Dentistry 3000

Vol 13, No 1 (2025)
ISSN 2167-8677 (online)
DOI 10.5195/d3000.2025.952

Knowledge, Attitudes and Practices of Dental and Medical Students about Hepatitis B

Noor Natik Raheem, Abeer Salah Salman, Athraa Ali Mahmood, Wassan Nori, Hashim Mueen Hussein

College of Dentistry, Mustansiriyan University, Iraq

Abstract

Objective: This study aimed to evaluate and compare hepatitis B's knowledge, attitudes, and practices among dental and medical students in Iraqi universities. **Material and Methods**: A cross-sectional observational study was conducted from 1 July to 1 September 2024 among second, third, fourth, and fifth-stage medical and dental students. For survey distribution, the questionnaire consisting of four domains submitted to an internet platform (Google Forms). Undergraduate students were invited to participate in the research via a survey link published on specific groups of students in the social networking platforms Viber and WhatsApp. **Results**: 426 students responded to the questionnaire. There were statistically significant differences in frequency were seen ($p < 0.001$) regarding source of your knowledge about HBV, route of infection transition, receiving vaccination, doses of vaccine, and periodic checking of titer values of the vaccine. Frequency of answers for questions regarding immunization programs and strategies against HB infection were not statistically different. Additionally, dental students had more frequent positive responses for use of gloves, changing gloves, use of face mask, changing face masks, use of disposable gown, and use of disposable instruments for the patients positive or suspected HB virus (95.4%, 94.6%, 93.8%, 73.0%, 74.3%, and 96.3%, respectively) whereas medical students less frequently used those (67.6%, 62.7%, 59.5%, 24.9%, 47.6%, and 85.9%, respectively). **Conclusion**: The study revealed that although both medical and dental students were knowledgeable about HBV transmission, vaccination uptake, particularly among medical students, was inadequate.

Open Access

Citation: Raheem NN, et al. (2025) Knowledge, Attitudes and Practices of Dental and Medical Students about Hepatitis B. Dentistry 3000. 1:a001 doi:10.5195/d3000.2025.952
Received: May 29, 2025
Accepted: July 6, 2025
Published: August 13, 2025

Email: noornatikraheem@uomustansiriyah.edu.iq

Introduction

Hepatitis is a potentially life-threatening liver disease and a global healthcare concern. Hepatitis B virus (HBV) is the leading cause of this disease [1]. Acute viral hepatitis is a disease that starts with bodily aches, darker urine, nausea/vomiting, loss of appetite, low-grade fever, and general malaise before developing into jaundice [2]. At the same time, chronic infection can lead to liver cirrhosis and hepatocellular carcinoma [3]. An estimated 296 million persons globally were believed to have a chronic HBV infection, and 1.5 million new infections occurred each year [4]. In general, HBV is infectious and can be transferred by transfusion therapy, the improper use of treatment-based injections, tattooing, transmission from maternal-to-infant, and sexual activity [5]. The practice of modern medicine has contributed significantly to the rise and spread of bloodborne diseases such as Human Immunodeficiency Virus (HIV) and Hepatitis B (HBV) due to flaws in instrument sterilization techniques and poor handling of hospital waste. Ten to 20% of healthcare waste is considered risky [6]. Occupational accidents that expose healthcare providers to bloodborne viruses are a significant public health risk. Dental healthcare professionals are especially vulnerable to hepatitis because of their frequent contact with sharps [7, 8].

Because the dental clinic is a high-risk setting for cross-infection, controlling the dissemination of hepatitis B is critical. Dental students should know the dangers of conducting dental processes and take adequate precautions when practicing [9]. Direct contact with blood, saliva, or other bodily fluids, needle injury, or mucosal contact from splashes, fluid droplets, and aerosols, in addition to indirect contact with infected tools, equipment, or instruments, could all result in infection transmission during dental procedures [7].

