# Hepatitis B and C infection-related knowledge, attitude and practices of dentists practicing in Yerevan: a cross sectional survey

**Master of Public Health Integrating Experience Project**

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**By**


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**List of Abbreviations**

**CDC**- Centers for Disease Control and Prevention

**KAP** -Knowledge, Attitude and Practice

**WHO**-World Health Organization

**EU**-European Union

**USA** – United States of America

**UK** – United Kingdom

**AUA-** American University of Armenia

**CHSR**- Center for Health Services Research and Development

**MOH**-Ministry of Health

**SD**-Standard Deviation

**IRB**-Institutional Review Board

**CI**-Confidence Interval

**HBV-** Hepatitis B virus

**HCV-** Hepatitis C virus

**HIV**- Human Immunodeficiency Virus

**BBP**- Blood Borne Pathogens

**IC-** Infection Control

**NHS -** National Health Services

**YSMU** – Yerevan State Medical University

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**Abstract**

**Background:** Hepatitis C and B are infectious diseases; the former is caused by the hepatitis C virus (HCV), the latter by the hepatitis B virus (HBV). According to the Glasgow declaration of viral hepatitis (World Hepatitis Summit 2015), the infection is present in all parts of the world and currently there are 400 million people living with Hepatitis B and/or C infection, and 1.4 million people die annually from complications of these infections. According to WHO, health care workers are at high risk of developing hepatitis infection and vaccination against hepatitis B of all healthcare workers who are being in a contact with blood is highly recommended. A recent literature review shows that along with other various factors, dental treatment can be a risk factor for Hepatitis B and C infections. Until present, no studies have assessed Hepatitis B and C related knowledge, attitude and practice of dentists in Armenia.

**Aim:** The study aimed to investigate the knowledge, attitude and practices (KAP) regarding Hepatitis B and C of dentists practicing in Yerevan.

**Methodology:** A cross-sectional survey design was used for this study. Multistage cluster sampling technique was applied. Firstly, dental clinics were randomly selected from the list of all dental clinics in Yerevan. Then if the clinic had more than four dentists, the participating dentists were again selected randomly. Overall, 120 dentists participated in the survey. The interviews were administered by phone. The study instrument included domains on dentists' socio-demographic and work-related characteristics, as well as knowledge, attitude and practice regarding hepatitis B and C. Descriptive analysis was carried out to address the research questions and multivariable linear regression analysis to identify socio-demographic and work-related characteristics significantly associated with the outcomes of knowledge, attitude, practice, and KAP scores.

**Results:** The majority of study participants were men (67.5%), the mean age of the participants was 37 (SD=9.8) years old. The mean working experience of dentists was 13 (SD=9.7) years. The mean knowledge percent score was 63.7 (SD=12.1), the mean attitude percent score was 56.9 (SD=23.9), and the mean practice percent score was 69.7 (SD=9.7). Overall, the dentists had good knowledge on Hepatitis B and C transmission roots, but poor knowledge on vaccination and transmission risk-related information. The dentists had moderate attitude toward hepatitis B and C infected patients. More than half of the dentists (54.2%) agreed that patients infected with Hepatitis B and C should receive treatment in specialized clinics. The study showed that not all dentists trust infection control procedures, which could be a reason for their avoiding/cautious attitude towards infected patients. Overall, the dentists reported relatively good infection control practices (69.7%). However, the percentage of those vaccinated against Hepatitis B was low (25.8%) among them. Also, the vast majority of participated dentists (96.7%) reported a dangerous practice of recapping needles. The mean KAP percent score of dentists was 63.4 (SD=8.7). Multivariable linear regression analysis identified positive

association between KAP score and dentist's weekly workload (B=0.07, p=0.001, 95% CI 0.31, 3.29). Attitude score was also positively associated with weekly workload (B=0.05, p=0.004, 95% CI 0.28, 2.9), while knowledge score was negatively related to participant's age (B=-0.04, p=0.029, 95% CI -0.24, -2.22). None of the available variables were significantly associated with the practice score.

**Conclusion:** Educational programs need to be organized for dentists in order to increase their awareness on Hepatitis B and C and improve their attitude towards Hepatitis B and C-infected patients. Infection control practices need to be properly taught and enforced. Further studies assessing the prevalence of Hepatitis B and C infections among dentists in Yerevan can help identify the high risk groups.

## Introduction

Hepatitis C and B are infectious diseases caused by the hepatitis C virus (HCV)[1] and hepatitis B virus (HBV), respectively.[2] Chronic type of hepatitis C can have a long latent period when the infected person may not have any complaints, but later it may cause liver cirrhosis or cancer.[3,4] Studies indicate that 80% of hepatitis C infection leads to chronic infection, 10-20% to chronic liver diseases such as liver cirrhosis in 20 or 30 years after the infection onset, and 1-5% to liver cancer.[1] Hepatitis B virus can also have a long latent period from 30 – 180 days (75 on average).[5] Less than 5% of infected individuals may develop chronic infection and of those infected adults 20-30% will have complications like liver cirrhosis and cancer.[6] According to the Glasgow declaration of viral hepatitis (World Hepatitis Summit 2015), the infection is present in all parts of the world and currently there are 400 million people who live with Hepatitis B and/or C infection, and 1.4 million people die annually from complications of these infections.[7] Many people around the world who have Hepatitis are not aware about the source of their infection.[8] According to WHO, health care workers are at high risk of developing hepatitis infection and vaccination against hepatitis B of all healthcare workers who are being in a contact with blood is highly recommended.[9,10,11] A recent literature review shows that along with other various factors, dental treatment can be a risk factor for Hepatitis B and C infections.[3,12,13,14] The treatment of Hepatitis C infection is very expensive and thus, unaffordable for the majority of people living in low/middle-income countries, that is why it poses a huge burden to societies of these countries.[1]

Also, unlike Hepatitis B infection that could be prevented via vaccination, there is no vaccination for Hepatitis C infection.[15] As resent US national statistics show, the prevalence of Hepatitis C is higher than the prevalence of HIV.[3] Unprotected sexual contact, intravenous drug usage, vertical transmission from mother to fetus and exposure to virus during different medical procedures

(including dental procedures) are the main routs of both Hepatitis C and B transmission.[3,16,17] According to CDC, even one needle stick injury with infected blood poses a 6-30% (depending on the type of viral antigens) risk of causing infection with HBV if the health care worker is not vaccinated, and for the HCV the risk is estimated to be 1.8% from a single needle stick injury with infected blood.[9] Recent studies found Hepatitis B and C viral particles in saliva and cervical fluid.[3,9] Literature also indicates that dental workers are at a higher risk for developing Hepatitis B and C and they can infect their patients if they do not follow the proper infection control procedures.[3,18] Studies did not find associations between viral hepatitis infection and dental treatment in those countries where the standard procedures of infection control are enforced (USA, Australia, Western European countries).[3] In contrary, in countries were infection control procedures are not properly followed (i.e. countries in Africa, Middle East, and Eastern Europe), studies show significant associations between dental treatment and Hepatitis B and C infections.[3] Literature indicates that poor infection control training of dentists is associated with wrong risk perception among them and bad attitude towards patients infected with blood borne pathogens (BBP).[18] A study in Latin American dental schools, which vary a lot in terms of providing modern, evidence based infection control trainings, identified that the less the graduates of those medical schools know about the routes of exposure to Hepatitis B and C and also HIV, the more likely they are to refuse to treat patients with these infections.[19] Another study in Turkey found that the majority of dentists had moderate knowledge on proper infection control requirements, however, concluded that dentists still need continuous educational programs on infection control.[20] Another interesting study was conducted in the UK, and the reason for this investigation was the fact that some HIV positive patients faced difficulties to receive dental treatment by National Health Services (NHS) as dentists refused to treat them. Therefore, the study aimed to investigate the knowledge and attitude of dentists towards patients who have blood borne infections. The results

showed that the higher was the knowledge among dentists, the more they felt ethically responsible to treat patients with blood borne infections. This study also found that older dentists had worse attitude towards those patients then younger dentists, concluding that older dentists need more formal trainings on infection control and blood borne infectious diseases.[21] A qualitative study conducted in Australia explored dentists' views on treating patients infected with Hepatitis C and found that even though dentists were well aware about infection control procedures, they did not quite trust those procedures which made them to change their behavior towards infected patients.[11] A study conducted in Romania found out that good knowledge of dentists on infection control is essential, but also adequate resources need to be available for maintaining proper infection control practices.[22] Another knowledge, attitude and practice (KAP) study conducted among Croatian dental students on treating patients with blood borne pathogens found negative correlation between lack of willingness to treat the infected patient and the knowledge about HIV, HBV and HCV of the students.[23]

According to the Global Burden of Disease (GDB) for Hepatitis C (WHO) in 2010, Armenia, as well as other Transcaucasia countries, have high prevalence rates of Hepatitis C.[24] In this region the prevalence of this chronic infection is higher compared to the EU countries. In Armenia the prevalence is 4%, in Azerbaijan 4%, in Georgia 6.7%, in Iran 0.9%, in Kazakhstan 3.2%, in Turkey 2.2% and in Kyrgyzstan it is 4%.[1,24] According to Gayane Melik-Andreasyan's research (The Research Institute of Epidemiology, Virology, and Medical Parasitology after A.B. Alexanian) and Hasmik Xazinyan's data (Armenian Hepatological Association), the prevalence of Hepatitis C in Armenia is 4%.[36,37] Unfortunately, there is no official data from the Ministry of Health (MOH) of Armenia on the prevalence of hepatitis C in Armenia. According to official data from the MOH, the prevalence of chronic Hepatitis B in Armenia has declined from 22.3 per 100.000 in 1990 to 2.3 per 100.000 in 2015,[25] and this is due to high coverage of children with Hepatitis B

vaccination (the universal vaccination of children against hepatitis B was implemented in 2000).[26,27] Nowadays, approximately 2% of the population in Armenia is infected with hepatitis B.[26] For the first dose of Hepatitis B vaccine at birth, the coverage is almost 98%, and for the Pentavalent vaccine which also includes Hepatitis B vaccine, the coverage is 94%.[25] In Armenia there is no data on Hepatitis B vaccination coverage among healthcare workers including dentists. According to the MOH December 5, 2011 order 25-N, which specifies the requirements for infection control in dental clinics, there is no mandatory vaccination of dentists against hepatitis B.[28] There has not been any study in Armenia to assess the knowledge, attitude and practices of dental workers regarding hepatitis B and C.

