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Awareness regarding hepatitis B immunization among preclinical Indian dental students

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Original Article

Abstract

BACKGROUND AND AIM: Hepatitis B Virus (HBV), a DNA virus with a human-only reservoir, is a worldwide public health problem. Approximately 45.0% of the world's population is considered to live in areas of high endemicity with a lifetime risk of infection of more than 60.0%. The present study aimed to assess the level of understanding and awareness about Hepatitis B immunization among the first and second year dental students at a private dental institution in Mangalore, Karnataka, India.

METHODS: A cross-sectional survey was carried out using a self-administered pretested questionnaire containing 10 questions on awareness about prevention and transmission, diagnosis and treatment of Hepatitis B, vaccination status of hepatitis B, and awareness of students regarding post exposure prophylaxis. Descriptive analysis was carried out and was presented as number. Student's t-test was used to determine any significant differences between the genders, and year of study.

RESULTS: The response rate was 100% (n = 179). About 59.7% of the students were aware of the Hepatitis B infection and its effects. Majority of the students (91.0%) were immunized by hepatitis B vaccine. Majority of the students (96.0%) felt it was necessary to be immunized against the Hepatitis B virus. About 69.8% of the students were aware of post exposure prophylaxis against Hepatitis B. A vast majority (96.0%) of the students felt that awareness about immunization against Hepatitis B among the community is necessary.

CONCLUSION: Majority of the students are aware of Hepatitis B, its infection, its vaccination, and its importance.

KEYWORDS: Immunization, Awareness, Hepatitis B Virus, Infection, Post Exposure Prophylaxis

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Hepatitis B virus (HBV), a DNA virus with a human-only reservoir, is a worldwide public health problem. About one-third of the world's population, which accounts to 2 billion people, have been infected with HBV.[1] Out of these, it is estimated that 360 million people are chronic carriers.[1] Approximately 45.0% of the world's population, including those who live in many African and Asian countries, the Amazon Basin and parts of the Middle East, are considered to live in areas of high endemicity with a lifetime risk of infection of more than 60.0%.[2] In India, the carrier rate of HBsAg in hospital staff has been found to be higher (10.9%) than in voluntary blood donors (6.0%) and in the general population (5.0%).[3] Hepatitis B infection can spread through having contact with the blood, semen, vaginal fluids, and other body fluids of someone who already has a hepatitis B infection. HBV is generally transmitted by unsafe use of therapeutic injections, blood transfusion, shaving by barbers, tattooing, mother to child transmission, and unsafe sexual practices.[4] Transmission of HBV

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infections by blood transfusion and in other medical interventions in both modern and traditional health practices is also common in SEARO (South-East Asia Regional Office). Studies show that the highest number of sharps injuries was sustained by healthcare professionals while they were drawing blood, giving injections, or suturing. In addition, those not wearing gloves while doing any of these procedures were at greater risk of contracting infection.[5]

Dentistry involves the use of small, sharp instruments contaminated with blood or other fluids and dental surgeons, dental students, or house surgeons are at high risk for inadvertent skin wounds. Such accidents include the possibility of transmission of hepatitis B, hepatitis C, and human immunodeficiency virus (HIV). To decrease the risk of HBV infection, it is recommended that dental personnel receive immunization against HBV and use individual protective equipment, such as gloves, to prevent blood-borne infection transmission during dental procedures.[6,7] The hepatitis B vaccine has been available since 1982 and, since 1990, has been recommended for healthcare workers whose activities frequently expose them to blood.[6-8]

Hepatitis B virus infection is a major global health problem. Worldwide, an estimated two billion people have been infected with the hepatitis B virus (HBV), and more than 350 million have chronic (long-term) liver infections. A vaccine against hepatitis B has been available since 1982. The hepatitis B vaccine is 95.0% effective in preventing HBV infection and its chronic consequences. The emergence of the blood-borne pathogens and the increasing number of infected patients compel the dental professions to have thorough knowledge about contagious diseases and the dental management of the care of health workers presenting with HBV patients.[9]

