Brief Report

Knowledge, attitude, and performance of medical staff of teaching healthcare settings about hepatitis B and C in Isfahan, Iran

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Abstract

Background: hospital personnel are at high risk of exposure, infection, and transmission of viral hepatitis. The present study aimed at investigating the knowledge, attitude, and performance of health service providers to provide them with the information required for their educational promotion on viral hepatitis.

Materials and Methods: This cross-sectional study was conducted on 400 staff of the forenamed healthcare settings such as on nurses, midwives, licensed practical nurses, and lab officials in Isfahan, Iran, in 2012. A checklist including demographic data and questions associated with the knowledge (18 questions), attitude (4 questions), and performance (15 questions) on hepatitis B and C was completed by the participants.

Results: A total of 388 participants completed the checklist. Participants' knowledge on the ways of transmission, prevalence, vaccination, and prevention methods was moderate (total score = 58.56 ± 10.1 percent) and the attitude was generally positive. Proper vaccination was carried out by 81.4% of the participants. Accidental injury by a needle was reported in 47.7% of the participants, but only 37.6% of them reported it to higher authorities and of them only 13.7% received appropriate treatment. Only 44.3% and 11.6% of participants reported always using gloves and masks, respectively, and 58.8% of the staff covered the needle cap before transferring it to the safety box.

Conclusions: Due to excessive contact with patients, a paramedic-educated society is expected to have an optimal level of knowledge, attitude, and performance related to viral hepatitis. Our results from the checklists showed that medical personnel are not appropriately aware of viral hepatitis and their performance, too, is not satisfactory. Further continuous training is required and there needs to be more emphasis on actions regarding behaviors with high risk of infection transmission.

Key Words: Attitude, hepatitis B, hepatitis C, knowledge, Iran, performance

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INTRODUCTION

Hepatitis B, with a prevalence rate of about 2 billion sufferers and 350 million carriers, is accounted for as a major health problem and the tenth cause of mortality all over the world.[1] In addition, hepatitis C, with a prevalence rate of 0.3%, is one of the most important causes of liver Cirrhosis and hepatocellular carcinoma

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in the world.[2] Based on the reports in systematic review studies carried out by Dr. Alavian *et al*., the prevalence rates of hepatitis B and C in Iran have been estimated to be 2.14 and 0.16%, respectively.[3,4] Moreover, studies conducted in different cities of Iran represent that 1.3-8.9% of the population carry hepatitis B virus.[5]

Although vaccination has reduced the prevalence of hepatitis B to some extent, infection with the virus, to a broad extent, still exists; this requires further serious measures to control it. In addition, considering the lack of appropriate vaccination against hepatitis C, proper application of the safety principles by healthcare staff is of great importance. According to studies conducted, a significant percentage of healthcare personnel are exposed to the risk of needle stick injury (NSI) and being contaminated by the patient's body fluids. Generally, and based on statistics in Iran, more than half of the nurses and other healthcare staff experience these injuries while working.[6-9] Consequently, promoting the knowledge, attitude, and performance of this at-risk society has a significant importance in prevention of hepatitis B and C.

Despite the fact that health service providers are more exposed to the risk of developing viral hepatitis compared to the general population, their knowledge level on viral hepatitis has been low or moderate. Studies conducted on the knowledge level of midwifery students and alumni[10] and surgeons[11] in Iran have showed the extent of their knowledge level to be suboptimal.[12] In a study by Kabir *et al*. conducted in Tehran, it has been claimed that the knowledge and performance of Iranian specialists about hepatitis transmission and prevention ways and necessary measures after accidental contacts have not been at an optimum level.[13] Contrary to expectations regarding the transmission possibility and proper application of the recommendations, general practitioners, dentists, and even surgeons and internal medicine specialists, as high-risk groups of the society, also showed a dissatisfactory level of knowledge.[13]

Continuous investigation of the knowledge, attitude, and performance of different personnel of medicine in various studies shows that people's performances such as vaccination, applying general precautions recommended by international organizations including wearing a pair of gloves, and taking measures after occupational injuries would highly be influenced by their attitude toward hepatitis. No careful studies with regard to the investigation of the knowledge, attitude, and performance of healthcare staff have been carried out in Isfahan yet; however, various studies have been conducted in this respect in other cities of Iran. The present study aims at investigating the knowledge, attitude, and performance of health service providers to provide them with information required for their educational promotion.