Hygienic hand care, correct glove use, and safe disposal of sharp tools are all part of the Centers for Disease Control and Prevention's (CDC) recommended measures for reducing the spread of bloodborne diseases such as HBV [10]. Because some exposures cannot be avoided, the primary sources of protection are immunization and good post-exposure treatment. As a result, understanding HBV infection, transmission, and schemes for disease prevention is critical for future dentists' safety [11].

Inadequate knowledge among healthcare workers in low/middle-income nations leads to inefficient attachment to safety standards, provoking the HBV burden [12]. Improving understanding of HBV is critical for lowering rates of infection among healthcare workers [13]. Knowledge assessments are often utilized for evaluating population awareness of illness concepts like causes and symptoms. Conversely, attitudes are determined by a convoluted interconnection of emotions, values, and individual beliefs. At the same time, practice is described as the cumulative behaviors taken to prevent the incidence or spread of illness [14].

Students in medicine and dentistry, integral to the health care system, are the first line of connect between patients and medical care, and their contact with patients and contaminated instruments may increase the risk of HBV infection, particularly if safety cautions are not stalked accurately. At the start of their clinical years, they are required to engage in patient care activities. Few studies have been conducted to discover medical and dental students' knowledge, practice, and attitude about HBV in Iraq. This study aimed to assess and compare students' awareness of HBV and attitude and practice among different medical and dental colleges in many Iraqi universities.

Material and Methods

This cross-sectional study included dental and medical undergraduate students in government and private colleges in Baghdad city (Mustansiriyah, Baghdad, Al Iraqia, Alraheed, ALhadi, Alfarahidi colleges of dentistry) and Mustansiriyah, Baghdad and Ashur medical colleges. This study was conducted from 1 July 2024 to 1 September 2024 among the second, third, fourth, and fifth-stage students. The total number of dental students (Group 1) was 241 (40 males, 201 females), and the total number of medical students (Group 2) was 185 (63 males, 122 females) (Figure 1).

Ethical Approval

Approval was received from the Ethical Committee, College of Medicine, Mustansiriyah University with IRB number 63 on 27 June 2024. All students were given details about the study and guaranteed confidentiality.

The online questionnaire used to collect data for this study included an opening sentence regarding the study's aim and approval that it did not have any personal information; hence, answering the questionnaire was considered an agreement to participate in the study. It included 4 domains, consisting of 23 items. The domains included sociodemographic information (3 items) including age, gender, and stage; the second domain consisted of 8 items to determine awareness of HBV infection and vaccination [15]; the third one consisted of 6 items about attitudes toward HBV infection and prevention, and the last one (6 items) is clinical practices about HBV infection and prevention [16].

Study sample

The present study uses the following formula that is used commonly in statistics to calculate the sample size for an infinite population:

$$n = \frac{Z2.p\ (1-p)}{E2}$$

Here, n denotes the required number size. Z: the z-score (1.96) associated with the desired confidence level (95%).

P: estimated prevalence or proportion in the target population (set at 0.5). E: margin of error (0.05).

$$n = \frac{(1.96)^2.0.5\ .(1-0.5)}{(0.05)^2}$$

$$n = \frac{3.8416\ .0.25}{0.0025} = 384.16$$

Thus, the required sample size was approximately 385 students.

All 426 study participants were encouraged to reply willingly, using digital devices via online survey link published on specific groups of students on social networking platforms (Viber and WhatsApp). For survey distribution, the questionnaire was submitted to an internet form Google Forms. Students were asked to answer yes or no to attitude and practice questions. Concerning student awareness of HBV transmission and vaccination-related questions, some answers were yes or no, while the others were short choices, and incomplete responses were excluded.

A pilot study was carried out involving around 10% of the target population to evaluate the clarity, practicality, and reliability of the survey instrument. Participants were selected from similar student demographics and were not included in the main study.