*Description of proposed project*

The study aimed to investigate the knowledge, attitude and practices of dentists practicing in Yerevan regarding Hepatitis B and C, to find out what is needed in this sphere in Armenia and to highlight this serious public health issue one more time.

*The main research questions:*

- Do dentists in Yerevan have adequate knowledge about the roots of exposure to Hepatitis B and C infections?
- What kind of preventive measures are less commonly applied by dentists in Yerevan for preventing patients' exposure to blood borne pathogens?
- What is the attitude of dentists towards infected patients?
- Is there a relation between workload and Hepatitis B and C -related knowledge, attitude and practices of dentists?

- Do dentists in Yerevan have adequate knowledge and practice regarding Blood Borne Infection (BBI) control?

## Methods

*Study design and instrument*

A cross-sectional survey design was used for this study. It consisted of structured interviews. The interviews were mainly administered by phone. The questionnaire was a combination of already existing valid instruments that were widely used in other countries to assess the knowledge, attitude and practices of dentists on blood borne pathogens.[29,30,2] It contained four main domains: first domain included demographic information of a participant, second domain contained 14 questions on participant's knowledge on hepatitis B and C, third domain contained 11 questions on participant's attitude towards infected patients, and the last domain contained questions on participant's infection control (IC) practices. The questionnaire contained also questions on hepatitis B vaccination status of the respondent, a question about the university the dentist has graduated from and a question about continuous education on infection control practices the participant received. There were also questions about dentist's experience on accidents such as getting needle stick injury during work or blood or saliva of patient splashing into eyes, and the measures taken after those accidents. The student investigator translated the questionnaire and adapted it to the local context. The translated questionnaire was then pretested among a small number (10 participants) of health care workers from different spheres who were engaged in invasive procedures on a daily basis (Appendix 1). After the pretest minor corrections were made to finalize the questionnaire.

*Study population*

The study inclusion criteria was being a practicing dentist and working in Yerevan who was willing to participate.

*Sampling strategy*

The study sample size was calculated according to the formula for one group hypothesis testing for mean.[31] It was intended to have 2 point minimal detectable difference in KAP score with 80% power and 5% significance level.

$$n= (z_{\alpha}+z_{\beta})^2 *\sigma^2/d^2 =(1.96+0.84)^2*7.1^2/2^2=99$$

As the study applied cluster sampling, the design effect coefficient of 1.2 was used

$$n=99*1.2=119=120$$

The data was collected until reaching the intended sample size.

A multistage cluster sampling technique was applied to select the study participants. Firstly, dental clinics were chosen from the list of all dental clinics in Yerevan by simple random sampling, using "RANDBETWEEN" function of Excel software. The student investigator used Spyur registry of dental clinics in Yerevan as a sampling frame. Dental clinics were the clusters. Maximum four dentists were interviewed in each dental clinic. To recruit participants in each selected clinic, the student investigator made phone calls to the selected clinics and asked for an appointment with directors of those clinics. After arranging an appointment, the student investigator made a visit to the clinic, informed the director about the study, and asked for a permission to access the list of dentists who worked in that clinic. The study participants were chosen from these lists using a random digit generator application in the smart phone of the student investigator and their phone numbers were obtained. In cases when the clinic had only four or fewer dentists, all of them were

contacted for the interview. In few cases, directors of dental clinics agreed to participate, but refused to provide phone numbers of dentists, so the student investigator had to do face to face interviews with those exceptional cases.

*Data collection*

All data for the study were collected by student investigator. The interviews were mainly conducted by phone. All study participants were informed prior to interview about the study and their right to refuse participation or stop interview at any time. A unique ID number was assigned to each participant.

*Data analysis*

The main dependent variables were knowledge score, attitude score, practice score, and KAP score of dentists. The main independent variable was dentist's weekly workload (the average number of patients seen during a week). The intervening variables included dentist's age, sex, marital status, being a graduate of YSMU versus other universities, years of formal education, years of experience in dental practice, working in a private versus a state clinic, and having been trained on IC during the last 5 years. The data were entered into SPSS dataset. Data cleaning was done by randomly comparing 10% of questionnaires with the entered data, visual check-ups were made to find the outlier values and frequency analysis was conducted for almost all variables. Recoding of variables was also done in SPSS. To come up with the knowledge score, the student investigator recoded all the right answers to the questions measuring participant's knowledge as 1 and wrong or "don't know" answers as 0. Then all the 14 questions of knowledge domain were summed up to get the knowledge score for each participant.

To come up with the attitude score, the student investigator recoded the desired attitude as 1 and the undesired attitude and "uncertain" answers as 0 for all items measuring attitude. Then the 11 questions of attitude domain were summed to get the attitude score of the participants.

To come up with the practice score, the questions in the practice domain were recoded so that the desired practices (mainly answers "always") were coded as 1, and the undesired ("often", "sometimes", "never") practices as 0. For the question about recapping the needle, the answer "never" was coded as 1 and the options "always", "often", "sometimes" as 0. The questions about participant's vaccination status and getting laboratory testing to find out their HBV/ HCV status were also categorized as practice questions and recoded with "yes" answers coded as 1 and "no" and "don't know" answers as 0. The recoded items in the practice domain were summed to get the practice score for each participant. KAP score was calculated by summing up knowledge, attitude and practice scores. For each score, percent scores were also calculated. For dental specialization variable, student investigator combined specializations into three categories: first category included therapeutic dentists, pediatric dentists and family dentists, second category included surgical dentists and dentists with two or more specialties, and third category included orthopedic and orthodontic dentists. University where dentists received their undergraduate degree was dichotomized into two groups: dentists who graduated from YSMU and dentists who received their undergraduate dental education in other universities.

Data analysis was done using STATA software. Firstly, descriptive analysis was conducted to calculate means, standard deviations and frequencies of different study variables. Then correlation analysis was carried out to find out the relation between knowledge, attitude, and practice scores. After, linear regression analysis was conducted to explore the association between the knowledge, attitude, practice, and KAP scores and different characteristics of participants, including dentist's weekly workload, years of experience in dental practice, years of formal education, being a

graduate of YSMU versus other universities, age, gender, marital status, working in private versus state clinic and participation in IC training(s) during last 5 years. The results were considered statistically significant when P value was less than 0.05.

*Ethical considerations*

Institutional Review Board of American University of Armenia approved the study. The student investigator underwent special training on interviewing study subjects. All participants were provided an oral informed consent. Only ID numbers were recorded in the questionnaires. Only student investigator had access to the study database.

## Results

### Descriptive Statistics

*Administrative results*

Firstly, 30 dental clinics were randomly sampled from the list of all dental clinics in Yerevan. Additional 50 clinics were randomly selected to account for non-response and smaller-than-intended number of practicing dentists in each clinic. Overall, from 80 randomly selected clinics 14 had ineligible or wrong phone numbers. Out of the remaining 66 clinics, 40 participated in the study resulting in a response rate of 60.6%. Out of the 26 clinics not participating in the study, 12 (46%) refused immediately, four (15.5%) told that their director is not in the country and the rest 10 (38.5%) clinics kept postponing the interview (Chart 1). Out of the 40 clinics, 124 dentists

were contacted; four of them refused to participate. Overall, the response rate at this stage was 96.8%.

*Socio-demographic information*

Table 1 presents socio demographic characteristics of the study participants. The majority of the study participants were male (67.5%). The mean age of the participants (all practicing dentists) was 37 years old ranging from 23 to 71. Seventy percent of participants were married. Slightly more than a third (36.7%) of dentists were family (general) dentists. The mean work experience of participated dentists was 13 years ranging from 1 to 47 years. The majority of participants received their undergraduate dental education in Yerevan State Medical University (YSMU) (60.8%), almost a third (31.6%) in other universities of Armenia, while 7.5% of participated dentists studied in the universities abroad (Artsakh, Syria, Ukraine, Russia and Belarus). Two of the study participants (1.7%) mentioned being infected with hepatitis B in the past (they mentioned that they have been cured and currently they are not carriers of the virus), one of them (0.8%) mentioned that the infection was work related. There was no statistically significant difference in the KAP percent score between dentists of different specialties (Table 2). The descriptive statistics on knowledge, attitude and practice scores are provided in Table 3 and percent scores for each are depicted in Graph 1. Overall, the mean KAP percent score was 63.4%. There was no significant difference in knowledge, attitude, practice and KAP percent scores by age, gender and university where the participants received their undergraduate dental education (Table 4). However, there were significant differences between attitude and KAP percent scores by weekly workload of dentists (Table 4).

*Knowledge about hepatitis B and C*

The respondents' answers to hepatitis B and C knowledge related questions are presented in Table 5. The majority of study participants knew that hepatitis B and C are mainly transmitted through blood (98.3%), 85.8% agreed that HBV and HCV can be transmitted through sexual contact, 81.7% of the study participants knew that HBV and HCV can also be transmitted through blood splashing into mucous membranes of the eye or mouth, and 89.2% knew that it can also be transmitted through mechanical skin injury. Similarly, the majority of study participants (91.7%) knew that HBV and HCV cannot be transmitted through social contact and 95% of the participants knew that Hepatitis B and C can lead to liver cirrhosis or cancer. However, less than a half of the participants knew that there is no vaccination against hepatitis C (46.7%). A majority of participants (94.2%) agreed with the statement that "health care professionals belong to the high-risk group for hepatitis virus infections". Only 35.8% of the participants knew that after stick injury with an infected needle, the probability of becoming infected with hepatitis C is not 10-20%. Few participants (40%) knew that after needle stick injury one of the most effective preventions is getting vaccine against Hepatitis B during the first 24 hours after the injury. Moreover, only 40.8% of the participants agreed to the statement that transmission risk after infected needle stick injury is higher for hepatitis B virus in comparison with hepatitis C virus. Few of the study participants answered correctly to the questions about Hepatitis B (30.8%) and Hepatitis C (33.3%) prevalence rates in Armenia. The highest knowledge score recorded among study participants was 13 out of 14, while the lowest was 3. The mean knowledge score was 8.92 (SD=1.7). The mean knowledge percent score was 63.7%.

