

Knowledge, attitude, and practices of hepatitis B infection among dental students

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Abstract

Background: Hepatitis B virus (HBV) infection is a major worldwide public health problem. Nearly 45% of the world's population lives in areas of high endemicity, with India being a country of intermediate endemicity.

Objective: To assess the knowledge, attitude, and practices of dental students about HBV infection at a private dental institution in Mysore, Karnataka, India.

Materials and Methods: A cross-sectional survey was conducted using a pretested, structured, and validated questionnaire containing 16 questions on awareness, transmission, prevention, diagnosis, treatment, vaccination status, and postexposure prophylaxis of HBV infection. Descriptive statistics were carried out along with chi-square test and contingency coefficient.

Result: The response rate was 100% ($n = 486$). A total of 88.7% of the students knew about the transmission of HBV infection. Only 64% students were immunized against HBV. Majority of the students (91.1%) agreed for vaccination against HBV infection. Only 28.4% students knew about the postexposure treatment against HBV infection. About 58.8% students knew about the preventive measures against HBV infection.

Conclusion: The overall awareness regarding HBV disease was found to be lacking among the dental students.

KEY WORDS: Awareness, knowledge, practices, hepatitis B virus, vaccination, dental professionals

Introduction

According to the World Health Organization (WHO), hepatitis B infection is the world's most common liver infection, which is caused by hepatitis B virus (HBV).^[1] HBV is a DNA virus, which belongs to hepadnaviridae family. It is 42–47 nm in diameter and enters the liver through blood stream.^[2] HBV is highly contagious and is 50–100 times more infectious than HIV. It is transmitted through blood, semen, vaginal fluid, and mucous membranes. It is transmitted most

commonly by unprotected sexual contact, contaminated blood transfusions, unsafe use of needles, from mother to child at birth, close household contact, and among children in early childhood.^[1]

HBV infection is a major health concern and is the most common blood-borne viral infection that places health-care workers, medical and dental professionals, at higher occupational risk.^[3] In dental setup, the possible forms by which HBV infection can be transmitted are from contact with blood or saliva of infected patients during dental procedures, while drawing blood, giving injections, or suturing, and needlestick injuries sustained while performing procedures.^[4,5] In addition to this, professionals who do not wear gloves while doing procedures are at a higher risk of acquiring HBV infection.^[6] It has been confirmed that HBV transmission occurs from exposure to saliva and gingival crevicular fluid, which in turn makes dental professionals more vulnerable for HBV infection.^[7]

All HBV infections do not have symptoms, which means that people who are contagious are at a risk without knowing it.^[1,8] However, many people may experience symptoms such

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as jaundice, fatigue, loss of appetite, nausea, and abdominal pain. In nearly all adults, 90% of the infection heals and they become healthy. But there is a risk of 90% and 30%–50% in infants and young children, respectively, which can lead to chronic infection.^[1] This provides an increased risk that they will suffer from liver cirrhosis or liver cancer in later life, if not medically managed.^[1,9]

Despite the availability of HBV vaccination since 1982, which gives 90%–100% protection against HBV infection, nearly two billion people in the world have been infected with HBV, of which 350 million are chronic carriers. As a consequence of this, approximately 600,000 die every year from HBV-related liver disease or hepatocellular carcinoma in the world.^[1,10] For HBV infection, India comes under intermediate endemic zone with prevalence between 2% and 10% among the studied population.^[11] In India, about 4% of the total population was estimated to be HBV carriers, which amounts to a total of 36 million carriers.^[12]

Studies have shown that nonimmunized dental professionals and surgeons are 3–4 and 6 times, respectively, at greater risk of exposure to HBV infection than the general population.^[13] In a dental clinical setup, lapse in the sterilization technique of instruments or improper hospital waste management can lead to the transmission of HBV infection to dental professionals.^[14]

Among the health-care professionals, dental professionals are placed in high-risk group as actual sufferers and carriers. Hence, it is of paramount importance for all the dental institutions to conduct educational talks and create awareness about HBV infection among their staff and students with the aim of decreasing the incidence of HBV infection among this high-risk group. The incidence of HBV infection can be reduced by giving proper education and awareness regarding its transmission and vaccination to the health-care workers.

Hence, this study was conducted to assess the knowledge, attitude, and practices of HBV infection among dental students, in a South Indian Dental College.

Materials and Methods

A cross-sectional observational study was conducted among the students of JSS Dental College and Hospital, Mysore. The study population comprised undergraduate dental students from all the years (first year, second year, third year, final year, and interns).

Ethical approval was obtained from the institutional ethical committee. Written informed consent was obtained from each participant, and anonymity of the participant was maintained throughout the study. All the students who were present and who gave written informed consent were considered as the sample size for the study. A pretested, structured, and validated questionnaire was administered to the students during a 2-month study period to collect information about the knowledge (Questions 1–6), attitude (Questions 7–13), and practices (Questions 14–16) of dental students regarding HBV infection.