The objectives of the pilot study included assessing the comprehensibility of the questions, the time taken to respond, and the internal consistency of the survey, especially in relation to knowledge and attitude areas. Feedback from participants regarding any unclear or ambiguous questions was collected, which guided subsequent revisions aimed at enhancing the content validity of the instrument.

Statistical analysis

After examining all the responses sent by the students, the collected data was sent to excel for analysis and then exported to the data editor of SPSS (Statistical Package for the Social Sciences version 28, USA). A descriptive statistical data analysis and a chi-square test were conducted to compare categorical variables. A *p*-value of ≤ 0.05 was considered significant for statistical analysis.

Results

A total of 23 questionnaires were collected from 426 dental and medical students [females (56.6%) and males (43.4%)] among the 2nd, 3rd, 4th, and 5th year students. The age range of the participants was from 18 to 24. The number of dental students (Group 1) was 241 [females=201 (83.4%), males = 40 (16.6%)], and the number of medical students (Group 2) was 185 [females = 122 (65.9%), males = 63 (34.1%)]. The demographic data are shown in Table 1.

Table 2 shows that the student's awareness of H.B. infection and vaccination was good for most questions. However there are statistically highly significant differences in frequency were seen among student groups ($p < 0.001$) regarding the following: source of your knowledge about HBV, route of infection transition, how it is transmitted, receive vaccination, doses of vaccine, and the periodic checking of the titer values of H.B. vaccine in the blood; while there are statistically nonsignificant difference in frequency among students groups for the following: immunization programs and strategies against HB infection, necessary to get immunized against hepatitis B even if infection control policies and sterilization process is carried out properly, and essential to get immunization against hepatitis.

93 % of the medical students and 94.2 % of the dental students gave a positive reply when asked, "It is necessary to get immunized against HBV even if proper infection control and sterilization process is carried out." However, only 29.7% of medical students receive vaccinations. On the other hand, approximately 57.3% receive vaccination among dental students. Among respondents, 74.1% of the medical students and 91.3% of the dental students think that periodic checking of the titer values of the vaccine is necessary to prevent infection. Additionally, 97.8% of the medical students and 96.3% of the dental students think immunization is required.

The percentage of responses on attitude questionnaires between groups is shown in Table 3. The fear of infection with HBV from practice was the highest (84.9%) among medical students and were (79.3%) among dental students, with nonsignificant differences among groups (p=0.138). As for treating the patients infected with HBV, the percentages were as follows (59.5%) among medical students and (43.6%) among dental students, with highly significant differences among student groups (p=0.001).

In addition, the result showed that 45.4% of the respondents said medical students treat patients infected with HBV safely, while merely 41.9% of the participants' dental students thought this. 85.9% of medical students and 90% of dentists worry about being infected with HBV by patients. Thus, 84.9% of the medical students and 90% of the dental students, with significant differences ($p < 0.001$), consider asking the patient about his infection with HBV a primary priority when taking his medical history in the case sheets before starting treatments.

Under the domain of questions on clinical practice relating to the protective and preventive measures to avert transmission of H.B. infection, the percentage of responses is shown in Table 4. The result showed that for taking protective measures during diagnosis, treatment procedures, and working on patients, dental students scored the highest with positive responses of 95.4%, 94.6%, 93.8%, 73.0%, 74.3%, and 96.3%, and medical students had the minimum percentage with 67.6%, 62.7%, 59.5%, 24.9%, 47.6%, and 85.9% of the respondents (for used gloves, change gloves, used face mask, change face mask, disposable gown, and used disposable instrument for the patients positive or suspected for HB, respectively).

Discussion

This study highlights the knowledge and attitude of both dental and medical students regarding the silent killer or silent epidemic HBV by public health professionals, students' knowledge about chronic infection, safety measures, and precautions that should be taken in their clinical practice to minimize the increased risk burden of infections.

Female participation for both dental and medical dental students reported a high percentage (83.4%, 65.9%) respectively, as females are more likely to respond to online-type surveys and tend to adopt more health-seeking behavior than males [17,18]; most respondents are dental students, as they seem more interested than medical students.

