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Is The Level Of Knowledge Of Healthcare Workers About Hepatitis A, B, C Transmission Routes Sufficient?

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Abstract

As with all infectious diseases, healthcare professionals should have sufficient knowledge to protect themselves, their colleagues and patients, and to inform patients and their relatives correctly about viral hepatitis. In this study, it was aimed to determine the level of knowledge about hepatitis A, B and C transmission routes of healthcare workers who are at high risk compared to the rest of the population. In this descriptive study, questionnaire was distributed to 600 people including employees and intern students. The data obtained from the questionnaire made by face-to-face interviews with 420 people who volunteered to participate in the research were evaluated in the study. In the survey study, the participants were asked a total of 66 questions, 22 in each area, to determine their level of knowledge about Hepatitis A, B and C. Participants were asked to mark one of the true/false/unknown option for the question specified in each item. Of the 420 people who participated in the survey, 345 (82.2%) were female and 75 (17.8%) were male, and the average age was found to be 30.05±10.51 years old. It was determined that the participants had an average of 5.44±5.65 years of work experience. As a result of the ANOVA and Post Hoc Tukey test, it was determined that the hepatitis A, hepatitis B and hepatitis C knowledge levels of the participants were statistically significantly different from each other. (mean±SD, respectively; 53.44±16.05, 68.22±20.6, 64.65±25.36) ($p<0.001$). In researches measuring the level of knowledge, deficiencies are determined and educational activities are shaped to eliminate these deficiencies. In our study, it was determined that the level of knowledge of HAV was especially lower in all participants compared to knowledge of HBV and HCV. For this reason, it is necessary to give priority to HBV and HCV in educational activities of HAV, which causes water and food-borne epidemics in cases such as earthquakes and disasters.

Keywords: *Hepatitis, patient's relatives, knowledge level, risk perceptions*

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Introduction

Viral hepatitis are preventable contagious diseases that cause serious labor and economic losses, and that concern the whole society, not only the individual. Despite the developments in science and technology, it continues to be a health problem that maintains its importance all over the world. Hepatitis A virus (HAV) is transmitted from person to person by direct contact, contaminated food or water-borne faecal-oral route (1). Hepatitis B virus (HBV) and Hepatitis C virus (HCV) can be transmitted through blood, sexual intercourse, during birth from mother to baby, use of infected blood or blood products, inadequate sterilization of medical devices, sharing of items such as syringes, razors, toothbrushes, and during tattooing (2-5).

Viral hepatitis can start with acute hepatitis and cause chronic hepatitis, cirrhosis, liver failure, liver cancer and death. In our country, it is reported that HBV infection is responsible for 30-40% of cirrhosis cases, 40-50% of liver cancer, and HCV infection is responsible for 25% of cirrhosis cases and 25-30% of liver cancer (6). Hepatocellular carcinoma (HCC) is the fourth most common cause of cancer-related death worldwide, with more than 780,000 deaths in 2018. With a 5-year survival rate of 18%, HCC is the second deadliest tumor after pancreatic cancer (7).

The risk of contracting diseases transmitted in this way increases as healthcare workers have more sharp-object related and puncture wounds which increases contact with blood and body fluids (8,9). As with all infectious diseases, healthcare professionals should have sufficient knowledge to protect themselves, their colleagues and patients, and to inform patients and their relatives correctly about viral hepatitis. In this study, it was aimed to determine the level of knowledge about hepatitis A, B and C transmission routes of healthcare workers who are at high risk compared to the rest of the population.

Materials and Methods

In this descriptive study, questionnaire was distributed to 600 people at Giresun Prof. Dr. İlhan Özdemir State Hospital and Dr. Ali Menekşe Chest Diseases Hospital, including employees and intern students. The data obtained from the questionnaire made by face-to-face interviews with 420 people who volunteered to participate in the research were evaluated in the study. In the survey study, the participants were asked a total of 66 questions, 22 in each area, to determine their level of knowledge about Hepatitis A, B and C. Participants were asked to mark one of the true/false/unknown option for the question specified in each item. It was accepted that the participants who answered correctly to all the questions asked got 100 points each for Hepatitis A, B and C. Incorrect and “unknown” answers were given 0 points. (10).

