

## Original Article

# Prevalence of Hepatitis B Virus Infection in Health Care Workers: A Clinical Study

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**Received:** 01-01-2014

**Revised:** 22-02-2014

**Accepted:** 02-03-2014

### ABSTRACT:

**Background:** Hepatitis B is a major public health problem worldwide. It is caused by Hepatitis B virus which is a DNA virus. It is common in health care workers. The present study assessed Hepatitis B virus infection among health care workers. **Materials & Methods:** This cross-sectional study was performed to determine the prevalence of hepatitis B infection among hospital employees. This study was conducted in the department of general medicine in year 2013. This study consisted of 600 participants (260 males and 340 females) of varying age groups. Information such as gender, age, education, economic status, and residency, occupation, vaccination status, duration of employment was recorded. In all subjects, a sample of blood was drawn with an aseptic technique and was collected in plain vial. Serum was separated by centrifugation and was tested for HBsAg by ELISA. Subjects found positive for HBsAg were then subjected for the screening of HBeAg and anti-HBc by immunocomb technique (EIA) solid phase ELISA. Results obtained in the study was subjected to statistical analysis. **Results:** A total of 600 subjects (Male-260, female -340) were included in the study. Out of 260 males, 4 (1.5%) and out of 340 females, 6 (1.7%) found positive of Hepatitis B. The difference of prevalence among males and females was non significant (P-0.4). In this study, we included residents (150), nursing staff (150), lab technician (150) and sanitary staff (150). The vaccinated against Hepatitis B was residents (108), nursing staff (63), lab technician (27) and sanitary staff (9). Unvaccinated were residents (142), nursing (87), lab technician (123) and sanitary staff (141). Seropositivity was seen in resident (1), nursing staff (2), lab technician (5) and sanitary staff (2). The difference was non significant (p-0.3). 350 subjects were having experience of 0-15 years, 124 subjects having experience 16-30 years and 126 subjects were having experience more than 30 years. Seropositivity was seen in 5 subjects (>30), 3 subjects (16-30 years) and 2 subjects (0-15 years). The difference was non-significant (0.1). **Conclusion:** Author concluded that needle stitch injuries are common among health care workers hence healthcare workers should take proper precaution while handling blood. Aseptic procedures should be carried out. More hepatitis immunization programmed should also be initiated in health care workers. **Key Words:** Hepatitis B, lab technician, nursing, immunization

**This article may be cited as:** Agarwal S, Sharma A, Agarwal A. Prevalence of Hepatitis B Virus Infection in Health Care Workers: A Clinical Study. J Adv Med Dent Sci Res 2014;2(1):156-159.

### INTRODUCTION

Hepatitis B is a major public health problem worldwide. Approximately 30% of the world's population or about 2 billion persons have serological evidence of either current or past infection with hepatitis B virus. It is caused by Hepatitis B virus which is a DNA virus.<sup>1</sup>

Hepatitis B infection is one of the transfusion transmissible infections. Transmission of HBV occurs through percutaneous or permucosal exposure to infective body fluids. This can be transmitted from person to person through sexual contact and drug injection. Nosocomial transmission is one of the risk factor, even in hospitals with high hygiene standards.

Mele and Gunson<sup>2</sup> in his study reported numerous cases of HBV infected health care workers (HCWs) who potentially perform exposure prone procedures (EPPs).

Improved hygiene, increased vaccine coverage, increased awareness of medical staff, and highly sensitive testing of blood products, these are the recent measures that should be implemented to decrease nosocomial HBV infections. Studies showed higher prevalence of HBV infection markers among the elderly, probably reflecting a longer exposure to risk factors. However, another possible explanation would be a real change in the epidemiologic profile of HBV infection in a similar way to that observed in the human immunodeficiency virus (HIV) infection, with a displacement of the prevalence curve for higher age groups. HBV vaccination has been strongly recommended for the prevention of transmission of HBV infection.<sup>3,4</sup>

This article records the prevalence of HBV infection among health care workers.

**MATERIALS & METHODS**

This cross-sectional study was performed to determine the prevalence of hepatitis B infection among hospital employees. This study was conducted in the department of general medicine in year 2013. This study consisted of 600 participants (260 males and 340 females) of varying age groups. Information such as gender, age, education, economic status, and residency, occupation, parenteral exposures, sexual partners, vaccination status, duration of employment was recorded. In all subjects, a sample of blood was drawn with an aseptic technique and was collected in

plain vial. Serum was separated by centrifugation and was tested for HBsAg by ELISA. Subjects found positive for HBsAg were then subjected for the screening of HBeAg and anti-HBc by immunocomb technique (EIA) solid phase ELISA. Results were subjected to statistical analysis using chi square test. P value <0.05 was considered significant.