Awareness of HBV infection and vaccination status: The dental students have suitable knowledge about HBV from different sources and use safety precautions that raise awareness regarding the route of infection and transmission [19,20]. Dentists could be at higher risk of acquiring viral infections, hepatitis B along with other infections as hepatitis C, herpes simplex virus infection, tuberculosis, influenza, rubella, and human immunodeficiency virus [21]. As dentists had more contact with the saliva, blood, and secretions of nasopharyngeal by mouth-nose absorption or accidental needle injury and other cutting instruments used for various dental procedures are the most common exposure routes to HBV; thus, dentist had a 3- to 4-times more likely to be at risk of HBV infection than in the Overall population; in spite of that the present study shows a low prevalence of dental students receiving vaccination against HBV, similar to the findings of [22], but it remains better than the medical students who have a 2–10 fold greater risk to get the HBV infection compared to others.

Nearly half of the Iraqi dental students received vaccination more than in other studies which is higher than previous studies that reported only 42% of dental students were HBV immunized, compared to a lower number of vaccinated medical students.; disagreeing with Bhattarai et al. 2014 [23], Holenarasipur et al. 2013 [24] stated that the majority of dental students felt it was necessary to get immunization against HBV during practice as dental and oral surgeons had the highest rates of HBV infection among all healthcare workers both groups showed high responses to the necessity of routine check of titers value of post-vaccination blood tests to check for a sufficient antibody response to HBV [25].

Two important methods for preventing hepatitis virus are vaccination and the use of properly sterilized instruments, but most of the study participants did not follow the vaccination schedule properly due to their negligence and other reasons as knowledge and attitude mentioned in our study [26].

A dentist considers every patient as a potential carrier of hepatitis this explains the high percentage of responses of both groups about fear of infection with HBV from their practice.

In the current study, the overall findings demonstrated the gaps in preventive measures between the studied groups in taking personal protective measures during routine diagnosis and treating patients, as the dental students reported the highest responses. This finding is consistent with [27]; Straub et al. [28] stated that the challenges of insufficient personal protective equipment (PPE) availability and the insufficient time for supervision make medical students face weaknesses in the proper utilization of PPE.

The dentistry clinic must ensure routine and regular disposal of needles, sterilize instruments, and follow all safety protocols (such as wearing PPE and disinfecting all surfaces, tools and equipment after each patient) (29) in teaching dental hospitals the dental students and staff always advised to secure primary protective gears as disposable surgical mask, cap, disposable gloves and scrubs with protective eye/face shield.

Study limitations and confounders

Other limitation of this study was that online surveys were only done by students with internet access, but not all of them might have looked intently, realized, and provided honest and accurate responses; specifically, there was no direct supervision of students or face-to-face questionnaires. Increasing the number of dental and medical colleges, besides increasing the number of students, increases the necessity to conduct future similar studies for all students.

This study offers important insights into the differences in knowledge, practices, and attitudes regarding HBV among medical and dental students in Iraqi universities. A notable strength of the research is its identification of significant disparities in infection control practices, with dental students showing greater compliance with protective measures.

Conclusions

The present study concludes a good level of awareness and knowledge of the HBV: route of infection and transmission of both dental and medical students, but unsatisfactory findings about receiving vaccination and completing the vaccine schedule, especially in medical students. Dental and medical schools should reflect more on HBV teaching and advise students to complete the vaccine schedule in preclinical years so that they can protect themselves and their patients and play a critical role in increasing awareness among healthcare staff.

Conflict of Interest

None.

Funds

None.

Acknowledgements

The authors thank Mustansiriyah University (www.uomustansiriyah.edu.iq), Baghdad, Iraq, for its support in the present work.