Following a full course of vaccination (3 doses of the vaccine given at 0, 1, and 6 months after birth), almost 100% of children and 95.0% of healthy young adults developed protective levels of antibody against hepatitis B surface antigen (anti-HBs). People who are elderly, obese, heavy smokers, undergoing hemodialysis, or immunocompromised have suboptimal antibody responses when vaccinated. For that reason, the key is to vaccinate the youngest populations as broadly as possible to allow for maximal prevention.[2]

Dental students should be aware of the risk involved in the treatment procedures and should take appropriate precautions in dealing with patients. Hence, the present study aimed to assess the level of understanding and awareness about Hepatitis B Immunization among the first and second year dental students at a private dental institution in Mangalore, Karnataka, India.

Methods

The study population comprised of 179 first and second year dental undergraduate students of the AB Shetty Memorial Institute of Dental Sciences, Mangalore, Karnataka, India. A cross-sectional survey was carried out using a self-administered pretested questionnaire. Ethical approval was obtained from the institutional ethical committee. Students were informed about the study. Participation was voluntary and students willing to participate were included in the study. The questionnaires were distributed in the classroom and were collected after 20 minutes.

A self administered questionnaire was used to assess the awareness about Hepatitis B Immunization among the subjects. The questionnaire was prepared in English and was validated by test-retest method by administering it to 10 students. This was a close ended questionnaire, and the subjects were asked to tick the most appropriate answer for each question. Reliability was assessed by split half reliability coefficient test ($P = 0.810$, good reliability). The questionnaire comprised of sociodemographic details and 10 questions on awareness about prevention and transmission, diagnosis, and treatment of Hepatitis B. In addition, it enquired about the

hepatitis B vaccination status of the students and awareness of students regarding post exposure prophylaxis. The data was entered into Microsoft Excel for Windows and descriptive analysis was carried out (number of correct responses). Knowledge score for each individual was calculated by assigning a score of 1 for each correct answer. Scores for questions 1-10 were added together to get a "knowledge score" for each individual. Mean knowledge score was calculated by dividing the total knowledge scores of all individuals by the number of individuals. Descriptive analysis was carried out and was presented as number and percentage. Student's t-test was used to determine any significant differences between the genders and year of study.

Results

The response rate was 100% (n = 179). Table 1 shows the gender distribution of the sample. There were 123 female and 56 male students. Table 2 shows the correct responses to the questions asked. About 59.7% of the students were aware of the Hepatitis B infection and its effects. The majority of the students (91.0%) were immunized by hepatitis B vaccine of which 70.9% said that their immunization was complete as per schedule. About 55.8% of the students had taken all four doses of Hepatitis B vaccine. More than three-fourth of the study population (76.5%) were aware of the modes of transmission of the virus. The majority of the students (96.0%) felt it was necessary to be immunized against the Hepatitis B virus. About 69.8% of the students were aware of post exposure prophylaxis against Hepatitis B. A vast majority (96.0%) of the students felt that awareness about immunization against Hepatitis B among the community is necessary. When asked whether it was necessary to get immunized against Hepatitis B, if proper infection control and sterilization process is carried out, 75.9% of the students felt that it is necessary. However, 24.0% did not feel the need to get immunized and 20.0% were not sure of it. 60.8% of the students answered correctly; answering that it was necessary to undergo periodic checking of the

Table 1. Sociodemographic distribution of the sample

		Number
Gender	Male	56
	Female	123
	Total	179
Year of Study	I year	92
	II year	87
	Total	179