*Attitude towards patients infected with HBV or HCV*

A majority of participants (81.7%) stated that if they found out that their longtime patient has hepatitis B or C they would not stop treating that patient (Table 6). Overall, half of the respondents (54.2%) agreed with the statement that HBV/HCV infected patients should receive dental treatment in specialized clinics, and dentists should have a right to refuse to treat infected patients (51.7%). Nevertheless, 84.2% of the dentists agreed with the statement that dentists have a moral obligation to treat infected patients. Only 71.7% trusted infection control procedures and agreed that they are adequate for prevention of hepatitis B and C transmission in dental clinics. Among all participated dentists, 82.5% agreed with the statement that all patients should be considered as potentially infected. The highest score for attitude was 11 out of 11 and the lowest was 0. The mean attitude score was 6.26 (SD=2.6). The attitude percent score was 56.9%.

*Infection control practices*

Eighty percent of participated dentists stated that they had needle stick injury at least once during their working practice (Table 7). In 56% of cases, the injuries were due to a wrong movement during the work with a patient and another 40% of injury cases took place during recapping the used needle. In 10% of cases the injury took place while pulling out the needle and 5 % mentioned other situations when needle stick injury happened. In the majority of cases dentists stated that they washed the injured area with soap and water and/or applied antiseptics. However, in 2% of cases the dentists stated that they didn't pay any attention to the injury and continued to work. Seventy percent of the dentists stated that at least once they had blood or saliva splash into their eyes. Only 25.8% of the participants mentioned that they have received all three doses of hepatitis B vaccine. However, the majority of dentists (72.5%) mentioned that

they have been tested against hepatitis B or C at least once during their practice as a dentist. Overall, the majority of participants mentioned proper usage (98.4%) and changing of gloves between patients (100%), usage (96.6%) and changing of facemask between patients (80%). Hundred percent of participating dentists mentioned that they always wash hands before beginning the treatment and always wear gown. However, only 67.5% of participants wear protective eyewear while working. Recapping needles after usage was the most widespread dangerous practice reported by 96.7% of the dentists. Only 71.7% of the dentists take medical history from their patients about hepatitis B and C status. The highest score for infection control practice was 13 out of 14 and the lowest was 7. The mean practice score was 9.75 (SD=1.4). The practice percent score was 69.7% (Table 7).

**Correlation analysis**

We conducted correlation analysis between the three constituents of the KAP score (Table 8) and found a weak positive correlation between knowledge and practice scores, which was insignificant in our sample (correlation coefficient=0.131, p=0.15). Attitude score did not correlate with the scores of knowledge (correlation coefficient=-0.06, p=0.55), and practice (correlation coefficient=-0.03, p=0.77) (Table 8). There was significant correlation between attitude score and weakly workload of dentists (correlation coefficient=0.29, p=0.002).

**Regression analysis**

*Unadjusted results*

In a simple linear regression analysis, one unit change in the weekly workload of a dentist increased his/her KAP score by 0.52 (p=0.001, 95% CI 0.23-0.81) (Table 9). The association between KAP score and other socio demographic variables was also explored, but the analysis

did not identify other statistically significant associations (Table 9). The same set of variables was explored to find out associations between any of these variables and knowledge, attitude and/or practice scores (Tables 10; 11; 12). Age of participants was significantly associated with the knowledge score (p=0.023, 95% CI -0.47, -0.04), so that one year increase in the age of a dentist decreased his/her knowledge score by 0.26. Dental practice in years was also significantly negatively associated with the knowledge score: B= -0.23 (p=0.045, 95% CI -0.45, -0.00) (Table 10). Unadjusted analysis could also identify a positive association between workload and attitude score: B=0.17 (p=0.002, 95% CI 0.07-0.27) (Table 11). No other significant associations were found between the explored variables and the knowledge, attitude and/or practice scores (Tables 9; 10; 11; 12).

*Adjusted results*

The student investigator conducted multivariable analyses with three different outcomes: KAP percent score, knowledge percent score and attitude percent score to explore the identified significant associations in models controlled for other available variables. These analyses showed that only workload was significantly associated with KAP percent score (B=0.07, p=0.001, 95% CI 0.31, 3.29) (Table 13) and attitude percent score (B=0.05, p=0.004, 95% CI 0.28, 2.97) (Table 14), while age was significantly associated with knowledge percent score (B=-0.04, p=0.029, 95% CI -0.24, -2.22) (Table 15).

## Discussion

The study identified that only 25.8% of dentists in Yerevan are vaccinated against Hepatitis B, which is a very low rate compared to the results of a study conducted in Tehran where the vaccination status among dentists was 88.3%.[18] Similarly, according to a study carried out in Lahore (Pakistan), 90% of dentists were vaccinated against hepatitis B with small variations between dentists working in private vs. public sector.[32] The vaccination status of dentists was higher in India as well (62%).[33] This study identified that in Yerevan, the knowledge of dentists regarding Hepatitis B and C transmission patterns is good, but the knowledge about the prevalence of infections in the population they serve is low, which may lead to inadequate risk perception among them. These findings are similar to the results of a study conducted in Iran (Zahedan)(Graph 1).[30] The current study also identified that the knowledge of dentists about some features of Hepatitis B and C viruses is poor, and generally, dentists perceive HCV as more contagious than HBV. These findings are similar with a study done among Chinese dental interns.[29] Current study identified that only 40% of dentist knew that after a needle stick injury vaccination against hepatitis B is an efficient way to protect them against the disease. Moreover, the majority of dentists who indicated that they were exposed to patient's body fluids due to a wrong movement during work or recapping needle did not follow standard precautions recommended for such cases.[34] This finding is the same as in a study done in Iran were only 40% of the respondents knew about effectiveness of the vaccine after getting injured.[30] Majority of the study participants were not aware about the fact that there is no vaccine available against hepatitis C (46.7%), which is lower than in the study in Iran (52%). Among dentists in Yerevan, 84.2% agreed with the statement that dentists have moral obligation to treat HBV/HCV infected patients, which is higher than in the study conducted in the UK (66%).[21] However, compared to

the study that was done in the UK, in Armenia fewer dentists agreed with the idea that they can refuse to treat infected patients if they want so (56% vs. 48.3%).[21] In Yerevan fewer dentists (82%) consider all dental patients as potentially infected compared with the dentists of Iran (95%).[30] In contrast, fewer dentists in Yerevan (54%) think that HBV/HCV infected patients should be treated in specialized facilities, compared to the dentists in Iran (89%). [30]

Overall, dentists in Yerevan reported good infection control practices. Hundred percent of participants mentioned always changing gloves between patients, washing hands before treatment, sterilizing instruments in autoclave or dry heat, wearing gown. These results are higher than in other studies.[30,29,32] However, only 67.5% of dentists in Yerevan wear protective eyewear, which is similar to findings of a study in Romania.[22] Current study showed that dentists in Yerevan have a dangerous practice of recapping needles (96.7%), which results in frequent needle stick injuries; this is similar to the findings in Iran.[30]

In current study the KAP score of dentists towards Hepatitis B and C was significantly associated with dentist's weekly workload. We did not find reports on the association between dentists' workload and infection control knowledge and attitude in the reviewed studies. While the explored studies were able to identify positive correlation between knowledge on Hepatitis B and C and attitude towards infected patients, current study did not find a correlation between the two, while the weak correlation identified between knowledge and practice in this study was not statistically significant, that can be because of our small sample size.[23]

One of the main strengths of this study was strong sampling methodology, which helped to increase the generalizability of the study findings to all dentists working in Yerevan. However, the sampling frame that was used for the study was not complete, which could introduce bias. The lists of dentists working in certain clinics were not always complete as well. However, the student investigator tried to convince the directors of the selected dental clinics to provide the

complete list of all dentists working in their clinics (registered or non registered dentists). The fact that in some cases (5.8%) the student investigator had to conduct interviews face to face, but not by phone may have also introduced some bias, even though during those interviews participants were not looking in the questionnaire and the interviewer avoided to have eye contact with them. The other limitation is that the study findings are based on self-reported data, which may not be always honest.

**Conclusions**

Current study was the first study, which explored Hepatitis B, C related knowledge, attitude and practice among dentists of Yerevan. It was able to identify the fact that dentists in Yerevan generally have good knowledge about the patterns of transmission of Hepatitis B and C. The results showed that in the vast majority of cases dentists use gloves, facemask, gown and instrument sterilization via autoclave or dry heat to properly protect their patients from BBIs. However, the study results showed that dentists in Yerevan inadequately protect themselves: few of the participants were vaccinated, not all of them used protection for their eyes, and the practice for taking patient's history about HBV/HCV status was uncommon. Also, they usually took no proper preventive measures in cases of being injured with sharp instruments. The study also identified that few dentists trust IC procedures and that dentists' attitude towards infected patients is not always positive. There was positive relation between dentists' weekly workload and their attitude towards infected patients. However, the study was not able to elucidate other factors that could be associated with certain type of attitude towards infected patients.

Educational programs need to be organized for dentists practicing in Yerevan in order to increase their awareness on infection control and improve their attitude towards Hepatitis B and C-infected patients. Infection control practices need to be properly taught and enforced. Also,

infection control protocols and procedures should be followed in all clinics, including protocols on actions that should be undertaken in cases of sharp instrument injuries or eye splashes with patients' body fluids. Further studies are recommended to determine the Hepatitis B and C status among dentist in Yerevan. Simulation studies can be done with standardized infected patients in order to determine which percent of dentists in Yerevan are willing to treat infected patients in reality. In addition, similar studies can be done with other health care professionals who are doing invasive therapies and also with nurses. A qualitative study may also help to understand the factors that are associated with certain types of attitudes towards infected patients.