MATERIALS AND METHODS

In this cross-sectional descriptive-analytic study, the study population included medical occupations personnel of five teaching healthcare settings in association with Isfahan University of Medical Science (Including Al-zahra, Kashani, Noor, Shahid Beheshti, and Amin hospitals). The study was conducted in 2012 and the staff of the forenamed healthcare settings such as nurses, midwives, licensed practical nurses, and lab officials participated in the study. Regarding the error "type 1" (α) = 0.05, study power = 80%, based on previous studies carried out in Iran,[11,14] and considering the fact that typically 20% of the participants had an optimal level of knowledge, attitude, and performance, the sample size was decided to be 400 people. Sampling was carried out by simple non-random sampling.

The instrument for data collection in this study was a checklist. The questions of the checklist were grouped under several sections. The first section related to demographic data such as age, gender, marital status, education level, job, service background duration, and the place (hospital) of service. The second included questions associated with the knowledge, attitude, and performance of the staff. There were 18 questions associated with the knowledge on the recognition of hepatitis B and C diseases, their modes of transmission, and information about the presence of any effective vaccination. These questions were closed-ended Yes/No questions, True/False statements, and multiple-choice type, with only one possible correct choice. In addition, there were four questions on the staff's attitude toward viral hepatitis, such as their attitude toward vaccination and the issue of whether or not they were at risk of developing hepatitis, graded from agree to disagree. Furthermore, there were 15 questions on the performance of the staff regarding prevention from exposure to infectious agents, vaccination, checking the antibody titer, and questions relevant to the number of times NSI has been experienced and the appropriate remedial measures taken.

All analyses were carried out by SPSS-20. Continuous and qualitative variables were reported as mean ± SD and number (percent), respectively. Continuous variables among groups were compared by the Independent Samples test and One-Way ANOVA, and qualitative variables among groups were compared

using the Chi-Square test. Correlations between continuous variables were assessed by the Pearson correlation coefficient. Statistical significance was accepted at $P < 0.05$.

RESULTS

Of the 400 participants, 388 (97%) completed the checklist. The mean age of the study population was 34.5 ± 8.6 years. There were 287 (74%) female and 101 (26%) male participants. Participant's characteristics, as provided in Table 1, show that most of the participants are married, bachelors, and work as nurses or licensed practical nurses.

The mean of total percent of true answers to questions associated with the knowledge was 58.56 ± 10.1, considered as participants' knowledge score.

Table 2 shows the results of assessing the association between participants' knowledge score and gender, marital status, education level, service background duration, and performance. Females, marrieds, pre-diplomas, and midwives had higher knowledge score than did other participants; however, there was no statistically significant difference in the mean of knowledge scores regarding participants' gender, marital status, education level, and performance ($P > 0.05$). Moreover, there was significant positive correlation between service background duration and participants' knowledge score ($r_{Pearson} = 0.106$, $P = 0.037$).

Table 3 shows the frequencies of answers to questions on the staff's attitude toward viral hepatitis. A total of 382 (98.4%) participants agreed over the issue that hepatitis B vaccination should be compulsory. Of all participants, 5.4% reported that they are scared of vaccine due to the risk of injury. Moreover, 68% of the participants believed that they are not at the risk of being infected with hepatitis, because they observe so much while in contact with patients, and only 7% did not trust vaccination. There was no statistically significant difference in the staff's attitude toward viral hepatitis regarding participants' gender, marital status, education level, service background duration, and performance (data are not shown).

Table 4 shows the frequencies of answers to questions on the staff's performance. Of all participants, 96.2% had a history of vaccination; most of them (81.4%) completed three levels of vaccination and only 13 participants had no history of vaccination. Among the participants being vaccinated against hepatitis B, 75% checked their antibody titer after vaccination and antibody titer was positive in 58% of them.

