Original Article

Knowledge, risk perception, and behavioral intention about hepatitis C, among university students

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ABSTRACT

Introduction: Hepatitis C virus (HCV) infection is a major complex public health problem. Different resources have proved that healthcare workers more than the general population are at a risk of infection. Therefore, medical field students, due to the future occupational hazards, are included in the risk group. **Aim:** The purpose of the study was to evaluate the level of knowledge, public and individual risk perception, and behavioral intention about HCV, among medical sciences students of the Isfahan University of Medical Sciences. **Settings and Design:** This is a descriptive–analytical study that was conducted among 457 students of the Medical Sciences in the Isfahan University of Medical Sciences. **Materials and Methods:** The data was collected using a questionnaire. Sampling was done randomly. **Statistical Analysis Used:** The data was analyzed using the $SPSS_{18}$ software and statistical tests of Pearson, Spearman, T- test, and the analysis of variance (ANOVA); $P < 0.05$ was considered significant. **Results:** Four hundred and fifty-seven students (41.8% male and 58.2% female) in 29 fields of study (six categories) participated in this research. The mean age was 21.55 ± 2.6 years. The mean and standard deviations of the students' knowledge was 3.71 ± 2.9 (out of 8), and the behavioral intention to accruing information and performance of preventive actions related to HCV was 11.52 ± 3.16 (out of 20). Public risk perception was 20.1 ± 3.5 (out of 30); and personal risk perception was 6.96 ± 1.8 (out of 10). The ANOVA test showed that public perception of the risk among students of different academic fields was different ($F = 1.52$, $P < 0.05$). **Conclusions:** According to the low knowledge of students of Medical Sciences in the Isfahan University of Medical Sciences about HCV, it was recommended that the University Policymakers design an educational intervention about it, in order to minimize the chances of being infected.

Key words: Behavioral intention, hepatitis C. knowledge, risk perception

INTRODUCTION

Hepatitis C – a contagious disease – was discovered in 1989, and considered a major cause of chronic viral liver disease in the world.[1] Hepatitis C virus (HCV) infection is a major complex public health problem.[2] According to the World Health Organization (WHO), about 130 – 170 million people are chronically infected with the Hepatitis C virus, with more than 350,000 people dying from Hepatitis C-related liver diseases each year.[3] Moreover, more than 240 million

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people have chronic (long-term) liver infections of hepatitis B and 600,000 people die every year due to the acute or chronic consequences of hepatitis B.[4] The disease and its subsequent liver diseases can lead to liver transplantation, transplantation for hepatocellular carcinoma, and liver failure. Most persons who are positive for HCV are not aware of their disease and do not follow cure therapies or treatment to promote behavioral changes, so transmission of the infection occurs very easily.[2] Some of the most common methods of Hepatitis C transmission include: Blood and blood product transfusions, organ transplants, hemodialysis, healthcare and occupational exposure (needle-stick injuries), and medical procedures.[5] Hepatitis B can be transmitted through blood-to-blood contact, but is more commonly transmitted through bodily fluids — particularly during sex.[6] HCV is approximately seven times more infectious than human immunodeficiency virus (HIV) and occurs as a result of the percutaneous transmission of the hepatitis C virus through infectious blood. Percutaneous means the infected blood is absorbed through the skin and enters the bloodstream of another person — in other words, it is a blood-to-blood transmission.[5] Healthcare workers who are exposed to needle-stick injuries in an occupational setting are at risk because of exposure to infectious blood and other body fluids.[7] Different resources have proved that healthcare workers, more than the general population, are at increasing risk of becoming infected.[8,9] Among the medical staff, the laboratory personnel have been infected more than the others and their positive serological tests are 2 to 27 times greater than those of other health professionals,[10] and the risk of the infection in non-safe injection (The absence of sterilization or do occupational errors) among dentists and oral surgeons is more than in other people.[11-13] Many healthcare professionals do not have sufficient knowledge about risk factors of HCV (2); even lower than 50% of all physicians in the United States are sensitive about asking their patients about risk behaviors.[14]

