

*Original Article*

**Knowledge of Hepatitis C Among General Population in Kosovo**

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**Abstract**

**Goal:** The goal of the study was to measure the public awareness on Hepatitis C (HCV) infection, in Prishtina, Kosovo's capital. The cross-sectional survey was undertaken in October 2019 using an investigator-developed questionnaire about Hepatitis C virus knowledge. With a 95 percent confidence level and a confidence interval of 4.4, a sample size of 502 persons was calculated.

**Results:** In terms of public awareness about the cause of Hepatitis C, 53 percent of survey participants were appropriately informed. Moreover, 54 percent of survey participants were properly informed about the transmission of Hepatitis C virus through tattooing and piercing procedures. Around 53.6 percent of survey participants were correctly informed that there is still no vaccine for protection against Hepatitis C virus. Regarding, application of knowledge in prevention, only 35.3 percent of the study participants claimed to have been tested for Hepatitis C virus during their routine blood tests. Furthermore, there exist relationship between the age group of the respondents and the knowledge regarding the question that Hepatitis C can be transmitted from the partner. The same relationship exists between the age group of the respondents and the knowledge that Hepatitis C can also be transmitted by blood transfusion and syringe exchange. Yet, other relations exist between the age group of the respondents and the knowledge regarding the chronic carrier of Hepatitis C virus but as well that pregnant women with Hepatitis C can transmit the disease to infants. **Conclusion:** Knowledge gaps necessitate public awareness initiatives which may increase testing and diagnosis. Knowledge on Hepatitis C virus might serve as an effective tool in decision making regarding appropriate preventive measures.

**Keywords:** Hepatitis C; public awareness; preventive measures.

*Bangladesh Journal of Medical Science Vol. 21 No. 04 October'22 Page : 751-758  
DOI: <https://doi.org/10.3329/bjms.v21i4.60237>*

**Introduction**

Globally, morbidity and mortality from hepatitis C virus (HCV) infection is on the rise. According to the report from World Health Organization (WHO), more than 71 million people worldwide have chronic

HCV infection<sup>1</sup>. The Hepatitis C virus causes acute and chronic liver infection. In the 1970s, Harvey J. Alter and colleagues described many cases of hepatitis that occurred after a blood transfusion and which were confirmed to be neither hepatitis A nor hepatitis B<sup>2</sup>. Hepatitis C virus agent was first isolated

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and described in 1989, after much research and experimentation in samples of infected chimpanzees<sup>3</sup>. The route of transmission is primarily through the blood, and now days especially in developed countries, since the systematic screening of blood donors, the risk of HCV infection as a result of blood transfusion or organ transplantation has decreased to 1 infected per 100,000<sup>4</sup>. However, in many countries, HCV still spreads through transfusion of pre-untested blood. Hepatitis C virus has been identified as present in haemodialysis patients, with a prevalence of positive anti-HCV cases ranging from 1 to 70 percent (depending on the country)<sup>5</sup>. In health facilities, needle piercing, unsafe injection, and inadequate sterilization of contaminated medical equipment are ways of spreading HCV infection in developed countries, and still represent the main route of transmission of HCV to poor regions of the world<sup>6</sup>. In 2000, approximately 16,000 health care professionals worldwide became infected with HCV as a result of percutaneous injuries<sup>6</sup>. In developed countries, the highest risk of HCV infection is associated with the use of intravenous drugs, with the replacement of contaminated needles, where this method of transmission includes about 60 percent of new cases diagnosed with HCV<sup>7</sup>. Needle drug users can also transmit the virus through the exchange of devices for drug use<sup>8</sup>. Other methods of transmission include the application of tattoos, piercings and acupuncture, methods that have also contributed to the spread of HCV. Hepatitis C virus can also be transmitted sexually. Vertical transmission (mother-child) is about 4 percent and occurs during pregnancy and childbirth<sup>9</sup>. The incidence is higher among HIV-positive homosexuals compared to the general population and has even increased in recent years<sup>9</sup>. Early diagnosis and adequate clinical management are crucial in preventing HCV transmission<sup>10</sup>.

