Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/8vcsdb21

HEPATITIS B INFECTION: DENTAL STUDENTS PRACTICE AND ATTITUDES TOWARDS THE DEADLY BLOOD BORNE VIRUS

Farheen Hameed[1], Raisa Shaikh[2], Sama Ul Haque[3], Javed Mahmood[4], Mujeeb-Ur-Rehman Sahito[5], Shazia Begum Shahani[6*]

[1]Associate Professor, MBBS, MPhil (Pharmacology). Department of Pharmacology, Shahida Islam Medical & Dental College, Lodhran, Pakistan
[2]MBBS, MPhil (Biochemistry), Senior Lecturer, Department of Biochemistry, Shahida Islam Medical & Dental College, Lodhran, Pakistan
[3]MBBS, MPhil (Anatomy), Associate Professor, Anatomy, Fazaia Ruth Pfau Medical College, Karachi, Pakistan
[4]MBBS, MPhil (Pathology), Senior Demonstrator, Department of Pathology, Shahida Islam Medical & Dental College, Lodhran, Pakistan
[5]MBBS, MS (General Surgery), MS (Urology), MPhil (Anatomy), Associate Professor, Department of Anatomy, Peoples' University of Medical & Health Sciences for Women, Shaheed Benazirabad. Pakistan
[6*]MBBS, MPhil (Anatomy), Professor, Department of Anatomy, Liaquat University of Medical & Health Sciences, Jamshoro, Pakistan

***Corresponding Author:** Prof. Dr. Shazia Begum Shahani
*MBBS, MPhil (Anatomy), Professor, Department of Anatomy, Liaquat University of Medical & Health Sciences, Jamshoro, Pakistan, Email: shazia.shahani@lumhs.edu.pk

ABSTRACT

Objective: comparing knowledge, attitude, and practice of clinical and non-clinical dental students towards Hepatitis B infection

Methodology: 200 dental students, of which 100 were chosen from non-clinical years in dental school, and the remaining 100 were chosen from clinical years in dental school for the study. They were given a validated questionnaire which they were to respond to. Questions in the questionnaire were regarding the knowledge, attitude, and practice of dental students towards HBV infection. Data was collected and analyzed on SPSS version 24.0. The chi-square test was used to analyze between the two groups, with the level of significance set at $P<0.05$.

Results: The average age of dental students, both clinical and non-clinical was 22.23± 22 and 23.27 ±32 respectively. The female students were 115 (57.5%) and the male students in the study were 85 (42.5). Significant difference was seen in the knowledge of clinical and non-clinical students when it came to the mode of transmissions of HBV as well as its complication in causing liver carcinomas. A significant difference was seen in the attitude as well when asked if they would be comfortable in treating Hepatitis patients (p=0.001). Significant difference was also seen when asked of the screening status. All of the students in the study were vaccinated but not all of them were vaccinated with three doses.

Conclusion: Clinical-year dental students demonstrate superior knowledge, attitude, and practice compared to non-clinical-year students. Efforts should focus on enhancing Hepatitis awareness and

relevant knowledge among all dental students, regardless of their academic year, to ensure better patient management and disease understanding.

Keywords: Hepatitis B, Dental students, Needle-stick injuries

INTRODUCTION

Hepatitis B virus (HBV), which infects 296 million individuals, doesn't have medical implications for a person but unfortunately social implications as well. Lack of diagnosis, proper treatment measures, and ineffective treatment strategies all have seen statistical projections to indicate that the annual morality rate from HBV to increases by 39% from 2015 to 2030

1. HBV still remains a serious global health problem, leading to diseases such as liver cirrhosis and hepatocellular carcinoma