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## Tables

**Table 1: Socio-demographic information**

| Characteristics | Mean | SD |
|---|---|---|
| Age (years) | 37 | 9.8 |
| University education duration (years) | 7.0 | 1.7 |
| Dental practice (years) | 12.8 | 9.7 |
| Worked days per week | 5.3 | 1.2 |
| Worked hours per day | 6.1 | 1.7 |
| Average number of patients treated per day | 4.8 | 2.3 |
| | **%** | **N** |
| Gender | | |
| *Male* | 67.5 | 81 |
| *Female* | 32.5 | 39 |
| Marital Status | | |
| *Married* | 70 | 84 |
| *Divorced* | 1.7 | 2 |
| *Widowed* | 1.7 | 2 |
| *Single* | 25.8 | 31 |
| *Other* | 0.8 | 1 |
| Dental specialty | | |
| *Therapeutic* | 20 | 24 |
| *Surgical* | 9.2 | 11 |
| *Orthopedic* | 12.5 | 15 |
| *Orthodontic* | 9.2 | 11 |
| *Family (general)* | 36.7 | 44 |
| *Pediatric* | 1.7 | 2 |
| *Combination 2 or more specialties* | 10.8 | 13 |
| University of undergraduate degree | | |
| *Yerevan State Medical University* | 60.8 | 73 |
| *Haybusak University* | 12.5 | 15 |
| *AmirdovlatAmasiaci Medical Institute* | 0.8 | 1 |
| *Armenian Medical Institute (Erebuni)* | 10.8 | 13 |
| *University of Traditional Medicine* | 5.0 | 6 |
| *Mayr Theresa University* | 2.5 | 3 |
| *Other* | 7.5 | 9 |
| Type of clinic | | |
| *Private* | 92.5 | 110 |
| *State* | 2.5 | 3 |
| *Both* | 5.0 | 6 |
| Trainings on IC during last 5 years | | |
| *Yes* | 37.5 | 45 |
| *No* | 58.3 | 70 |
| *Don't know/Refused* | 4.2 | 5 |

IC – Infection control

**Table 2: KAP score by combined dental specializations**

| | N | Mean | Median | SD |
|---|---|---|---|---|
| **Dental specialty** | | | | |
| Therapeutic, Family and Pediatric dentists | 69 | 64.0 | 64.1 | 8.4 |
| Surgical, combination of specialties | 24 | 64.4 | 66.7 | 11.0 |
| Orthopedic, Orthodontic | 26 | 63.6 | 66.0 | 7.4 |

**Table 3: Mean scores for knowledge, attitude and practice**

| Variables | Mean | Median | SD |
|---|---|---|---|
| *Knowledge score (score range 0-14)* | 8.9 | 9.0 | 1.7 |
| *Attitude score (score range 0-11)* | 6.3 | 6.5 | 2.6 |
| *Practice score (score range 0-14)* | 9.7 | 10.0 | 1.4 |

**Table 4: Knowledge, attitude, practice and KAP scores by age, gender, university and workload (whole sample)**

| | N | Knowledge %-score mean (SD) | Attitude %-score mean (SD) | Practice %-score mean (SD) | Overall KAP %-score mean (SD) |
|---|---|---|---|---|---|
| **Age** | | | | | |
| Younger (<35) | 63 | 65.2 (10.7) | 55.6 (24.3) | 69.8 (8.9) | 64.1 (8.3) |
| Older (≥ 36) | 57 | 62.0 (13.4) | 58.4(23.6) | 69.5 (10.7) | 63.7 (9.2) |
| **Gender** | | | | | |
| Female | 39 | 64.7 (11.7) | 52.7 (22.5) | 70.4 (10.6) | 63.4 (8.5) |
| Male | 81 | 63.2 (12.4) | 58.9 (24.4) | 69.3 (9.4) | 64.2 (8.9) |
| **Education** | | | | | |
| YSMU | 73 | 62.9 (11.8) | 59.9 (22.3) | 68.8 (9.8) | 64.2 (8.3) |
| Other universities | 47 | 64.9 (12.6) | 52.2 (25.8) | 71.1 (9.6) | 63.5 (9.4) |
| **Workload** | | | | | |
| <24 patients | 60 | 62.7 (12.7) | 52.1 (23.8)* | 68.8 (11.5) | 61.9 (9.2)* |
| >25 patients | 55 | 64.8 (11.8) | 62.0 (23.9) | 70.5 (7.9) | 66.0 (7.9) |

* Statistically significant within category difference, $p \leq 0.05$

**Table 5: Percentages of correct responses to the items measuring Hepatitis B and C-related knowledge of dentists practicing in Yerevan (N=120)**

| | To your knowledge: | N | % |
|---|---|---|---|
| 1. | Is hepatitis B and C mainly transmitted through blood? *(true)** | 118 | 98.3 |
| 2. | Can hepatitis B and C infections result in chronic hepatitis and liver cancer?*(true)* | 114 | 95.0 |
| 3. | Do health care professionals belong to the high-risk group for hepatitis virus infections?*(true)* | 113 | 94.2 |
| 4. | Can hepatitis B or C be transmitted through social contact (shaking hands, kissing, sharing glasses, clothes, etc.)?*(false)* | 110 | 91.7 |
| 5. | Can hepatitis B and C be transmitted through mechanical skin injury?*(true)* | 107 | 89.2 |
| 6. | Is hepatitis B and C mainly transmitted through sexual contact? *(true)* | 103 | 85.8 |
| 7. | Can hepatitis B and C be transmitted through blood splashing into mucous membranes of the eye or mouth? *(true)* | 98 | 81.7 |
| 8. | Is a vaccine for hepatitis C available?*(false)* | 56 | 46.7 |
| 9. | Is transmission risk after infected needle stick higher for hepatitis B virus in comparison with hepatitis C virus? *(true)* | 49 | 40.8 |
| 10. | Is the vaccination against hepatitis B an efficient protection against infection during first 24 hours after an infected needle stick?*(true)* | 48 | 40.0 |
| 11. | Is the risk of hepatitis C infection after a needle stick about 10%-20%?*(false)* | 43 | 35.8 |
| 12. | Is prevalence of hepatitis C lower than 1% in Armenian population? *(false)* | 40 | 33.3 |
| 13. | Is prevalence of hepatitis B lower than 1% in Armenian population?*(false)* | 37 | 30.8 |
| 14. | Is hepatitis B virus sensitive to low temperature, dryness and ultraviolet ray?*(false)** | 34 | 28.3 |
| | **Cumulative knowledge percent score, mean (SD)** | 63.4 | (12.1) |

**Table 6: Percentages of desired responses to the items measuring Hepatitis B and C-related attitude of dentists practicing in Yerevan (N=120)**

| | Attitudinal statements | N | % |
|---|---|---|---|
| 1. | Dentists have a professional obligation to treat hepatitis B or C positive patients. *(desired)* | 101 | 84.2 |
| 2. | All patients should be considered potentially infectious .*(desired)* | 99 | 82.5 |
| 3. | If I found out that my longtime patient had hepatitis B or C, I would stop treating him. *(undesired)* | 98 | 81.7 |
| 4. | Infection control principles are adequate for prevention of transmission of hepatitis B and C. *(desired)* | 86 | 71.7 |
| 5. | Regardless of clinical precautions, transmission risk of hepatitis exists from patient to patient. *(undesired)* | 74 | 61.7 |
| 6. | Regardless of clinical precautions, transmission risk of hepatitis exists from dentist to patient. *(undesired)* | 71 | 59.2 |
| 7. | Dentists should have the right to refuse to treat patients with hepatitis. *(undesired)* | 62 | 51.7 |
| 8. | Patients with hepatitis should receive dental treatment in specialized clinics. *(undesired)* | 55 | 45.8 |
| 9. | Dentists are anxious about increasing the transmission risk of the hepatitis infections while treating infected patients. *(undesired)* | 51 | 42.5 |
| 10. | Fear and concern about being infected with hepatitis B and C is one of the reasons to refuse infected patients. *(undesired)* | 33 | 27.5 |
| 11. | Regardless of clinical precautions, transmission risk of the hepatitis exists from patient to dentist. *(undesired)* | 21 | 17.5 |
| | **Cumulative attitude percent score, mean (SD)** | **56.9** | **(23.9)** |

**Table 7: Percentages of desired responses to the items measuring Hepatitis B and C-related infection control practice of dentists practicing in Yerevan (N=120)**

| Infection control practice statements | N | % |
|---|---|---|
| 1. Do you change gloves between patients? *(desired)* | 120 | 100.0 |
| 2. Do you use gown? *(desired)* | 120 | 100.0 |
| 3. Do you wash hands before treatment? *(desired)* | 120 | 100.0 |
| 4. Do you sterilize your instruments by autoclave or dry heat? *(desired)* | 120 | 100.0 |
| 5. Do you use gloves during work? *(desired)* | 118 | 98.4 |
| 6. Do you cover all instruments to prevent contamination? *(desired)* | 116 | 96.6 |
| 7. Do you use facemask? *(desired)* | 116 | 96.6 |
| 8. Do you change facemask between patients? *(desired)* | 96 | 80.0 |
| 9. Were you tested against Hepatitis B or C during your working practice? *(desired)* | 87 | 72.5 |
| 10. Do you take medical history from your patients about Hepatitis B or C infection status? *(desired)* | 86 | 71.7 |
| 11. Do you use protective glasses? *(desired)* | 81 | 67.5 |
| 12. Did you receive complete immunization against Hepatitis B? *(desired)* | 31 | 25.8 |
| 13. Do you use gown for patient? *(desired)* | 9 | 7.5 |
| 14. Do you recap needles? *(undesired)* | 4 | 3.3 |
| **Cumulative practice percent score, mean (SD)** | **69.7** | **(9.8)** |

**Table 8: Correlations between knowledge, attitude and practice scores**

| | Knowledge | Attitude |
|---|---|---|
| **Knowledge** | 1 | |
| **Attitude** | -0.05 | 1 |
| **Practice** | 0.13 | -0.03 |

**Table 9: Unadjusted associations between KAP percent-score and socio-demographic characteristics**

| Variables | Regression Coefficient | p-value | 95% Confidence Intervals |
|---|---|---|---|
| Age | -0.72 | 0.381 | -0.23, 0.09 |
| Gender | -0.85 | 0.619 | -4.23, 2.53 |
| Specialty (Therapeutic, Surgical, Orthodontic) | -0.41 | 0.286 | -1.14, 0.34 |
| University education duration (years) | 0.22 | 0.644 | -0.72, 1.17 |
| Education (YSMU vs. other) | 0.25 | 0.695 | -1.01, 1.51 |
| Dental practice (years) | -0.03 | 0.688 | -1.96, 0.13 |
| Workload | 0.52 | 0.001 | 0.23, 0.81 |

