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*Original Article*

# Knowledge and attitude of medical science students toward hepatitis B and C infections

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**Abstract:** The present survey aimed to determine the knowledge level and attitude of medical students in Guilan University toward Hepatitis B and C viruses' infections. In a cross-sectional survey, the knowledge and attitude of 424 medical science undergraduate students of nursing, midwifery, operating room technician, laboratory, anesthesiology and radiology in Guilan University of Medical Sciences toward Hepatitis B virus (HBV) and Hepatitis C virus (HCV) infections were investigated using a standardized questionnaire. The mean (SD) knowledge level of the medical students toward HBV and HCV were 17 ± 5 from 28 and 10.58 ± 6.7 from 29 questions respectively. Females, nursing students, forth year students, those who worked in hospital and those who had needle stick injuries (NSI) history showed significantly higher knowledge scores toward HBV ($P< 0.05$). Married students, anesthesiology students, those who were in their fourth year of study, and those who worked in hospital had significantly higher mean knowledge scores toward HCV ($P< 0.05$). Also students' attitude toward HBV and HCV was positively correlated with their mean knowledge level ($r=0.14$, $p=0.004$), ($r=0.18$, $p=0.0001$). Education on the nature, symptoms, transmission, prevention and treatment of HBV and HCV infections may increase the willingness of health care workers to care for infected persons.

**Keywords:** Knowledge, attitude, medical students, hepatitis B, hepatitis C

## Introduction

Viral hepatitis is a liver disease which is associated with inflammation of liver and in many cases permanent damage of liver tissue [1, 2]. It is a serious health concern and one of the most important infectious leading causes of death worldwide. Viral hepatitis leads to at least one million deaths in the world yearly. There are six common known types of hepatitis viruses (A, B, C, D, E and G) [2]. Hepatitis B and C viruses are two common causes of chronic liver disease and permanent liver damage [1, 3]. About two billion patients are infected with hepatitis B virus (HBV), and more than 350 million people are carriers worldwide [4]. Hepatitis C Virus Infection appears to be endemic in most parts of the world [5, 6] and about 3.3 percent of the world's population (200 million people) are infected with Hepatitis C Virus (HCV) [7, 8].

Middle East countries including Iran show an intermediate prevalence of hepatitis B [9]. Percutaneous injuries are a substantial source of infection by blood borne pathogens as HCV and HBV [10, 11]. Although the disease can lead to huge burden especially in endemic areas, it is preventable. Prevention is the only safe strategy against high prevalence of viral hepatitis. Having enough Knowledge and proper attitudes toward these infections are cornerstones of preventing the spread of them. Health staff and medical students have the most important role in preventing the disease by improving the disease knowledge among them and the patients because medical students are in close contact with hepatitis patients during their studying and afterwards.

Because medical students who consist future health staff face the threat of percutaneous injuries with the consequent risk of contracting

blood-borne infections such as hepatitis B and C viruses [12, 13], their general knowledge and attitude about viral hepatitis and its transmission and prevention can stop the spread of this disease in hospitals and society [4].

The present survey aimed to determine the knowledge level and attitude of medical students in Guilan University of Medical Sciences toward Hepatitis B and C viruses' infections.

## Materials and methods

### *Sample*

It was a cross-sectional survey which was performed from Jan 2012 to July 2012 to assess the knowledge and attitude of 424 medical science undergraduate students of nursing, midwifery, operating room technician, laboratory, anesthesiology and radiology in Guilan University of Medical Sciences toward HBV and HCV virus infections using a standardized questionnaire. The sample was calculated based on the positive knowledge proportion among the random subgroup and considering the precision of 0.06 and the type one error of 0.05.

The students were invited by some posters and pamphlets which were distributed around the university and hospitals and were asked to register in the study after giving some important information about the survey and taking informed consent from them.