Using the Statistical Package for the Social Sciences (SPSS) 20.0 (SPSS Inc., Chicago, IL, USA) statistical program of the obtained data, numbers and percentages for discrete variables, mean + standard deviation values for continuous variables were given. Pearson's Chi-square, Mann Whitney U test, Kruskal Wallis tests were used for statistical analysis and $P<0.05$ was accepted for statistical significance.

Results

Of the 420 people who participated in the survey, 345 (82.2%) were female and 75 (17.8%) were male, and the average age was found to be 30.05±10.51 years old. It was determined that

the participants had an average of 5.44±5.65 years of work experience. Table 1 shows the demographic characteristics of the participants in the study When the awareness of the participants about immunity against hepatitis A and hepatitis B virus was evaluated; 9.5% stated that they were naturally immune to hepatitis A, 29.8% stated that they had no immunity and did not get vaccinated, 20.2% were vaccinated, and 40.5% did not know. Against hepatitis B, 12.2% of the participants stated that they were naturally immune, 61.4% were vaccinated, and 26.4% did not know their current immune status.

81% of the participants answered correctly about hepatitis A transmission that drinking infected water, 80.7% by poorly washed vegetables, 68.3% by shared kitchen utensils, 56% by sexual intercourse, 52.9% by dental treatment, 36.4% by sharing the same social environment. It is true that 94.5% of the participants answered correctly about Hepatitis B transmission by infected by needle sticking, 90.0% by sexual intercourse, 83.6% by dental treatment, 83.6% by common nail clippers, 87.9% by razor blades. The correct answer rate for Hepatitis B can not be transmitted were 51.4% via contacted infected blood with intact skin, 86.2% via handshake, 50.2% via drinking infected water, 28.3% via mosquito bite, 48% via eating infected food. 87.4% knew correctly that the hepatitis B vaccine was available and 72.8% correctly knew that the disease could become chronic.

Table 1. Demographic characteristics of the participants

		n	%
Sex	Female	345	82,2
	Male	75	17,8
Occupation	MYO student	40	9,5
	midwifery student	121	28,8
	Laboratory worker	17	4,0
	Cleaning personnel	54	12,9
	Nurse	178	42,4
	Doctor	10	2,4
Education Level	Primary and secondary education	40	9,5
	High School	148	35,2
	University	232	55,3
Workplace	State Hospital	230	54,8
	Vocational Higher Education School	40	9,5
	Vocational High School	58	13,8
	Diğer	92	21,9
Marital Status	Married	217	51,7
	Single	203	48,3
Got Trained?	Yes	234	55,7
	No	186	44,3
Total		420	100,0

The ratio of participants which correctly knew that hepatitis C can be transmitted were 90% via needle sticks, 85% via sexual intercourse, 81.9% via dental treatment, 77.4% via common nail clippers, 72.1% via nail file, 83.6% via razor blade. The ratio of participants who correctly answered that hepatitis C can not be transmitted were 49.8% via the contact of infected blood

with intact skin, 78.6% via handshake, 27.9% via mosquito bite, 51.9% via infected food. 51.1% knew correctly that there was no hepatitis C vaccine and 68.7% of them knew correctly that the disease could become chronic. The knowledge levels of the participants about the transmission and immunization of hepatitis A, B, C are given in Table 2.

