



Original Research Article

Knowledge and awareness regarding hepatitis B infection amongst dental students in northern parts of India: A cross section study

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ARTICLE INFO

Article history:

Received 06-06-2020

Accepted 11-06-2020

Available online 03-10-2020

Keywords:

Knowledge

Awareness

Dental students

Hepatitis B

ABSTRACT

Hepatitis B virus transmission in a dental setting more commonly occurs due to inadequate/improper use of safety measures by the dentist. This particular study evaluated the hepatitis B virus infection related awareness among dental graduates. A validated questionnaire regarding the awareness about hepatitis B infection and various infection control measures was distributed among the students of different year of study in undergraduate bachelor dental graduate program. Final year students showed an increased awareness when compared to third year students. There is need for improving the knowledge among the nonclinical students, mainly on transmission of virus through salivary contact. The overall awareness among the students is only fairly satisfying, which signifies the need for continued infection control education among the students.

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1. Introduction

Hepatitis B virus infection (HBV) is an inflammatory disease of liver due to double stranded virus of the hepadnaviridae family.¹ Hepatitis B infection possesses a major health concern and is the most common blood borne viral infection, placing health care workers and medical and dental professionals at higher occupational risk.¹ The other mostly common communicable diseases include human immunodeficiency virus (HIV) and hepatitis C virus (HCV).

The possible forms of transmission of hepatitis virus include unprotected sexual contact, blood transfusion, reuse of contaminated needles, and vertical transmission from mother to child during pregnancy.² In dental setting the most common mode of transmission is from percutaneous exposure (needle stick injuries) and also from contact with blood or saliva of infected patients. 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 for hepatitis infection.³

Nearly two billion people in the world have been infected by HBV and there are nearly 350 million people who are chronic carriers.⁴ HBV infections are 50 to 100 times more infectious than HIV.⁵ Hepatitis B and hepatitis C infection can become persistent and show the way to cirrhosis of liver and even liver cancer. It is mainly acquired in the course of contaminated needles or tainted blood products and infection patterns are diffuse.⁶ Among the professionals, dentists are placed in high risk group as actual sufferers and carriers with a grim picture. It is of prime importance for all dental schools, medical staff, and dental staff to conduct talks and create awareness about hepatitis B infection.

India has the intermediate endemicity of hepatitis B virus with surface antigen (HBsAg) prevalence between 2% and 10% among the population studied.⁷ In India about four percent of the population was estimated to be HBV carriers giving a total pool of approximately 36 million carriers.⁸ 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.⁸ Studies have shown that the risk of exposure for general dentists is about three to

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four times greater and for nonimmunized surgical specialists about six times greater than that of the general population.⁹ In the dental setting, there are special circumstances and opportunities which can lead to the transmission of such organisms to dental healthcare professionals and to dental clinical students.¹⁰

The incidence of HBV can be reduced by giving proper education regarding its transmission and immunizations to the public, all healthcare workers (HCW), and students.¹¹ There are no adequate data on the awareness of hepatitis among dental college students in India. Hence this forms the base of the present study which aimed to analyze the awareness of hepatitis B infection among the clinical students in a private university.

2. Materials and Methods

A cross-sectional analytical study was conducted on undergraduate dental and oral hygiene students registered at various Dental institution in northern parts of India. A total of 500 dental students were invited to participate. Students were informed about the aims and rationale of the study, and written consent was obtained from all of those who participated. The students were allowed to withdraw from the study at any time without any repercussions. Students were divided into clinical (3rd-, 4th- year dental and nonclinical (1st- and 2nd-year dental students). A student was considered to be “clinical” if they were directly involved in patient treatment and “nonclinical” if they were not. A pretested, modified, self-administered anonymous questionnaire was used to collect information on the sociodemographic characteristics, knowledge, and practice patterns of the students with regard to HB infection. The questionnaire comprised three domains; knowledge which contained 8 questions, mode of transmission (10 questions) and attitudes and practices (8 questions). Correct answers received two points while incorrect answers were scored as zero points. The scores were then added to obtain a domain score.

The collected data was analyzed using Statistical Package for the Social Sciences (SPSS) version 21. Quantitative variables were summarized as proportions, frequencies, mean with their standard deviations, range, and percentages. Chi-square test was used to determine the association between the variables, and the level of significance was set at $P < 0.05$.

