

Assessment of Hepatitis B Vaccination Status of Students of Faculty of Dentistry

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Abstract

Aim: The aim of this study was to evaluate the dental students' hepatitis B vaccination and serological status according demographic data.

Methodology: A questionnaire prepared related to hepatitis B virus infection and demographic data of 290 students, educating at University of Firat and Dicle, Faculty of Dentistry in 2016-2017 academic year was distributed. Chi-square test analysis was used for statistical analysis. $p < 0.05$ was considered statistically significant.

Results: In the study, it was determined that 17.9% of the students had hepatitis B in the family and 17.9% of them had seen themselves at risk. Of the 290 students who participated in this study, 42% were HBV vaccinated, 21.6% completed the vaccination scheme, 35% of the students had HBV carriers and 20.7% were controlling HBV serology. The higher class of students, the rate of development of vaccination, control of HBV serology, HBV carrier, and protective response increased significantly ($p < 0.01$). Gender, parental level of education did not have a statistically significant effect on the answers given to the questions.

Conclusions: The level of awareness of HBV in dental school students is not at the desired level. We believe that the students who start the first semester of the dental school will be educated by the infection control committees collectively and vaccination will solve this problem.

Keywords: Hepatitis B, dental students, infection

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Introduction

Compared with the general population, healthcare professionals are at greater risk of developing infectious diseases transmitted by blood

and blood products (1). Among healthcare professionals, those in the field of dentistry have a particularly elevated risk of contracting infectious diseases. During dental practice, the dentist, dental assistant, patient, and dental technician can acquire

infections from one another, a phenomenon termed cross-infection (2). These professionals are at particular risk of contracting hepatitis B virus (HBV) (3). Therefore, students, academic personnel, and clinical assistants should be familiar with the characteristics, transmission routes, and prevention of contagious diseases (2). Priority should be given to knowledge about sterilization and disinfection methods and prevention or minimization of transmission risk (4).

Currently, chronic viral hepatitis is an important health problem. HBV has a greater potential of becoming chronic, and it can lead to fatal complications such as cirrhosis and hepatocellular cancer (1). HBV is transmitted through blood and body fluids during parenteral, perinatal, horizontal, or sexual contact (5). In Turkey, 3–7% of the general population carries HBV (6), and its reported rate among healthcare personnel is 1.6% (7). Healthcare professionals, hemodialysis patients, those with multiple sexual partners, intravenous drug users, and babies born to infected mothers constitute high HBV risk groups (8). Studies performed in Turkey have revealed that 1.3–14.3% of health professionals are HBV carriers (9, 10). Among health care professionals, surgeons and dentists constitute the most important risk groups for HBV infection because they perform invasive procedures more frequently and are exposed to patients' blood (10).

Dentists who have contact with patients' blood and secretions are in a high-risk group for parenteral contamination. Inevitably, the exposure rate among dentistry students is even higher due to their inexperience and technical inadequacies (11). Previous studies have demonstrated that 66–80% of dentistry students are exposed to HBV infection (11, 12). Therefore, these students should be warned against these risks, educated about the appropriate measures to take, and informed about the best response in cases of suspected exposure.

In this study, we aimed to evaluate the demographic characteristics and HBV vaccination and serological status of students in the Dentistry Faculties of Firat and Dicle Universities, who are at high risk of contracting viral hepatitis.

Materials and Methods

Study group

This cross-sectional study was conducted during the 2016–2017 academic year with 290 first- and second-year students (156 males, 134 females) in the Faculties of Dentistry of Firat and Dicle Universities.

Data Collection

Sociodemographic data were collected using a personal information form developed by the investigators, and information about students' HBV vaccination status was collected using a 16-item questionnaire.

Personal Information Form: This form was developed by the investigators to collect information on respondents' age, gender, grade, and university; their parents' educational level; and the presence of any health professional in the family.