Table 2. Knowledge levels about hepatitis transmission and immunization

	HAV Correct		**HBV** Correct		**HCV** Correct	
	n	%	n	%	n	%
1-Contact of intact skin with infected blood	128	30,5	248	51,4	209	49,8
2-The patient's needle sticking	253	60,2	397	94,5	378	90
3-Sexual intercourse	235	56,0	378	90	357	85
4-During dental treatment	222	52,9	351	83,6	344	81,9
5-Handshake	108	25,7	362	86,2	330	78,6
6-Kissing on the cheek	107	25,5	348	82,9	323	76,9
7-Mosquito bite	171	40,7	119	28,3	117	27,9
8-Drinking infected water	340	81,0	211	50,2	223	53,1
9-Eating unwashed vegetables and fruits	339	80,7	201	47,9	218	51,9
10-Using common nail clippers	254	60,5	351	83,6	325	77,4
11-Using common toothbrush	298	71,0	358	85,2	338	80,5
12-Using common rasp	218	51,9	331	78,8	303	72,1
13-Shaving razor	247	58,8	369	87,9	351	83,6
14-From mother to baby during birth	213	50,7	340	81	300	71,4
15-Inhalation	251	59,8	301	71,7	292	69,5
16-Use of common items, such as plates, with the sick person	287	68,3	198	47,1	188	44,8
17-Sharing the same social environment with the patient	153	36,4	282	67,1	283	67,4
18-Living in the same house increases the risk of transmission	326	77,6	270	64,3	252	60
19-May become chronic after acute infection	128	30,5	306	72,9	289	68,8
20-Vaccinated	349	83,1	367	87,4	215	51,2
21-Fecal transmission is extremely rare	136	32,4	234	55,7	198	47,1
22-It is transmitted through breast milk	175	41,7	186	44,3	141	33,6

The questions asked to determine the hepatitis A, B and C knowledge levels of the participants were evaluated out of 100, and the adequacy of the participants' knowledge level and the affecting factors are given in Table 3.

Tablo 3: Factors affecting the score of knowledge about hepatitis A, B and C viruses

		Hepatitis A Knowledge Score		**Hepatitis B Knowledge Score**		**Hepatitis C Knowledge Score**	
		med±SD	**p**	**med±SD**	**p**	**med±SD**	**p**
Sex	Male	55,65±18,10	0,192	63,01±19,83	**0,016**	59,09±23,80	**0,037**
	Female	52,97±15,56		69,34±0,67		65,84±25,55	
Occupation	MYO student	45,00±13,17	**<0,001**	72,71±14,83	**<0,001**	66,25±21,74	**<0,001**
	Midwife	55,06±14,17		72,66±20,98		72,73±22,63	
	Laboratory worker	67,11±13,01		76,47±8,06		79,41±9,25	
	Cleaning personnel	57,49±17,37		61,50±22,22		59,68±21,68	
	Doctor	45,00±9,69		85,42±6,87		84,55±8,35	
	midwifery student	50,83±17,58		60,64±19,70		50,75±27,28	
Education Level	Primary and Secondary School	57,37±18,32	0,101	58,45±24,62	**<0,001**	57,25±24,16	**<0,001**
	High School	51,56±16,72		62,08±18,94		53,81±26,38	
	University	54,02±15,11		73,68±19,38		72,73±21,79	
Workplace	State Hospital	56,50±14,83	**<0,001**	70,71±21,65	**0,002**	70,85±23,13	**<0,001**
	Vocational Higher Education School	45,00±13,17		72,71±14,83		66,25±21,74	
	Vocational High School	49,84±14,77		64,44±20,31		57,52±25,22	
	Other	51,73±18,84		62,45±19,02		52,96±27,29	
Marital status	Married	55,57±15,19	**0,005**	70,12±22,08	0,051	70,28±23,23	**<0,001**
	Single	51,16±16,65		66,19±18,83		58,64±26,19	
Got Trained?	No	53,02±15,78		63,76±22,38		57,32±28,33	
	Yes	53,67±15,46	0,692	71,14±19,57	**0,001**	69,13±22,91	**<0,001**
	TOTAL	53,44±16,05		68,22±20,64		64,65±25,36	

When the knowledge level of hepatitis A, B, C was evaluated with the post hoc Tukey test according to the affecting factors: According to the occupational groups; The factor that provides significance for hepatitis A knowledge status is that vocational higher education school students have lower scores than nurses, laboratory workers and cleaning personnel. The factor that provides significance for the hepatitis B knowledge status is that doctors and nurses score higher than midwifery students and cleaning staff. In addition, laboratory workers score