Table 1: Participants' characteristics

Age (year)	35.4±8.6
Gender	
Male	287 (74)
Female	101 (26)
Marital status	
Married	258 (73.5)
Unmarried	103 (26.5)
Education	
Under diploma	15 (3.9)
Diploma	94 (24.2)
Under-graduate	31 (8)
Bachelor	233 (60.1)
Post-graduate and upper	15 (3.9)
Performance	
Nurse	141 (36.3)
Midwife	62 (16)
Licensed practical nurse	114 (29.4)
Laboratory staff	71 (18.3)
Service background duration (year)	10.1±8.2

Data are mean±SD and number (percent)

Table 2: Association between participants' knowledge score with gender, marital status, education level, job, and service background duration

		P value
Gender		
Male	58.15±9.7	0.17*
Female	59.73±10.9	
Marital status		
Married	58.77±9.5	0.49*
Unmarried	57.98±11.5	
Education		
Under diploma	60±8.9	0.62†
Diploma	59.33±11.2	
Under-graduate	58.6±11.5	
Bachelor	58.36±9.5	
Post-graduate and upper	55.18±8.2	
Job		
Nurse	57.95±9.6	0.73†
Midwife	59.41±9.6	
Licensed practical nurses	59.06±11.8	
Laboratory staff	58.21±10.1	
Work history (year)	*r*=0.106	0.037

Data are mean±SD. *r*, Pearson correlation coefficient. *P* values calculated by*Independent samples test and †One-way ANOVA

Percentage of female participants who completed their vaccination was significantly higher compared to male participants (85.6% vs. 70.2%, $P = 0.001$). Percentage of complete vaccination in nurses (90%), midwives (98.3%), licensed practical nurses, (65.4%) and laboratory staff (76%) were statistically significant ($P < 0.0001$). Percentage of complete vaccination in highly educated participants was statistically significant (low education level with lack of vaccination, $P = 0.033$). There was no statistically significant difference between staff's vaccination

Table 3: Frequencies of participants' answers to questions on the staff's attitude toward viral hepatitis

	Agree	Disagree	No idea
HBV vaccination should be compulsory	382 (98.4)	3 (0.8)	3 (0.8)
I fear vaccination because of risk of injury	21 (5.4)	328 (84.6)	39 (10)
I am not at the risk of stricken with hepatitis, because I observe when I contact patients so much	65 (16.8)	255 (65.7)	68 (17.5)
I do not trust vaccination	27 (7)	312 (80.4)	49 (12.6)

Data are number (%), HBV: Hepatitis B virus

Table 4: Frequencies of participants' answer to questions on the staff's performance

	Answer	Number (%)
How many times have you got HBV vaccination?	Never	13 (3.4)
	1 time	26 (6.8)
	2 times	32 (8.4)
	3 times	316 (81.4)
Have you checked your antibody titer after vaccination?	Yes	291 (75)
If you have checked your antibody titer, was that positive?	Yes	225 (58)
Did you ever get injured from needle stick injury?	Yes	185 (47.7)
If you were injured from needle stick injury, did you report it?	Yes	146 (37.6)
Did you get prophylactic vaccination after needle stick injury?	Yes	53 (13.7)
How much do you use gloves as protection instruments?	Always	172 (44.3)
How much do you use mask as protection instruments?	Always	45 (11.6)
Is sufficient matter available for washing hands in hospital?	Yes	306 (78.9)
Do you cap the needle before throwing away the bubble?	Yes	228 (58.8)

Data in number (%). HBV: Hepatitis B virus

status with regard to participants' marital status and service background duration ($P > 0.05$). History of NSI was seen in 47.7% of participants, of which only 37.6% were reported, and only 13.7% of them received prophylactic vaccination. History of NSI was statistically significant among nurses (56.7%), midwives (53.2%), licensed practical nurses (46.4%), and laboratory staff (26.7%) ($P < 0.0001$). History of NSI has no statistically significant difference between participants, with regard to participants' gender, marital status, education level, and service background duration ($P > 0.05$). Only 44.3% and 11.6% of the participants used gloves and masks as protection instruments, respectively.