**RESULTS**

A total of 600 subjects (Male-260, female -340) were included in the study. The difference among distribution of males and females was non significant (P- 0.2). (Table I)

Table II shows that out of 260 males, 4 (1.5%) and out of 340 females, 6 (1.7%) found positive of Hepatitis B. the difference of prevalence among males and females was non significant (P-0.4). In this study, we included residents (150), nursing staff (150), lab technician (150) and sanitary staff (150). The vaccinated against Hepatitis B was residents (108), nursing staff (63), lab technician (27) and sanitary staff (9). Unvaccinated were residents (142), nursing (87), lab technician (123) and sanitary staff (141). Seropositivity was seen in resident (1), nursing staff (2), lab technician (5) and sanitary staff (2). The difference was non significant (p-0.3). (Graph- I) Graph II shows that seropositivity on the basis of duration of profession. 350 subjects were having experience of 0-15 years, 124 subjects having experience 16-30 years and 126 subjects were having experience more than 30 years. Seropositivity was seen in 5 subjects (>30), 3 subjects (16-30 years) and 2 subjects (0-15 years). The difference was non-significant (0.1).

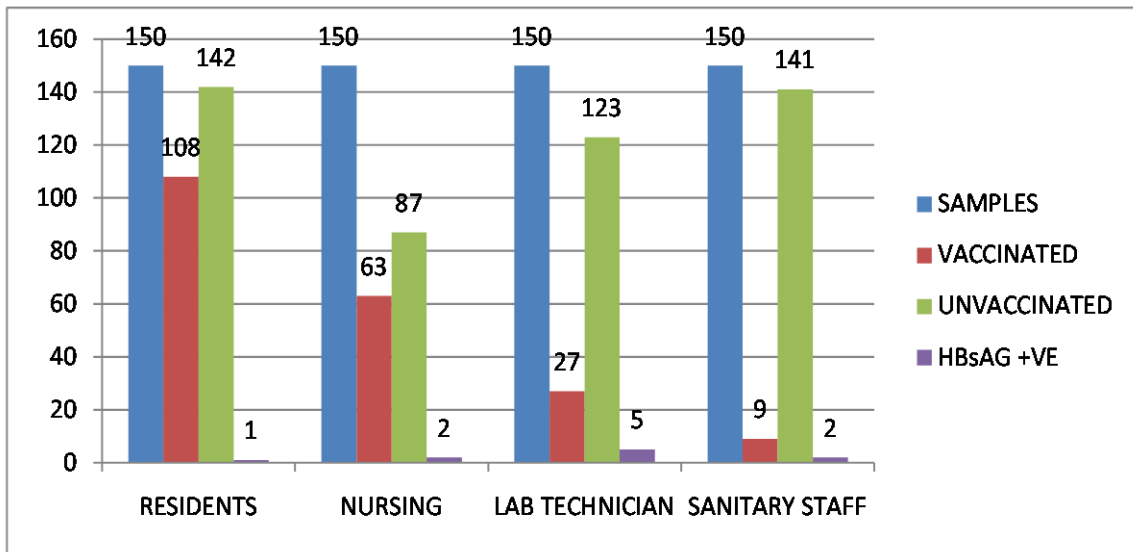
**TABLE I** Distribution Of Subjects

TOTAL- 600		
MALE	FEMALE	P VALUE
260	340	0.2

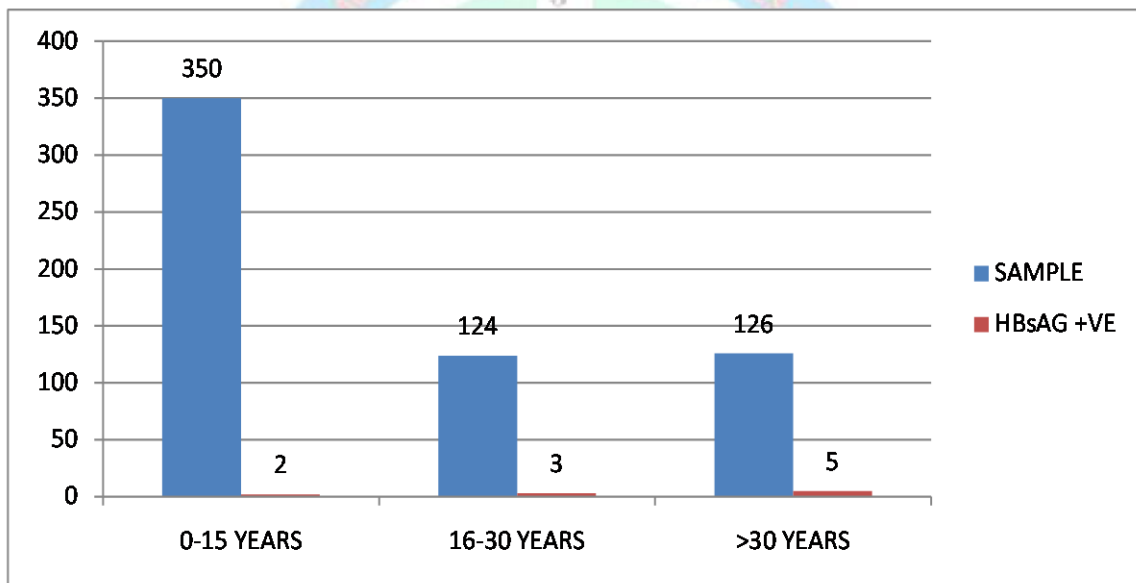
**TABLE II SERO- POSITIVITY AMONG SUBJECTS**

TOTAL- 600			
GENDER	MALE	FEMALE	P VALUE
TOTAL	260	340	0.4
PREVALENCE	4 (1.5%)	6 (1.7%)	

**GRAPH I** Distribution Of Seropositivity On Basis Of Profession



**GRAPH II** Distribution Of Subjects On The Basis Of Duration Of Profession



**DISCUSSION**

Hepatitis B infection is a viral infection cause by hepatitis B virus (DNA virus) belonging to Hepedna viridae family is the cause of morbidity and mortality not in India but worldwide. It may lead into cirrhosis of liver and hepatocellular carcinoma in long standing chronic infection. It is the leading cause of millions of deaths worldwide. The mode of spread is through parenteral route. Sexual contact through infected person is another cause of infection.<sup>5</sup>