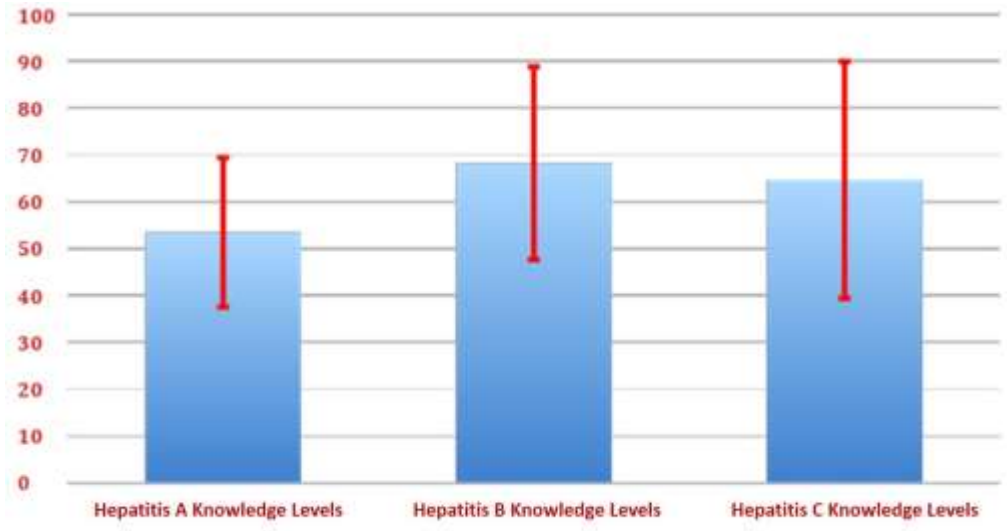
higher than midwifery students. The factor that provides significance for the hepatitis C knowledge status is that doctors, nurses, and laboratory workers score higher than midwifery students and cleaning staff. According to educational status; The factor that provides significance for the hepatitis B and hepatitis C knowledge status is that university graduates score higher than high school, secondary and primary school graduates. According to the results of the institution being worked for; The factor that provides significance for the hepatitis A knowledge status is that those working in the State Hospital have higher scores than those working in the Vocational Higher Education School and Vocational High School. The factor that provides significance for the hepatitis B knowledge status is that the employees of the State Hospital have higher scores than the other group. The factor that provides significance for the hepatitis C knowledge status is that State Hospital employees have higher scores than the vocational high school and other groups. A moderately positive and significant correlation was found between hepatitis A, B, C knowledge level and age (table 4)

Table 4. Correlation between hepatitis A, B, C knowledge level and age

	Hepatitis A **r-p**	**Hepatitis B** **r-p**	**Hepatitis C** **r-p**
Age	**0,232-<0,001**	**0,106-0,030**	**0,265-<0,001**
Hepatitis A	**1**	**0,198-<0,001**	**0,177-<0,001**
Hepatitis B		**1**	**0,817-<0,001**
Hepatitis C			**1**

As a result of the ANOVA and Post Hoc Tukey test, it was determined that the hepatitis A, hepatitis B and hepatitis C knowledge levels of the participants were statistically significantly different from each other. (mean±SD, respectively; 53.44±16.05, 68.22±20.6, 64.65±25.36) ($p<0.001$) (Figure 1)

Figure 1 Comparison of hepatitis A, B, C knowledge levels



Discussion

Viral hepatitis is the leading cause of liver cancer and liver transplants. The first step for the prevention and protection of viral hepatitis is to have sufficient awareness and knowledge about the disease (6).

Turkey is located in the middle endemic region for hepatitis A. Infection often peaks in late childhood and adolescence. Outbreaks caused by infected water and food are common (11,12,13). In the study conducted by Aslı et al. (14), the rate of hepatitis A seroprevalence was found to be 50% between the ages of 0-30, and 89% in those over the age of 46. The low rate of seropositivity in the younger age group makes this group more risky for HAV infection. Although the childhood immunization strategy with hepatitis A vaccine seems to be effective in reducing the reported incidence of hepatitis A in individuals younger than 19 years of age, it has been observed that people over 20 years of age are the most susceptible population (15). In our study, the mean age of the participants was 30.05±10.51, and they are in the risky group. 9.5% of the respondents in the survey answered that they are naturally immune to hepatitis A, 29.8% have never been immune and have not been vaccinated, 20.2% are vaccinated, and 40.5% do not know their status. Hepatitis A preventive and control measures need to focus on adults, in addition to the current childhood hepatitis A vaccination program.

