

Level of Awareness Regarding Hepatitis B Infection in a Dental Setting Amongst Undergraduate Dental Students Across Himachal Pradesh: A Cross Sectional Study

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ABSTRACT

Background: The following study was undertaken to assess the present level of awareness regarding Hepatitis B infections in a dental setting.

Material and Method: A questionnaire was drafted containing 10 objective type questions. The questionnaire was circulated amongst undergraduate dental students (3rd year, 4th year and interns) across all 5 colleges in Himachal Pradesh.

Result: A significantly low student population (40.1%) had received vaccination against HBV, 42.7% of students were unaware of PEP protocol.

Conclusion: Critical understanding of such vital information regarding prevention and management of HBV infection in a dental setup must be provided to each budding healthcare student for the safety of themselves and patients.

Keywords: Hepatitis B infection, Awareness, dental students, dental setup.

INTRODUCTION

Every healthcare professional is dedicated to treating diseases and in doing so puts one's own health and wellbeing on the line. Dentists are categorised as a high risk group in terms of contracting contagious diseases such as HIV, Tuberculosis and Hepatitis. Hepatitis is a serious viral infection resulting in the inflammation of the liver. It is broadly of 3 viral types, Hepatitis A, B and C.^[2] Amongst the three types, Hepatitis B virus (HBV) infects more than 350 million people worldwide and has high morbidity and mortality rates.^[3] Statistically speaking India falls into the

category of intermediate endemicity for HBV where about four percent of the population was estimated to be HBV carriers giving a total pool of approximately 36 million carriers ^[4]. Worse, 75% of these cases hail from the Asian continent where an estimated 8% and 15% are suspected to be active carriers of this virulent virus.^[5]

The possible forms of transmission of hepatitis virus include unprotected sexual contact, blood transfusion, reuse of contaminated needles, and vertical transmission from infected mother to child during pregnancy.^[6] While in a dental setup the

Received: June. 18, 2019; Accepted: July. 28, 2019

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most common mode of transmission of HBV is from percutaneous exposure (needle stick injuries) and/or from contact with blood or saliva of an infected patient. The possibility of HBV transmission from exposure to saliva and gingival crevicular fluid has been confirmed, which makes the oral health care professionals more vulnerable to hepatitis infection.^[7]

Studies have shown that the risk of exposure for general dentists is about three to four times greater and for non-immunized surgical specialists about six times greater than that of the general population.^[8] In the dental setting, there are special conditions which may lead to the transmission of highly infective pathogenic organisms to dental healthcare professionals and to dental clinical students. Therefore the overall incidences of Hepatitis B infection can be reduced by providing dental student correct knowledge regarding the disease and creating awareness about the grave dangers of HBV. This study was undertaken to assess the level of awareness of hepatitis B infection regarding its transmission and immunizations amongst the clinical students across 5 dental colleges in Himachal Pradesh, India in order to understand the present condition of HBV awareness amongst future healthcare providers.

MATERIALS AND METHODS

The aim of the study was to determine the awareness on hepatitis B infection among dental

students attending clinical duties. This study was conducted in 2019 among 756 dental students (third year, final year and interns) from 5 dental colleges across Himachal Pradesh. The study protocol was reviewed by the institutional ethical board before conducting the study. The students who their consent were included in the study and those who were not willing to participate were not included in the study.

A survey comprising of 10 questions regarding HBV infection transmission and control in dental practice was distributed among all the students participating in the study. It is a simple, self-reported questionnaire with a 2 scale response (yes/no). Only completed questionnaires were considered for evaluation. A total of 735 questionnaires were evaluated after complete analysis.

Statistical Analysis

The statistical analysis was done using SPSS (Statistical Package for Social Sciences) version 16, SPSS Inc., IBM, USA. The data were tabulated and presented as number and percentage using descriptive statistics. The comparison of responses of questions with participant's year of course and respective institutions was done using Chi-square test. The level of significance for the present study was fixed at a p-value of less than 0.05.

Table 1. questionnaire regarding HBV awerness.

S no.	Questions	Response	3 rd year	4 th year	Intern	Total
1	Are you aware of the modes of transmission of Hepatitis B in a dental setup?	Yes	83.2%	90.8%	94.7%	88.5%
2	Have you or your colleague(s), personally suffered a needle stick injury during your clinical duties?	Yes	53.4%	51.9%	45.1%	51%
3	Have you been immunized against Hepatitis ?	Yes	45.5%	58.1%	45.1%	53%
4	Do you know of the first aid steps following a needle stick injury in a clinical setup ?	Yes	53.4%	59.6%	75.2%	60.1%
5	Have you ever gotten your prophylactic vaccinating against Hepatitis B during your clinical postings?	Yes	32.4%	40%	56.6%	40.1%
6	Have you ever heard about PEP (Post Exposure	Yes	47.5%	60.4%	70.8%	57.3%

