

Knowledge and attitude of dental students toward hepatitis B virus and its vaccination – A cross-sectional study

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Abstract

Objectives: To estimate the awareness of hepatitis B virus (HBV) and coverage of hepatitis B vaccination among dental students enrolled in dental colleges located in Andhra Pradesh.

Materials and Methods: A cross-sectional study was conducted using a prestructured questionnaire to find out the awareness of HBV and coverage of hepatitis B vaccine among dental students.

Results: A total of 2780 dental students were approached to participate in the study but only 2701 (97.1%) students (M = 900, F = 1801) gave response. Out of the total 2701 students, 79.45% were aware of HBV infection and only 51.50% of the participants received hepatitis B vaccine. 20.5% have come across HBV infected patients and 59.5% are unaware of postexposure protocol. Of all, 63.9%, 21.5% and 42% felt the mode of transmission is blood, sexual contact and oral fluids, respectively. 49.12% recommended for awareness programs on risks in HBV; 56.46% suggested mandatory Hepatitis B vaccination programs in dental colleges.

Conclusions: Despite the availability and accessibility of a cost-effective hepatitis B vaccine, the vaccination coverage among dental students was low. Health education needs to be improved for all health care students especially for dental students.

Keywords: Dental students, hepatitis B vaccination, hepatitis B vaccine, hepatitis B virus infection

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Submitted: 30-Oct-2021, **Accepted:** 02-Dec-2021, **Published:** 11-Jan-2022

INTRODUCTION

Most of the world population today is suffering with many chronic infections such as bacterial, fungal and viral infections. Among them, many of the infections are due to viral cause and these viral infections became major burden for public health causing severe illness to the people. Many of the viral infections can be preventable with proper immunization against them. Among all viral infections, Hepatitis B is called as “silent killer” and “silent epidemic”

by public health professionals and is a potentially fatal disease caused by exposure to the hepatitis B virus (HBV) that can lead to cirrhosis, liver cancer or liver failure in chronically infected individuals.^[1]

HBV belongs to *Hepadnaviridae* family.^[2] The full virion (Dane particle), 42 nm in diameter, contains nucleocapsid and surface antigen hepatitis b surface antigen (HBsAg).^[3]

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How to cite this article: Benarji KA, Anitha A, Suresh B, Aparna V, Praveena A, Penumatsa LA. Knowledge and attitude of dental students toward hepatitis B virus and its vaccination – A cross-sectional study. *J Oral Maxillofac Pathol* 2021;25:553.

Access this article online

Quick Response Code:



Website:

www.jomfp.in

DOI:

10.4103/jomfp.jomfp_387_21

The World Health Organization had suggested that approximately 2 billion people had been infected with HBV worldwide.^[4]

As India has one fifth of the world's population, it shares a large portion of worldwide HBV burden. It is estimated that India has approximately 40 million HBV carriers of the world.^[5]

This virus is present in the high concentration in blood, serum, saliva, serous exudates, semen, vaginal fluid and most body fluids. The possible forms of transmission include unprotected sexual contact, blood transfusion, and re-use of contaminated needles, syringes and vertical transmission from mother to child during childbirth.

Acute infection with HBV is associated with acute viral hepatitis an illness that begins with general ill-health, loss of appetite, nausea, vomiting, body aches, mild fever, dark urine and then progresses to the development of jaundice.

Chronic infection with HBV may be either asymptomatic or may be associated with a chronic inflammation of the liver (chronic hepatitis), leading to cirrhosis over a period of several years. This type of infection dramatically increases the incidence of hepatocellular carcinoma.^[6]

Occupational blood-borne infections are associated with significant morbidity and mortality among health-care workers. Physicians, dentists, nurses, laboratory staff and dialysis center personnel are at high risk of acquiring blood-borne infections. They are exposed to hazardous blood-borne pathogens such as hepatitis B.