**Table 10: Unadjusted associations between mean knowledge percent-score and socio-demographic characteristics**

| Variables | Regression Coefficient | p-value | 95% Confidence Intervals |
|---|---|---|---|
| Age | -0.26 | 0.023 | -0.47, -0.04 |
| Gender | -1.42 | 0.549 | -6.12, 3.27 |
| Specialty (Therapeutic, Surgical, Orthodontic) | 1.45 | 0.400 | -1.94, 4.84 |
| University education duration (years) | -0.22 | 0.740 | -1.53, 1.09 |
| Education (YSMU vs. other) | -1.97 | 0.386 | -6.47, 2.51 |
| Dental practice (years) | -0.23 | 0.045 | -0.45, -0.00 |
| Hepatitis B vaccination status | 2.66 | 0.294 | -2.34, 7.64 |
| Workload | 0.10 | 0.209 | -0.06, 0.26 |

**Table 11: Unadjusted associations between mean attitude percent-score and socio-demographic characteristics**

| Variables | Regression Coefficient | p-value | 95% Confidence Intervals |
|---|---|---|---|
| Age | 0.16 | 0.478 | -0.28, 0.60 |
| Gender | -6.24 | 0.181 | -15.4, 2.95 |
| Specialty (Therapeutic, Surgical, Orthodontic) | -0.70 | 0.493 | -2.74, 1.33 |
| University education duration (years) | 0.33 | 0.802 | -2.26, 2.92 |
| Education (YSMU vs. other) | 0.84 | 0.086 | -0.12, 1.81 |
| Dental practice (years) | 0.35 | 0.123 | -0.09, 0.79 |
| Hepatitis B vaccination status | -3.16 | 0.528 | -13.0, 6.73 |
| Workload | 0.49 | 0.002 | 0.19, 0.80 |

**Table 12: Unadjusted associations between mean practice percent-score and socio-demographic characteristics**

| Variables | Regression Coefficient | p-value | 95% Confidence Intervals |
|---|---|---|---|
| Workload | 0.004 | 0.468 | -0.01, 0.02 |
| Age | -0.01 | 0.448 | -0.04, 0.02 |
| Gender | -0.15 | 0.562 | -0.68, 0.37 |
| Education (YSMU vs. other) | -0.32 | 0.216 | -0.82, 0.19 |
| Specialty (Therapeutic, Surgical, Orthodontic) | 0.04 | 0.839 | -0.35, 0.43 |
| Dental practice (years) | -0.02 | 0.138 | -0.44, 0.01 |
| University education duration (years) | 0.081 | 0.279 | -0.06, 0.23 |

**Table 13: Adjusted associations between mean KAP percent-score and socio-demographic characteristics**

| Variables | Regression Coefficient | p-value | 95% Confidence Intervals |
|---|---|---|---|
| Workload | 0.07 | 0.001 | 0.31, 3.29 |
| Gender | -0.13 | 0.853 | -0.02, -0.19 |
| Age | -0.06 | 0.107 | -0.18, -1.63 |
| Married/Non married | -0.83 | 0.329 | -0.11, -0.98 |
| University (YSMU vs. other) | 0.80 | 0.248 | 0.11, 1.16 |
| Private vs. State | 0.38 | 0.756 | 0.03, 0.31 |
| Training on IC in last 5 years | 0.50 | 0.455 | 0.07, 0.75 |

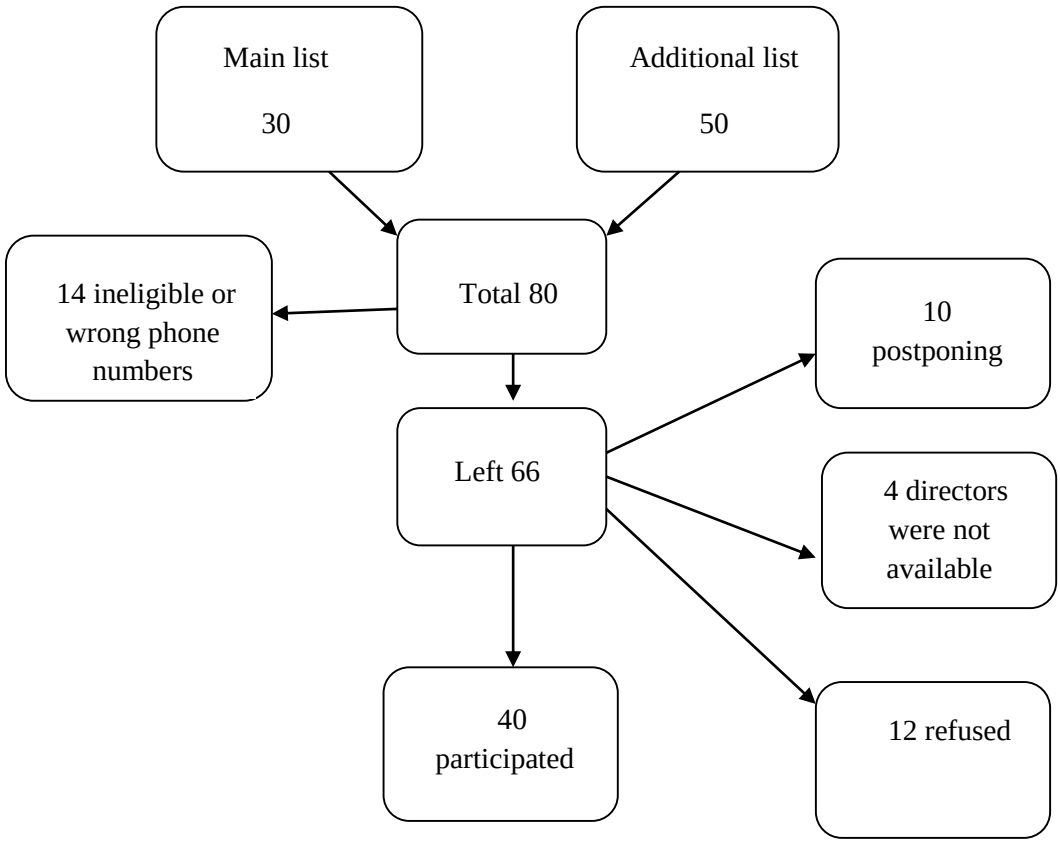
**Table 14: Adjusted associations between mean attitude percent-score and socio-demographic characteristics**

| Variables | Regression Coefficient | p-value | 95% Confidence Intervals |
|---|---|---|---|
| Workload | 0.05 | 0.004 | 0.28, 2.97 |
| Gender | 0.42 | 0.443 | 0.07, 0.77 |
| Age | -0.01 | 0.652 | -0.05, -0.45 |
| Married/Non married | -0.44 | 0.518 | -0.07, -0.65 |
| University (YSMU vs. other) | 1.00 | 0.073 | 0.18, 1.81 |
| Private vs. State | -0.14 | 0.885 | -0.01, -0.14 |
| Training on IC in last 5 years | 0.13 | 0.803 | 0.02, 0.25 |
| Knowledge score | -0.17 | 0.268 | -0.11,-1.11 |
| Practice score | -0.07 | 0.684 | -0.04, -0.41 |

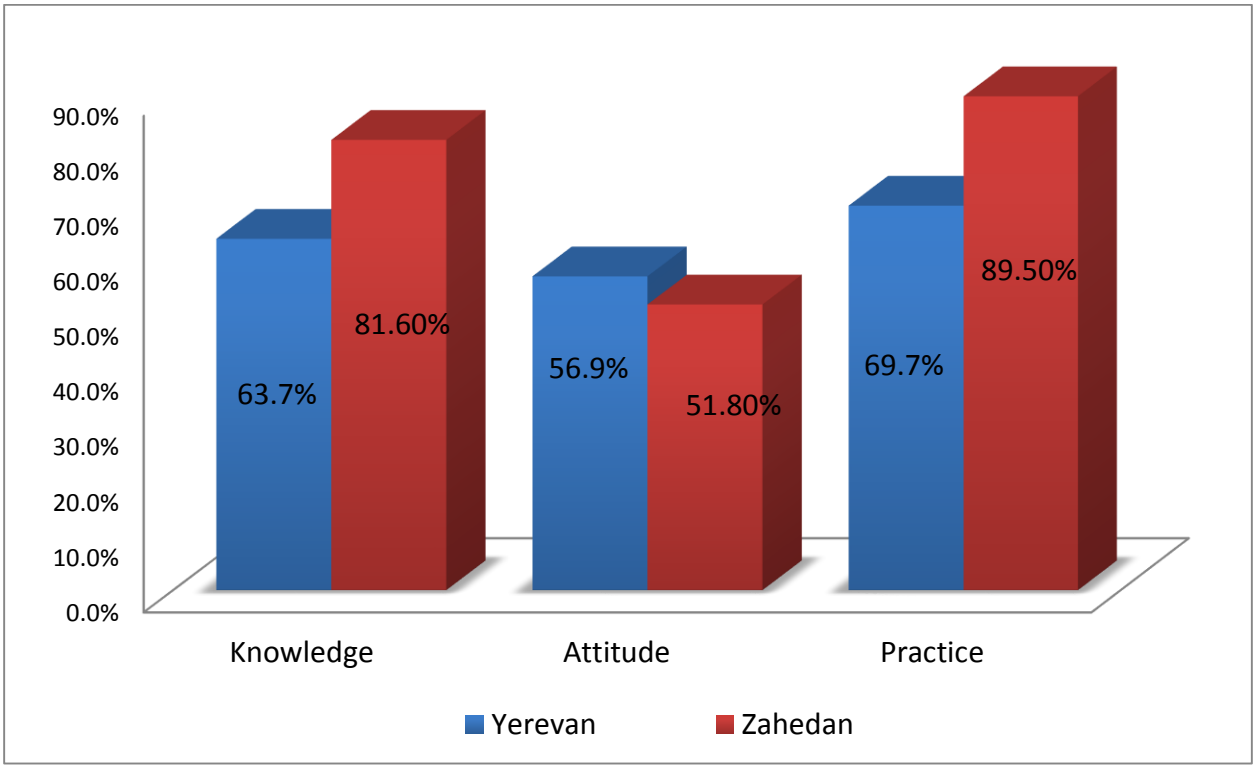
**Table 15: Adjusted associations between mean knowledge percent-score and socio-demographic characteristics**

| Variables | Regression Coefficient | p-value | 95% Confidence Intervals |
|---|---|---|---|
| Workload | 0.02 | 0.085 | 0.17, 1.74 |
| Gender | -030 | 0.394 | -0.08, -0.86 |
| Age | -0.04 | 0.029 | -0.24, -2.22 |
| Married/Non married | -0.07 | 0.872 | -0.02, -0.16 |
| University (YSMU vs. other) | 0.25 | 0.491 | 0.07, 0.69 |
| Private vs. State | 0.96 | 0.127 | 0.15, 1.54 |
| Training on IC in last 5 years | 0.04 | 0.899 | 0.01, 0.13 |
| Attitude score | -0.07 | 0.268 | -0.11, -1.11 |
| Practice score | 0.12 | 0.311 | 0.10, 1.02 |

