection among OPD patients attending a tertiary care hospital. **Methods:** Data from Dec 2015- April-2017 for OPD patients underwent HBsAg screening were collected and analysed. **Results:** A total number of 3891 patients were screened for HBsAg among them 1731 (44.48%) were males and 2160 (55.51%) were females. The seroprevalence of HBsAg in total OPD patients was 90(2.31%), was higher in males 46(2.65%) as compared to females 44(2.03%). The highest seroprevalence was found in 60-71 (4%) age group. **Conclusions:** The seroprevalence of Hepatitis B positive cases was 2.31% among OPD patients. Also, the rising seroprevalence rates of hepatitis B in males need urgent attention.

**Key words:** HBsAg, seroprevalence, OPD patients, tertiary care hospital

## INTRODUCTION

About 30% of the world population has serological evidence of current or past infection with hepatitis B virus. It is known to be the 10<sup>th</sup> leading cause of death and HBV related hepatocellular carcinoma is the 5<sup>th</sup> most frequent cancer worldwide.<sup>[1]</sup> About 2 billion people (or 30% of world population) worldwide have serological evidence of current or past HBV infection, and an estimated 350 million people harbor chronic infection<sup>2</sup>. India has been placed into the intermediate zone of prevalence of hepatitis B (2-7% prevalence rate by WHO).<sup>[2]</sup> Indian population forms the second largest global pool of chronic HBV

infections and the number of HBV carriers in India is estimated to be 50 million.<sup>[3]</sup> The virus is transmitted by either per-cutaneous or mucous membrane contact with infected blood or other body fluid and is found in highest concentrations in blood and serous exudates. The primary routes of transmission are peri-natal, early childhood exposure, sexual contact, and per cutaneous exposure to blood or body fluids (i.e. injections, needle stick, blood transfusion). The hepatitis B surface antigen (HBsAg) in serum is the first seromarker to indicate active HBV infection, either acute or chronic.<sup>[4]</sup>

A large population of patients suffering from hepatitis B may be asymptomatic and can transit the disease to healthy population. The patients presenting to the OPDs of a hospital are generally those seeking treatment for mostly community acquired ailments hence the estimation of seroprevalence of hepatitis B surface antigen in such patients can be considered as a surrogate marker to represent the dynamics of virus transmission in the community. Studies have been conducted to estimate the prevalence of hepatitis B virus in selected group of people with higher risk factors such as blood donors, pregnant women, drug addicts and patients with liver disorders. However, there is paucity of information in India on prevalence of HBV infection among general population. That is why a prevalence based study of patients at a

Access this article online	
Website: <a href="http://www.iabcr.org">www.iabcr.org</a>	Quick Response code
DOI: 10.21276/iabcr.2017.3.2.11	

Received:17.05.17| Revised:28.05.17| Accepted:02.06.17

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tertiary care teaching hospital is helpful in assessing true nature of problem in the community, which can help in assessing the magnitude of HBV infection and aid in devising preventive measures.

Community based seroprevalence studies are difficult to conduct in a developing country like India, because of socioeconomic hurdles and logistics difficulties. More than one half ambulatory and two-thirds outpatients care are catered by private health care in India.<sup>[5]</sup>

A private tertiary teaching hospital catering to the needs of a large population thus represents an important center for serological surveys. Also, the available data at Rajasthan state level on the seroprevalence and distribution of this blood borne pathogen is limited.

It was against the above backdrop that the present study was undertaken to estimate the seroprevalence of Hepatitis B viral infection among OPD patients attending tertiary care hospital.

## METHODS

The present study is a prospective hospital based study conducted in the department of Microbiology, at Ananta Institute of Medical Sciences & Research Center, Rajsamand from December 2015 to April 2017. A total of 3891 blood samples were collected from patients attending different OPDs, for whom HBsAg detection was sought after a written consent. For the evaluation of HBsAg, a one-step rapid immunochromatographic Assay (ICA) was used. The qualitative detection of HBsAg was determined using a rapid Card (Hepacard-Biomed industries). The ICA are rapid and sensitive methods for detecting HBsAg. They are economical and do not require special instrumentation for analysis and have been recommended for use in clinical microbiology laboratories.<sup>[6]</sup> Immunochromatographic Assay has high sensitivity and specificity.<sup>[7]</sup> The reactive samples were retested in duplicates with fresh blood samples, if found reactive were considered as reactive.