Health-care workers have been reported to have the highest occupational risk of HBV infection during their health professional training and the incidence of this HBV infection among them has been estimated to be 2–4 times higher than the general population.^[7]

The highest prevalence of HBV is seen in dentists as HBV can be transmitted by pricks with infected, contaminated needles and syringes or through accidental inoculation of blood during minor surgical and dental procedures.^[8,9]

The specific problems associated with hepatitis B in dental setting include the risk of infection, risk of bleeding in patients and alteration in metabolism of certain drug substances that increases the risk of toxicity.^[10]

The knowledge about hepatitis B and safety measures and precautions to be taken are essential to minimize the risk

of acquired infections in health-care settings among health personnel, especially dental health-care professionals who are more vulnerable to HBV infection as they remain in direct contact with the infected patients, blood, injections and surgical instruments during the course of clinical work.^[11]

Hepatitis B infection can be prevented by the proper immunization protocol. It is mandatory for all health-care professionals to get vaccinated against hepatitis B as a part of occupational safety measures.^[12]

Even after the introduction of many immunization programs and strategies against hepatitis B infection, it continues to remain a major health problem in dental settings.

Hence, the aim of this study was to determine the extent of awareness about HBV infection and vaccination status of undergraduate dental students from various dental colleges of Andhra Pradesh.

MATERIALS AND METHODS

Participants

A cross-sectional questionnaire-based survey was conducted among all under graduate dental students of all dental colleges located in Andhra Pradesh in the months of September to December 2019.

A total of 15 dental colleges had been established in Andhra Pradesh state and the entire state has been divided in to three zones (Rayalaseema, North Andhra and South Andhra) based on geographical area. Each zone has five dental colleges and two dental colleges had been selected randomly from each zone likewise total 6 dental colleges were chosen to conduct the study.

A total of 2780 dental students were approached to participate in the study and 2701 (97.1%) gave response and the remaining students did not respond because of lack of time. They were selected irrespective of the year of studying and based on the convenient sampling method.

Survey instruments

A closed-ended questionnaire was used. Questionnaire was prepared based on existing literature^[13-15] and the questionnaire comprised of total 15 questions pertaining to awareness HBV infection and its vaccination.

Ethical consent

Ethical clearance was obtained before the start of the study from the ethical committee of Drs Sudha and Nageswara

Rao Siddhartha Institute of Dental Sciences and prior permission was obtained from the principals of all dental colleges.

Pilot study

A pilot study was carried out with a convenient sample of 30 students using a questionnaire comprising of 20 closed-ended questions to assess the feasibility and understanding of the questions. Validity of the questionnaire was found to be acceptable with Cronbach's alpha value of 0.82. Test-retest reliability was evaluated using Kappa Statistic, and the level of agreement was found to be acceptable with score of 0.8.

Finally, a closed-ended questionnaire comprising of 15 questions was prepared.

All the students who were available on the day of survey were included in the study. Questionnaires were distributed to all participants and they were given sufficient time to fill the questionnaire and were collected on the same day.

Statistical analysis

The completed questionnaires were collected, and data were entered in to a standard Microsoft Excel 2007 sheet. The collected data were subjected to the statistical analysis using the IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp., Chi-square test was performed to compare the groups and $P < 0.05$ was considered as significant.

RESULTS

A total of 2701 students filled up the questionnaire, among them 68.7% subjects were male and 31.3% subjects were female. The age range of the participants was from 18 years to 26 years. The mean age of the participants was 21.87 ± 2.03 .

Among all the participants, 689 students were 1st year Bachelor of Dental Surgery (B. D. S), 538 were 2nd year, 503 were 3rd year, 491 were 4th year and 480 subjects were doing compulsory internship of B. D. S.

Out of all respondents, 79.45% were aware of HBV vaccination among them 11.5% of the subjects got to know about this vaccination through media, 70.8% of the subjects through college and 24.9% of the subjects through other sources as shown in Chart 1.