Author's Contributions

A: Conception and design: NNR, ASS, AAM
B: Analysis and interpretation of the data: NNR, ASS, AAM
C: Drafting of the article: NNR, ASS
D: Critical revision of the article for important intellectual content: AAM, HMH
E: Final approval of the article: NNR, ASS, AAM, WN, HMH
F: Provision of study materials or samples: NNR, ASS, WN
G: Statistical expertise: NNR, WN
H: Obtaining of funding: NNR, ASS
I: Administrative, technical, or logistic support: AAM, WN, HMH

J: Collection and assembly of data: NNR, ASS

References

1. Systematic review and meta-analysis of HIV, HBV and HCV infection prevalence in Sudan. Badawi MM, Atif MS, Mustafa YY. Virol J. 2018; 15, 148.

2. Hepatitis B awareness among the dental professionals, students and dental hygienists in a dental school – An epidemiological study. Tripati S, Kamala BK, Kiran K. Int J Contemp Dent. 2011;2:45-50.

3. Chronic Hepatitis B Infection: A Review. Tang LSY, Covert E, Wilson E, Kottilil S. Jama. 2018;319(17):1802-13.

4. World Health Organization. Hepatitis B Geneva: WHO; 2022 [[online] Available at: https://www.who.int/news-room/fact-sheets/detail/hepatitis-b. Accessed 23 May 2023.

5. Effect of gender and age on the knowledge, attitude and practice regarding hepatitis B and C and vaccination status of hepatitis B among medical students of Karachi. Pakistan. Khan N, Ahmed SM, Khalid MM, Siddiqui SH, Merchant AA. J. Pak. Med. Assoc. 2010; 60(6): 450-455.

6. Indian perspective Journal of Hospital Infection. Taneja N, Biswal M. Safe disposal of infectious waste. 2009 ;62(4): 525–26.

7. Competency assessment for infection control in the undergraduate dental curriculum. Milward MR, Cooper PR. Eur. J. Dent. Educ.2007; 11(3): 148-154.

8. Infection control practices among undergraduate students from a private dental school in India. Kumar S, Sharma J, Duraiswamy P, Kulkarni S. Rev. Odonto Ciênc. 2009; 24(2): 124-128.

9. Knowledge, attitudes, and practice regarding infection control measures among dental students in Central India. Singh A, Purohit BM, Bhamba A, Saxena S, Singh A, Gupta A. J. Dent. Educ. 2011; 75(3): 421-427.

10. Hepatitis B and C infection among dentists–Risk, prevention, and management. Sheikh AN, Siddiquee B, Chahande J. Journal of Advances in Dental Practice and Research. 2022;1(1):31-6.

11. Hepatitis B: Knowledge, Preventive Attitude and Vaccine Status of Dental Students and Interns at Umm Al-Qura University, Makkah, Saudi Arabia. Afifi IK, Al-Zahrani AK, Al-Sulimani RS, Alqahtani M. Journal of Umm Al-Qura University for Medical Sciences.2020; 6. 10.54940/ms45403892.

12. Awareness and Prevalence of Needle Stick Injury among Nursing Students at King Abdulaziz University. Almuslami OK, Fadul SS, Munshi SS, Sangoof FM, Mersal NA. Evidence-Based Nursing Research. 2022;5(1):14-23.

13. Sero-prevalence of hepatitis B virus infection and associated factors among health care workers and medical waste handlers in primary hospitals of North-west Ethiopia. Yizengaw E, Getahun T, Geta M, Mulu W, Ashagrie M, Hailu D, Tedila S. BMC Res Notes. 2018 Jul 3;11(1):437. doi: 10.1186/s13104-018-3538-8.

14. Seroprevalence of Hepatitis B Among Healthcare Workers in Asia and Africa and Its Association With Their Knowledge and Awareness: A Systematic Review and Meta-Analysis. Maamor NH, Muhamad NA, Mohd Dali NS, Abdul Mutalip MH, Leman FN, Aris T, Lai NM, Abu Hassan MR. Front Public Health. 2022 Apr 28;10:859350. doi: 10.3389/fpubh.2022.859350.