## RESULTS

We report here a study to assess the epidemiology of HBV prevalence among the OPD patients attending a tertiary care hospital of Rajsamand (Rajasthan).

A total of 3891 serum samples were processed for HBsAg detection over a period of 12 months, among them 1731 (44.48%) were male and 2160 (55.51%) were female. Table 2 shows age and sex distribution of hospital based population. The seroprevalence of HBsAg was 90 (2.31%). It was higher in males 46 (2.65%) as compared to females 44 (2.03%). The highest seroprevalence was found to be among 61-70 age groups which were (4%). The highest seroprevalence among HBsAg positive male was found in 61-70 age group which was 5.47% and among females were in age group 41-50 which was 3.71.

## DISCUSSION

The seroprevalence of HBsAg in the present study was found to be 2.31%. India has been placed into the intermediate zone of prevalence of hepatitis B (2-7%) so present study findings correspond to it. HBV prevalence

among the hospital based population at Karad, Maharashtra in a tertiary care hospital by Patil et al 2016,<sup>[8]</sup> the seroprevalence of HBsAg was found to be 2.25%. A study conducted by Tripathi P.c. et al 2015<sup>[9]</sup> seroprevalence of hepatitis B surface antigen at a tertiary care center in Telangna was 1.69%. Samtha P et al 2014<sup>[10]</sup> in their hospital based population at Guntur Andhra Pradesh reported prevalence of hepatitis B surface antigen was 2.4%, which approximately coincides with our study. Quadri S.A. et al 2013<sup>[11]</sup> reported the prevalence of HBsAg to be 1.63%, in a hospital based study at Bijapur, Karnataka. A recent study conducted in Rajasthan by Payal Mathur et al 2016<sup>[12]</sup> at a tertiary care teaching hospital situated at district Ajmer, the seroprevalence of HBsAg was found to be 0.94% only. Another hospital based population study conducted by Smita Sood 2013<sup>[13]</sup> at Jaipur district of Rajasthan at a superspeciality private hospital among OPD attendees, the prevalence of hepatitis B surface antigen was observed to be 1.73%. There are several studies conducted on seroprevalence of HBsAg in India. The point of hepatitis B in non-tribal population is 3.07% and among the tribal population is 11.85%. Batham A et al in their review of 54 studies on seroprevalence of HBsAg was observed 2.4% in non-tribal population and 15.9% among tribal population. Another review of hepatitis B prevalence in India by Lodha et al has conducted that it is in between 1-2%<sup>[14]</sup>. High prevalence of HBsAg (between 2-7%) has been reported in the past, and a community based study carried out in Tamil Nadu reported the prevalence of HBsAg was 5.7%.<sup>[15]</sup> Another study conducted in Sarkhet Valley, HBsAg prevalence rate was found to be 8.8% in the hospital patients.<sup>[16]</sup> The prevalence of HBsAg in patients attending surgical OPD at Fauji Foundation hospital, Rawalpindi, Pakistan has been reported as 2.28%.<sup>[17]</sup> Seroprevalence of Hepatitis B was 2.11% to 3.53%<sup>[18, 19]</sup> in Rawalpindi, and 4% from Jamshoro (Sindh).<sup>[20]</sup> Very Low prevalence rate of HBsAg also has been observed in few studies Smita Sood and Shirish Malvankar 2010<sup>[21]</sup> in a study of HBsAg prevalence in hospital based population was noted to be 0.87%. The relative low prevalence in their study could be due to the fact that it was conducted in a private hospital catering usually to economically privileged class patients. Another low prevalence of 0.62% has been reported among blood donors from coastal Karnataka.<sup>[22]</sup>

**Table-1 Gender Distribution of HBsAg Positive Patients**

Gender	No. of sera tested	HBsAg positive sera	Percentage
Male	1731	46	2.65
Female	2160	44	2.03

Prevalence of Hepatitis B varies from country to country and depends upon a complex mixture of behavioural, environmental and host factors. In general, it is lowest in countries or areas with high standards of living (eg. Australia, North America, North Europe) and Highest in countries or area where socioeconomic level is lower (eg. China, South-East Asia, South America)<sup>[23]</sup> Most of the studies have reported high prevalence of HBsAg in males as compared to females, which is also true in our study.

