



**A STUDY TO ASSESS RISK FACTORS ASSOCIATED WITH ACQUIRING HEPATITIS B INFECTION IN HEALTH CARE WORKS AND MEDICAL STUDENTS WORKING IN TERTIARY HEALTH CARE SETTINGS IN HIMACHAL PRADESH.**

<b>Dr. Aditya Rana*</b>	Jr, Department of Microbiology, DRPGMC Kangra At Tanda(H.P). *Corresponding Author
<b>Dr. Subhash Chand Jaryal</b>	Professor And Head of The Department, Department of Microbiology, DRPGMC, Kangra At Tanda. (H.P)
<b>Dr. Anuradha Sood</b>	Associate Professor, Department of Microbiology, DRPGMC, Kangra At Tanda(H.P)
<b>Dr. Bhanu Kanwar</b>	Jr, Department Oof Microbiology, DRPGMC, Kangra At Tanda(H.P)
<b>Dr. Daaman Thakur</b>	Jr, Department of Microbiology, DRPGMC, Kangra At Tanda(H.P)

**ABSTRACT**

**BACKGROUND:** Hepatitis B infection is one of the most important occupational hazards among the medical students and healthcare workers(HCW's) due to their risk of exposure to Infected bodily fluids and blood. **MATERIAL AND METHOD:** This study was conducted in the Department of Microbiology in DRPGMC Kangra at Tanda. 215 subjects were included in the study randomly which included health care workers and medical students. **RESULTS:** In our study males were 89(41.4%) and females were 126(58.6%).153(71.1%)were healthcare workers and 62(28.3%) were medical students. 103(47.9%) subjects had history of exposure to blood products.41 (19.1%) had history of dental procedures, surgeries 11.6(11.6%), and contact with HBV positive individuals 2(0.9%). 79 subjects out of 103 had a history of NSI. Vaccination cover for HBV was 185(85%) **CONCLUSION:** Health care workers and medical students are at higher risk due to their continuous exposure to Hepatitis B virus infection. Needle sticks injuries were the most common hazard factor associated with risk factors for acquiring Hepatitis B infection. Knowledge of safe needle practices from proper handling to disposal is frequently required in health care settings. Proper reporting of exposure to blood products must be done at nodal officers for infection control.

**KEYWORDS :** Health care workers, Hepatitis B Virus , Risk factors, Blood products, Needle stick injury

**INTRODUCTION:**

Viral hepatitis is one of major global health challenges with increasing disease burden worldwide.The clinical spectrum of HBV infection ranges from subclinical to acute symptomatic hepatitis or, rarely, fulminate hepatitis during the acute phase and from the inactive hepatitis B surface antigen (HBsAg) carrier state, chronic hepatitis of various degree of histologic severity to cirrhosis and its complications during the chronic phase.[1,2]

Global Burden of Disease Study 2013 Lancet showed that Hepatitis B has accounted for a major health problem which can cause a high risk of death from cirrhosis and liver cancer. It is estimated that 240 million people are chronically infected with hepatitis B, and almost 686,000 people die yearly due to the complications caused by the infection.[3]

The risk of contracting HBV by HCWs is four-times greater than that of general adult population.[4] While earlier studies had shown a high prevalence of HBsAg positivity 8 in HCW (2.21–10%).[5,6] Recent studies have shown a relatively low prevalence (0.4–1.4%).[7]

The highest rates of needle stick injuries are seen among dentists, physicians, laboratory workers, dialysis workers, cleaning service employees, and nurses.[8] Nearly 3.0 billion injections are administered annually in India, 1.89 billion are estimated to be unsafe due to inadequate sterilization, use of faulty techniques or unsatisfactory injection waste disposal. [9] Unsafe therapeutic injections are an important method of transmission of the disease. Outbreaks of viral hepatitis B have been linked to inadequately sterilized needles and syringes.[10] The estimated median population attributable fraction for chronic hepatitis B linked to injections in India was 46%.[9]

This present study aimed towards assessing the major hazard factors associated with risk of acquiring hepatitis B infection in healthcare workers and medical students working in our hospital.

**MATERIAL AND METHODS:**

The study was conducted in the department of Microbiology in DRPGMC, Kangra at Tanda. 215 subjects were included randomly in the study who fulfilled the inclusion criteria which include subjects aged more than 18 years and willing to give consent.

Retrospective data was collected clearly on the basis of history given by the subjects. A questionnaire was given to subjects with a list of hazard risk factors associated with the possibility of acquiring Hepatitis B infection and status of vaccination for HBV in health care workers and medical students working in our hospital.