2. HBV infection spreads through the blood-borne routes, sexual intercourse that is unprotected, and lastly vertical transmission from mother to child 3This is extremely scary , since over a million people die yearly due to viral hepatitis or its complications , such as the hepatocellular carcinoma and cirrhosis under discussion 4. Furthermore, HBV, hepatitis C, and human immunodeficiency virus all share the same route of transmission, which is blood-borne leading to the chance of developing coinfections 5. Due to their continual exposure to blood-borne pathogens during dental treatments, working dentists continue to be at risk for contracting blood-borne diseases like HBV 6. It is suggested that the dentist and the dental staff tend to get infected from HBV from patients the most when comparing to other occupations 6. In a dental office infection of HBV can spread across different routes. It is the duty of a dentists that they should do all they can to prevent the transmission of HBV by considering every patient as a carrier of HBV, and also provided high level of sterilization, and prophylactic vaccination protocols to reduce the risk of hepatitis 7. The same should be emphasized for dental students, who will become future dentists, and are in many countries already exposed to patients and also performing treatment during their dental schools. However, their knowledge regarding exposure to blood borne pathogen remains scarce, with a study indicating that they have incomplete knowledge of occupation exposure and their compliance in regard to infection control program during clinical practice was low 8In Pakistan, dental students are also exposed to patients and do many dental procedures on those patients in their final two years of dental school. In the light of this a study was conducted to determine the practice and attitude of dental students in regards to hepatitis B.

METHODOLOGY

This was a cross-sectional analytical study conducted from March to July 2023 , following the ethical approval from the institutional review board of Shahida Islam Medical Complex. A validated questionnaire was used for acquiring data from the participants using a non-probability snowball sampling technique. The questionnaire was uploaded onto google forms, and a link generated using which it was sent out to dental students. For this study a sample size of two hundred dental students were taken who were at the time of the study doing their undergraduate program. 100 dental students were to be from non-clinical years of their study (1^{st} and 2^{nd} year BDS), while the remaining 100 dental students were to be from the clinical years of their study (3^{rd} and 4^{th} year BDS). The questionnaire evaluates students' attitudes toward Hepatitis B viral disease and preventive controls through three major aspects Informed consent was sought from all the students that took part in the study, and the significance of the study was explained to those who asked about it.

All the respondents were assured anonymity. The participants gave the contact details in case of any queries regarding the proforma. Data was analyzed using the statistical package of social sciences version 24.0. Qualitative data were analyzed by chi-square test. $p<0.05$ was taken as level of significance.

RESULTS

The average age of dental students, both clinical and non-clinical, was 22.23± 22 and 23.27 ±32 respectively.

Figure 1: Shows the gender distribution of all the dental students that participated in the study.

Table 1: Shows percentage distribution between dental students in the non-clinical and clinical years of dental school and their knowledge regarding Hepatitis B infection.

Table 2: Percentage distribution between dental students in non-clinical and clinical years of dental school and attitude towards Hepatitis B infection

Table 3: Distribution of dental students practice regarding Hepatitis B infection

