

## SHORT COMMUNICATION

# Prevalence of Hepatitis B Virus Infection in General Population of Nagpur Region

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## Abstract

*The study aimed to determine the trend in Hepatitis-B virus infection in general population and to compare the prevalence with that of healthy blood donors in and around Nagpur region. The study was conducted in department of Clinical Microbiology in outdoor patients who attend the OPD and referred from surgery, medicine, obstetric and gynaecology (ANC patients) for HBsAg testing. We collected 1ml of blood sample and was tested for HBsAg status of the patients by the rapid test kit, One Step Cassette Style HBsAg Test. The prevalence of Hepatitis-B virus infection among the general population is low in Nagpur region. Sexually active age group are at high risk of HBV infection. In our study, there was no significant difference between HBsAg positive general population and healthy blood donors.*

**Keywords:** Sexually transmitted disease, HBsAg, Serum hepatitis.

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DOI: [10.18049/jcmad/329a10](https://doi.org/10.18049/jcmad/329a10) Revised : 17/08/2015

Received on : 12/08/2015 Accepted : 19/08/2015

## Introduction

Hepatitis-B virus infection (HBV) is a life threatening disease and contributes to a large man power as well as economical loss worldwide. It is a serious and common infectious diseases of the liver affecting millions of people worldwide. It is caused by hepatitis-B virus which can be transmitted through percutaneous i.e. puncture through the skin and mucosal route i.e. direct contact with mucosal membrane, exposure to infectious blood or blood products, through body fluids.<sup>1</sup> Approximately 30% of the worlds population or about 2 billion persons have serological evidence of either current or past infection with hepatitis B virus. Countries are classified on the basis of endemicity of hepatitis-B virus (HBV) infection into high (8% or more), intermediate (2-7%), or low (less than 2%) incidence countries. The prevalence of chronic HBV infection in India ranges from 2% to 10% as shown in different studies. India therefore comes under the intermediate to high endemicity category.<sup>2</sup> Hepatitis B virus

infection is estimated to be the cause of 30% of cirrhosis and 53% of liver cancer in the world. Approximately 15 -40% of patients with chronic HBV will develop cirrhosis, end stage liver failure or hepatocellular carcinoma (HCC) in their lifetime.<sup>3</sup>

## Aims and Objectives

The study aimed to determine the trend in Hepatitis-B virus infection in general population and to compare the prevalence with that of healthy blood donors.

## Material and Methods

The study was conducted in department of Clinical Microbiology in outdoor patients who attend the OPD and refered from surgery, medicine, obstetric and gynaecology (ANC patients) for HBsAg testing. We collected 1ml of blood sample and was tested for HBsAg status of the patients by the rapid test kit, One Step Cassette Style HBsAg Test (manufactured by IND Diagnostic Inc, Canada). The study was conducted from May 2014 to August 2014.

Simultaneously we had screened the blood donors in the same period for HBsAg. The study was done in healthy donors (18 – 45 yrs) attending the blood bank. HBsAg screening was done using the commercially available Microwell ELISA test to detect HBsAg

according to FDA guidelines. Data was analysed by Chi square test.

## Observation and Results

Out of the total 2095 patients, 1671 (79.76%) were females, 424 (20.24%) were males.

**Table- 1: Age and sex wise distribution of clinical OPD patients tested for HBsAg**

Age of patients (yrs)	Males	HBsAg (+ve ) males (%)	Females	HBsAg (+ve) females (%)
0-19	117	0 (0)	92	0 (0)
20-29	292	2 (28.57)	231	5 (38.46)
30-39	234	3 (42.86)	185	3 (23.08)
40-49	222	1 (14.29)	50	2 (15.38)
50-59	152	1 (14.29)	120	2 (15.38)
60-69	117	0 (0)	92	1 (7.69)
>= 70	34	0 (0)	28	0 (0)
<b>Total</b>	<b>424</b>	<b>7</b>	<b>1671</b>	<b>13</b>

Table no. 1 shows that, out of 1671 females, HBsAg was maximum positive in age group of 20 – 29 yrs contributing to 38.46%. While in males out of 424, maximum positivity was in the age group of 30 – 39 yrs contributing to 42.86%. High prevalence was seen in sexually active age group.

**Table- 2: Age and Sex wise distribution of HBsAg positive blood donors in blood bank**

Age of donors (yrs)	Males	HBsAg (+ve) males (%)	Females	HBsAg (+ve) females (%)
18 – 25	586	4 (28.57)	30	0 (0)
26 – 35	670	7 (50)	36	0 (0)
36 – 45	254	2 (14.29)	12	0 (0)
>45	167	1 (7.14)	8	0 (0)
<b>Total</b>	<b>1677</b>	<b>14</b>	<b>86</b>	<b>0</b>

Table no. 2 shows that, out of the total 1763 blood donors, 1677 (95.12%) were males and 86 (4.88%) were females. None of the female donors were HBsAg positive, while 14 (0.79%) males were HBsAg positive. Maximum HBsAg positive male donors were in the age group of 26 – 35 yrs. The prevalence of HBsAg positive in general population of Nagpur region is 0.95%, while the prevalence is 0.79% in healthy blood donors.

## Discussion

A large number of studies on the epidemiology of HBV infection have been carried out in India over the last two decades.<sup>4</sup> There are several levels of variability amongst these studies. These includes the sample size, the methodology for assay of HBV serological markers, the age group, general population sample versus blood donor and risk population samples, ethnicity and geography of the study population. All these have also been shown to influence the prevalence of HBV infection

globally. In the present study the seroprevalence of HBsAg positive in general population of Nagpur region was 0.95%. While, in a population based study of rural population in Birbhum district of West Bengal, with a population of 7653 of all ages and both sexes showed that, prevalence of HBsAg was 2.97% and there was a peak of prevalence after second decade of life.<sup>5</sup> It has been estimated that HBV infection is largely acquired by horizontal transmission in childhood and adolescence. Perinatal transmission plays a less important role.<sup>6</sup> According to India's Drug and Cosmetics Act (1945), each blood unit has to be tested for

hepatitis B virus infection. In the present study seroprevalence of HBsAg positive in blood donors was 0.79%. While in the study done by Singh *et al*, among the 30,428 blood donors screened, the overall seroprevalence of HBsAg was 0.62 %. Seroprevalence was significantly high in male donors as compared to female donors.<sup>7</sup> The decreasing trend in seroprevalence was noticed over three successive years. Although India comes under intermittent to high endemic areas, but the prevalence in general population of Nagpur region is low i.e. 0.95%. Prevalence of HBV infection among healthy blood donors is still low 0.79%. This is due to the advance technology for donor screening, public awareness, educational and motivational programs and mass immunization programs help in decreasing the infection.

### Conclusion

Although India lies in intermediate to high endemic category, the prevalence of Hepatitis-B virus infection among the general population is low in Nagpur region. Sexually active age group are at high risk of HBV infection . In our study, there was no significant difference between HBsAg positive general population and healthy blood donors. Pre-donation counseling, donor self-exclusion and ensuring 100% voluntary blood donation will be effective in decreasing the hepatitis B infection rate.

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**Conflict of Interest:** None declared

**Source of Support:** Nil

**Ethical Permission:** Obtained

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