	Prophylaxis) for Hepatitis B?					
7	Do you think that auxiliaries and waste disposal staff should also be immunised against HBV?	Yes	100%	95.2%	98.2%	97.7%
8	Do you use the double glove technique while handling the Hepatitis B patient?	Yes	58%	69.6%	63.7%	64%
9	Are you aware of the test done to best diagnose a post exposure case of hepatitis B?	Yes	44.5%	56.9%	59.3%	52.5%
10	Do you think prophylaxis against hepatitis B should be mandatory for everyone working in a dental setup?	Yes	97.5%	99.6%	100%	98.9%

RESULT

Table 1 shows the distribution of answers to each question among the participants. The result suggested out of the total participants 53.4% the third-year students, 59.1% final year students and 45.1% of interns reported suffering from needle prick injury. In response to the question regarding the individual immunization status of each participant 45.5% of third year, 58.1% final year and 45.1% of interns confirmed being immunized against HBV. Regarding first aid following a needle prick injury 53.4% of third years students, 59.6% of final year and 75.2% of interns reported being aware of the initial first aid. According to the result 47.5% of third year, 60.4% final year students and 70.8% interns were aware of PEP (Post Exposure Prophylaxis) for accidental HBV exposure. While handling HBV infected patients only about 64% of total students (58% third year, 69.6% final year and 63.7% interns) reported using the double glove technique patient. Total of 52.5% of students from all the academic years with 44.5% third years, 56.9% final years and 59.3% interns were aware of the diagnostic test to confirm HBV infection in a suspected patient.

DISCUSSION

As students enter clinical duties starting from their third academic year, they are in evidently exposed to a wide variety of infections borne out of biomedical waste generated during treatment and handling of patients. Any patients may be a carrier of HBV, as chronic infection with hepatitis B may be either asymptomatic or may be associated with a chronic inflammation of the liver (chronic hepatitis), leading to a cirrhosis over a period of several years.^[9] Thus it's imperative that students

must be instructed to treat every patient with caution as nearly 80% of the infections are subclinical which means the disease remains undiagnosed.^[10] In this latent form, HBV is potentially 50–100 times more infectious than HIV.^[11] From the results of the following study, it appears that the graduating students of all the dental colleges across Himachal Pradesh possess similar levels of awareness regarding the modes of transmission of HBV in a dental setup and show an overall positive attitude towards acquiring immunization against HBV. Our study revealed that almost half the student population suffered from need stick injuries during the course of their clinical postings. Each of these incidents can be a potential source of HBV infection.

In 1991, vaccination to HBV was not considered important but evidence over the last decade proves HBV vaccination as a key to limiting the chance of transmission. A study reported that only 20% of dental surgeons had received three doses of hepatitis B vaccine in Benin city, Nigeria.^[12] A significantly low student population (40.1%) had received vaccination against HBV. It was surprising to see that there was a steep drop in the number of interns who had received vaccination when compared with the final year student. A review by Liliane C Meireles of over 3 decade of HBV control through vaccination concluded that a booster dose of HBV vaccine could be useful for healthcare workers who are identified as hypo responders (anti-HBs less than 100 IU/mL).^[13] Out of the total participants less than half had gotten a prophylactic booster dose of HBV vaccine. Prevention is better than cure, thus an effective way of reducing HBV incidence among dental professionals is by ensuring proper immunization against the virus.

When considering general knowledge and practices regarding HBV infected patient management, (questions 4,6 and 8) the third year students reported having the lowest levels of awareness about important concepts such as PEP (post exposure prophylaxis) ^[14] and proper first aid protocol regarding handling patients suspected of the infection must be introduced to each and every student. Elective dental treatment for patients likely to be infectious should be postponed until the absence or inactivation of infectious is confirmed by showing the absence of HBsAg in blood. The active infection period spans from 1 to 4 months from initial contact and during this period the surface antigen (HBsAg) can be detected in blood samples ^[15] Critical understanding of such vital information must be provided to each budding healthcare student for the safety of themselves and the community.

CONCLUSION

Several management and preventive techniques have been created to tackle HBV infection transmission in a healthcare setup. Still a high number of health professionals do not follow or implement these in their daily practice. A high standard of clinical hygiene, including the routine use of disposable needles for injections, single dose containers for drugs to be injected, sterilized instruments and personal cleanliness before and after treating patients, is essential to prevent transmission of HBV. Dental students must be made aware of the dangers of the disease and educated about proper management and prevention protocol against HBV infections. Although the introduction of an immunization programme to protect dentists and clinical staff is in place most students report not following the vaccination regime. Proper clinical hygiene and prophylactic vaccination will further will safeguard both patients and clinicians. Therefore, routine exercise of good clinical hygiene and proper sterilization can prevent transmission of HBV in the dental surgery. The management of a patient infected with Hepatitis can be difficult and challenging but not impossible.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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Journal of Current Medical And Pharmaceutical
Research Vol. 5, Issue, 06(A), pp 424-4243,
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