### *Questionnaires*

The questionnaire was derived from other surveys [10, 14] and after translation to Persian was assessed by a panel of experts and its validity was documented. The questionnaire consisted of four parts. Twelve questions for demographic data, 28 questions were used to explore knowledge levels toward HBV infection, 29 questions for knowledge about HCV infection, and 18 questions were designed to determine subjects' attitude toward hepatitis B and C patients. The questionnaires' validity and reliability were also confirmed by Cronbach's alpha coefficient (alpha = 0.8 for Hepatitis B knowledge questioner, alpha = 0.9 for Hepatitis C knowledge questioner and alpha = 0.67 for Hepatitis B and C attitude questioner).

The mean knowledge score was determined based on each demographic group. For attitude, participants were asked whether they agreed or disagreed with the 18 statements. They also had the choice to answer "I don't have any idea".

Demographic data containing participants' age, sex, marital state, educational field (nursing, midwifery, operating room technician, laboratory, anesthesiology and radiology), educational grade, occupation in hospital, hepatitis vaccination history, hepatitis Antibody titration, family history of hepatitis, Needle stick injury (NSI) history, education (participation in education classes on NSI), were registered for each participant. Questionnaires were filled by direct interviews, which were performed by a trained general practitioner from the research team after taking informed consent from the subjects in the university or hospitals.

### *Statistical analysis*

Data were entered into SPSS 18 software and analyzed by descriptive statistics (i.e., mean, SD, frequency) and comparison means (i.e., one way ANOVA, *t* Test, $X^2$ test). A *P* value less than 0.05 was considered statistically significant.

## Results

Totally 424 medical students entered the survey, 310 of whom where male and 114 were female with the mean (SD) age of 21.59 ± 2.85 years old. While 387 (91.3%) of the total participants were single only 37 (8.7%) were married. Most of them were studying operating room technicians and nursing (89 and 87 students respectively) while the rest of them were midwifery, anesthesiology, laboratory, and radiology students (58, 47, 66 and 72 students respectively). Among the students, 155 (36.6%) were in the first 2 semesters of their studies, 130 (30.7%) in semesters 3-4, 108 (25.5%) in semesters 5-6, and only 31 (7.3%) of them were fourth year students. Only 77 (18.2%) of 424 students, were working in the hospital simultaneously and 412 (97.2%) of them had received Hepatitis B vaccination but 353 (97.4%) didn't control serum Antibody titter. Family history of hepatitis was positive in 11 (2.6%) of the students and 33 (7.8%) of them had NSI history while 163 (38.4%) of the students received education about NSI. Knowledge toward Hepatitis B was analyzed through 28

questions. The mean (SD) knowledge level of the medical students toward Hepatitis B was 17/01 ± 5/06 from 28 questions. The questions and the proportion of correct answers are shown in **Table 1**.

Knowledge toward Hepatitis C was assessed by 29 questions. The mean knowledge score of students toward Hepatitis C was 10.58 ± 6.7. The **Table 2** shows the proportion of correct answers toward each Hepatitis C knowledge question.

**Table 3** shows the participants' answers toward attitude questions. The mean attitude score of the students was 37.66 with the minimum score of 27 and maximum of 49. Females, nursing students, fourth year students, those who worked in hospital, had NSI history, and those students who had checked their antibody titer and had received education about the measurements after NSI showed significantly higher knowledge scores toward Hepatitis B (P=0.03, P=0.0001, P=0.03, P=0.001, P= 0.02, P=0.02 and P=0.0001 respectively) but the relationship between their marital state, family history of hepatitis and history of hepatitis B vaccination and their knowledge toward Hepatitis B was not significant (P>0.05). The group which got the lowest score in knowledge toward HBV infection was Radiology students group (**Table 4**).

Married students, operation room technician students, those who were in their fourth year of study, those who work in hospital and had received education about the measurements after NSI had significantly higher mean knowledge scores toward Hepatitis C (P=0.03, P= 0.002, P=0.0001, P=0.0001 and P=0.0001 respectively) but the association between their gender, Hepatitis family history and NSI history, history of hepatitis B vaccination and check up of hepatitis B antibody titer and their mean knowledge score of Hepatitis C was not significant (P>0.05). Radiology students got lowest knowledge score among all the students. About students' attitude, only their gender and Hepatitis family history were significantly associated with their attitude toward patients with Hepatitis B and C (P=0.0001 and P=0.02 respectively) (**Table 4**).