Prevention of Hepatitis, particularly in high-risk groups such as healthcare workers, is important;[2] unlike hepatitis B that has vaccine for prevention, there is no vaccine for hepatitis C.[6] Therefore, the overall level of awareness about HCV is a challenge to prevention,[2] professional awareness can be considered a good strategy for it. The best preventive strategy is primary prevention, because it can reduce or eliminate the risk of transmission.[15] Awareness,[16] public and individual risk perception as essential elements for healthy behavioral changes,[17] and behavioral intention, as the most important determinant of behavior, meaning the willingness to change one's behavior, are essential concepts for behavioral changes.[18] Studies have shown the correlation between lack of knowledge and preventive behaviors among injection drug users, as also between the attitudes and occupational risks of preventive actions to HCV among health workers.[19,20] Kermode *et al.* (2005), in their cross-sectional study on 266 healthcare workers in health settings, proved that there was a positive correlation between information and perception of risk, knowledge of blood-borne virus transmission, and universal precautions about percutaneous injury, among healthcare workers (nurses, dentists, etc). They also showed that perception of risk was one of the predictors of a safer injection.[21] As medical field students are in the risk group, due to future occupational hazards, and 40% of hepatitis cases in the world were caused by occupational substance exposures,[22] a survey of the knowledge, attitude, and practices of the target group must be considered before designing educational and preventive interventions. Therefore, we decided to evaluate the level of knowledge, public and individual perceived risk, and behavioral intention about HCV, among the students of Medical Sciences in the Isfahan University of Medical Sciences. The results of this study can be useful to the University Policymakers for designing a future educational intervention on HCV.

MATERIALS AND METHODS

This is a descriptive-analytical study that was conducted among the students of Medical Sciences in the Isfahan University of Medical Sciences. Sampling was done through a simple random method among students of the Isfahan University of Medical Sciences. The sample size was 500 people (after calculating the loss of 20%). Data was gathered through a questionnaire. Template and structure questions of this study were derived from Gonzales study *et al.*[23] According to Gonzales *et al.'s,* study on hepatitis B, the questionnaire was designed for hepatitis C. An infectious diseases specialist and a health education specialist confirmed the questionnaire. The questionnaire to collect data included five sections and 27 questions. It included six questions with regard to demographic characteristics; eight questions with regard to the awareness degree (Can hepatitis C be transmitted through sexual contact with an infected person?), with a yes/no scale; three questions with regard to personal risk (I am at risk for hepatitis C infection, with a degree range of: 3 – 15); six questions with regard to public risk (Hepatitis C has an equal effect on the all age groups, with a degree range of: 6 – 30); and four questions pertaining to behavioral intentions; with a five-part Likert scale from completely agree to completely disagree (How likely do you ask someone to give you more information about hepatitis C infection, with a degree range of: 4 – 20). Degree 1 was given to correct answers and zero was given to wrong and 'do not know' answers, degree 5 was given to agree answers, and 1 was given to disagree ones. The Chronbach Alpha coefficient for hepatitis B in Gonzales study *et al.,* was 0.51, 0.77, and 0.56, for personal risk perception, public risk perception, and behavioral intention, respectively.[23] Its validity and reliability was confirmed after a pilot study among 30 students, with expert considerations, after which its Chronbach Alpha coefficient was determined 0.74, 0.76, and 0.62 for the awareness question, risk perception, and behavioral intention, respectively. The questionnaire was self-administrated. The time for answering was 15 minutes. After referring to colleges and dormitories, the questionnaire was distributed; the study objectives were explained to them, and after obtaining their consent, they voluntarily participated in the study. Therefore, consent of participants

was the inclusion criteria and incomplete questionnaires were excluded. Also, assurance was given to the participants that their information would remain confidential. Finally, 457 students completed the questionnaire. The data were analyzed using the SPSS (version 18) and the Spearman and the Pearson correlation, independent *t*-test, and one-way ANOVA, and presented through tables and charts; $P < 0.05$ was considered significant.