15. Knowledge and attitude of dental students toward hepatitis B virus and its vaccination - A cross-sectional study. Benarji KA, Anitha A, Suresh B, Aparna V, Praveena A, Penumatsa LA. J Oral Maxillofac Pathol. 2021 Sep-Dec;25(3):553.

16. Knowledge, Attitudes, and Practices Toward the Prevention of Hepatitis B Virus Infection Among Medical Students in Medina City, Kingdom of Saudi Arabia. Albadrani MS, Abdulaal AM, Aljabri AM, Aljohani SS, Aljohani SF, Sindi MA, Jan HK, Alsaedi H, Alamri WM, Alharbi AM, Alraddadi AA. Cureus. 2023 Nov 15;15(11):e48845.

17. "Does gender influence online survey participation? A record-linkage analysis of university faculty online survey response behavior" Smith G. *ERIC Document Reproduction Service No. ED 501717* (2008).

18. An Event History Analysis of the Gender Effects of Survey Participation in a Probability-based Multi-wave Panel Study with a Sequential Mixed-mode Design. Becker R. Gender and Survey Participation: *methods, data, analyses,*2022 16(1), 30. doi:https://doi.org/10.12758/mda.2021.08

19. A. Knowledge, Awareness And Practice Towards Hepatitis B Infection Among Dental Students In The International University For Science And Technology, Syria Kadou M, Dannan. J Comm Med And Pub Health Rep.2024; 5(01): Https://Doi.Org/10.38207/JCMPHR/2024/JAN.

20. Knowledge about Hepatitis B Virus and Relevant Safety Precautions among Dental Students in Kurdistan Region, Iraq. Kareem FA, Mohammad RF, Zardawi FM, Gul SS. J Environ Public Health. 2022 Sep 18;2022:8516944. doi: 10.1155/2022/8516944. PMID: 36172400; PMCID: PMC9510674.

21. Hepatitis B in health care workers: Indian scenario. Singhal V, Bora D, Singh S. J Lab Physicians 2009; 1:41–8.

22. Hepatitis B vaccination and immunization of dental students,Lira ALS, Martins KRJ. Rev Odontol Bras Central 2021; 30(89): 180-194. DOI 10.36065/robrac.v30i89.1445.

23. Hepatitis B vaccination status and Needle-stick and Sharps-related Injuries among medical school students in Nepal: a cross-sectional study. Bhattarai SKCS, Pradhan PM, Lama S, Rijal S. BMC Res Notes. 2014; 7, 774. https://doi.org/10.1186/1756-0500-7-774

24. Awareness regarding hepatitis B immunization among preclinical Indian dental students. Vasanthakumar AH, D'Cruz AM. J Oral Health Oral Epidemiol 2013; 2(2): 97-101.

25. Dentists and Hepatitis B Vaccination – An In Vivo National Study. Yared G, Al Khatib A, AL Manhal W, Yared N, Younes R. International Arab Journal of Dentistry. 2023; Vol. 14: Iss. 2, Article 17.

26. Knowledge, Attitude and Awareness of Hepatitis B Vaccine Among Medical and Dental Students, KarthiknV, Rani L, Brundha MP. Biosc. Biotech. Res. Comm. 2020; Special Issue Vol 13 No (7) Pp-120-124.

27. Dental professionals' use of personal protective equipment during COVID-19: a cross-sectional study in China. Wan Q, Han L, Yang X, Yu S, Zheng X. Front. Public Health. 2023; 11:1183580. doi: 10.3389/fpubh.2023.1183580.

28. Personal protective equipment and medical students in times of COVID-19: experiences and perspectives from the final clerkship year. Straub J, Franz A, Holzhausen Y, Schumann M, Peters H. BMC Med Educ.2023; 23, 806. doi.org/10.1186/s12909-023-04784-2.