There was also a positive significant correlation between participants' age and their knowledge level toward both Hepatitis B and C (R=0.19, p= 0.004 and R=0.25, p=0.0001 respectively).

Students' attitude toward Hepatitis B was positively correlated with their knowledge level in a way that knowledgeable ones had more positive attitude (r=0.14, p=0.004). The positive correlation between students' knowledge about Hepatitis C and their attitude toward the disease was also significant (r=0.18, p=0.0001).

## Discussion

The mean knowledge levels of the medical students are partially toward HBV infection and relatively low toward HCV infection in the present survey. In a survey by Ahmadi et al. on health care workers' knowledge and attitude toward Hepatitis B, the knowledge of the majority of health care workers was moderate and they found female health care workers more knowledgeable about HBV infection than males (just like the present survey) [15]. In a study by Mortel et al. the knowledge of health care workers regarding HCV was poor [16]. Ghahramani et al also in a study in Shiraz reported that the knowledge of students of medical sciences with respect to the type of hepatitis (A, B, C, D and E) was very weak [4]. In a report by Razi et al. in Pakistan, the survey showed fair level of knowledge among university students regarding hepatitis B and C, but gaps in knowledge were identified which need to be strengthened in students especially in non-biological sciences group [1]. We showed that the majority of correct answers were related to the nature and transmission of the viruses but in Ghahramani's survey students' knowledge with respect to the prevention of disease was higher than other aspects [4] and in the survey of Ahmadi et al, the knowledge of health care workers about the nature of HBV infection was the lowest [15].

We showed a significant relationship between medical groups and knowledge scores: nurses were more knowledgeable than other groups. Richmond also reported that doctors were the most knowledgeable group [14]. In a survey by Joukar et al on the knowledge of health care workers about HCV, the mean knowledge level score was acceptable and doctors were the most knowledgeable group too [10]. Also in the survey by Mortel et al. those staff members who had the most experience, who had recently