Identification of the prevalence of HCV infection is based on serological tests. As there is no vaccine and prophylaxis after exposure to HCV, the focus of primary prevention should be on providing blood supplies in developing countries; in increasing safety during the application of injections in health care as well as in reducing the number of injecting drugs users<sup>11</sup>. An HCV vaccine would prevent transmission, regardless of risk factors, and significantly reduce the global burden of HCV-associated disease but there

are barriers to development of vaccine including virus diversity, limited models for testing vaccines, and incomplete understanding of protective immune responses<sup>12</sup>. It is not easy to early detect the HCV infection because most people do not have any symptoms until the HCV causes liver damage, which can take 10 or more years to happen, others may have symptoms of feeling tired, muscle soreness, upset stomach, stomach pain, fever, loss of appetite, diarrhea, dark-yellow urine, light-colored stools, yellowish eyes and skin, called jaundice<sup>13</sup>. Also, a resilience may be a protective factor in the disease trajectory of hepatitis C in terms of QOL; Health care providers should incorporate resilience into the management of hepatitis patients, through a multidisciplinary approach<sup>14</sup>.

Health education of the population is of great importance in the early identification of the disease and the early initiation of adequate treatment. Some people clear the virus, but most people with acute HCV will develop a long-term (chronic) infection. Left untreated, chronic hepatitis C can cause severe liver damage, liver cancer, and even death. But hepatitis C is curable. The first step to being cured is getting a hepatitis C blood test. CDC now recommends testing: Every adult at least once, Pregnant women during every pregnancy, Everyone with ongoing risk factors regularly<sup>15</sup>. An estimated 2.4 million Americans are living with hepatitis C, yet many do not know they are infected. In April 2020, the U.S. Centers for Disease Control and Prevention (CDC) issued recommendations calling for all adults, age 18 years and older, to get tested for hepatitis C<sup>15</sup>. Know More Hepatitis (<https://www.cdc.gov/knowmorehepatitis/about-kmh.htm>), a national, theory-driven multi-media education campaign, was designed to help implement this recommendation by encouraging all adults to get tested for hepatitis C. The goal of the campaign was to ultimately reduce the morbidity and mortality associated with hepatitis C by increasing testing so those who are infected can get linked to life-saving care and treatment. Treatment is available that can cure hepatitis C for most people<sup>15</sup>. The campaign with the motto “Millions of Americans have hepatitis C”, “Hepatitis C can progress to liver cancer”, “Hepatitis C often has no symptoms”, “Hepatitis C can be cured” emphasized information and prevalence of hepatitis C, the presentation of complications, and the dissemination of additional knowledge about the symptoms and

importance of early treatment of hepatitis C. The campaign motivated us further to pursue a cross sectional study on the knowledge of the population about hepatitis C and its characteristics.

### Methodology

In the capital of Kosovo, Prishtina, we conducted a cross-sectional study among the citizens, through a closed question questionnaire, with the aim to get their basic knowledge regarding hepatitis C. The sample was calculated with a confidence level of 95 percent and a confidence interval of 4.4, which resulted in a sample of 502 respondents. Results were compared using SPSS Version 20. Chi-Square test and independent sample were used to compare variables with significant value  $p < 0.005$ .

**Ethical Clearance:** Informed consent has been obtained from all participants. Ethical approval was taken locally.

### Results of the questionnaire

In our study, 502 participants were included, of which 312 (62.2 percent) female participants and 190 (37.8 percent) male participants. From overall participants, 63.3 percent had a high school diploma, 26.3 percent had a secondary school diploma, and 10.4 percent had a low school diploma. Moreover, 40.8 percent of them were professionals (doctor, lawyer, economist, engineer, architect, teacher), 27.1 percent were unemployed, 16.3 percent were students, 11 percent were private workers, and 4.8 percent were government employees. When asked about the etiology of hepatitis C, 32.1 percent of 312 female participants and 20.9 percent of 190 male participants correctly answered, indicating that the cause of hepatitis C is a biological cause of viral nature, specifically the hepatitis C virus, as indicated in Table 1.