DISCUSSION

The aim of the present study was to investigate the current status of knowledge, attitude, and performance of medical staff of teaching healthcare settings in Isfahan. The results showed that the participants' knowledge on the prevalence, transmission, and prevention ways of hepatitis B and C and lack of any vaccination for hepatitis C has been at a moderate – not optimal – level. However, nearly most of the participants were aware that healthcare personnel, compared to the general population, are more at the risk of developing hepatitis B and C. Considering the fact that the possibility of developing hepatitis B preceded by NSI is higher compared with Human immunodeficiency virus development and the development rates of hepatitis B and C preceded by NSI are 25-30% and 3-10%, respectively,[14] the participants' awareness of the issue that hepatitis B is more serious would be remarkable. The prevalence rate ofhepatitis B in Iran is typically 2.14%;[3,4] however, a significant percentage of participants still do not care. To eliminate this mentality, people should be informed of the prevalence of hepatitis B to a higher extent. Nearly all the participants were adequately aware of the increasing risk of developing hepatitis B or C when managing hemophilia and dialysis patients; hence, participants were more careful when managing such patients. The staff's attitude toward vaccination against hepatitis B was optimal. Although it was mandatory for all the staff to be vaccinated against hepatitis B, this study showed that a small percentage of them were not vaccinated against hepatitis B yet and/or did not complete all the vaccination processes.

The results of the present study on the knowledge, attitude, and performance of healthcare personnel about viral hepatitis were almost similar to those of other studies conducted in Iran. In a study by Kabir *et al*. conducted in Tehran, the knowledge level of dentists, general physicians, surgeons, and internal medicine specialists on the prevalence, transmission ways, and the prevalence and safety after vaccination was not found to be optimal. With respect to performance, 88% of them were vaccinated and only 60% had checked for antibody titer after vaccination.[13] Yet, in a study carried out by Jokar *et al*. on healthcare staff in Rasht, the knowledge of the personnel on hepatitis C was at a nearly optimal level and in association with literacy, contrary to the results of this study. In the above-stated study, physicians (doctors) had a significantly higher level of knowledge and better attitude.[15] Of all the participants in that study, half had experienced NSI and majority of whom have reported it. However, none of them had received Prophylaxis. In other studies conducted in Iran, NSI has been stated not to be reported by those who had experienced it,[13,16] the reason of which needs to be investigated. The results of this study were similar to those of other studies carried out in Iran regarding

NSI frequency and increasing risk of NSI in nurses compared to other professions, as well.[7,9,16-18]

The results of the present study showed that participants had enough information on the risks of not using gloves. However, less than half of them used gloves while working. This shows that more rules require to be governed in this regard. Moreover, although there were specific boxes for needles in all wards and all the personnel were trained not to sheath the needles after usage, more than half of the participants (58.8%) did not use the needle in a proper way – they sheathed the needle by the needle cap before throwing the syringe away. Furthermore, in a study by Kabir *et al*. in Tehran, more than 70% of the participants were found to sheath the needles.[13] Considering the fact that a great number of NSI cases are caused while sheathing the needle cap, training the personnel in this respect and taking necessary measures for prevention seem to be vital. Findings of the present study show that detergents and disinfectants were sufficiently available in all the healthcare centers that participated in the study; however, the amount and quality of their usage need to be investigated further.

CONCLUSION

A paramedic-educated society is expected to have an optimum level of knowledge, attitude, and performance about and toward diseases transmitted in these ways due to frequent contact with patients and the high rate of NSI. In contrast, the results of this study showed that paramedics were not optimally informed of hepatitis B and C and their knowledge level on the above-mentioned aspects were suboptimal. With regard to some aspects of performance, for instance, sheathing the needle by a needle cap, which is one of the factors of NSI incidence, despite informing the personnel of the risks associated with this, it seems that a large number of personnel still attempt to do so. More training courses require to be consecutively held and emphasized.