**Table 1.** Correct knowledge answers toward hepatitis B in association with subjects' gender

| | Statements | Correct answers female N (%) | Correct answers male N (%) | *P* value |
|---|---|---|---|---|
| The nature of the disease and its transmission μ=10/75±3/12 | 1. Hepatitis B is caused by a virus | 295 (95.2) | 103 (90.4) | NS |
| | 2. Hepatitis B can be spread by mosquitoes | 186 (60) | 68 (59.6) | NS |
| | 3. Hepatitis B can be spread through close personal contact such as kissing or talking | 214 (69) | 56 (49.1) | 0.0001 |
| | 4. Hepatitis B can be spread through sharing injecting equipment, such as needles and operation tools | 290 (93.5) | 97 (85.1) | 0.006 |
| | 5. Hepatitis B can be transferred from mother to fetus | 278 (89.7) | 87 (76.3) | 0.0001 |
| | 6. Hepatitis B is spread through blood-to-blood contact | 282 (91) | 93 (81.6) | 0.007 |
| | 7. Having a medical and/or dental procedure increases a person's chances of contracting hepatitis B | 261 (84.2) | 75 (65.8) | 0.0001 |
| | 8. Hepatitis B is spread through the air in an enclosed environment (e.g., crowded buses and elevators) | 178 (57.4) | 63 (55.3) | NS |
| | 9. Sexual transmission is a common way hepatitis B is spread | 221 (71.3) | 68 (59.6) | 0.02 |
| | 10. Some people with hepatitis B were infected through unsterile tattooing | 240 (77.4) | 81 (71.1) | NS |
| | 11. Some people with hepatitis B were infected through blood transfusions | 267 (86.1) | 89 (78.1) | 0.04 |
| | 12. sharing dishes with HBV positive patients can cause the spread of virus | 240 (77.4) | 77 (67.5) | 0.03 |
| | 13. HBV can spread from one person to another in the family | 75 (24.2) | 30 (26.3) | NS |
| | 14. Once you have had hepatitis B, you cannot catch it again because you are immune | 212 (68.4) | 72 (63.2) | NS |
| | 15. HBV can be transferred through Colonoscope or Endoscope tools | 163 (52.6) | 55 (48.2) | NS |
| | 16. HBV can be transferred through mother's milk to the infant | 118 (38.1) | 50 (43.9) | NS |
| Symptoms and complications μ=3/39±1/7 | 17. After the entrance of HBV to the body symptoms appear soon | 269 (86.8) | 88 (77.2) | 0.01 |
| | 18. Hepatitis B can lead to cirrhosis | 117 (37.7) | 45 (39.5) | NS |
| | 19. An individual can have hepatitis B antibodies without being currently infected with the virus | 155 (50) | 55 (48.2) | NS |
| | 20. Hepatitis B is associated with an increased risk of liver cancer | 173 (55.8) | 62 (54.4) | NS |
| | 21. A person can be infected with hepatitis B and not have any symptoms of the disease | 200 (64.5) | 68 (59.6) | NS |
| | 22. Always after the entrance of HBV to the body symptoms appear | 108 (34.8) | 38 (33.3) | NS |
| Prevention μ=1/91±0/92 | 23. People with hepatitis B should be restricted from working in the food industry | 192 (61.9) | 66 (57.9) | NS |
| | 24. There is a vaccine for hepatitis B | 56 (18.1) | 27 (23.7) | NS |
| | 25. special diet is recommended for patients with Hepatitis B | 191 (61.6) | 77 (67.5) | NS |
| | 26. Hepatitis B test is done before marriage | 97 (31.3) | 45 (39.5) | NS |
| Treatment μ=0/95 ±0/75 | 27. There is a pharmaceutical treatment available for hepatitis B | 169 (54.5) | 56 (49.1) | NS |
| | 28. People with hepatitis B should restrict their alcohol intake | 127 (41) | 50 (43.9) | NS |