29. Transmission of blood-borne pathogens in US dental health care settings: 2016 update. Cleveland JL, Gray SK, Harte JA, Robison VA, Moorman AC, Gooch BF. J Am Dent Assoc. 2016;147(9):729-738. doi:10.1016/j.adaj.2016.03.020.

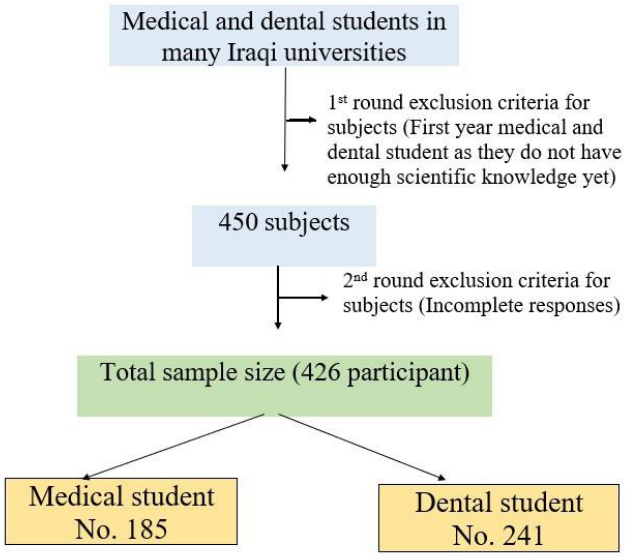

Figure 1. Flowchart of study participants' recruitment.

Table 1. Distribution of groups in the study and demographic data.

Student Groups	**No. (%)**	**Age (%)**	**Gender**	**Stage**
Dental students (G1)	241(56.6 %)	18= 11(4.6%), 19= 45(19.0%), 20=74(31.2%), 21=48(20.3%), 22= 33(13.9%), 23= 14(5.9%), 24= 12(5.1%)	Females = 201 (83.4%) Males = 40 (16.6%)	2= 71(29.5%), 3=75(31.1%), 4=65(27.0%), 5=30(12.4%)
Medical students (G2)	185 (43.4 %)	18= (31.5%), 19= 16(8.0%), 20=49(24.4%), 21=82(40.8%), 22= 33(16.4%), 23= 12(6.0%), 24= 6(3.0%)	Females = 122 (65.9%) Males = 63 (34.1%)	2=21(11.4%), 3=30(16.2%), 4=111(60.0%), 5=23(12.4%)

No: number, %: percentage

Table 2. Comparison of percentages of awareness of HBV infection and vaccination questionnaire between groups.

Questionnaire	Choices	No. (%) of groups		X^2	*P-value*
		G1	G2		
1. The source of your knowledge about HBV infection and vaccination	- Syllabus	86 (35.7%)	113(61.1%)	29.326	<0.001 ***
	- Media	103 (42.7%)	40(21.6%)		
	- Others	52 (21.6%)	32(17.3%)		
2. The most common route of infection is a transition from	Dentist /doctor to patient	20 (8.3%)	23(12.4%)	16.730	<0.001 ***
	Patient to patient	30(12.4%)	48(25.9%)		
	Patient to dentist/doctor	191(79.3%)	114(61.6%)		
3. How it (HBV) transmitted	Saliva	55 (22.8%)	16 (8.6%)	30.986	<0.001 ***
	Blood	135 (56.0%)	143(77.3%)		
	Sneezing and cough	27 (11.2%)	5 (2.7%)		
	From mother to infant	10 (4.1%)	6 (3.2%)		
	Sexual route.	14 (5.8%)	15(8.1%)		
4. Do you receive vaccination	Yes	138 (57.3%)	55(29.7%)	32.015	<0.001 ***
	No	103(42.7%)	130(70.3%)		
5. No. of doses of vaccine you receive if you have it	One	55 (32.0%)	30(16.2%)	30.499	<0.001 ***
	Two	71 (41.3%)	130(70.3%)		
	Three	43 (25.0%)	23(12.4%)		
	Four	3 (1.7%)	2(1.1%)		
6. if you did not mention the possible reason	lack of opportunity	118 (49.2%)	118(63.8%)	16.577	0.002***
	lack of awareness	28 (11.7%)	16(8.6%)		
	fear of side effects	37(15.4%)	19(10.3%)		
	The vaccine is non-available.	12(5.0%)	16(8.6%)		
	Non-susceptibility of infection	45(18.8%)	16(8.6%)		
7. With proper infection control and sterilization strategies. Do you think is it necessary to get immunized against HBV?	Yes	226(94.2%)	172(93.0%)	0.250	0.617^{NS}
	No	14(5.8%)	13(7.0%)		
	Yes	220 (91.3%)	137(74.1%)	22.896	<0.001 ***