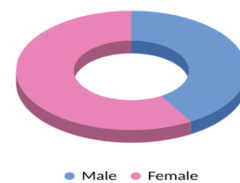
**RESULTS:**

In our study, 215 subjects were included in the study. Males were 89(41.4%) and females were 126(58.6%) in our study.(Figure 1) Out of 215 subjects, the majority 153(71.1%) were health care workers which include doctors, nurses, lab technicians and class IV workers, 62(28.9%) subjects were medical students which include MBBS and BSc students of our college.(Table 1)

**Table 1:** Distribution on the basis of occupation

Sr. No.	Occupation	Number	Percentage(%)
1	Doctor	73	34%
2	Nurses	23	28.8%
3	Technicians	15	7.0%
4	Students	62	19.5%
5	Class IV workers	42	10.7%

**Sex Distribution**



**Figure 1:** Sex Distribution

The most common risk factor for acquiring HBV infection in our study was exposure to blood products in 103(47.9%) subjects. Out of these 103 subjects 79 subjects had a history of needle stick injury. Other risk factors were dental procedure 41 (19.1%), surgery 25 (11.6%), and contact with HBV positive individuals 2(0.9%).(Figure 2)

Risk Factors

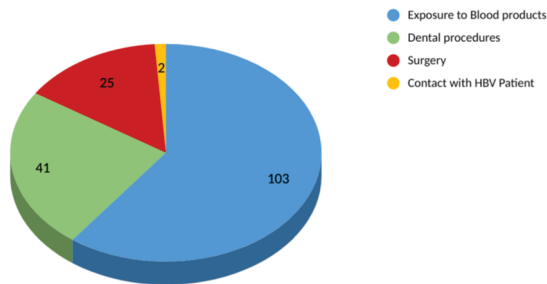


Figure 2: Distribution of Risk factors

Exposure of needle stick injuries were seen maximum in the healthcare workers mainly in nurses and class IV workers. Blood splashes to mucosal surfaces were seen in majority in doctors mainly during invasive procedures.

Out of 215 subjects in the study 183(85%) were vaccinated for hepatitis B and 33(15%)were unvaccinated. Majority of the unvaccinated individuals were class IV workers.

#### DISCUSSION:

Exposure to blood products is the most common occupational health hazard among healthcare workers and medical students. These risk factors can result in developing blood-borne infectious diseases. Needle stick injury remains the major hazardous risk factor for acquiring infection like hepatitis B in health care setup.

In our study exposure to blood products was the major risk factor. Similarly in study by Tesfa et al showed similar results with exposure to blood products as a crucial risk factor in acquiring HBV infection.[11]

Out of these 103 subjects with exposure to blood products had a history of needle stick injury. Majority of these exposures were seen in nursing staff and class IV workers. This could be explained because nurses are the major workforce who remain with the patient round the clock and provide direct patient care and class IV workers during handling the biomedical waste. Sharma et al in their study similarity with our study with the majority of nursing staff indulged with needle stick injury.[12]

Nearly 3.0 billion injections are administered annually in India, 1.89 billion are estimated to be unsafe due to inadequate sterilization, use of faulty techniques or unsatisfactory injection waste disposal. Unsafe therapeutic injections are an important method of transmission of the disease. Outbreaks of viral hepatitis B have been linked to inadequately sterilized needles and syringes.[10] The estimated median population attributable fraction for chronic hepatitis B linked to injections in India was 46%

Majority of the needle stick injury was in non dominant hands mainly during recapping of the used syringes. Similar results were shown Sharma et al[12]. In their study. In study by Cicek et al showed recapping was the major risk factor in exposure to blood products in HCWs.[13]

Exposure to blood products were mainly reported by the health care workers with job duration of less than 5 years. This suggests that less experienced HCW were more prone to the exposure.

Very few incidences of the exposure to blood products were reported to the infection control committee of the hospital. Studies revealed that about 22%–82% of cases remain unreported.[14]

Vaccination plays the main role in preventing the disease. In our study the percentage of vaccine cover was only 85% in these 215 subjects. In a study by Kumar et al in their study on health care workers at Mangalore, India showed that only 57.1% of health care workers were completely vaccinated for Hepatitis B virus.[6]

#### CONCLUSION:

In the present study we focused on the major hazard factors associated with the risk of acquiring Hepatitis B infection in health care workers and medical students in our hospital. Health care workers are at four times higher risk to the general population. Continuous exposure to the blood products during invasive procedures and during handling and disposal of the sharps make them more vulnerable to this deadly virus. Exposure to surgeries and dental exposure can also lead to acquiring the disease.

It is necessary to provide awareness regarding the safe practices and standard work precautions for the health care workers and medical students. Much more sensitisation is needed during reporting of NSI to infection control committee so that the majority of such incidents come into the knowledge and proper protocol should be followed to prevent infection.

We recommend that all the HCWs and medical students should be vaccinated for Hepatitis B . There is a need to strictly implement the policy of Hepatitis B immunization, follow-ups and levels of antibody titers after vaccination in every health care setting. It not only ensures safety of healthcare workers but also reduces rate of transmission hence reducing nosocomial transmission which is very much desired in source limited countries.

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