**Table 2.** Correct knowledge answers toward hepatitis C in association with subjects' gender

| | Statements | Correct answers female N (%) | Correct answers male N(%) | *P* value |
|---|---|---|---|---|
| The nature of the disease and its transmission μ=7/37±4/66 | 1. Hepatitis C caused by a virus | 225 (72.6) | 83 (72.8) | NS |
| | 2. Hepatitis C can be spread by mosquitoes | 124 (40) | 41 (36) | NS |
| | 3. Hepatitis C can be spread through close personal contact such as kissing or talking | 134 (43.2) | 37 (32.5) | 0.04 |
| | 4. Hepatitis C can be spread through sharing injecting equipment, such as needles and operation tools | 193 (62.3) | 75 (65.8) | NS |
| | 5. Hepatitis C can be transferred from mother to fetus | 186 (60) | 64 (56.1) | NS |
| | 6. Hepatitis C is spread through blood-to-blood contact | 200 (64.5) | 82 (71.9) | NS |
| | 7. Having a medical and/or dental procedure increases a person's chances of contracting hepatitis C | 180 (58.1) | 67 (58.8) | NS |
| | 8. Hepatitis C is spread through the air in an enclosed environment (e.g., crowded buses and elevators) | 110 (35.5) | 42 (36.8) | NS |
| | 9. Sexual transmission is a common way hepatitis C is spread | 131 (42.3) | 44 (38.6) | NS |
| | 10. Some people with hepatitis C were infected through unsterile tattooing | 152 (49) | 63 (55.3) | NS |
| | 11. Some people with hepatitis C were infected through blood transfusions | 171 (55.2) | 70 (61.4) | NS |
| | 12. sharing dishes with HCV positive patients can cause the spread of virus | 166 (53.5) | 71 (62.3) | NS |
| | 13. HCV can spread from one person to another in the family | 55 (17.7) | 32 (28.1) | 0.02 |
| | 14. Once you have had hepatitis C, you cannot catch it again because you are immune | 136 (43.9) | 49 (43) | NS |
| | 15. HCV is a mutant virus | 98 (31.6) | 32 (28.1) | NS |
| | 16. HCV can be transferred through Colonoscope or Endoscope tools | 88 (28.4) | 29 (25.4) | NS |
| | 17. HBV can be transferred through mother's milk to the infant | 64 (20.6) | 26 (22.8) | NS |
| Symptoms and complications μ=2/14±1/8 | 18. After the entrance of HCV to the body symptoms appear soon | 59 (19) | 28 (24.6) | NS |
| | 19. Hepatitis C can lead to cirrhosis | 82 (26.5) | 39 (34.2) | NS |
| | 20. An individual can have hepatitis C antibodies without being currently infected with the virus | 117 (37.7) | 57 (50) | 0.02 |
| | 21. Hepatitis C is associated with an increased risk of liver cancer | 130 (41.9) | 57 (50) | NS |
| | 22. A person can be infected with hepatitis C and not have any symptoms of the disease | 66 (21.3) | 34 (29.8) | NS |
| | 23. Always after the entrance of HCV to the body symptoms appear | 67 (21.6) | 23 (20.2) | NS |
| Prevention μ=0/76±0/92 | 24. People with hepatitis C should be restricted from working in the food industry | 105 (33.9) | 58 (50.9) | 0.001 |
| | 25. There is a vaccine for hepatitis C | 55 (17.7) | 30 (26.3) | 0.05 |
| | 26. special diet is recommended for patients with Hepatitis C | 46 (14.8) | 15 (13.2) | NS |
| | 27. Hepatitis C test is done before marriage | 80 (25.8) | 36 (31.6) | NS |
| Treatment μ=0/68 ±0/71 | 28. There is a pharmaceutical treatment available for hepatitis C | 30 (9.7) | 13 (11.4) | NS |
| | 29. People with hepatitis C should restrict their alcohol intake | 71 (22.9) | 31 (27.2) | NS |

**Table 3.** Students' attitude toward Hepatitis B and C

| Statement | Agree | Don't have any idea | Disagree |
|---|---|---|---|
| 1. All patients should be tested for HBV and HCV before they receive health care | 353 (83.3) | 52 (12.3) | 19 (4.5) |
| 2. Patients with HBV and HCV should be given the last appointment for the day | 124 (29.2) | 127 (30) | 173 (40.8) |
| 3. Health professionals who are HBV and HCV positive should not give health care services to patients | 219 (51.7) | 123 (29) | 82 (19.3) |
| 4. I deliver the same standard of care to patients with HBV and HCV as I do for other patients | 279 (65.8) | 78 (18.4) | 67 (15.8) |
| 5. I try not to spend much time when I give services to HBV and HCV positive patients | 70 (16.5) | 101 (23.8) | 253 (59.7) |
| 6. I feel that I do not have the skills needed to effectively and safely treat patients with HBV and HCV | 241 (56.8) | 132 (31.1) | 50 (11.8) |
| 7. I would prefer to wear two pairs of gloves when treating a bleeding person with HBV and HCV | 329 (77.6) | 68 (16) | 27 (6.4) |
| 8. I do not like treating people with HBV | 115 (27.1) | 148 (34.9) | 161 (38) |
| 9. It's not disgusting for me to have contact with HBV and HCV positive patients | 147 (34.7) | 157 (37) | 120 (28.3) |
| 10. I often use additional infection control precautions when treating patients with HBV and HCV | 278 (65.6) | 121 (28.5) | 25 (5.9) |
| 11. I am willing to treat people with HCV | 103 (24.3) | 219 (51.7) | 102 (24.1) |
| 12. Testing outpatients for HBV and HCV is not necessary | 126 (29.7) | 171 (40.3) | 126 (29.7) |
| 13. Following infection control guidelines will protect me from being infected with HBV and HCV at work | 316 (74.5) | 86 (20.3) | 22 (5.2) |
| 14. The possibility that I will be infected with HBV or HCV at work is low | 63 (14.9) | 127 (30) | 234 (55.2) |
| 15. Education is effective in improving knowledge on Hepatitis B and C | 351 (82.8) | 61 (14.4) | 12 (2.8) |
| 16. HIV is easier to catch than Hepatitis B and C | 87 (20.5) | 219 (51.7) | 118 (27.8) |
| 17. HBV and HCV positive patients should stay away from other family members | 74 (17.5) | 141 (33.3) | 208 (49.1) |
| 18. I think Hepatitis B and C test should be done before marriage | 342 (80.7) | 61 (14.4) | 21 (5) |