HBV Questionnaire: As no standard survey evaluating the HBV vaccination status of dentistry students is available, the investigators prepared a questionnaire of this nature with reference to other questionnaires (2, 13). Questionnaire items inquired about students' family history of jaundice; whether they considered themselves to be at risk of HBV infection; their HBV serological, carriership, and vaccination status; their most recent immunization; their HBV titers after vaccination; and the development of a protective response. Seven of the 16 questionnaire items concerned respondents' demographic characteristics. As requested by the respondents, response options for nine items regarding hepatitis B were "yes," "no," and "I don't know."

Procedure

The survey was administered to the students in their classrooms under supervision. Before administration, the students were told that they were not obligated to participate in the study or disclose their names, and informed consent was obtained from participants. The students were also informed that the data would be used for scientific research purposes and that they would be given guidance on all survey items. Volunteer participants then completed the forms.

Statistical Analysis

SPSS software (ver. 21.0 for Windows) was used for the statistical analysis. The chi-squared test was used, with a significance level of $p < 0.05$.

Results

Demographic characteristics

This study included 134 (46.2%) female and 156 male (53.8%) students whose mean age was 20.04 ± 1.93 years. Of these, 151 (52.1%) participants were first-year students, and 139 (47.9%) were second-year students.

HBV vaccination and serological status

Survey responses indicated that 17.9% of the students had family histories of HBV, with no difference according to gender ($p > 0.05$). Comparable proportions of female (5.8%) and male (12.1%) students perceived that they were at risk of HBV infection ($p > 0.05$). HBV serological control rates and carrier status did not differ between

female and male students (both $p > 0.05$). Similar proportions of female (40.5%) and male (43.4%) students had been vaccinated ($p > 0.05$).

The HBV vaccine dose and last day of immunization did not differ between male and female students (both $p > 0.05$). Comparable proportions of female and male students measured their post-vaccination HBV titers and developed protective responses (both $p > 0.05$; Table 1).

Significant differences were detected between students at Firat and those at Dicle Universities in the HBV carrier status ($p = 0.014$), vaccination rate ($p = 0.001$), timing of the final vaccine dose ($p = 0.037$), and measurement of the post-vaccination HBV titer ($p = 0.035$). No significant difference was found in respondents' history of HBV, perception of themselves as at risk of contracting HBV infection, serological testing, vaccination dose, or development of a protective response (all $p > 0.05$; Table 2).

Table 1. The comparison of students' responses to questions according to gender

Questions		Male	Female	p*
Do family members have hepatitis?	yes	19	21	0.782
	no	72	63	
	do not know	26	22	
Do you see yourself in the risk group for HBV?	yes	27	13	0.116
	no	66	69	
	do not know	25	23	
Did you control the HBV serology?	yes	20	26	0.142
	no	72	51	
	do not know	25	28	
Are you a HBV carrier?	yes	40	38	0.091
	No	56	58	
	do not know	22	9	
Did you make the HBV vaccine?	yes	62	51	0.353
	No	23	29	
	do not know	58	46	
How many doses did HBV vaccine?	1 dose	7	9	0.832
	2 doses	6	5	
	3 doses	23	17	
	do not know	63	55	
When did you get the last dose?	≤ 5	22	21	0.837
	≥ 6	27	21	
	do not know	42	40	
Did you measure your temper after vaccination?	yes	11	6	0.190
	no	31	37	
	do not know	45	32	
Has the protective response developed?	yes	7	7	0.980
	no	19	18	
	do not know	37	38	

* $p < 0.05$, chi-square test

Table 2. The comparison of students' responses to questions according to the faculty and class

Questions		University		p	Class		p
		Firat	Dicle		I class	II class	
Do family members have hepatitis?	yes	15	25	0.856	17	23	0.049
	no	51	84		86	49	
	do not know	16	32		26	22	
Do you see yourself in the risk group for HBV?	yes	17	23	0.459	19	21	0.514
	no	71	64		67	68	
	do not know	22	26		28	20	
Did you control the HBV serology?	yes	22	24	0.979	13	33	0.001*
	no	61	62		62	61	
	do not know	26	27		39	14	
Are you a HBV carrier?	yes	39	39	0.014*	16	62	0.001*
	no	63	51		80	34	
	do not know	8	23		18	13	
Did you make the HBV vaccine?	yes	53	60	0.001*	51	62	0.008*
	no	29	23		22	30	
	do not know	28	76		66	38	
How many doses did HBV vaccine?	1 dose	7	9	0.352	9	7	0.069
	2 doses	7	4		3	8	
	3 doses	16	24		16	24	
	do not know	43	75		69	49	
When did you get the last dose?	≤5	23	20	0.037*	19	24	0.437
	≥6	23	25		24	24	
	do not know	26	56		46	36	
Did you measure your temper after vaccination?	yes	12	5	0.035*	6	11	0.212
	no	28	40		40	28	
	do not know	29	49		40	37	
Has the protective response developed?	yes	6	8	0.563	2	12	0.018*
	no	12	25		20	17	
	do not know	32	43		41	34	