Out of all the participants, 66.87% of the participants had received vaccination against HBV and among them only 10% of the subjects completed the full course of hepatitis-B

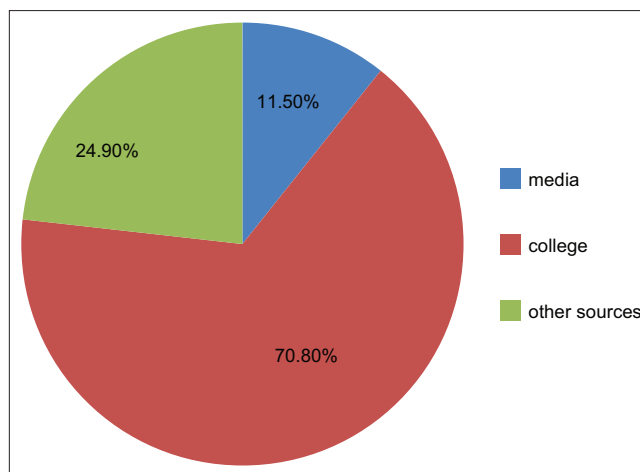


Chart 1: Response of the participants about hepatitis B virus vaccination awareness

vaccine, almost 32.13% of the subjects did not receive Hepatitis-B vaccine and reasons for not receiving were lack of opportunity (43.3%), lack of awareness (41.3%), fear of side effects (8.17%), nonavailability (14.2%) and belief of nonsusceptibility to HBV infection (14.2%) as shown in Chart 2.

When the participants were asked about the mode of transmission of Hepatitis virus, 72.5% of the participants said as blood, saliva and sexual contact and 27.5% of the participants said as only blood. 49.6% of the participants suggested HBsAg as a diagnostic test for HBV infection, 18.2% HBsAb, 9.1% HBcAb and 23.9% of them did not aware of diagnostic test for HBV infection.

Out of all respondents, 49.12% recommended for awareness programs on risks in HBV; 56.46% suggested mandatory hepatitis-B vaccination programs in dental colleges; 12.66% suggested annual assessment of HBV titre levels.

Almost all participants (89%) suggested that increasing the vaccination rate by making the vaccine available at no cost.

All the students were compared according to their academic year, there was a significant difference among the students when asked whether they come across a hepatitis B patient ($P = 0.04$) and awareness of any incident of a dental surgeon (s) who had been infected from a patient ($P = 0.01$). First year academic students had given less positive response when compare to other groups, as shown in Table 1.

DISCUSSION

HBV infection is the most important chronic infection

Table 1: Academic year wise participants “yes” responses for the given questions

Question	1 st year, n (%)	2 nd year, n (%)	3 rd year, n (%)	4 th year, n (%)	Intern, n (%)	P
Do you know about HBV?	368 (53)	412 (77)	486 (97)	416 (85)	464 (97)	0.09
Did you receive HBV vaccine	157 (23)	217 (40)	312 (62)	333 (68)	373 (78)	0.07
Awareness of risks with HBV	245 (36)	338 (63)	430 (85)	447 (91)	449 (94)	0.10
Did you measure antibody titre for HBV after vaccination?	27 (4)	42 (8)	27 (5)	66 (13)	40 (8)	0.26
Hepatitis-b vaccination protects against HBV	246 (25)	355 (66)	436 (87)	401 (58)	431 (90)	0.08
Willing to treat a HBV patient	349 (51)	290 (54)	309 (61)	334 (68)	348 (73)	0.06
Have you ever come across a hepatitis-B patient?	81 (12)	79 (15)	79 (16)	132 (27)	184 (38)	0.04*
Are you willing to treat a hepatitis-B patient?	349 (51)	290 (54)	309 (61)	334 (68)	348 (73)	0.007
Do you have the knowledge of post exposure protocol?	79 (11)	128 (24)	135 (27)	192 (39)	258 (54)	0.03*
Are you aware of any incident of a dental surgeon (s) who had been infected from a patient?	26 (4)	68 (13)	45 (9)	91 (19)	130 (27)	0.01*