Göktalay et al. (16); in the study he carried out to measure the knowledge levels of hepatitis B knowledge among 392 faculty and college students, he determined that 71.4% knew correctly about blood route transmission, 57.0% knew correctly the sexual transmission, and 56% knew correctly about from mother to baby transmission during birth. 37.4% of the participants answered correctly that it could not be transmitted via water and food. According to Ersoy et al. (17), in another study in which 195 midwives participated, 99.5% answered correctly that hepatitis B can be transmitted by blood, 93.8% answered correctly that it can be transmitted from mother to baby during birth, and 97.4% answered correctly that it can be transmitted during tooth extraction. Only 27.8% of the participants correctly knew that hepatitis B would not be transmitted by using common plates and 39% knew that it can not be transmitted by kissing. In our study; the correct answer rate for knowing that it can be transmitted via needle stick was 94.5%, via sexual intercourse is 90.0%, via dental treatment was 83.6%, via common nail clippers usage was 83.6%, via razor blades was 87.9%. The correct answer rate for no infection transmission via the following ways were: infected blood with intact skin (51.4%), handshake (86.2%), drinking infected water (50.2%), mosquito bite (28.3%), eating infected food(48%).

In a study measuring the level of knowledge of the personnel providing primary health care services, it was reported that the transmission routes of hepatitis B infection were answered correctly by 73% (18). Ersoy et al. (17) found the rate of those who knew all the transmission routes correctly to be 45%, and this rate was quite low and it was interpreted that the study only included midwives, which may have caused the level of knowledge to appear low. In our study, it was conducted for all healthcare professionals and 50% correct answers for all the questions were evaluated as adequate knowledge level. When the adequacy of knowledge levels were evaluated, it was remarkable that HAV knowledge levels were lower than HBV and HCV ($p<0.001$). Compared to other studies, the level of HBV knowledge was not found to be high.

The CDC estimates that approximately 385,000 sharp objects related injuries occur annually among healthcare workers in hospitals (19). According to the data obtained from the Exposure Prevention Network (EPINet), when the rates reported in 2018 and the rates in 2014 are compared, the risk of sharp objects injuries increased by 20% (20), and the risk of contact with infected blood and body fluids increased by 42% (21).

In our study, when hepatitis A, B, C knowledge levels were compared in terms of gender, no statistically significant difference was found between men and women.

In a study measuring the hepatitis B knowledge levels of students in faculty of health personnel and higher education students, the average correct answers was found to be higher in those who stated that they had knowledge about the disease compared to those who did not (16). Similarly, in our study, the level of knowledge was found to be higher in those who received previous education about Hepatitis B and C ($p<0.01$). No statistically significant difference was found between those who received and who did not receive education in hepatitis A ($p< 0.692$).

In a study investigating the knowledge levels of general practitioners about hepatitis B and hepatitis C (22); it has been determined that the level of knowledge about HCV infections is lower than the level of knowledge about HBV infections. Similar results were found in our study.

When the health workers and students were compared, no difference was found between the hepatitis A knowledge levels, while the hepatitis B and hepatitis C knowledge levels were found to be significantly higher in the health care workers ($p=0.35$, $p=0.05$, $p<0.01$). This situation has been associated with the provision of compulsory in-service training for sharp objects wounds and infectious diseases to the hospital staff and hence, the increase in awareness. In our study, a moderately positive and significant relationship was found between hepatitis A, B, C knowledge level and age. Since the average age of health workers is higher than that of students, this supports the fact that the knowledge level increased with age. The lowest correct answer was given to the question that it won't be transmitted via infected blood contact with intact skin and mosquito bite.

Conclusion

In researches measuring the level of knowledge, deficiencies are determined and educational activities are shaped to eliminate these deficiencies. In our study, it was determined that the level of knowledge of HAV was especially lower in all participants compared to knowledge of HBV and HCV. For this reason, it is necessary to give priority to HBV and HCV in educational activities of HAV, which causes water and food-borne epidemics in cases such as earthquakes and disasters.

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