*p<0.05, chi-square test

Significant differences between first- and second-year students were detected in family histories of HBV positivity (13.2% vs. 24.5%), serological testing (11.4% vs. 30.6%), HBV carrier status (14% vs. 56.9%), HBV immunization (36.7% vs. 47.7%), and development of a protective response (3.2% vs. 19%; all p<0.05). No significant relationship was observed between students' year in school and responses to other items (all p>0.05; Table 2).

No significant relationship was detected between survey responses and parents' educational levels or the presence of a healthcare worker in the family (both p>0.05; Tables 3, 4 and 5)

Discussion

Epidemiological studies on oral and dental health reveals the importance of the problem of

dental health in our society. Protective measures that should be taken for dental health and indicating the need and importance of periodontal health plays an important role in raising awareness of the society. Dental problems can be minimized and more effective results can be obtained with giving information about tooth decay and dental plaque to the community, regular brushing and dental care. It has been emphasized that, in the basic and other studies on the care of the mouth, for regular and adequate oral hygiene, the teeth should be brushed at least 2 times a day and cleaned with dental floss once a day. Tooth decay and periodontal disease are observed in the rate of 96% in Turkish population (9). In Turkey, it has been seen that with the evaluation of the results of epidemiological studies performed in order to determine oral health, the importance giving to tooth and gingival health was less and tooth loss due to tooth decay and Periodontal diseases was very high levels. Of the factors involved in the etiology of tooth loss and

identification of measures that can be taken is of great importance.

It has been proposed that to evaluate the oral and dental health of patients between the ages of 12-79 admitted Dicle University Faculty of Dentistry Periodontology Clinic by considering all of data.

In the epidemiological studies on periodontology; the indices that do not cause large differences between practitioners and applied easily are preferred. CPITN index developed by WHO is used commonly for these reasons (4,10). Almas et al (11) have reported that, there was no direct relation between CPITN scores and plaque and gingival

index. On the other hand, they emphasized that, there was a relationship between CPITN and papilla bleeding and pocket depth index. It has been emphasized that, CPITN was weak guide for determining the gingivitis, but a good indicator for chronic periodontal disease. Also, it was originally proposed as an appropriate estimation of disease in large epidemiological surveys and has contributed to an understanding of the epidemiology of periodontal disease on a global level (12). In our study, the relationship between periodontal and smoking habits of individuals was investigated by using the CPITN index system.

Table 3. The comparison of students' responses to questions according to the father's education level

Questions		Father's Education Levels					p
		Literate n	Primary school n	Secondary school n	High school n	University n	
Do family members have hepatitis?	yes	2	10	4	10	14	0.799
	no	9	31	18	26	51	
	do not know	4	7	6	15	16	
Do you see yourself in the risk group for HBV?	yes	1	12	5	5	17	0.454
	no	8	21	19	36	51	
	do not know	4	9	7	10	18	
Did you control the HBV serology?	yes	1	10	10	10	15	0.378
	no	6	22	17	30	48	
	do not know	6	10	4	11	22	
Are you a HBV carrier?	Yes	2	19	7	18	32	0.240
	no	8	17	17	25	47	
	do not know	3	6	7	8	7	
Did you make the HBV vaccine?	yes	6	18	16	26	47	0.387
	no	2	11	7	12	20	
	do not know	8	31	10	23	32	
How many doses did HBV vaccine?	1 dose	1	2	2	5	6	0.190
	2 doses	1	3	1	1	5	
	3 doses	2	2	4	12	20	
	do not know	6	36	16	22	38	
When did you get the last dose?	≤5	1	9	2	11	20	0.244
	≥6	3	7	6	10	22	
	do not know	3	24	14	15	26	
Did you measure your temper after vaccination?	yes	0	3	0	5	9	0.270
	no	5	10	10	13	30	
	do not know	3	21	8	19	26	
Has the protective response developed?	yes	1	3	1	4	5	0.616
	no	1	11	7	7	11	
	do not know	5	11	10	17	32	

