

Hepatitis B: Awareness, Risk Perception, Vaccination, and Challenges among Different Health-care Providers in a Medical College

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ABSTRACT

Background: Viral hepatitis is a group of distinct diseases caused by picornaviruses which leads to the inflammation of liver parenchyma. Hepatitis B virus is transmitted through mucosal or percutaneous contact with infected blood and other body fluids, particularly semen and vaginal fluid. It runs a chronic course and may lead to chronic liver diseases, liver failure, hepatocellular carcinoma, and death. With the increasing number of invasive diagnostic and therapeutic procedures, there is an increasing risk of infection to the auxiliary healthcare workers. **Objectives:** The objectives of the study were to assess the level of awareness of hepatitis B infection, its risk factors, and vaccination among the auxiliary healthcare workers, nurses, and interns and to impart the knowledge of hepatitis B and promote the importance of preventive techniques to avoid the infection and its ill effects. **Study Setting:** This study was conducted in the Department of Biochemistry, MIMER Medical College and Dr. BSTR Hospital, Talegaon Dabhade, Pune, Maharashtra. **Materials and Methods:** The study was conducted among 50 Class III and 130 Class IV workers, 150 nurses, and 100 interns working with our hospital. Participants were provided with a questionnaire of their category and responses were tabulated for data analysis. **Results:** It was observed that about 91.42% of nurses, 37.50% of healthcare workers, and all of the interns were aware of hepatitis B infection and its characteristics. More than 80% of them had completed the full course of vaccination against hepatitis B, except for Class III/IV workers. Adequate safety measures were followed by a major share of the nurses and interns. Many of them were aware of the correct biomedical waste management practices, except for a few workers. **Conclusion:** Hepatitis B viral infection is a silent deadly disease. There is much less awareness of this disease even among the people who are at a greater risk. Thus, there is a need to enhance the knowledge of safe occupational practices.

Key words: Class III and IV workers, hepatitis B, interns, nurses, vaccine

INTRODUCTION

Viral hepatitis is a group of distinct diseases that result in the inflammation of liver parenchyma.

They are caused by viruses belonging to the family Picornaviridae. There are five major viruses which cause hepatitis and some others whose infection can lead to hepatitis such as cytomegalovirus, Epstein-Barr virus, and herpes simplex virus. The various types of hepatitis infections are acute hepatitis (Types A and E) and chronic hepatitis (Types B, C, and D). In May 2016, the World Health Assembly adopted the first "Global Health Sector Strategy on Viral Hepatitis, 2016-2020." The global target is to reduce the new viral hepatitis infections by 90% and reduce deaths due to viral hepatitis by 65% by the year 2030.

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Hepatitis B is caused by a DNA virus, named hepatitis B virus (HBV). The HBV is transmitted through mucosal or percutaneous contact with infected blood and other body fluids, particularly semen and vaginal fluid.^[1] It is an infection that runs a chronic course, and in 15–40% of cases, it may lead to chronic liver diseases, liver failure, hepatocellular carcinoma, and death.^[2] It has a chronic carrier status resulting in inactive HBV carriers being able to transmit the virus.^[3] Globally, more than 250 million people are suffering from hepatitis B infection. In India, more than 37 million people are affected, contributing a major share to the global pool of hepatitis B infection.^[4]

The common avenues for the transmission includes unprotected sexual intercourse with an infected person, sharing drugs through needles or other paraphernalia that can become contaminated with infected blood, through occupational needlestick or sharp exposures, from an infected mother to her baby during birth, hemodialysis, and through household exposures to the blood or body fluids of an infected person.^[5]

Symptoms of the acute infection begin to appear after 60–120 days of viral invasion. These include fever, joint pain, jaundice, nausea, vomiting, fatigue, loss of appetite, dark urine, and clay-colored stools. If not diagnosed, it can progress into chronic state causing liver cirrhosis and hepatocellular carcinoma.^[6] The diagnosis of HBV infection requires the evaluation of the patient's blood for hepatitis B surface antigen (HBsAg), hepatitis B surface antibody (HBsAb), and hepatitis B core antibody (HBcAb).^[7] Hepatitis B envelope antigen (HBeAg) is usually a marker of high levels of replication of the virus. The presence of HBeAg indicates that the blood and body fluids of the infected individual are highly infectious.^[8]

There is no definite treatment for a complete cure. However, drugs such as tenofovir, polyethyleneglycated interferon, entecavir, lamivudine, and adefovir are used to reduce the severity.^[9]

Dr. Blumberg and Dr. Millman developed the first hepatitis B vaccine, which was initially a heat-treated form of the virus. The current hepatitis B vaccine is the first human vaccine to be produced by recombinant DNA technology. The vaccine is 95% effective in preventing infection and the development of chronic disease and liver cancer due to hepatitis B.^[10]

HB vaccines have been an effective prevention strategy for individuals at risk.^[11] The current immunization schedule for hepatitis B vaccine includes a dose given as early as possible after birth, preferably within 24 h for all institutional deliveries because

the birth dose of hepatitis B vaccine is effective in preventing perinatal transmission of hepatitis B. Later, three doses are to be given at 6, 10, and 14 weeks along with diphtheria-tetanus-pertussis and oral polio vaccine.^[12] Unvaccinated persons should receive both hepatitis B immune globulin and hepatitis B vaccine as soon as possible (preferably within 24 h) after an exposure to HBsAg-positive source.^[13] An immunized person with HBsAb antibody titer above 100 IU/L has minimal risk of being infected with the virus.^[14]

Blood and blood products are the most common vehicle of transmission in health-care settings. With the increasing number of invasive diagnostic and therapeutic procedures, there is an increasing risk of infection to the auxiliary healthcare workers (AHCWs).^[15] AHCWs have a higher risk of occupational exposure to various infections through the daily handling and exposure to biomedical wastes, blood, and its products.^[16] Hepatitis B is a common infection that manifests at a much later stage. Thus, adequate control measures and safety precautions are of much importance in preventing this infection.