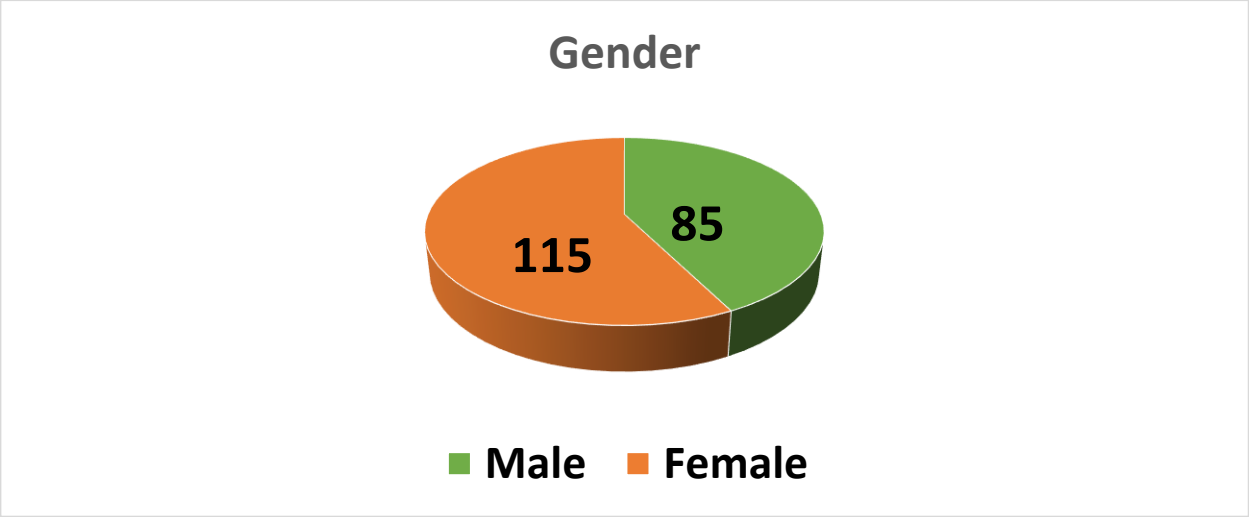

Table 1 Percentage distribution of student knowledge about hepatitis B infection	Non-clinical dental students			Clinical dental students			P value
	Yes (%)	No (%)	Don't Know (%)	Yes (%)	No (%)	Don't Know (%)	
Can Hepatitis B Virus cause Hepatic Cancers	75	18	7	99	1	0	0.001
Can Hepatitis B Virus carriers transmit infection	93	2	5	100	0	0	0.222
Can Hepatitis B Virus spread by casual contact like hand shaking	76	8	16	11	88	1	0.001
HBV is spread by contact with open wound / cut	78	9	13	93	4	3	0.335
Can Hepatitis B Virus transmission occur by contaminated blood or body fluids	90	3	7	100	0	0	0.034
Can Hepatitis B Virus transmission occur by unsterilized syringe, needle and surgical instruments	99	0	1	100	0	0	0.234
Can Hepatitis B Virus be transmitted by unprotected sex	90	3	7	95	5	0	0.049
Can Vaccine prevent Hepatitis B Virus infection	94	2	4	98	0	2	0.354
Has Hepatitis B Virus undergone laboratory testing	99	0	1	100	0	0	0.574
Does Hepatitis B Virus have post exposure prophylaxis	64	6	30	74	16	10	0.312
HBV can be cured / treated	82	7	11	90	6	4	0.156

Table 2 Students views regarding Hepatitis B Infection	Non-clinical dental students			Clinical dental students			P value
	Agree (%)	Disagree (%)	Don't Know (%)	Agree (%)	Disagree (%)	Don't Know (%)	
I do not fear contracting an HBV infection	0	99	1	0	100	0	0.745
Vaccine for Hepatitis B virus is safe and effective	96	1	3	99	1	0	0.323
Changing gloves while drawing blood is a wasted effort	4	96	0	1	99	0	0.446
Patients should be tested prior to treatment for hepatitis B virus	90	2	8	100	0	0	0.053
Taking care of patient with HBV make me uncomfortable	16	74	10	8	89	3	0.001
I can avoid contracting HBV at work by adhering to infection control protocols.	95	4	1	98	2	0	0.650

Table 3 Distribution of Frequency & percentage of students protocol for hepatitis B infection		Non-clinical dental students		Clinical dental students		
		Yes (%)	No (%)	Yes (%)	No (%)	P Value
Have you ever screened for HBV		70	30	100	0	0.001
I always change gloves for every patient while drawing blood		95	5	100	0	0.031
Have you ever experienced needle prick injury		4	96	11	89	0.842
I routinely report needle prick injury		4	96	5	95	0.459
Have you received your vaccination for hepatitis B virus?		80	20	100	0	0.745
Vaccination Record						
How many doses of vaccination have you received for hepatitis B virus?	Not received Before	0		0		0.325
	One Dose	0		0		0.542
	Two Doses	20		5		0.001
	Three Doses	80		95		0.001