**Chart 1: Summary of administrative results**



**Graph 1: Knowledge, Attitude and Practice percent scores in the current study compared with the study findings from Iran (Zahedan)**



**Appendix**

*Questionnaire in English*
ID _____

Interview date____/___/____

Beginning of the interview___:___

**Demographic information**

1. Gender (mark only) 1) Male 2) Female
2. Your age in years at the last birthday _____
3. What is your marital status?

   1) Married 2) Divorced 3) Widowed 4) Single 5) Other

4. What type of dental specialist you are? (Select all that apply)

   1) Therapeutic dentist
   2) Surgical dentist
   3) Orthopedic dentist
   4) Orthodontic dentist
   5) Family (general) dentist
   6) Pediatric dentist
   7) Other *(specify)* _____

5. In which university did you receive your dental education?

   1) Yerevan State Medical University
   2) Haybusak University
   3) Amirdovlat Amasiaci Medical Institute
   4) Armenian Medical Institute (Erebuni)
   5) University on Traditional Medicine
   6) Other (please specify)_____

6. How many years did your formal education last? _____
7. How many years do you work as a practicing dentist? _____
8. How many days a week do you work (on average)? _____
9. How many hours a day do you work on average? _____
10. On average how many patients do you treat during a workday? _____

11. What type of clinic do you work in?

1) Private
2) Public
3) Both
4) Other *(please specify)*_____

12. During the last 5 years, did you participate in any training that included infection control practices?

1)Yes 0) No88) DK

**Knowledge on hepatitis B and C infections**

*Now I will ask few questions on Hepatitis B and C, you can answer "yes", "no" or "don't know"*

| N | To your knowledge: | Yes | No | DK |
|---|---|---|---|---|
| **13** | Is hepatitis B and C mainly transmitted through blood? | **1** | **0** | **88** |
| **14** | Is hepatitis B and C mainly transmitted through sexual contact? | | | |
| **15** | Can hepatitis B and C be transmitted through blood splashing into mucous membranes of the eye or mouth? | **1** | **0** | **88** |
| **16** | Can hepatitis B and C be transmitted through mechanical skin injury? | **1** | **0** | **88** |
| **17** | Can hepatitis Bor Cbe transmitted through social contact (shaking hands, kissing, sharing glasses, clothes, etc.)? | **1** | **0** | **88** |
| **18** | Can hepatitis B and C infections result in chronic hepatitis and liver cancer? | **1** | **0** | **88** |
| **19** | Isa vaccine for hepatitis C available? | **1** | **0** | **88** |
| **20** | Do health care professionals belong to the high-risk group for hepatitis virus infections? | **1** | **0** | **88** |
| **21** | Is the risk of hepatitis C infection after a needle stick about 10%-20%? | **1** | **0** | **88** |
| **22** | Is the vaccination against hepatitis B an efficient protection against infection after an infected needle stick? | **1** | **0** | **88** |
| **23** | Is transmission risk after infected needlestick higher for hepatitis B virus in comparison with hepatitis C virus? | **1** | **0** | **88** |
| **24** | Is prevalence of hepatitis B lower than 1% in Armenian population? | **1** | **0** | **88** |
| **25** | Is prevalence of hepatitis C lower than 1% in Armenian population? | **1** | **0** | **88** |
| **26** | Is hepatitis B virussensitive to low temperature, dryness and ultraviolet ray? | **1** | **0** | **88** |

**Attitude towards patients with hepatitis B or C**

*Now I would like to know your attitude concerning some statements on this topic. Please, express your attitude to each of these statements via choosing "agree", "disagree" or "uncertain" answer options.*

| N | Statement | Agree | Disagree | Uncertain |
|---|---|---|---|---|
| **27** | Patients with hepatitis should receive dental treatment in specialized clinics. | 1 | 0 | 88 |
| **28** | Dentists should have the right to refuse to treat patients with hepatitis. | 1 | 0 | 88 |
| **29** | If I found out that my longtime patient had hepatitis B or C, I would stop treating him. | 1 | 0 | 88 |
| **30** | Fear and concern about being infected with hepatitis B and C is one of the reasons to refuse infected patients. | 1 | 0 | 88 |
| **31** | Dentists are anxious about increasing the transmission risk of the hepatitis infections while treating infected patients. | 1 | 0 | 88 |
| **32** | Regardless of clinical precautions, transmission risk of the hepatitis exists from patient to dentist. | 1 | 0 | 88 |
| **33** | Regardless of clinical precautions, transmission risk of hepatitis exists from dentist to patient. | 1 | 0 | 88 |
| **34** | Regardless of clinical precautions, transmission risk of hepatitis exists from patient to patient. | 1 | 0 | 88 |
| **35** | Dentists have a professional obligation to treat hepatitis B or C positive patients. | 1 | 0 | 88 |
| **36** | Infection control principles are adequate for prevention of transmission of hepatitis B and C. | 1 | 0 | 88 |
| **37** | All patients should be considered potentially infectious. | 1 | 0 | 88 |

**Practices**

38. Are you immunized against hepatitis B? *(If no/DK, skip to question 40)*
1) Yes 0) No 88) DK

39. If yes, did you receive complete immunization (all three doses of Hepatitis B vaccine)?
1) Yes 0) No 88) DK

40. Were you tested against Hepatitis B or C during your working practice? *(If no/DK, skip to question 44)*
1) Yes 0) No 88) DK

41. Have you ever been diagnosed as having Hepatitis B or C? *(If no/DK, skip to question 44)*
1) Yes 0) No 88) DK

42. Was it work-related?
1) Yes 0) No 88) DK

43. Are you currently a carrier of the virus?
1) Yes 0) No 88) DK

44. Have you ever had an accidental needle stick during your practice? *(If no/DK, skip to question 47)*
1) Yes 0) No 88) DK

45. Please tell what were the reasons? *(Mark all that apply)*
1) Wrong movement during work with the patient
2) During recapping the needle
3) While taking off the needle
4) When leaving the needle without attention
5) While a colleague passed the used needle
6) From the waist container, that had needles out
7) Other *(please specify)*_____

46. Please describe in few words how did you act when you got a needle stick injury *(Mark all that apply)*
1) I washed the injury with soap and water
2) I applied antiseptics in the injured area
3) I reported about the case to administrative staff of the clinic that is responsible for infection control
4) I got vaccination against hepatitis B within 24 hours after the case
5) I didn't pay attention to that injury
6) I don't remember what I did
7) I had laboratory testing to assure that I didn't get any blood borne infection
8) Other *(please specify)*_____

47. Did you ever had blood, saliva of the patient splashing into mucous membranes of your eye?

1) Yes 0) No 88) DK

*Now I will ask you about some infection control practices. You can reply "always", "often", "sometimes" or "never".*

| N | Question | Always | Often | Sometimes | Never |
|---|---|---|---|---|---|
| **48.** | Do you use gloves during work? | 1 | 2 | 3 | 4 |
| **49.** | Do you change gloves between patients? | 1 | 2 | 3 | 4 |
| **50.** | Do you use facemask? | 1 | 2 | 3 | 4 |
| **51.** | Do you change facemask between patients? | 1 | 2 | 3 | 4 |
| **52.** | Do you use gown? | 1 | 2 | 3 | 4 |
| **53.** | Do you wash hands before treatment? | 1 | 2 | 3 | 4 |
| **54.** | Do you use protective glasses? | 1 | 2 | 3 | 4 |
| **55.** | Do you cover all instruments to prevent contamination? | 1 | 2 | 3 | 4 |
| **56.** | Do you recap needles? | 1 | 2 | 3 | 4 |
| **57.** | Do you use gown for patient? | 1 | 2 | 3 | 4 |
| **58.** | Do you sterilize your instruments by autoclave or dry heat? | 1 | 2 | 3 | 4 |
| **59.** | Do you take medical history from your patients about Hepatitis B or C infection status? | 1 | 2 | 3 | 4 |

***Thank you for your participation!***

End of interview___:___

Interview duration (in minutes) _____

*Հարցաթերթ*

ՏՀ _____

Հարցազրույցի ամսաթիվ____/___/____

Հարցազրույցի սկիզբ___:___ Հարցազրույցի վերջ___:___

Հարցազրույցի տևողություն (րոպեով) _____

**I. Ժողովրդագրական տեղեկություններ**

1. Սեռը (նշել) 1)արական 2)իգական

2. Ձեր տարիքը Ձեր վերջին տարեդարձին_____

3. Ձեր ամուսնական կարգավիճակը

1) Ամուսնացած 2) Ամուսնալուծված 3) Այրի 4) Չամուսնացած

4. Ո՞րն է Ձեր ատամնաբուժական նեղ մասնագիտացումը*(ընտրել բոլոր կիրառելիները)*

1) Թերապևտիկ բժիշկ-ատամնաբույժ
2) Վիրաբուժական բժիշկ-ատամնաբույժ
3) Օրթոպեդիկ բժիշկ-ատամնաբույժ
4) Օրթոդոնտիկ բժիշկ-ատամնաբույժ
5) Ընտանեկան բժիշկ-ատամնաբույժ
6) Մանկական բժիշկ-ատամնաբույժ
7) Այլ *(նշել)* _____

5. Ո՞ր համալսարանում եք ստացել Ձեր ատամնաբուժական կրթությունը

1) Երևանի Մխիթար Հերացու անվան պետական բժշկական համալսարան
2) Հայբուսակ համալսարան
3) Ամիրդովլաթ Ամասիացու համալսարան
4) Հայկական բժշկական ինստիտուտ (Էրեբունի)
5) Ավանդական բժշկության համալսարան
6) Այլ*(նշել)*_____