MATERIALS AND METHODS

A cross-sectional observational study was conducted among 50 Class III workers, 130 Class IV workers, 150 nurses, and 100 interns working with our hospital. Each participant was provided with an informed consent form to be duly signed. The demographic details of the participant (name [optional], age, gender, contact number, designation, and duration of employment in health-care sector) were noted down. Then, the participants were provided with a questionnaire according to his/her category and language of choice (English/Hindi/Marathi). The responses to each question were recorded and scores were allotted. The data obtained were then tabulated and analyzed to obtain the level of awareness of hepatitis B and associated factors among the various study groups.

RESULTS

Through the study, it was observed that a major share of the nurses and interns were aware of hepatitis B infection and its preventive measures. However, Class III and IV workers were not adequately aware of the blood-borne infections and precautionary measures [Table 1]. Apart from the most common route of contaminated blood products and injection drug abuse, a few of the interns

Table 1: Response analysis

Parameter of awareness	Interns (%)	Nurses (%)	Workers (%)
Various blood-borne infections	93.24	87.14	81.82
Hepatitis B infection	100	91.42	37.50
Mode of spread for hepatitis B	82.76	76.72	36.36
Symptoms of hepatitis B	92.30	84.81	42.42
Identify risk groups	98.56	95.22	24.24
Follow precautionary measures	92.30	84.33	30.30
Tests undergone to detect disease	40.52	62.85	15.15
Completed course of vaccination	80.76	91.42	24.24
Protocol for needle prick injury	54.28	65.38	N.A.
Labeling of infected samples	61.53	60.00	N.A.
Biomedical waste management	57.69	87.14	N.A.

N.A.=Question is not applicable to particular category

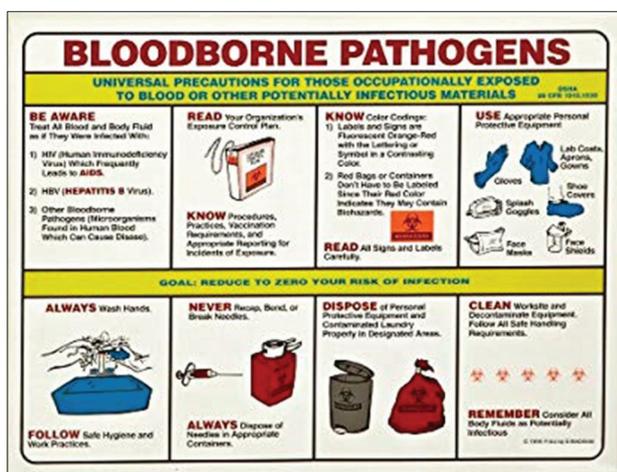


Figure 1: Protective measures for healthcare workers

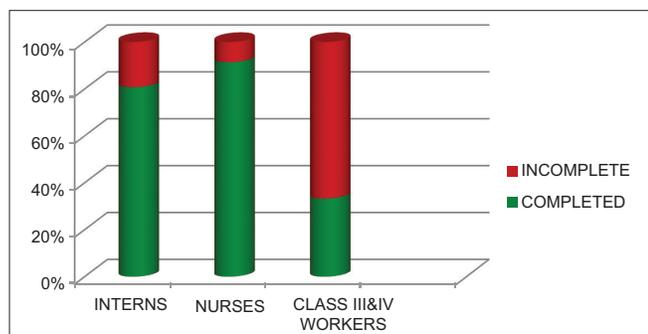


Figure 2: Vaccination status of healthcare workers against hepatitis B

and nurses were aware of spread through body fluids, perinatal spread, and hemodialysis.

Precautionary measures include the use of personal protective devices and safe injection practices during work in the hospital [Figure 1].^[17] The vaccination schedule for prophylaxis against hepatitis B includes three doses of 1 ml intramuscular injections at 0, 1, and

6 months. Through this study, it was found that many of the healthcare workers had not completed their vaccination schedule, mainly missing out on the third dose [Figure 2]. The nurses were much more aware of needle prick injury and its post-exposure prophylactic measures.

Each sample of body fluid or tissue is a potential source of spread of infection and requires utmost care while handling. Patients who have a known positive status of such blood-borne infections should be given additional preventive measures during diagnostic and therapeutic investigations.

CONCLUSION

This study was conducted to assess the level of awareness of hepatitis B infection, its etiology, risk factors, and the role of vaccination in its prevention among various groups of healthcare workers in a tertiary health-care teaching hospital.

Hepatitis B viral infection is a silent deadly disease. The signs and symptoms appear quite a long time after the occurrence of the infection. If not diagnosed and treated accordingly, the arising complications can even claim the life of the affected individual.

The fact of concern is that there is much less awareness of this disease even among the people who are at a greater risk. The risk of contracting HBV is much higher among healthcare workers compared to that of the general adult population.

Therefore, people at high risk for this infection must be counseled about its ill effects and taught about the preventive strategies while working in a health-care sector. Adequate immunization must be carried out and booster doses should be taken regularly to decrease the risk.

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