DISCUSSION

Occupational hazards are unfortunately a consequence of the conditions and the environment in which a person is working 9. Dentists are constantly treating patients and because the oral cavity is a reservoir and gateway to many infections inside humans. It is therefore absolutely necessary that it must be protected and safeguarding measures should also be similarly taken by the dentists as they are an instrumental part of the country's health care system 10-11. The purpose of this study was to assess dentistry students' knowledge of HBV, specifically their behaviours and attitudes towards it. After all this is necessary to determine as these students will go onto be future clinicians' treatment patients on a regular basis so it will be necessary that they have good knowledge of HBV. Another study that looked at the prevalence of recurrent aphthous stomatitis in dentistry students also had more female students than male students as demonstrated in our study. 12. The results depict what was fairly obvious, that dental students in there clinical years displayed better knowledge as well as about HBV infection, as well as attitude and practice. Significant difference was seen when answering question about if HBV causes liver cancer, if HBV is spread through handshaking, HBV is transmitted through unprotected sex, and HBV is transmitted through blood and fluids. These findings are synonymous with another study that showed the level of knowledge and attitude when it comes to HBV infections was satisfactory in clinical dental students, as well as the practices

concerning with HBV and its infection control protocols was also good 13. The difference seen in the knowledge and other aspects of HBV can be mostly due to their year of study. Nonetheless it is crucial that dental students must have a sound knowledge of hepatitis B 14. The attitude displayed between non-clinical and clinical students towards HBV infections was fairly similar and there wasn't great difference encountered in it, except for the question in which it was asked if they feel comfortable or not treating infected patients, which showed significant difference between the two groups. The vaccination status was also found to be different, with significant difference being observed between clinical and non-clinical dental students when it came to two doses and three doses of the HBV vaccine. It was good to see that all the students were vaccinated, as another similar study conducted on 246 dental students should that only 60% of the dental students were vaccinated 15. Very few students have ever been needle pricked, as found in the study, but it was frightening to see that the level of reporting was less than 10% in both clinical and non-clinical groups. This finding was seen in a meta-analysis as well in which there were dental students with a high prevalence of needle-stick injuries, but a low reporting rate of exposure to needle-stick injury 16. Regular dissemination of knowledge of HBV infections should be given to dental students, regardless of their year of education. Students are likely to express their willingness to receive education on HBV 17. No matter where we look, it is necessary to provide relevant knowledge of infection control and blood-borne illness to dental students who will become future dentists and will encounter difficult scenarios in their clinical practice 18-19. This study recommends more knowledge should be given to students early on in their incipient years of dental school and constantly refreshed and polished in order to enshrine the importance of HBV infections, its transmission, prevention, and even its treatment.

Conclusion

Dental students in their clinical years displayed better knowledge, attitude, and practice than those students that were in their non-clinical years. More awareness must be provided to the dental students regardless of their year of education so that they are in a better state of handling patients with Hepatitis as well as have relevant knowledge of the prevention, transmission, and treatment of the disease.

REFERENCES

1. Hsu YC, Huang DQ, Nguyen MH. Global burden of hepatitis B virus: current status, missed opportunities and a call for action. Nature Reviews Gastroenterology & Hepatology. 2023 Apr 6:1-4.
2. Franco E, Bagnato B, Marino MG, Meleleo C, Serino L, Zaratti L. Hepatitis B: Epidemiology and prevention in developing countries. World journal of hepatology. 2012 Mar 3;4(3):74.
3. Leumi S, Bigna JJ, Amougou MA, Ngouo A, Nyaga UF, Noubiap JJ. Global burden of hepatitis B infection in people living with human immunodeficiency virus: a systematic review and meta-analysis. Clinical infectious diseases. 2020 Dec 1;71(11):2799-806.
4. Leumi S, Bigna JJ, Amougou MA, Ngouo A, Nyaga UF, Noubiap JJ. Global burden of hepatitis B infection in people living with human immunodeficiency virus: a systematic review and meta-analysis. Clinical infectious diseases. 2020 Dec 1;71(11):2799-806.
5. Shahriar S, Araf Y, Ahmad R, Kattel P, Sah GS, Rahaman TI, Sadiea RZ, Sultana S, Islam MS, Zheng C, Hossain MG. Insights into the coinfections of human immunodeficiency virus-hepatitis B virus, human immunodeficiency virus-Hepatitis C Virus, and Hepatitis B virus-Hepatitis C virus: prevalence, risk factors, pathogenesis, diagnosis, and treatment. Frontiers in Microbiology. 2022 Feb 3;12:780887.
6. Cleveland JL, Gray SK, Harte JA, Robison VA, Moorman AC, Gooch BF. Transmission of blood-borne pathogens in US dental health care settings: 2016 update. The Journal of the American Dental Association. 2016 Sep 1;147(9):729-38.
7. Mahboobi N, Agha-Hosseini F, Mahboobi N, Safari S, Lavanchy D, Alavian SM. Hepatitis B virus infection in dentistry: a forgotten topic. Journal of viral hepatitis. 2010 May;17(5):307-16.