REFERENCES

1. The global alliance for vaccines and immunization. Hepatitis B [database on the Internet] 2006. Available from: http://www.who.int/bulletin/volumes/81/10/Drain1003.pdf. [Last accessed on 2012 Sept 07].
2. Pol S, Vallet-Pichard A, Corouge M, Mallet VO. Hepatitis C: Epidemiology, diagnosis, natural history and therapy. Contrib Nephrol 2012;176:1-9.
3. Alavian SM, Hajarizadeh B, Ahmadzad-Asl M, Kabir A, Bagheri-Lankarani K. Hepatitis B Virus infection in Iran: A systematic review. Hepat Mon 2008;8:281-94.
4. Alavian SM. Hepatitis C infection in Iran: A review article. Iran J Clin Infect Dis 2009;4:47-59.
5. Ghorbani GA, Alavian SM, Ghadimi HR. Long term effects of one or two doses of hepatitis B vaccine in adults after five years. Pak J Biol Sci 2008;11:660-3.
6. Shiva F, Sanaei A, Shamshiri AR, Ghotbi F. Survey of needle-stick injuries in paediatric health personnel of 5 university hospitals in Tehran. J Pak Med Assoc 2011;61:127-31.
7. Galougahi MH. Evaluation of needle stick injuries among nurses of Khanevadeh Hospital in Tehran. Iran J Nurs Midwifery Res 2010;15:172-7.
8. Askarian M, Malekmakan L, Memish ZA, Assadian O. Prevalence of needle stick injuries among dental, nursing and midwifery students in Shiraz, Iran. GMS Krankenhhyg Interdiszip 2012;7:Doc05.
9. Mohammadi N, Allami A, Malek Mohamadi R. Percutaneous exposure incidents in nurses: Knowledge, practice and exposure to hepatitis B infection: Percutaneous exposure incidents in nurses. Hepat Mon 2011;11:186-90.
10. Nazari M, PAK GM, Babaee G, Granmaieh M. A comparative study of knowledge and universal precaution in preventing hepatitis B among midwives and midwifery's students in some medical science university hospitals in Tehran 2002. J Med Coun Islamic Republic Iran 2006;24:165.
11. Moghimi M, Marashi SA, Kabir A, Taghipour HR, Faghihi-Kashani AH, Ghoddoosi I, *et al.* Knowledge, attitude, and practice of Iranian surgeons about blood-borne diseases. J Surg Res 2009;151:80-4.
12. Kakoei S, Sheibani G, Mohammad Alizadeh S. Awareness and practice of Kerman dentists about B-hepatitis, 2004. J Dent Sch 2007;25:66-72.
13. Kabir A, Tabatabaei SV, Khaleghi S, Agah S, Faghihi Kashani AH, Moghimi M, *et al.* Knowledge, attitudes and practice of Iranian medical specialists regarding hepatitis B and C. Hepat Mon 2010;10:176-182.
14. Puro V, De Carli G, Cicalini S, Soldani F, Balslev U, Begovac J, *et al.* European recommendations for the management of healthcare workers occupationally exposed to hepatitis B virus and hepatitis C virus. Euro Surveill 2005;10:260-4.
15. Jokar F, Mansour-Ghanaei F, Soati F, Meskinkhoda P. Knowledge levels and attitudes of health care professionals toward patients with hepatitis C infection. World J Gastroenterol 2012;18:2238-44.
16. Azadi A, Anoosheh M, Delpisheh A. Frequency and barriers of underreported needlestick injuries amongst Iranian nurses: A questionnaire survey. J Clin Nurs 2011;20:488-93.
17. Ghannad MS, Majzoobi MM, Ghavimi M, Mirzaei M. Needlestick and sharp object injuries among health care workers in Hamadan Province, Iran. J Emerg Nurs 2012;38:171-5.
18. Askarian M, Shaghaghian S, McLaws ML. Needlestick injuries among nurses of Fars province, Iran. Ann Epidemiol 2007;17:988-92.

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