*p<0.05, chi-square test

Table 4. The comparison of students' responses to questions according to the mother's education level

Questions		Mother's Education Levels					p
		Literate	Primary school	Secondary school	High school	University	
		n	n	n	n	n	
Do family members have hepatitis?	yes	10	13	6	7	4	0.967
	no	34	42	21	23	15	
	do not know	10	15	7	7	9	
Do you see yourself in the risk group for HBV?	yes	9	16	8	5	2	0.100
	no	26	37	20	33	19	
	do not know	12	15	9	3	9	
Did you control the HBV serology?	yes	10	14	11	6	5	0.718
	no	23	37	20	26	17	
	do not know	14	17	6	8	8	
Are you a HBV carrier?	yes	17	27	9	16	9	0.599
	no	20	34	23	20	17	
	do not know	10	7	5	5	4	
Did you make the HBV vaccine?	yes	22	32	22	21	15	0.151
	no	7	16	8	12	9	
	do not know	33	34	12	13	12	
How many doses did HBV vaccine?	1 dose	3	4	5	1	3	0.342
	2 doses	3	1	2	2	3	
	3 doses	8	10	8	10	4	
	do not know	30	43	16	16	13	
When did you get the last doses?	≤5	4	10	10	8	11	0.018*
	≥6	9	17	8	11	3	
	do not know	24	29	11	10	8	
Did you measure your temper after vaccination?	yes	1	3	4	6	3	0.293
	no	18	20	11	9	10	
	do not know	18	26	14	12	7	
Has the protective response developed?	yes	3	5	3	1	2	0.709
	no	13	9	7	6	2	
	do not know	19	17	12	6	11	

*p<0.05, chi-square test

Table 5. The comparison of students' responses to questions according to their being a health worker in their family

Questions		There is a health worker in the family	No health worker in the family	p
Do family members have hepatitis?	yes	13	27	0.158
	no	66	69	
	do not know	24	24	
Do you see yourself in the risk group for HBV?	yes	24	16	0.257
	no	61	74	
	do not know	23	25	
Did you control the HBV serology?	yes	23	23	0.113
	no	65	58	
	do not know	19	34	
Are you a HBV carrier?	yes	45	33	0.125
	no	50	64	
	do not know	13	18	
Did you make the HBV vaccine?	yes	55	58	0.189
	no	30	22	

	do not know	44	60	
How many doses	1 dose	7	9	0.644
did HBV vaccine?	2 doses	5	7	
	3 doses	22	18	
	do not know	54	64	
When did you	≤5	18	25	0.593
get the last dose?	≥6	24	24	
	do not know	42	40	
Did you measure your	yes	7	10	0.170
temper after vaccination?	no	29	39	
	do not know	45	33	
Has the protective	yes	6	8	0.674
response developed?	no	19	18	
	do not know	32	43	

*p<0.05, chi-square test

In our study, it has been detected that, periodontal disease findings increased depending on age. This finding is consistent with the findings of many studies performed before on this subject (13-15). Researchers have reported that, periodontal diseases were more common in older individuals, and these individuals had poor oral hygiene (15-18). In middle-aged and elderly individuals, moderate loss of attachment was found highly, severe loss of attachment was less and similar results could be said about bone loss (16).

Tobacco smoking, mostly in the form of cigarette smoking, is recognized as the most important environmental risk factor in periodontitis (3). It has been estimated that about a third of the male adult global population smokes. Among the young, one in five smokes worldwide (12). Individuals who smoke for a long time can lose their lives due to systemic diseases seen in connection with smoking. Therefore, it is seen that, quitting smoking and even never starting is the most practical way in order to prevent periodontal disease / tooth loss, tobacco-related diseases and improve the quality of life (19, 20).