8. Wu L, Yin YL, Song JL, Chen Y, Wu YF, Zhao L. Knowledge, attitudes and practices surrounding occupational blood-borne pathogen exposure amongst students in two C hinese dental schools. European Journal of Dental Education. 2016 Nov;20(4):206-12.
9. Ramaswami E, Nimma V, Jakhete A, Lingam AS, Contractor I, Kadam S. Assessment of occupational hazards among dentists practicing in Mumbai. Journal of Family Medicine and Primary Care. 2020 Apr;9(4):2016.
10. Giri S, Bhargava A, Ahluwalia R, Nautiyal A, Tomar S, Bhalla K. Review of risk factors and control measures for occupational health hazards in a dental practice. Journal of Survey in Fisheries Sciences. 2023 Apr 27:1188-95.
11. Raza SM, Wassan SM, Ahmed MA, Kumari K, Kumar H, Naqvi AM. Knowledge and Awareness About the Occupational Hazard Among Dentist in Tertiary Care Hospital in Karachi. InMed. Forum 2023 May (Vol. 34, No. 5, p. 88).
12. Al-Johani K. Prevalence of recurrent aphthous stomatitis among dental students: a cross sectional study. J Contemp Dent Pract. 2019 Dec 1;20(8):893-5.
13. Ravichandran RK, Jain J, Ananda SR, Jaduram B, Gunasekaran S. Knowledge, attitude and practices regarding hepatitis B and infection control among clinical dental students. Int J Applied Dent Sci. 2019;5(3):42-6.
14. Kareem FA, Mohammad RF, Zardawi FM, Gul SS. Knowledge about Hepatitis B Virus and Relevant Safety Precautions among Dental Students in Kurdistan Region, Iraq. Journal of Environmental and Public Health. 2022;2022.
15. Paul P, Arumugam B. Knowledge and awareness regarding hepatitis B infection among medical and dental students: a comparative cross sectional study. Int J Res Med Sci. 2015 Sep;3(9):2352-6.
16. Huang J, Li N, Xu H, Liu Y, An N, Cai Z. Global prevalence, risk factors and reporting practice of needlestick and sharps injuries among dental students: A systematic review and Meta-analysis. Journal of Hospital Infection. 2022 Jul 1.
17. Brailo V, Pelivan I, Škaričić J, Vuletić M, Dulčić N, Cerjan-Letica G. Treating patients with HIV and Hepatitis B and C infections: Croatian dental students' knowledge, attitudes, and risk perceptions. Journal of dental education. 2011 Aug;75(8):1115-26.
18. Barzegar Ghahfarokhi M, Zare Jahromi M, Ranjbarian P, Mahmoudi S. Knowledge and Practice of Dental Students and Dentists Regarding Infection Control Protocols in Isfahan, Iran. Journal of Research in Dental and Maxillofacial Sciences. 2023 Apr 10;8(2):128-37.
19. Nagao Y, Kimura T, Tomooka K, Wakita H. Education and Awareness Activities Regarding Hepatitis B and C Among Japanese Dental Health Workers in the Oita Prefecture. Cureus. 2022 Sep 27;14(9).