The data entry and statistical analysis were done using statistical package for social sciences (SPSS) version 14 for Windows. Descriptive statistical analysis has been carried out in this study and statistical tools such as chi-square test and contingency coefficient (CC) analysis were employed.

Result

A total of 486 dental students participated in the study. Of these, 100 were first-year students, 103 second-year students, 98 third-year students, 100 final-year students, and 85 were interns.

A total of 16 questions were asked. The answers to each question were evaluated either as Yes, No, or Cannot Say. By applying chi-square test to each question, the *p*-value obtained was <0.05 for all the questions and hence, was very significant. The details of the distribution of answers by the students to each question are given [Table 1]. The responses of the students according to the different years that they belonged to were recorded and evaluated. The CC and *p*-value were significant for most questions [Table 2].

A total of 475 (97.7%) students have heard of hepatitis B disease and 431 (88.7%) students know that hepatitis B is transmitted through virus. Third-year students have the maximum and first-year students have the minimum awareness in this regard. A total of 416 (85.6%) students knew that hepatitis B is transmitted through contaminated or infected blood transfusions. The maximum awareness was among final-year students and minimum among second-year students, but the difference was not statistically significant. For the question regarding whether hepatitis B can be transmitted through food, clothing, and hugging, 71 (14.6%) students have said that it is transmitted through the same. Interns showed maximum awareness whereas the third-year students the minimum awareness. A total of 358 (73.7%) students knew that hepatitis B can be transmitted through tattoo and acupuncture needles. Again, interns showed the maximum awareness in this regard and first-year students, the minimum awareness. A total of 375 (77.2%) students knew that hepatitis manifests as jaundice. Final-year students gave the maximum correct response, whereas first-year students gave the minimum correct response. A total of 54 (11.1%) and 71 (14.6%) students had the history of hepatitis B in their past and in their family, respectively, maximum history of hepatitis B was in third-year students. Despite this fact, 444 (91.4%) students recommended vaccination against hepatitis B among their family members, still 33 (6.8%) did not recommend the same. Interns again with maximum response were the ones to recommend vaccination. Only 311 (64%) students were vaccinated against hepatitis B, with interns being the highest and first-year students being the lowest group. A total of 310 (63.8%) students knew about the appropriate intervals of hepatitis B vaccination and final-year students had the maximum knowledge. A total of 367 (75.5%) students knew about the potential risk of HBV transmission in their profession with the maximum awareness being among interns. To the question

Table 1: The overall distribution of answers of all the dental students to each question

Questions	Response of dental students (total number of students = 486)			Chi-square test	*p-value (≤ 0.05)
	Yes N (%)	No N (%)	Cannot say N (%)		
Knowledge-based questions					
1. Have you heard of hepatitis B disease?	475 (97.7)	3 (0.6)	8 (1.6)	907.198	0.000
2. Is it transmitted by virus?	431 (88.7)	37 (7.6)	18 (3.7)	671.123	0.000
3. Is it transmitted through contaminated/infected blood transfusions?	416 (85.6)	53 (10.9)	17 (3.5)	601.370	0.000
4. Is it transmitted through food, clothing, and hugging?	71 (14.6)	396 (81.5)	19 (3.9)	515.346	0.000
5. Is hepatitis B transmitted through tattoo or acupuncture needles?	358 (73.7)	88 (18.1)	40 (8.2)	362.815	0.000
6. Does hepatitis B manifest as jaundice?	375 (77.2)	84 (17.3)	27 (5.6)	430.111	0.000
Attitude-based questions					
7. Do you have any history of hepatitis B in the past?	54 (11.1)	407 (83.7)	25 (5.1)	558.383	0.000
8. Is there any history of hepatitis B in your family?	71 (14.6)	391 (80.5)	24 (4.9)	492.383	0.000
9. Do you recommend vaccination against hepatitis B among your family members?	444 (91.4)	33 (6.8)	9 (1.9)	738.111	0.000
10. Are you vaccinated against hepatitis B?	311 (64.0)	157 (32.3)	18 (3.7)	265.198	0.000
11. Are you aware of the appropriate intervals of the hepatitis B vaccination?	310 (63.8)	137 (28.2)	39 (8.0)	232.457	0.000
12. Are you aware about the risk of transmission of hepatitis B among your profession?	367 (75.5)	101 (20.8)	18 (3.7)	410.383	0.000
13. Are you aware of the first aid treatment in case of accidental exposure to hepatitis B?	138 (28.4)	301 (61.9)	47 (9.7)	204.457	0.000
Practice-based questions					
14. Do you know the precautionary measures to be taken against hepatitis B in your routine practice?	286 (58.8)	168 (34.6)	32 (6.6)	199.457	0.000
15. Before entering the dental college, were you aware of the risk of exposure to hepatitis B?	308 (63.4)	132 (27.2)	46 (9.5)	220.198	0.000
16. Would you have joined this profession after knowing the potential risk of exposure to hepatitis B?	361 (74.3)	81 (16.7)	44 (9.1)	370.901	0.000

*p-value ≤ 0.05 is significant.

regarding postexposure treatment of HBV infection, only 138 (28.4%) students knew what possible steps can be taken if they get accidentally exposed to HBV. Final-year students had the maximum awareness in this regard. A total of 286 (58.8%) students knew about the precautionary measures that should be taken in routine practice to prevent transmission of HBV infection. The awareness in this regard was minimum in first-year students and maximum in interns. A total of 308 (63.4%) students were aware about the risk of HBV exposure before entering the dental college and 361 (74.3%) told that they would have joined the profession despite knowing the potential risk of exposure to hepatitis B.