3. Results

There were 250 (50%) clinical and 250 (50%) nonclinical students. Of these, 400 (80%) were female, and the average age was 22.78 years (18–33; ± 2.7). The mean overall knowledge domain scores ranged from 8 (50%) to 16 (100%) with the vast majority (92%) achieving a score of $>80\%$. There were no significant differences between the

mean knowledge scores and gender and course of study.

However, there were differences between some responses and the clinical status. A significant number of nonclinical students knew that HBV can be transmitted through saliva ($P < 0.01$) and a significant number of clinical students reported that dentists routinely experience needle stick injuries ($P = 0.02$).

The mean scores for the modes of transmission domain were also relatively high. More than two-thirds (69%) of the respondents achieved a score of $>80\%$, and there were no significant differences between the genders and the course of study. However, the clinical students had a significantly higher mean score compared to the nonclinical students ($P = 0.01$) which indicated that their levels of knowledge on modes of transmission were better than the nonclinical students. A significant number of nonclinical students incorrectly stated that HBV could be spread through shaking hands with an infected person ($P < 0.01$) and through coughing or sneezing ($P = 0.04$). More nonclinical students correctly reported that HBV could be spread from sharing a toothbrush with an infected person ($P = 0.02$) while more clinical students were aware that HBV could be spread during the birth process ($P = 0.03$).

Regarding the screening for the HBV antibodies (anti-HBs), 86% students admitted to be screened before vaccination, 14% students were not screened. A total of 96% students reported having completed the vaccination schedule, 4% stated that they did not complete the schedule. The vast majority of both clinical 94% and nonclinical students (88%) reported that they had completed the vaccination schedule.

4. Discussion

Similar to other studies, the majority of respondents had an acceptable level of knowledge and displayed acceptable practices in relation to the prevention of the spread of HBV.^{12,13} The clinical students had a significantly higher mean score, and this could be due to their exposure to patients in the clinical setting, the lectures received in pathology and microbiology and the time spent interacting with supervisors during clinical sessions. This could be due to the fact that the lectures on HBV are offered in the 2nd and 3rd year, and as a result, the clinical students may have forgotten this and were unaware of the different modes of transmission. Not surprisingly, clinical students were more aware of needlestick injuries compared to nonclinical as they were treating patients and either experienced needlestick injuries or were reminded on the protocol to follow in the event of a needlestick injury. A significant number of nonclinical students incorrectly perceived that HBV could be spread through shaking hands with an infected person ($P < 0.01$) and through coughing or sneezing ($P = 0.04$). The nonclinical students, therefore, implied that HBV can be transmitted through casual contact which

is incorrect. This could be due to the fact that perhaps these aspects were not covered in the junior years, but once students entered into clinics, practical and relevant information was shared. This was confirmed by the positive results obtained from clinical students who reported that HBV could be spread by sharing a toothbrush with an infected person ($P = 0.02$) and during the birth process ($P = 0.03$).

Based on these findings, it is clear that although the students achieved high scores, there were still gaps in their knowledge and as a result, some of them answered incorrectly. The fact that 80% of students were screened for HBV antibodies (anti-HBs) showed that the dental school has a working policy in administering the vaccine. Although vaccination is compulsory, students were not being followed up to ensure that they had received all the vaccinations. It was comforting to note that 92% reported to have taken the HBV vaccine and that clinical (94%) and nonclinical students (88%) reported to have completed the vaccination schedule. This was much higher compared to a similar study done in India which reported only 45% of dental students having been vaccinated.^{14,15}

5. Conclusion

More than half did not know that HBV infection can be transmitted through piercing and more than half of the nonclinical students wrongly reported that antibiotics can be used to prevent infection after exposure. The vast majority were vaccinated against HBV.

6. Source of Funding

None.

7. Conflict of Interest

None

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Cite this article: Singh H, Singh CS, Kaur P. Knowledge and awareness regarding hepatitis B infection amongst dental students in northern parts of India: A cross section study. *J Oral Med, Oral Surg, Oral Pathol, Oral Radiol* 2020;6(3):137-139.