6. Քանի՞ տարի է տևել Ձեր պաշտոնական կրթությունը: _____

7. Քանի՞ տարի եք աշխատում որպես ատամնաբույժ: _____

8. Շաբաթվա ընթացքում միջինում քանի՞ օր եք աշխատում:_____

9. Օրական միջինում քանի՞ ժամ եք աշխատում: _____

10. Մեկ աշխատանքային օրվա ընթացքում միջինում քանի՞հիվանդ եք ընդունում:

_____

11. Ի՞նչ տեսակի ատամնաբուժական կլինիկայում եք աշխատում:

1) Մասնավոր
2) Պետական
3) Երկուսում էլ
4) Այլ*(նշել)*_____

12. Վերջին 5 տարիների ընթացքում մասնակցե՞լ եք վարակների հսկողության վերաբերյալ որևէ մասնագիտական դասընթացի:

1)Այո 0) Ոչ 88)Չգիտեմ

**II. Հեպատիտ B-ի և C-ի մասին գիտելիքներ**

*Հիմա ես կտամ մի քանի հարց հեպատիտ B-ի և C-ի վերաբերյալ, դուք կարող եք պատասխանել <<այո>>, <<ոչ>> կամ <<չգիտեմ>>:*

| N | Ըստ Ձեզ. | Այո | Ոչ | Չգ |
|---|---|---|---|---|
| 13 | Արդյո՞ք հեպատիտ B-ն և C-ն փոխանցվում են արյան միջոցով: | 1 | 0 | 88 |
| 14 | Արդյո՞ք հեպատիտ B-ն և C-ն փոխանցվում են սեռական ճանապարհով: | 1 | 0 | 88 |
| 15 | Հեպատիտ B-ն և C-ն կարո՞ղ են փոխանցվել, եթե աչքերի կամ բերանի լորձաթաղանթներին արյուն ցայտի: | 1 | 0 | 88 |
| 16 | Հեպատիտ B-ն և C-ն կարո՞ղ են փոխանցվել մաշկի մեխանիկական վնասման միջոցով: | 1 | 0 | 88 |
| 17 | Հեպատիտ B և C վիրուսները կարո՞ղ են փոխանցվել կենցաղային շփման ընթացքում (ձեռք սեղմելիս, համբուրվելիս, միևնույն ակնոցը կամ հագուստը օգտագործելիս և այլն): | 1 | 0 | 88 |
| 18 | Հեպատիտ B և C ինֆեկցիաները կարո՞ղ են հանգեցնել լյարդի ցիռոզի և լյարդի քաղցկեղի: | 1 | 0 | 88 |
| 19 | Գոյություն ունի՞ պատվաստանյութ հեպատիտ C-ի դեմ: | 1 | 0 | 88 |
| 20 | Առողջապահության ոլորտի մասնագետները պատկանու՞մ են հեպատիտներով վարակվելու բարձր ռիսկի խմբի: | 1 | 0 | 88 |
| 21 | Ճի՞շտ է, որ վարակված ասեղով վնասվելու պարագայում հեպատիտ C-ով վարակվելու հավանականությունը մոտ 10%-20% է: | 1 | 0 | 88 |
| 22 | Վարակված ասեղով վնասվելուց հետո 24 ժամվա ընթացքում հեպատիտ B-ի դեմ պատվաստվելըկարո՞ղ է ապահովել արդյունավետ պաշտպանություն վարակից: | 1 | 0 | 88 |

| | | | | |
|---|---|---|---|---|
| **23** | Վարակված ասեղով վնասվելու պարագայում հեպատիտ B-ի փոխանցման հավանականությունը ավելի՞ բարձր է, քան հեպատիտ C-ինը: | **1** | **0** | **88** |
| **24** | Ճի՞շտ է, որ Հայաստանի բնակչության շրջանում հեպատիտ B-ի տարածվածությունը 1%-ից ցածր է: | **1** | **0** | **88** |
| **25** | Ճի՞շտ է, որ Հայաստանի բնակչության շրջանում հեպատիտ C-ի տարածվածությունը 1%-ից ցածր է: | **1** | **0** | **88** |
| **26** | Հեպատիտ B-ի հարուցիչը զգայու՞ն է ցածր ջերմաստիճանի, չորության և ուլտրամանուշակագույն ճառագայթների նկատմամբ: | **1** | **0** | **88** |

## III. Հեպատիտ B-ի և C-ի նկատմամբ վերաբերմունքը

*Հիմա ես կցանկանայի պարզել Ձեր կարծիքը Հեպատիտ B-ի և C-ի մասին մի քանի պնդումների վերաբերյալ: Խնդրում եմ ասացեք, համաձա՞յն եք արդյոք այդ պնդումներից յուրաքանչյուրին (կարող եք պատասխանել «համաձայն եմ», «համաձայն չեմ» կամ «վստահ չեմ»):*

| **N** | **Պնդում** | **Համաձայն եմ** | **Համաձայն չեմ** | **Վստահ չեմ** |
|---|---|---|---|---|
| **27** | Հեպատիտով հիվանդները պետք է ստանան ատամնաբուժական սպասարկում հատուկ մասնագիտացված կլինիկաներում: | 1 | 0 | 88 |
| **28** | Ատամնաբույժը պետք է իրավունք ունենա հրաժարվել բուժել հեպատիտով հիվանդին: | 1 | 0 | 88 |
| **29** | Եթե ես պարզեի, որ իմ մշտական այցելուն ունի հեպատիտ B կամ C, ես կդադարեի բուժել նրան: | 1 | 0 | 88 |
| **30** | Հեպատիտ B-ով կամ C-ով վարակվելու վախը և անհանգստությունըայն հիմնական պատճառն է, որը ստիպում է ատամնաբույժին հրաժարվել վարակված այցելուին բուժելուց: | 1 | 0 | 88 |
| **31** | Ատանմաբույժները անհանգստանում են, որ վարակված հիվանդին բուժելը կմեծացնի վարակի տարածման վտանգը: | 1 | 0 | 88 |
| **32** | Անկախ կիրառվող կանխարգելիչ միջոցներից՝ հեպատիտի փոխանցման ռիսկը վարակված հիվանդից ատամնաբույժին պահպանվում է: | 1 | 0 | 88 |
| **33** | Անկախ կիրառվող կանխարգելիչ միջոցներից՝ հեպատիտի փոխանցման ռիսկը ատամնաբույժից հիվանդին պահպանվում է: | 1 | 0 | 88 |

| | | | | |
|---|---|---|---|---|
| **34** | Անկախ կիրառվող կանխարգելիչ միջոցներից՝ հեպատիտի փոխանցման ռիսկը ատամնաբուժական հիվանդից այլ հիվանդի պահպանվում է: | 1 | 0 | 88 |
| **35** | Ատամնաբույժները մասնագիտական էթիկայի նկատառումներից ելնելով պարտավոր են բուժել հեպատիտ B-ով կամ C-ով վարակված հիվանդներին: | 1 | 0 | 88 |
| **36** | Վարակի հսկողության միջոցները բավարար են հեպատիտների փոխանցումը կանխելու համար: | 1 | 0 | 88 |
| **37** | Ատամնաբուժական բոլոր հիվանդներին պետք է դիտարկել որպես հեպատիտով պոտենցիալ վարակված: | 1 | 0 | 88 |

## IV. Գործելակերպ

*Հիմա ես մի քանի հարց կտամ հեպատիտների կանխարգելմանն ուղղված Ձեր գործելակերպի վերաբերյալ: Դուք կարող եք պատասխանել «այո», «ոչ» կամ «չգիտեմ»:*

38. Դուք պատվաստվա՞ծ եք հեպատիտ B-ի դեմ:*(եթե ոչ/ՉԳ, անցնել հարց 40-ին)*

1)Այո 0) Ոչ 88)Չգիտեմ

39. Դուք ստացե՞լ եք լիարժեք իմունիզացիա (Հեպատիտ B-ի դեմ պատվաստանյութի բոլոր երեք դոզաները):

1)Այո 0) Ոչ 88)Չգիտեմ

40. Ձեր աշխատանքային պրակտիկայի ընթացքում Դուք երբևէ ստուգվե՞լ եք հեպատիտ B-ի կամ C-ի նկատմամբ:*(եթե ոչ/ՉԳ, անցնել հարց 44-ին)*

1)Այո 0) Ոչ 88)Չգիտեմ

41. Ձեզ երբևէ ախտորոշե՞լ են հեպատիտ B կամ C*(եթե ոչ/ՉԳ, անցնել հարց 44-ին)*

1)Այո 0) Ոչ 88)Չգիտեմ

42. Ձեր վարակվելը կապվա՞ծ է եղել աշխատանքի հետ:

1)Այո 0) Ոչ 88)Չգիտեմ

43. Դուք վարակակի՞ր եք ներկայումս:

1)Այո 0) Ոչ 88)Չգիտեմ

44. Դուք երբևէ ունեցե՞լ եք պատահական վնասվածք ասեղով՝ Ձեր աշխատանքային պրակտիկայի ընթացքում:*(եթե ոչ/ՉԳ, անցնել հարց 47-ին)*

1)Այո 0) Ոչ 88)Չգիտեմ

45. Ի՞նչ հանգամանքներում է դա տեղի ունեցել *(նշել բոլոր համապատասխան տարբերակները)*

1) Հիվանդի հետ աշխատանքի ընթացքում՝ սխալ շարժում կատարելիս
2) Ասեղի կափարիչը փակելիս
3) Ասեղը հանելիս
4) Ասեղն առանց հսկողության թողած ժամանակ
5) Երբ գործընկերս փոխանցում էր օգտագործած ասեղը
6) Թափոնների տարայից, երբ ասեղը ծակել էր այն
7) Այլ պայմաններում *(նշել)*_____

46. Խնդրում եմ նկարագրեք՝ ի՞նչ միջոցներ ձեռնարկեցիք, երբ ասեղով վնասվածք էիք ստացել:*(նշել բոլոր համապատասխան տարբերակները)*