Discussion

A study has shown that only 59.7% students were aware of HBV infection and its effects.^[15] Another study conducted

among first-year dental students among three dental colleges in Haryana showed that 84.9% of the students were aware regarding the spread of HBV infection and only 23.7% of the students had complete vaccination against hepatitis B.^[16] A study done in Taiwan reported that 75.0% of the dental students had knowledge of hepatitis B infection, but had little knowledge about vaccine dosage, transmission, prevention, and precautions of HBV infection.^[17] Another study done on dental students in Maharashtra indicated that they had good knowledge about HBV infection.^[18] A study done among Iranian dental students showed that they had a relatively good level of knowledge about HBV infection and its control practices.^[19] A study done in Pondicherry reported that 92.7% of the dental interns were aware of HBV immunization.^[20] Another study done at the University of Dundee on medical and dental students showed that 99.2% of students were aware of HBV immunization.^[21]

Table 2: The maximum and minimum response of undergraduate dental students to each question

Questions	Correct response by dental students (year wise)			
	Maximum	Minimum	CC	*p-value (≤ 0.05)
1. Have you heard of hepatitis B disease?	Interns	Third year	0.154	0.157
2. Is it transmitted by virus?	Third year	First year	0.288	0.000
3. Is it transmitted through contaminated/infected blood transfusions?	Final year	Second year	0.197	0.12
4. Is it transmitted through food, clothing, and hugging?	Interns	Third year	0.215	0.003
5. Is hepatitis B transmitted through tattoos or acupuncture needles?	Interns	First year	0.353	0.000
6. Does hepatitis B manifest as jaundice?	Final year	First year	0.256	0.000
7. Do you have any history of hepatitis B infection in the past?	Third year	Interns	0.207	0.006
8. Is there any history of hepatitis B infection in your family?	Third year	Final year	0.246	0.000
9. Do you recommend vaccination against hepatitis B among your family members?	Interns	Second year	0.234	0.000
10. Are you vaccinated against hepatitis B?	Interns	First year	0.279	0.000
11. Are you aware of the appropriate intervals of the hepatitis B vaccination?	Final year	First year	0.199	0.010
12. Are you aware about the risk of transmission of hepatitis B in your profession?	Interns	First year	0.548	0.000
13. Are you aware of the first aid treatment in case of accidental exposure to hepatitis B?	Final year	First year	0.329	0.000
14. Do you know the precautionary measures to be taken against hepatitis B in your routine practice?	Interns	First year	0.536	0.000
15. Before entering the dental college, were you aware of the risk of exposure to hepatitis B?	Interns	Final year	0.197	0.012
16. Would you have joined this profession after knowing the potential risk of exposure to hepatitis B?	Final year	First year	0.227	0.001

CC, contingency coefficient.

*p-value ≤ 0.05 is significant.

In this survey, the overall level of knowledge about HBV infection among dental students of various years of graduation was fairly satisfactory in some aspects and below satisfactory levels in other aspects. The level of knowledge was good among interns and final-year students compared with other students. The possible reason for lower level of knowledge among first-year and second-year students could be owing to the lack of school-based health education for students in our Indian education system. The third-year students showed average response, response being neither poor nor good, which could be owing to the awareness created once they enter the professional dental course. Based on the results from this study, we infer that there is a need to improve knowledge about HBV infection among first- and second-year students. The maximum correct responses for most of the questions were given by the interns, with the final-year students answering better than them with regard to few questions regarding areas of transmission through contaminated blood transfusions, manifestation of HBV infection as jaundice, and appropriate

intervals of HBV vaccination. Hence, there is a need to educate the interns and create more awareness.

Conclusion

This study concludes that the first- and second-year dental students lack awareness about the hazards of HBV infection. None of the undergraduate students of any year were fully aware on all aspects of HBV infection. Hence, a regular continuing awareness program for all the students would be very beneficial. Moreover, not all the dental students were vaccinated against hepatitis B, which makes them more prone to HBV infection. As the students have an increased risk of acquiring injuries while performing dental procedures involving blood and saliva, the students should be routinely immunized when they enter the dental college. It is recommended that a policy be made, under which health education and complete vaccination of all the dental students with regard to HBV infection be made mandatory in the first year itself.

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