**Table 4.** Knowledge and attitude of medical students in relation to the demographic characteristics

| Variables | | | Mean (SD) knowledge score toward hepatitis B | *P* value | Mean (SD) knowledge score toward hepatitis C | *P* value | Mean (SD) attitude score | *P* value |
|---|---|---|---|---|---|---|---|---|
| Gender | Female | 310 (73.1) | 17. 3+4.6 | 0.03 | 10.4+6.8 | NS | 38.1+3.9 | 0.0001 |
| | Male | 114 (26.9) | 16.1+6 | | 11.2+6.5 | | 36.6+3.7 | |
| Marital state | Single | 387 (91.3) | 16.9+5.1 | NS | 10.4+6.7 | 0.03 | 37.7+4 | NS |
| | Married | 37 (8.7) | 18.2+3.7 | | 12.8+6.9 | | 37.7+3.7 | |
| Field of study | Nursing | 87 (20.5) | 18.4+4.5 | 0.0001 | 10.3+6.8 | 0.002 | 38.2+4.9 | NS |
| | midwifery | 58 (13.7) | 16.6+4.7 | | 8.9+7.1 | | 37.2+4.1 | |
| | Operating room | 89 (21) | 18+5.1 | | 12.7+5.7 | | 37.8+3.6 | |
| | Anesthesiology | 47 (11) | 16.8+4.4 | | 10.4+5.9 | | 37+3.5 | |
| | Laboratory Sciences | 66 (15.6) | 17.6+4.9 | | 11.6+8 | | 37.6+3.5 | |
| | Radiology | 72 (18.2) | 14.3+5.2 | | 8.9+6.2 | | 37.6+3.4 | |
| Semester | 1-2 | 155 (36.6) | 16.5+5.1 | 0.03 | 9.6+6.7 | 0.0001 | 38+3.8 | NS |
| | 3-4 | 130 (30.7) | 16.6+5.4 | | 9.6+6.8 | | 37.1+3.5 | |
| | 5-6 | 108 (25.5) | 17.8+4.6 | | 12.5+6.1 | | 37.6+4.2 | |
| | 7-8 | 31 (7.3) | 18.7+4.2 | | 13.2+6.8 | | 38.8+4.5 | |
| Working in hospital | Yes | 77 (18.2) | 18.8+4.5 | 0.001 | 136+6.3 | 0.0001 | 38.2+4.1 | NS |
| | No | 347 (81.8) | 16.6+5.1 | | 9.9+6.7 | | 37.6+3.9 | |
| History of hepatitis B vaccination | Yes | 412 (97.2) | 17.1+5 | NS | 10.6+6.8 | NS | 37.8+4.1 | NS |
| | No | 12 (2.8) | 14.8+7.9 | | 9.6+5.6 | | 37.7+3.9 | |
| Controlling HBS Antibody titer | Yes | 71 (16.8) | 18.3+5.2 | 0.02 | 11.4+7.2 | NS | 37.5+3.6 | NS |
| | No | 353( 83.2) | 16.8+5 | | 10.4+6.6 | | 37.7+4 | |
| Family history of Hepatitis | Yes | 11 (2.6) | 16.3+6.3 | NS | 9.5+6.5 | NS | 35+3 | 0.02 |
| | No | 413 (97.4) | 17+5 | | 10.6+6.7 | | 37.7+3.9 | |
| NSI history | Yes | 33 (7.8) | 18.9+3.3 | 0.02 | 11.4+6.6 | NS | 36.7+84.7 | NS |
| | No | 391 (92.2) | 16.9+5.1 | | 10.5+6.7 | | 37.7+3.8 | |
| Receiving education on NSI | Yes | 163 (38.4) | 18.6+4.2 | 0.0001 | 12.5+6.5 | 0.0001 | 38.1+4.2 | NS |
| | No | 291 (61.6) | 16+5.2 | | 9.4+6.6 | | 37.4+3.7 | |