In present study, we analyzed the presence of Hepatitis infections among healthcare workers such as residents, lab technicians, nursing staff and sanitary staff. In our study, we included 600 subjects (males-260, females- 340) and were assessed for the seropositivity of HBsAg. The present study reported 10 subjects positive for Hepatitis B virus infection. The prevalence rate was 1.7%. Various studies have reported marked variation in the prevalence of HBsAg among health care workers (HCWs). A study

of CDC (USA) estimated the annual risk of HBV infection 2% among of laboratory technicians, 1% among physicians, and 0.7% among nurses.<sup>6,7</sup> A rate of non vaccination among different healthcare workers was quite common in our study. Residents consisted of (142), nursing (87), lab technicians (123) and sanitary staff (141). Mahoney<sup>8</sup> suggested that immunization programmes should be implemented at hospital levels in different health care workers.

In our study, we included residents, nursing staff, lab technician and sanitary staff. Seropositivity was seen more in lab technician (5) than resident (1), nursing staff (2) and sanitary staff (2). The difference was non significant (p=0.3). As lab technicians are prone to get needle stick injury as compared to other group. A study of Gerberding JL<sup>9</sup> concluded that lab technicians come to contact of blood more frequently as compared to other professionals and hence care should be taken to avoid needle stick injury. In our study, we found that 5 subjects were having more than 30 years of experience in his/her profession. Hence we can say that duration of profession play important role in getting infection. Pattison CP<sup>10</sup> in his study found that the prevalence rate of 2.3% in subjects having >27 years of service as a health care worker.

Sepkowitz KA<sup>11</sup> found that healthcare workers are more susceptible to get Hepatitis B virus infection as compared to any other professional.

## CONCLUSION

Author concluded that needle stitch injuries are common among health care workers hence healthcare workers should take proper precaution while handling blood. Aseptic procedures should be carried out. More hepatitis immunization programmed should also be initiated in health care workers.

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**Source of support:** Nil

**Conflict of interest:** None declared

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