

ORIGINAL ARTICLE

KNOWLEDGE, AWARENESS, AND PROTECTIVE PRACTICES OF
HEPATITIS B VIRUS AND INFECTION CONTROL
MEASURES AMONGST DENTAL STUDENTSAneeqa Shahab¹, Aisha Wali^{2*}, Naseem Ahmad Khan³, Batool Fatima⁴, Sidra Siddiqui⁵

ABSTRACT

Objectives: The purpose of this study was to assess the knowledge, attitudes, and level of practice regarding infection control amongst dental students.

Methodology: A descriptive cross-sectional study was conducted among dental students of Baqai Dental College Karachi from 1st September to 20th February 2019. Ethical approval was obtained from the ethical review board of the University. Dental students of all Professionals (1st year, 2nd year, 3rd year, final year) were invited to participate in the study. Data was entered and analyzed for frequency and percentages using IBM statistical packages for social sciences (SPSS) software version 22.

Results: Students have a good knowledge of hepatitis B, but there are gaps in the practical application of this knowledge. The first year and second year have significantly lower levels of knowledge and practice than third and final year. Most students are positive and ready to take any treatment for patients with hepatitis B.

Conclusion: Dental students have the right knowledge and good attitude, but there are misunderstandings. To overcome this, training programs and workshops on HBV infection should be organized annually at the Dental College. In addition, hepatitis B vaccination should be mandatory for students.

Keywords: Knowledge, hepatitis B, dental students, awareness

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INTRODUCTION

Hepatitis B is the most common liver disease in the world, caused by the 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]. In 2015, the World Health Organization (WHO)

reported that approximately 257 million individuals were likely affected by Hepatitis B infection, with about 887,000 deaths resulting from complications such as cirrhosis and hepatocellular carcinoma [3]. Another report from the WHO stated that in mid-2019, the number of patients in Pakistan suffering from Hepatitis B and Hepatitis C were 5 million and 10 million, respectively [4]. The prevalence rate of HBV in Pakistan has been reported to be between 3% to 5%, but it exceeds to about 10% to 20% in high-risk groups [5]. HBV is commonly transmitted through various routes, including blood transfusions and blood products, contaminated injection needles, piercing or tattooing, sexual transmission, and vertical transmission from mother to child [6]. The Ontario Medical Association estimated in 2012 that the risk

of acquiring an infection after sustaining an injury from a contaminated needle was from 6% to 30% for HBV [7].

Dental practitioners, along with other dental health care professionals, face a significant risk of being infected by various microorganisms such as HBV, HCV, herpes simplex virus, HIV, mumps, influenza, and rubella [8]. The risk is further heightened by accidental injuries during patient treatment, which underscores the need for a safety precaution culture and infection control practice among dental students [9]. It is the responsibility of dental schools to provide adequate infection control measures and train their students on protecting themselves and their patients, as well as establish a foundation for safe working conditions [10]. Many studies have been conducted on dental students to determine the Knowledge, Attitude, and Practices for HBV [11-15].

The purpose of this study was to assess the knowledge, attitudes and level of practice regarding infection control amongst dental students.

METHODOLOGY

A descriptive cross-sectional study was conducted among dental students of Baqai Dental College Karachi from 1st September to 20th February 2019. Ethical approval was obtained from the ethical review board of the University. Dental students of all Professionals (1st year, 2nd year, 3rd year, final year) were invited to participate in the study. Verbal consent was obtained from each participants and participants' confidentiality was maintained in the study. A convenience sampling method was done, and students present on the day of the study were included in the study. Those who were absent on the day of data collection were excluded from the study. A pre-tested, structured, validated questionnaire consisting of 19 closed-ended questions were distributed to gather information about their knowledge (Questions 1-7), prevention and protection practices (Questions 1-12) on HBV infection [16]. There were a total of 270 students enrolled, of which 230 students completed the questionnaire including first year (70), second year

(49), third year (71), final year (40). All students from first year to final year were given a questionnaire in class and asked to fill out a questionnaire within 20 minutes without discussion with one another and in the presence of a senior dental faculty. Data was entered analyzed using IBM SPSS version 22.17 $P < 0.05$ was considered statistically significant [17].

RESULTS

The response rate was 85% (230 out of 270). A total of 230 students participated in the study Table 1 presented the distribution of participants.

Table 1: Distribution of the participant's categories

Variables	Total no. of students	No. of students present n (%)
1 st Year	70	70(100%)
2 nd Year	68	49(72%)
3 rd Year	78	71(91%)
Final Year	54	40(74%)
Total	270	230(85%)

All students were found to be aware of hepatitis B and are well versed in hepatitis B, but there are also some gaps and inaccuracies. Students of third year had the maximum awareness of the correct test (blood) needed to diagnose hepatitis B, which is 66 (33.5%). Only 42 (37.2%) third-year students reported that hepatitis B is contagious than HIV. Cirrhosis as a complication of hepatitis B was known to 50 (43.1%) third-year students.

Table 3 presented preventive and protective practices of dental students. Regarding taking medical history of patients before dental procedure, 67(31.8%) of third year students marked "Yes". When asked about protective measures taken 61(35.5%) of third year students wear facemask and gloves.