RESULTS

Four hundred and fifty-seven students of Medical Sciences from the Isfahan University of Medical Sciences (in six academic field groups) participated in this study, in 2013, — of them 58.2% were female and 41.8% were male. In terms of educational level, 228 students were Undergraduate students, 205 PhD/Medicine students, and others were Master students. Other demographic characteristics are shown in Tables 1 and 2.

Mean age was 21.55 ± 2.6 years. The minimum and maximum ages were 18 and 41 years, respectively. The mean scores and standard deviations of students' knowledge and other achieved scores are shown in Table 3.

The correlation between the variables and demographic characteristics is shown in Table 4.

The results of the *t*-test show that there is a positive relationship between the mean scores of knowledge, risk perception, and gender ($P < 0.05$).

The ANOVA test showed that public risk perception among different fields of academic students was different ($F = 1.52$, $P < 0.05$), and the Scheffe test indicated that students of laboratory sciences, Midwifery, and Nursing, had the greatest public risk perception and behavioral intention than students from the other medical fields.

Students of Medical Physics and Prostheses had the least public risk perception, and students of Orthopedics and Health and Food Safety had the least personal perceived risk. However, one-way ANOVA showed that there was no difference between the students' knowledge, among students of different medical fields.

The regression test showed that only risk perceptions of Hepatitis were related to behavioral intentions ($r = 0.13$, $P < 0.001$).

DISCUSSION

This study aimed to review the level of knowledge, public and individual risk perception, and behavioral intention about HCV, among students of Medical Sciences in the Isfahan University of Medical Sciences. The response rate was 91.4%. On account of the importance of Hepatitis C and future occupational hazards, this survey was useful for the University Policymakers to design educational interventions about HCV and minimize the chances of being infected.

The results of our study showed that students had little knowledge about HCV, especially about the ways of

Table 1: Frequency of students (sex, educational levels)

Educational levels	Sex *n* (%)		Sum *n* (%)
	Male	Female	
Undergraduates	99 (43.4)	129 (56.6)	228 (100)
Masters	7 (29.2)	17 (70.8)	24 (100)
PhD/Medicine	85 (41.5)	120 (58.5)	205 (100)
Sum *n* (%)	191 (41.8)	266 (58.2)	457 (100)

Table 2: The frequency distribution of students in terms of field study

Field of study	The frequency distribution of students *N* (%)
Medicine, dentistry, and pharmaceutics	209 (45.73)
Nursing, midwifery, and laboratory science	52 (11.73)
Health (professional , environmental, and public)	52 (11.73)
Health Services Management	23 (5.03)
Nutrition and food safety	41 (8.97)
Others	80 (17.57)
Sum	457 (100)

Table 3: Mean of variables (knowledge, perceived risk, behavioral intention)

Variable	Scores Mean±SD
Knowledge (0-8)	3.71±2.9
Public risk perception (6-30)	20.1±3.5
Perceived personal risk (3-15)	6.98±1.8
Behavioral intention (4-20)	11.52±3.6

Table 4: Mean±SD of knowledge perceived, personal risk, public risk perception, and behavioral intention

Dependent variables	Independent variables			
	Sex	Age	Educational levels	Field of study
Knowledge	Male: 2.93±2.82 Female: 4.26±2.92 *P*<0.001	*r*=0.35 *P*<0.001	*r*=0.35 *P*<0.001	F=1.36 *P*>0.05
Perceived personal risk	Male: 6.58±1.57 Female: 7.1±2.09 *P*>0.05	*r*=0.1 *P*<0.05	*r*=0.09 *P*<0.05	F=1.9 *P*<0.05
Public risk perception	Male: 19.7±3.33 Female: 20.4±3.59 *P*<0.05	*r*=0.24 *P*<0.001	*r*=0.19 *P*<0.001	F=1.52 *P*<0.05
Behavioral intention	Male: 11.47±2.89 Female: 11.55±3.35 *P*>0.05	*r*=0.03 *P*>0.05	*r*=0.03 *P*>0.05	F=1.59 *P*<0.05

transmission (less than half of the score). Flores (2012) also achieved the same result.[20] In Ismail's review study (2009), the score on knowledge was reported to be more than 50%. In Khurram's study (2008), 78.3% of the medical students knew about the ways of transmission.[24] Higher mean scores are perhaps related to different healthcare groups, including the staff (doctors, nurses, other job groups) and medical students, in different places. In Ashry's study (2008), the rate of knowledge was lower than the one in our study; the difference can be related to the different subjects studied (dental patients).[25]