Table 2. Correct responses to the questions

Question	No. (%)	Overall mean knowledge score	Min score	Max score
Awareness of hepatitis infection and its effects	107 (59.7)	6.4 (2.1)	5.0	8.5
Immunized by hepatitis B vaccine	163 (91.0)			
Immunization completed as per the schedule	127 (70.9)			
4 doses of hepatitis vaccine taken in a year	100 (55.8)			
Awareness of the modes of transmission of hepatitis B	137 (76.5)			
It is necessary to get immunization against hepatitis	172 (96.0)			
Awareness of post exposure prophylaxis available for hepatitis B	125 (69.8)			
Awareness about the immunization against hepatitis B among the community	172 (96.0)			
It is necessary to get immunized against hepatitis B even if proper infection control and sterilisation process is carried out	136 (75.9)			
Periodic checking of the titre values of the hepatitis B vaccine in the blood is necessary to prevent from getting infected.	109 (60.8)			

Table 3. Comparison of mean knowledge scores between year of study and genders using Student's t-test

		Mean ± SD	t	df	Standard error of difference	P
Gender	Male	6.5 ± 1.79	0.4185	177	0.239	0.676
	Female	6.4 ± 1.32				
Year of study	I year	4.8 ± 1.38	9.3177	177	0.150	0.001*
	II year	6.2 ± 0.25				

* P < 0.05, significant.

titre values of the Hepatitis B vaccine in the blood to prevent getting infected. However, 28.0% were not sure of it, and 9.0% answered that it was not necessary.

Table 3 shows the comparison of mean knowledge scores between year of study and gender using Student's t-test. The second year students had a higher mean knowledge score than the first year students which was statistically significant. There was no significant difference in knowledge among the genders.

Discussion

Hepatitis B virus causes a life-threatening liver infection that often leads to chronic liver disease and puts people at high risk of death from cirrhosis of the liver and liver cancer. Prevention strategies include primary prevention of new infections (i.e. vaccines and post-exposure prophylaxis), secondary prevention of HBV transmission by appropriate sexual and sanitary practices, and tertiary prevention of the pathological consequences of chronic HBV by anti-viral treatment. The present study was undertaken in order to gain knowledge about the awareness the students had about hepatitis B infection and its effects, and the need to get vaccination against hepatitis. Since the students get exposed to clinics and patients in their third year of dental education, it is very necessary for them to get immunized against hepatitis in their preclinical years to prevent them from the infection. Therefore, this study was conducted to know how many of them had been immunized, have completed the dose, and are aware of its importance.

In the present study, although the majority of the students were immunized against HBV, only 59.7% were aware of the HBV infection and its effects. However, most of them (76.5%) were aware of the modes of transmission of the infection. A study in Taiwan has shown that 75.0% of the dental students had knowledge of hepatitis B. However, they had little information about vaccine dose, transmission via personal objects, and precautions and prevention.[10] A study on dental students in the Rural Dental College in Maharastra, India, indicated that the students had good knowledge about HBV. About 94.0% of the students knew that HBV was preventable.[11] A study on Iranian students showed that they had a relatively good level of knowledge about HBV virus infection and its control practices.[12]

Studies on dental interns in Pondicherry showed that 92.7% of the interns were aware of immunization against HBV.[13] At the University of Dundee, 99.2% of the medical and dental students were aware of HBV immunization.[14] The study population in the present study were the first and second year BDS students. Hence, the awareness level regarding HBV infection and its effects are low when compared to the other studies where the population was comprised of third and fourth year dental students, and interns.

On the whole, it is to be noted that most of the students surveyed were familiar with hepatitis B infection. The health sciences students play an important role in prevention of this dreadful disease. Hepatitis B is a highly infectious disease, and many of its routes of transmission are similar to those of HIV/AIDS. Making the healthcare team aware of the epidemiology of this disease will go a long way in prevention of both these infections.

The present study concluded that the majority of the students are aware of Hepatitis B, its infection, its vaccination, and its importance. Most of the students have taken Hepatitis B vaccination and have completed their vaccination as per the schedule. The students feel it is very important to get immunized against Hepatitis B, and create awareness in their community about this infection and to prevent the community from getting infected by hepatitis for a better living.

Conflict of Interests

Authors have no conflict of interest.

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