**Table -2 Age and Sex distribution of OPD patients with hepatitis B seropositivity**

Age Group	Male	Female	HBsAg (+)		Total Patients Tested	HBsAg (+)%
			Male %	Female %		
0-10	36	18	0(0%)	0(0%)	54	0(0%)
11-20	80	74	2(2.5%)	0(0%)	154	2(1.29%)
21-30	338	739	8(2.36%)	8(1.08%)	1077	16(1.48%)
31-40	392	588	8(2.04%)	14(2.38%)	980	22(2.24%)
41-50	315	296	10(3.17%)	11(3.71%)	611	21(3.43%)
51-60	352	234	9(2.55%)	8(3.41%)	586	17(2.90%)
61-70	146	129	8(5.47%)	3(2.32%)	275	11(4%)
Above 71	72	82	1(1.38%)	0(0%)	154	1(0.64%)
<b>Total</b>	<b>1731</b>	<b>2160</b>	<b>46</b>	<b>44</b>	<b>3891</b>	<b>90</b>
	<b>44.48%</b>	<b>55.51%</b>	<b>2.65%</b>	<b>(2.03%)</b>		<b>(2.31%)</b>

Smita sood and Shirish Malvankar have reported the prevalence to be 1.04% and 0.58% in males and females respectively.<sup>[21]</sup> Tripathi et al reported HBsAg prevalence in males 1.97% and in 1.28% females, Payal Mathur et al reported 1.12% in males and 0.7% in female, Samtha et al reported males 2.5% and 1.13% in females. There has been no plausible explanation for the higher rates in males in the general population but probably due to the higher exposure to occupational HBV, and also probably because females clear the HBV more efficiently as compared to males. In the present study, highest prevalence was found to be among 61-70 yrs age group i.e 4% followed by 41-50 i.e. 3.43% and 51-60 age group with 2.90%. Quadari et al reported relatively higher percentage of subjects in 6<sup>th</sup>, 3<sup>rd</sup>, and 2<sup>nd</sup> decade of life respectively were found with HBsAg in their sera. Smita Sood and Shirish Malvankar reported highest prevalence among 2<sup>nd</sup>, 5<sup>th</sup> and elderly patients. Patil et al reported highest HBsAg prevalence among 51-60 yrs age group (5.24%) in both males (5.51%) and females (4.78%). A community based study carried out in Tamil Nadu reported that age specific prevalence for the overall exposure to HBV, HBsAg, HBeAg was not significantly different in different age group.<sup>[24]</sup> In another population studies, conducted on blood donors the HBsAg carrier rate is observed to increased directly with age up to a peak and then to decline among the older age group.<sup>[25]</sup>

## CONCLUSION

Present study reported Seroprevalence of HBsAg as well as its age and sex wise distribution, our study highlights HBV infection rate in this part of the country and shall provide reference to future studies on the epidemiology of HBV infection, to understand and assess the magnitude of disease in a community and for its control and prevention. This study also shows that the ever rising Seroprevalence rates of hepatitis B among the males, is a cause of alarm in the country which also should be taken into consideration. Permission obtained from Institution Ethics Committee.

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**How to cite this article:** Sharma M, Bohra S, Mehra SK, Shah R. Seroprevalence of Hepatitis B Virus Infection among OPD patients attending tertiary care Hospital. *Int Arch BioMed Clin Res*. 2017;3(2):50-53. DOI:10.21276/iabcr.2017.3.2.11

**Source of Support:** Nil, **Conflict of Interest:** None