In the current study the mean score of public and personal risk perception was higher than the average score. Perceived susceptibility that shows an accurate perception of the threatening risk, is a subjective belief related to catching the disease or adverse conditions, as a result of attempts to develop a certain behavior. It has a strong cognitive component that is somewhat dependent on knowledge.[18] As there is no vaccine available yet, and the current gold-standard therapy often fails,[26] primary prevention is the best way to control HCV. Having sufficient knowledge and promotion of perceived susceptibility are useful strategies to encourage students to adhere to preventive measures. As 58.6% of the students reported that their immunization program against hepatitis B has been completed, approximately 57% reported that they intend to take the necessary measures (get information) for the prevention of hepatitis C. In the current study, female students had a greater general and individual risk perception. In other words, female students felt that their friends, relatives, and themselves are in danger; perhaps, this is related to the inherent differences between women and men; as males felt themselves less in danger than females. Harris *et al.*, (2006), showed that the women's domain of the perceived likelihood of negative outcomes related to health was greater than men's.[27]

The current study showed a positive significant correlation between the students' educational level and knowledge, perceived personal risk, and public risk perception; but there was no significant relationship between the educational level and behavioral intention.

The results of the Gonzales study (2006), were in accordance with the results of the present study, which was also about HBV with the same age group.[23]

Although risk perception is important in influencing behavioral changes,[18] and in present study, students have good personal and public risk perception and intention scores in the research, the attempts to learn more about HCV is not satisfactory; so intention is necessary for behavior and knowledge improvement and is a very crucial component. Some studies proved the correlation between awareness and preventive practices in Hepatitis,[28,29] which requires further investigation, to evaluate their perceptions of the intention, for example, attitude. In the Askarian 'study (2009), a similar result was observed, so dentists with a good knowledge and attitude had poor practices in relation to compliance with the standard precautions.[30] Osborne's study (2003), was inconsistent with our results, so vulnerability and perceived severity were considered as being predictive of preventive behavior for Operating Room nurses.[31]

In the present study, increasing age was accompanied by higher knowledge scores. That was maybe related to the increased experience or passing the theoretical or practical courses. The result of Prodanovska's study (2010), among nursing students, was consistent with our study.[32] In our study, the degree of education made a difference between the scores of knowledge; so students with higher level of education had more knowledge about HCV. The study results of Ismail (2009), were in accordance with our study.[33]

In the current study, Midwifery and Nursing students with a higher level education had the greatest public risk perception and behavioral intention than the other students. It was a pleasure to see this, because other studies named these groups high risk; so much so, Hamid *et al.*, had reported that most of the needle injuries among healthcare workers belonged to nurses.[34] Also Ismail *et al.*, found that most of incidences of needle-stick injuries took place among final year medical students.[33] One of the restrictions of this study was lack of quota sampling and the low sample size in some fields. Therefore, by a quota sampling design and with a larger sample size in all groups of students, the study can be more comparable.

CONCLUSION AND RECOMMENDATION

In the current study, the students had knowledge of an undesirable level, acceptable public perceived risk, and moderate personal perceived risk and behavioral intention. Generally, female students had greater knowledge, perceived risk (personal and public), and behavioral intention than male students. Also, greater age and education levels of students were associated with increased knowledge and perceived risk (personal and public) among students. As hepatitis is a very important health problem affecting almost 10% of the population,[35] we strongly recommend that other researchers complete additional studies to assess the knowledge, attitude, practice, and perceived risk of medical students and other health-related professionals, especially emergency healthcare workers. Also we suggest designing studies with quota sampling and a larger sample size, Studies must be conducted separately in all fields and compared with each other, and the causes of undesirable knowledge of students must be also investigated at the individual and institutional levels.

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Conflicts of interest

There are no conflicts of interest.

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