1) Վնասված տեղը լվացի ջրով և օճառով:
2) Վնասված տեղը մշակեցի ախտահանիչ միջոցներով:
3) Դեպքի մասին հայտնեցի կլինիկայի տնօրինությանը կամ վարակի հսկողության պատասխանատու անձին
4) Հեպատիտ B-ի դեպ պատվաստում ստացա դեպքից հետո 24 ժամվա ընթացքում:
5) Այդ վնասվածքին ուշադրություն չդարձրեցի:
6) Չեմ հիշում, թե ինչպես վարվեցի:
7) Լաբրատոր թեստեր հանձնեցի, որ համոզվեմ, որ որևէ արյունածին վարակ ձեռք չեմ բերել:
8) Այլ *(խնդրում ենք մանրամասնեք)*_____

47. Երբևէ պատահե՞լ է այնպես, որ պացիենտի արյունը կամ թուքը ցայտել են ձեր աչքի մեջ: 1)Այո 0) Ոչ 88)Չգիտեմ

*Հիմա ես մի քանի հարց կտամ վարակի հսկողության գործելակերպի մասին:Դուք կարող եք պատասխանել `«միշտ», «հաճախ», «երբեմն» կամ «երբեք»:*

| N | Հարց | Միշտ | Հաճախ | Երբեմն | Երբեք |
|---|---|---|---|---|---|
| **48.** | Աշխատանքի ընթացքում օգտագործու՞մ եք ձեռնոցներ: | 1 | 2 | 3 | 4 |
| **49.** | Փոխու՞մ եք Ձեր ձեռնոցները՝ մի հիվանդից մյուսին անցնելիս: | 1 | 2 | 3 | 4 |
| **50.** | Աշխատանքի ընթացքում օգտագործու՞մ եք դիմակ: | 1 | 2 | 3 | 4 |
| **51.** | Փոխու՞մ եք ձեր դիմակը՝ մի հիվանդից մյուսին անցնելիս: | 1 | 2 | 3 | 4 |
| **52.** | Աշխատելիս օգտագործու՞մ եք խալաթ: | 1 | 2 | 3 | 4 |
| **53.** | Լվացվու՞մ եք բուժումը սկսելուց առաջ: | 1 | 2 | 3 | 4 |
| **54.** | Օգտագործու՞մ եք պաշտպանիչ ակնոց: | 1 | 2 | 3 | 4 |
| **55.** | Ծածկու՞մ եք Ձեր գործիքները՝ վարակումից խուսափելու համար: | 1 | 2 | 3 | 4 |
| **56.** | Կափարիչով փակու՞մ եք ասեղները: | 1 | 2 | 3 | 4 |
| **57.** | Օգտագործու՞մ եք խալաթ պացիենտի համար: | 1 | 2 | 3 | 4 |
| **58.** | Դուք ախտահանու՞մ եք Ձեր գործիքները ավտոկլավում կամ չոր ջերմային պահարանում: | 1 | 2 | 3 | 4 |
| **59.** | Դուք Ձեր հիվանդներից անամնեզ հավաքու՞մ եք՝ հեպատիտ B-ով կամ C-ով վարակված լինելու վերաբերյալ: | 1 | 2 | 3 | 4 |

***Շնորհակալություն այս հարցմանը մասնակցելու համար:***

Հարցազրույցի վերջ____:____

Հարցազրույցի տևողություն. _____րոպե

**American University of Armenia**

**Institutional Review Board #1**

## Consent form

Hello, my name is Shahane Mnatsakanyan. I am a last year student of the Master of Public Health program at the Patricia and Gerald Turpanjian School of Public Health of the American University of Armenia. Our school conducts a study to better understand the knowledge, attitude and practices of dentists in Yerevan about Hepatitis B and C infections. I am inviting you to participate in this study, because you are a practicing dentist in Yerevan. We randomly chose your dental clinic from the list of all dental clinics provided by Spyur registry, and using the list of dentists that work in your clinic we randomly chose your contact information. This interview will not take longer than 10-15 minutes to complete. Your name will not be recorded on the questionnaire and not appear in any presentation of the project. Your responses to our questions will contribute to this project but your answers will be combined along with the answers of other participants. Your participation in this study is voluntary. There is no penalty if you decline to take part in this project. You may refuse to answer any question or stop the interview at any time. There is no financial compensation or other personal benefits from participating in the study and there are no known risks to you resulting from your participation in the study. Your honest answers will help us to gain better knowledge about dentists' knowledge, attitude and practices on Hepatitis B and C prevention and give sufficient evidence for the policy makers to further improve continuous education of medical specialists and plan for other interventions in Armenia to reduce the transmission of viral hepatitis. Nobody except the research team will have access to the data provided by you. If after the interview you have any questions regarding this study, you can contact the principle investigator of this study Dr. Anahit Demirchyan by (060) 61 25 62. If

you feel you have not been treated fairly or think you have been hurt by joining the study you should contact Dr. Kristina Akopyan, the Human Subject Protection Administrator of the American University of Armenia (060) 61 25 61. Do you agree to participate? (YES or NO) Thank you. If yes, shall we continue?

**Հայաստանի Ամերիկյան Համալսարան**
**Հանրային առողջապահության բաժին**
**Գիտահետազոտական էթիկայի թիվ 1 հանձնաժողով**
**Իրազեկ համաձայնության ձև**

Բարև Ձեզ, իմ անունը Շահանե Մնացականյան է: Ես սովորում եմ Հայաստանի ամերիկյան համալսարանի Ժեռալդ և Պատրիսիա Թուրփանճյանների անվան (ՀԱՀ)Հանրային առողջապահության ֆակուլտետի ավարտական կուրսում: Մեր ֆակուլտետն իրականացնում է հետազոտություն, որի նպատակն է ավելի լավ հասկանալ Երևանում աշխատող ատամնաբույժների գիտելիքները, մոտեցումները և գործելակերպը հեպատիտ B-ի և C-ի վերաբերյալ: Ես հրավիրում եմ Ձեզ մասնակցելու այս հարցազրույցին, քանի որ Դուք Երևանում աշխատող ատամնաբույժ եք: Մենք պատահականության սկզբունքով ընտրել ենք Ձեր կլինիկան բոլոր ատամնաբուժական կլինիկաների ցանկից, որը տրամադրվել է ՀՀ առողջապահության նախարարության կողմից, և օգտվելով ատամնաբույժների ցանկից, ովքեր աշխատում են Ձեր կլինիկայում, մենք պատահականության սկզբունքով ընտրել ենք Ձեր հեռախոսահամարը:

Այս հարցազրույցը կտևի ընդամենը 10-15 րոպե: Ձեր հեռախոսահամարը կամ անունը  չի գրանցվի հարցաթերթիկում և չի ներկայացվի ոչ մի զեկույցում:  Ձեր պատասխանները կներկայացվեն միայն մյուս մասնակիցների պատասխանների հետ ընդհանրացված: Ձեր մասնակցությունն այս հետազոտությանը կամավոր է: Ձեզ ոչինչ չի սպառնում, եթե Դուք հրաժարվեք մասնակցել: Դուք կարող եք հրաժարվել պատասխանել ցանկացած հարցի կամ ցանկացած պահի ընդհատել հարցազրույցը:

Դուք չեք ստանա որևէ ֆինանսական փոխհատուցում կամ պարգևատրում՝ հետազոտությանը մասնակցելու համար: Դուք ոչ մի ռիսկի չեք դիմում՝ մասնակցելով այս հետազոտությանը: Ձեր անկեղծ պատասխանները կօգնեն իրականացնել այս հետազոտությունը և պատկերացում կազմել ատամնաբույժների՝ հեպատիտ B-ի և C-ի  մասին ունեցած գիտելիքների, մոտեցումների և գործելակերպիվերաբերյալ: Նաև, արժեքավոր տեղեկություններ կտրամադրեն քաղաքականություն մշակողներին, որպեսզի բժշկական ոլորտի մասնագետների շարունակական կրթության դասընթացները կատարելագործվեն, ինչպես նաև Հայաստանում պլանավորվեն և իրականացվեն այլ ծրագրեր՝ ուղղված հեպատիտների տարածման կանխարգելմանը:Ձեր կողմից տրամադրված տվյալները հասանելի չեն լինի ոչ ոքի՝ բացի հետազոտությունն իրականացնող թիմի անդամներից: Այս հետազոտության վերաբերյալ հարցեր ունենալու դեպքում կարող եք զանգահարել հետազոտության համակարգողին՝ Անահիտ Դեմիրչյանին (060) 61 25 62 հեռախոսահամարով: Եթե Դուք կարծում եք, որ հետազոտության ընթացքում

Ձեզ լավ չեն վերաբերվել և/կամ հետազոտությունը Ձեզ վնաս է հասցրել, կարող եք կապվել ՀԱՀ-ի Էթիկայի հանձնաժողովի համակարգող Քրիստինա Հակոբյանին հետևյալ հեռախոսահամարով (+374 60) 61 25 61:
Համաձա՞յն եք մասնակցել («այո» կամ «ոչ»): Շնորհակալություն: Եթե այո, կարո՞ղ ենք սկսել:

**Interview script**

Hello, my name is Shahane, I am from American University of Armenia. We are conducting a study with dentists in Yerevan about Hepatitis B and C knowledge, attitude and practices. We randomly chose your phone number from the list that was provided by your dental clinic. Our interview will take only 10-15 minutes. Would you like to participate?

Հարցազրույցի սեղմագիր

Բարև Ձեզ, իմ անունը Շահանե է, ես Հայաստանի Ամերիկյան Համալսարանից եմ:Մենք հետազոտություն ենք անցկացնում Երևանի ատամնաբույժների շրջանում՝ հեպատիտ B-ի և C-ի վերաբերյալ գիտելիքների, մոտեցումների և գործելակերպի ուսումնասիրման համար: Մենք պատահականության սկզբունքով ընտրել ենք Ձեր հեռախոսահամարը Ձեր կլինիկայի տրամադրած ցանկից: Մեր հարցազրույցը տևում է ընդամենը 10-15 րոպե: Կցանկանա՞ք մասնակցել:

**Journal form**

| Date DD/MM/YY | Name of clinic | Phone number of participant | ID of participant | Attempt number | Result |
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**Result**

0-refusal

1-complete interview

2-respondent is ineligible

3-incomplete interview

4-interview was postponed

5-respondent is incompetent due to ailment

6-respondent is retired

7-wrong phone number

8-other *(specify)* _____