* $P < 0.05$. HBV; Hepatitis B virus

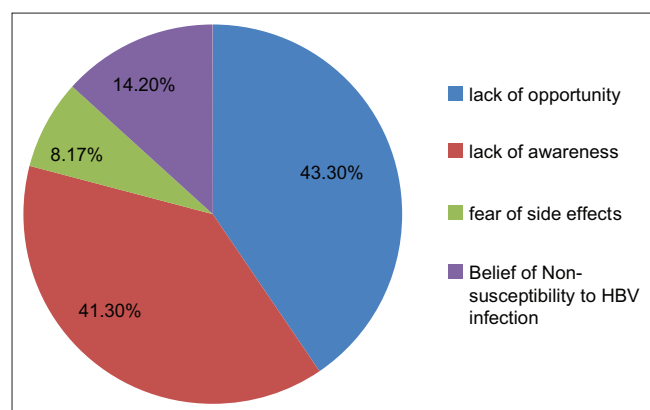


Chart 2: Responses of the participants about the reason for not receiving the hepatitis B virus vaccination

affecting most of the people worldwide. Even though it has an effective vaccine, this infection remains a serious threat to public health in the world and for health-care professionals, especially for dentists who have always been in contact with various bleeding procedures while treating the patients. Dental professionals are the one who have more chance to get infected with occupational blood-borne diseases like HBV.

In the present study, only 10% of the participants completed the full course of hepatitis-B vaccine and this study found higher level of incomplete vaccination when compare to previous studies conducted by Tripathi *et al.*^[13] in Bareilly, U. P. India and Biju *et al.*^[16] in Mumbai, India. The reason might be due to the fact that students were neglecting their vaccination schedule and they tend to forget the date and time of vaccination. It would be better if they get reminder from vaccination center or concerned hospital to avoid the missing schedule.

Almost 32.13% of the subjects did not receive even one dose of Hepatitis-B vaccine and this was in accordance with the study conducted by Pathak *et al.*^[17] among health-care workers in Haryana, India and the study found that 35% of health-care workers and 47% of nursing staff were

not vaccinated against HBV during the study time. This finding in the present study showed that there is an urgent need to motivate the dental students toward receiving of Hepatitis-B vaccine to avoid future risks of HBV.

In the present study, one of the major barrier for not receiving hepatitis-B vaccine was lack of opportunity (43.30%), but in a study conducted by Anjali and Shikha.^[18] in Ahmedabad, India, The reason was due to the lack of information. The present study participants have more knowledge about HBV vaccination as they learned it as part of their curriculum and this might have been reflected in their responses.

In the present study, 72.5% of the subjects knew that the transmission of Hepatitis-B through blood, saliva and sexual contact and in a study conducted by Krishnaraj *et al.*^[19] in Pondicherry, India only 52.2% respondents knew about the mode transmission.

In the present study, there was a significant difference among the preclinical students (1st and 2nd year students) and interns regarding the knowledge of HBV as the interns have more clinical exposure and they are in continuous contact with the subject to update their knowledge.

Almost all participants (89%) suggested that increasing the vaccination rate by making the vaccine available at no cost and this was in accordance with a study done Anjali Singh *et al.*^[13] in Ahmedabad, India. It may be due to the fact that the provision of free vaccine against Hepatitis-B at college level during the course of the study would help them to avoid this infection in the life long.

CONCLUSIONS

Even though the participants in the present study were very much aware about the hepatitis-B and its vaccination, they were not serious about their vaccination status and most of the respondents did not complete the full dose

of vaccination. There is an emergency need to improve their vaccination status by motivating them toward it. Most of the respondents suggested mandatory hepatitis-B vaccination programs in their dental colleges.

The present study was conducted on large sample but with a convenient sample, there is a need to conduct future studies on the basis of sampling techniques to generalize the results.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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