In a study from the United States, the frequency of smoking in older individuals between the ages of 50-70 has been identified as 19%. In another study from Mexico, in individuals aged 60 and over, smoking prevalence was detected as 13% (15). Baelum et al (17) in their study performed in Thailand, have detected that the rate of smoking between the ages of 30-39 was 39%, between the ages of 50-59 was 45%.

Axelsson et al (21) have reported that, approximately 30% of the individuals participating in the study were smokers, but the distribution was not equal in terms of age and sex. In the study performed by Eren et al (15) it has been come out that, 25% of individuals included in the study smoked at any period of their life. In a study performed in order to elucidate the prevalence of

smoking of young people in Turkey, this rate was detected as 30.6% (20). The rate of smoking among individuals included in our study was detected to be 35%.

In several epidemiologic studies, it has been reported that, the effect of smoking on young individuals was similar to older ones. Researchers concluded that, smoking was a risk factor for periodontal diseases from an early age and will double the likelihood of periodontitis occurring by the mid-twenties and associated with accelerated periodontal destruction among young adults (2, 4, 17, 22). However, there are some studies which do not find the relationship between smoking and periodontal destruction in young individuals (23-25). Yücesoy and Balos (22) have reported that, smoker and nonsmoker groups were in need of a high rate of initial periodontal therapy, but in smokers group, the need for treatment increased more. In another study it was reported that, poor periodontal health knowledge was associated with low-level treatment need and smoking was associated with high-level treatment need. Hence, it is possible to decrease community need for periodontal treatment with the elimination of acquired risk factors of periodontitis. (26).

Conclusions

The education of first-year dentistry students about HBV infection control before they come into contact with patients is extremely important. Periodic controls should also be performed to ensure that students receive adequate doses of vaccine. In conclusion, all dentistry students should be vaccinated before the clinical stage of their education, and they should be educated about HBV and other high-risk infections.

Acknowledgments

The authors deny any conflicts of interest related to this study.