8.	Do you think it is necessary to check the titer values of the HB vaccine in the blood periodically?	No	21 (8.7%)	48(25.9%)		

***: $p < 0.001$ using the chi-squared test, NS: nonsignificant, X^2: Chi-square

Table 3. Comparison of percentages of attitude questionnaire between groups.

Questionnaire	**Choices**	**No. (%) of group**		***X*²**	**P-value**
		G1	**G2**		
9. Do you fear about infection with HBV from your practice	Yes	191(79.3%)	157(84.9%)	2.204	0.138 NS
	No	50(20.7%)	28(15.1%)		
10. Can you treat patients infected with HBV	Yes	105(43.6%)	110(59.5%)	10.573	<0.001 ***
	No	136(56.4%)	75(40.5%)		
11. Is it safe to treat patients infected with HBV safely?	Yes	101(41.9%)	84(45.4%)	0.521	0.470 NS
	No	140 (58.1%)	101(54.6%)		
12. Do you have the right to know your patient's HBV infection status?	Yes	207(85.9%)	165(89.2%)	1.028	0.311 NS
	No	34(14.1%)	20(10.8%)		
13. Do you worry about being infected with HBV by patients?	Yes	217(90.0%)	159(85.9%)	1.695	0.193 NS
	No	24(10.0%)	26(14.1%)		
14. Do you consider asking the patient about his infection with HBV as a primary priority when taking his medical history in the case sheets before starting treatments?	Yes	230(95.4%)	157(84.9%)	14.062	<0.001 ***
	No	11(4.6%)	28(15.1%)		

***: p < 0.001 using the chi-squared test, NS: nonsignificant, X2: Chi-square

Table 4. Comparison of percentages of items on your clinical practice questionnaire between groups.

Questionnaire	Choices	No. (%) of group		X^2	P-value
		G1	G2		
15. Do you wear latex gloves during diagnosis and treatment??	Yes	230(95.4%)	125(67.6%)	58.523	<0.001 ***
	No	11(4.6%)	60(32.4%)		
16. Do you change gloves between patients during diagnosis and treatment?	Yes	228(94.6%)	116(62.7%)	68.532	<0.001 ***
	No	13(5.4%)	69(37.3%)		
17. Do you wear a face mask during diagnosis and treatment??	Yes	226(93.8%)	110(59.5%)	73.964	<0.001 ***
	No	15(6.2%)	75(40.5%)		
18. Do you change face masks between patients?	Yes	176(73.0%)	46(24.9%)	97.289	<0.001 ***
	No	65(27.0%)	139(75.1%)		
19. Using disposable gown during diagnosis and treatment??	Yes	179(74.3%)	88(47.6%)	31.909	<0.001 ***
	No	62(25.7%)	97(52.4%)		
20. Using disposable instruments for the patients suspected or positive for HBV??	Yes	232(96.3%)	159(85.9%)	14.780	<0.001 ***
	No	9(3.7%)	26(14.1%)		

***: $p < 0.001$ using the chi-squared test, NS: nonsignificant, X2: Chi-square