Table 2: Knowledge of dental students about Hepatitis B

Questions	Responses	N (%)
Which test is required for the detection of Hepatitis B?	Blood	197(85%)
	Urine	24(10%)
	Sputum	9(3.9%)
What is the common clinical feature of Hepatitis B?	Jaundice	186(80%)
	Fever	44(19%)
What could be the odds of Hepatitis B transmission after a single contaminated needle stick Injury (%)?	0.01	69(30%)
	1-4	75(32%)
	90	60(26%)
	6-30	26(11%)
Do you think Hepatitis B is more infectious than HIV?	Yes	129(56%)
	No	115(50%)
What is the complication of Hepatitis B?	Cirrhosis	116(50.43%)
	Myocardial infarction	33(14.34%)
	Liver cancer	81(35.2%)
What is the common mode of transmission of Hepatitis B?	Unsterilized dental instruments	129(56%)
	Blood transfusion	87(37.82%)
	Mother-to-child transmission	14(6.08%)
What is the ideal age for Hepatitis B vaccination?	Infancy	123(53.47%)
	Young	84(36.52%)
	Adult	23(10%)

Table 3 Preventive and protective practices of dental students regarding Hepatitis B

Questions	Responses	n(%)
Do you inquire about the patient's medical history before the dental procedure?	Yes	211(91.73%)
	No	19(8.26%)
Do you wash your hands before and after a patient's examination?	Yes	203(88.26%)
	No	24(10.43%)
With what do you wash your hands?	Plain soap	68(29.56%)
	Detergent	47(20.43%)
	Antiseptic solution	115(50%)
The preferable method used for sterilization?	Autoclave	172(74.78%)
	Boiling	46(20%)
	Autoclave or boiling	47(20.43%)
	Washing	8(3.47%)
Protective measures you used to prevent injury to yourself?	Facemask and gloves	172(74.78%)
	Eyewear	31(13.47%)
	Protective clothing	27(11.73%)
Did you complete the three-dose vaccination (HBV) schedule?	Yes	160(69.56%)
	No	67(29.13%)
The minimum time you autoclave/boil your instrument (min)?	10	87(37.82%)
	15	93(40.43%)
	30	50(21.73%)
After using gloves on patients what do you do with them?	Dispose off	183(79.56%)
	Re-use after wash	34(14.78%)
	Re-use after sterilization	13(5.65%)
Do you use a new saliva ejector for each patient?	Yes	180(78.26%)
	No	50(21.73%)
Where do you dispose of blood-stained material and biomedical waste?	Dustbin	124(53.91%)
	Color-coded bin	106(46.08%)
Do you disinfect impression cast/denture/wax?	Yes	188(81.73%)
	No	42(18.26%)
Do you disinfect dental chairs?	Yes	164(71.3%)
	No	66(28.69%)

DISCUSSION

The results of the current study highlighted awareness and knowledge of dental students about Hepatitis B and its control measures. It is important that each hospital or clinic develops its own procedures to prevent infection [18]. The present study reported that 197(85%) of the dental students had knowledge that blood test is required for detection of Hepatitis B. Similar results were reported by Malhotra, et al. [19].

HBV transmission is commonly associated with blood transfusions, which is considered to be one of the most significant risk factors [20]. The present study reported that 37.8% of the dental students had knowledge that hepatitis B can be transmitted through blood transfusion. Ali A et al reported that almost all dental students (97.9%) were knowledgeable about HBV transmission through this mode [20]. Since dental students are involved in direct patient care from the beginning of their studies, they gain significant clinical exposure and become confident in handling patients with infectious diseases and following standard cross-infection protocols by the time they reach their final year [20].

Vaccination can prevent HBV infection, but there is currently no effective vaccine available for HIV or HCV [21]. The present study results showed that 42(36.5%) first year and 22(19.1%) final year students thought that HIV is more infectious than Hepatitis B but 25(22.1%) second year and 42(37.2%) third year students answered that Hepatitis B is more infectious than HIV.

Viral hepatitis is considered a serious health problem, especially in developing countries, as it can lead to fatal liver cirrhosis and hepatocellular carcinoma [22]. The level of knowledge and compliance with infection control measures was insignificant among students [23]. We asked our participants about complications of Hepatitis B, 34 (42.0%) first-year students thought that liver cancer was a common complication of hepatitis B, while 25 (21.6%) students in the second year, 50 (43.1%) students in the third year and 26 (22.4%)

students choose liver cirrhosis

In dentistry, the most common route of infection is through contact with the skin (acupuncture) and contact with the blood or saliva of an infected patient. Transmission of HBV through saliva and gingivitis has been confirmed, making dentists more susceptible to hepatitis infections [24]. Therefore, hand washing and use of gloves, aprons and masks is a key part of the treatment process that can reduce the appearance of mucous membranes [25] The current study found that first-year students (42.4%), 41 (23.8%) second-year students, 61 (35.5%) third-year students and 28 (16.3%) final year students used it take action to protect themselves from injury. In the current study, 13 (10.1%) first-year students, 35 (27.1%) second-year students, 55 (42.6%) third-year and 26 (20.2%) final year students thought that autoclave is the preferable method used for instrument sterilization. It has been found that HBV survive on dental operatory surface for many days after the treatment of patients with positive reports of Hepatitis B. Therefore, it is must to adapt standard precautions with appropriate sterilization and disinfection measures must be followed. In terms of immunizations, 46 (28.8%) first-year students, 31 (19.4%) second-year students, 56 (35.0%) third-year students and 27 (16.9%) final year students have completed three limited immunizations.

CONCLUSION

This study concludes that dental students had an awareness of the hazards of HBV infection. But none of the undergraduate students of any year were fully aware of all aspects of HBV infection. Hence, a regular continuing awareness program for all the students would be very beneficial.

Author's Contribution

AS: Manuscript writing and overall supervision

AW: Statistical analysis and final checking of manuscript

NAK: Concept and design

BF: Literature search, data collection and entry in SPSS

SS: Literature search, data collection and entry.

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