References

- Kömerik N, Akçam Z, Gönen İ, Karaduman Dai. An investigation of dental students' hepatitis b immunisation status and extent of awareness on viral hepatitis. *Journal of Faculty of Dental faculty of Atatürk University* 2005;15(2):21-25.
- Ataç A, Özbek M, Erbudak H, Arslan U. Evaluation of knowledge levels of clinical students in Hacettepe university faculty of dentistry on infection control. *Journal of Faculty of Dental faculty of Hacettepe University* 2008;32:10-7.
- Kohn WG, Collins AS, Cleveland JL, Harte JA, Eklund KJ, Malvitz DM. Guidelines for infection control in dental healthcare settings-2003. *MMWR Recomm Rep* 2003;52(17):1-61.
- Abacıgil F, Ulu G, Piringçi S, Arıkan A, Okyay P, Beşer E. Knowledge of hepatitis b virus infection and infection control practices among faculty of dentistry workers, in Aydın. *TAF Preventive Medicine Bulletin* 2016;15(5):421-30. [Crossref](#)
- Tekin-Koruk S, Koruk İ, Şahin M, Duygu F. Evaluation of hbsag, anti-hbs and anti-hcv positivity and risk factors among oral and dental health workers in Şanlıurfa. *Journal of Klimik* 2009;22(2):55-61.
- Demir İ, Kaya S, Demirci M, Cicioğlu-Ardoğan B. Investigation of seropositivity of hepatitis B virus in healthcare workers in Isparta. *Turkish Journal of Infection* 2006; 20: 183-7.
- Akca G. The blood borne viral infections and the importance in dentistry. *Turkish Journal of Hospital Infections* 2008;12:5-10.
- Kader Ç, Yolcu S, Erbay A, Kılıç Akça N, Yüzer S, Polat S. Investigation of Hepatitis-B and C Seroprevalences in Bozok University School of Health Students. *Viral Hepatitis Journal* 2012;19(2):49-53. [Crossref](#)
- Kurt H, Türçapar N, Battal İ, Tekeli E, Meço O. The frequency of viral hepatitis (A, B, C, D) infection in health care workers in high risk groups. *Viral Hepat J* 1997;1:56-9.
- Demirtürk N, Aykın N, Eldemir H, Demirdal T. Knowledge of surgeons and dentists about the hepatitis B and C. *Turkish Journal of Hospital Infections* 2004;8(4):304-9.
- Stewardson D, Palenik C, McHugh E, Burke F. Occupational exposures occurring in students in a UK dental school. *European Journal of Dental Education* 2002;6(3):104-13. [Crossref](#)
- Kennedy J, Hasler J. Exposures to blood and body fluids among dental school-based dental health care workers. *Journal of Dental Education* 1999;63(6):464-9.
- Uzun E, Akçam FZ, Zengin E, Kişioğlu AN, Yaylı G. Evaluation of the Hepatitis B infection status, knowledge and behaviours of the research assistants of SDU School of Medicine. *Medical journal of Suleyman Demirel University* 2008;15(1):22-7.
- Kunches LM, Craven DE, Werner BG, Jacobs LM. Hepatitis B exposure in emergency medical personnel: Prevalence of serologic markers and need for immunization. *The American Journal of Medicine* 1983;75(2):269-72. [Crossref](#)
- Yılmaz MZ, Torun AC, Şentürk F, Muğlalı M, Özkan N. Evaluation of the distribution of exposure to infection and prevention methods in dentistry according to professional experience and clinics Abant Medical Journal. 2015;4(1):33-40.
- McCarthy GM, Britton JE. A survey of final-year dental, medical and nursing students: occupational injuries and infection control. *Journal-Canadian Dental Association*. 2000;66(10):561-561.
- Tomruk CÖ, Özkurt Z, Gürsoy H, Şengift K. Evaluation of status, knowledge levels and attitude of students in yeditepe university faculty of dentistry on hepatitis B infection. *Cumhuriyet Dental Journal* 2011;14(2):78-91.
- Sivarajasingam V, Laszlo J, Ogden G. Extent of hepatitis B immunisation among medical and dental students. *BMJ* 1995;311(6999):231. [Crossref](#)
- Kulekci G, Balkanlı O, Inanc D, Guvener Z. Hepatitis B prevalence in dentistry. *Journal of Turkish Society of Microbiology* 1991;21:109-17.
- Doğan G, Bayındır Y, Kayabaş Ü, Tekerekoğlu M, Yoloğlu S, Ersoy Y. Seroprevalences of hepatitis B and C among dentists and dental health care workers. *Klimik Journal* 2005;18(3):121-4.
- Sarı N, Günel Ö, Dizbay M, Hızal K, Aktaş F. The Investigation of HBsAg and Anti-HCV Seroprevalence in Cleaning Staff and Nurse in a University Hospital. *Viral Hepat J* 2006;11(3):126-31.
- Pahsa A, Erdemoğlu A, Özsoy M, Emekdaş G, Özer M, Kocabeyoğlu Ö. Seroprevalence of hepatitis B and C in health workers. 9. Turkish Clinical Microbiology and Infectious Diseases Congress, Antalya, Congress book. 1999;234. [Crossref](#)
- Kutlu R, Çivi S, Aslan R. Measles, rubella, mumps and hepatitis B seroprevalence among the female medical students. *TAF Prev Med Bull.* 2011;10(5):549-56. [Crossref](#)
- Savaşer S, Balcı S, Ceylan N, Yalçın ZH, Direk M, Balcı F. Awareness about the hepatitis b and prevention of hepatitis b among high school students. *Florence Nightingale Journal of Nursing* 2011;19(1):1-8.
- Çelen M, Ayaz C, Geyik M, Hoşoğlu S, Acemoğlu H, Uluğ M. The results of the poll which is about rank of knowledge of viral hepatitis at high school students. *Viral Hepat J* 2005;10(1):58-61.
- Ünsal A, Tözün M. Knowledge level of high school students on hepatitis B - Eskişehir. *TAF Preventive Medicine Bulletin.* 2012;11(5):609-616. [Crossref](#)