cared for someone with HCV, and who had the greatest contact with blood and body fluids and the most responsibility for patient care, had the greatest knowledge regarding HCV [16]. The higher knowledge level of nursing students and the lowest grade by radiology students in the present survey was may be due to more relationship with the patients with HBV or HCV infections and most responsibility for patient care in groups such as nurses.

In our survey, the majority of the medical students (97.2%) had received Hepatitis B vaccination but only 16.7% of them had controlled HBS Antibody titer. Also in a survey by Ahmadi et al. 85% of health care workers had the history of Hepatitis B vaccination but more than half of the health care workers didn't have enough knowledge about the vaccination of Hepatitis B [15]. Also in the Pakistan survey, knowledge about hepatitis B vaccine was not satisfactory among study groups [2]. We should also consider that vaccination is a way of preventing HBV infection but is not enough for it. As the knowledge of our study group was not high about the prevention of HBV infection it can be predictable that do not follow preventive strategies completely.

Regarding attitude questions the majority of medical students (77.6%) believed that they prefer to wear two pairs of gloves when treating a bleeding person with HBV and HCV and 83.3% agreed that all patients should be tested for HBV and HCV before they receive health care. But only 29.2% agreed that patients with HBV and HCV should be given the last appointment for the day It was similar to Joukar's study on health care workers which showed 74.4% of them were double-gloved when they treated a bleeding person with hepatitis C and 95.8% believed that hepatitis C patients should be identified for infection control purposes and 48.5% of the participants indicated that patients with hepatitis C should be given the last appointment of the day [10]. Also in the study by Mortel et al., 55% of health care workers agreed or strongly agreed that mandatory testing upon admission to hospital was necessary and 69% reported that they were comfortable touching someone with HCV [16], against our study in which only 34.7 agreed that having contact with HCV or HBV positive patients was not comfortable for them.

At last our data indicates that there is a positive correlation between medical students' knowledge toward Hepatitis B and C and their attitude toward the diseases in a way that higher knowledge is associated with better attitude. This result is consistent with the results of some similar surveys [1, 5, 10] but against the data from Mortel's survey in which there was no significant relationship between health care workers' knowledge and attitude toward Hepatitis C [16].

However the data of the present study has some weaknesses and is limited by cross-sectional study design and the small sample size. In addition, we didn't talk about non-responders, and the study subjects consisted of only those who willingly registered in the survey. Also we asked the students idea about the statements and self-reported responses may not reflect responders' actual attitudes. Apart from these limitations, this investigation has some strength because it refers to a common health problem and targets a high risk group which can have a significant influence on a serious health concern. Improving knowledge of blood-borne pathogens, including hepatitis B and hepatitis C, is important for students in the medical sciences. Health care professionals play an important role as patient educators and it is essential that they are knowledgeable about these diseases.

## Conclusion

Knowledge and attitude of medical students in our region is partial to weak especially on the preventive methods and in those groups of students who have less close contact with the patients. We found a positive correlation between students' knowledge and attitude toward HBV and HCV infections.

Additionally, as enough knowledge and correct attitude of the infections has influence on health care workers' willingness to care for patients with HBV and HCV infections, education on the nature, symptoms, transmission, prevention and treatment of HBV and HCV infections in the work place, and on methods to protect oneself from transmission may increase the willingness of health care workers to care for HCV-infected persons thus reducing discrimination towards these people in the health care setting.

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## Declare of conflict of interest

The authors have no conflict of interests.

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