**Table 1.** Answers to the question of whether hepatitis C is caused by the HCV virus

Gender	Correct	Incorrect	Do not know	Total
Female	32.10%	4.80%	25.30%	62.20%
Male	20.90%	4.80%	12.20%	37.80%
<b>Total</b>	<b>53.00%</b>	<b>9.60%</b>	<b>37.50%</b>	<b>100.00%</b>

In terms of general understanding of hepatitis C's cause, 53 percent of respondents were appropriately informed. Meanwhile, with 32.1 percent right answers, the feminine gender emerged as the most knowledgeable. According to Table 2, 20.9 percent

of professionals in various fields (doctor, lawyer, economist, engineer, architect, teacher) were informed about the cause of hepatitis C, 14.7 percent of unemployed participants were also informed, and 8.4 percent of students, 5.6 percent of private workers, and 3.4 percent of government employees gave correct answers.

**Table2.** Answers to the question of whether hepatitis C is caused by the HCV virus

Occupation	Correct	Incorrect	Don't know	Total
Unemployed	14.70%	1.40%	11.00%	27.10%
Professionals (different fields)	20.90%	5.40%	14.50%	40.80%
Private worker	5.60%	1.60%	3.80%	11.00%
Student	8.40%	1.20%	6.80%	16.30%
Official worker	3.40%	0.00%	1.40%	4.80%
<b>Total</b>	<b>53.00%</b>	<b>9.60%</b>	<b>37.50%</b>	<b>100.00%</b>

Meanwhile, professionals from a variety of areas (doctor, lawyer, economist, engineer, architect, and teacher) were found to be better knowledgeable about the cause of hepatitis C, with 40.8 percent of accurate answers. In terms of knowing about the hepatitis C vaccine, if one is available, 33.1 percent of female participants and 20.5 percent of male participants are aware that there is currently no hepatitis C vaccination, as summarized in Table 3.

**Table3.** Answers to the question of whether there is a hepatitis C vaccine

Gender	Correct	Incorrect	Do not know	Total
Female	33.10%	10.20%	18.90%	62.20%
Male	20.50%	6.40%	11.00%	37.80%
<b>Total</b>	<b>53.60%</b>	<b>16.50%</b>	<b>29.90%</b>	<b>100.00%</b>

As a result, 53.6 percent of respondents were aware that there is still no vaccination available to protect against HCV. Concerning tattooing and piercing, or whether these procedures are possible ways of transmitting hepatitis C, 54 percent of respondents were aware that these procedures are a possible mode of transmission, 16.9 percent gave incorrect answers, and 29.1 percent said they had no knowledge of tattooing and piercing as possible routes of hepatitis C transmission, as summarized in Table 4.

**Table 4.** The answers to the question of whether tattoo piercing are the routes of transmission of hepatitis C

Gender	Correct	Incorrect	Do not know	Total
Female	32.70%	10.40%	19.10%	62.20%
Male	21.30%	6.60%	10.00%	37.80%
Total	54.00%	16.90%	29.10%	100.00%

A question regarding routine blood tests, resulted in 35 percent of participants informing us that they do not perform the hepatitis C test during routine screening, 29.7 percent do not know whether or not they perform this test during routine blood tests and 35.3 percent of respondents claimed that they performed the hepatitis C test during routine blood tests, as presented in Table 5.

**Table5.** Answers to the question of whether they were also tested for hepatitis C during routine blood tests

Gender	Correct	Incorrect	Do not know	Total
Female	20.50%	23.10%	18.50%	62.20%
Male	14.70%	12.00%	11.20%	37.80%
Total	35.30%	35.10%	29.70%	100.00%

As for the other questions in the questionnaire, the results of all age groups were compared using Version 20. SPSS in order to find correlations. Chi-Square test for independent samples was used to compare variables with significance value  $p < 0.005$ . In Table 6, we present such a correlation between the age group of respondents and the question of whether hepatitis C can be transmitted from a partner. Based on the result obtained, we can say that there is a relationship between the age group of respondents and knowledge regarding the question that hepatitis C can be transmitted by the partner (56.6 percent to 84.5 percent according to Table 6).

**Table 6.** The correlation between the age group of respondents and the question of whether hepatitis C can be transmitted from a partner

			Hepatitis C can be transmitted from a partner			Total
			Correct	Incorrect	Do not know	
Age group	18-24	Count	56	18	25	99
		Expected Count	69.0	13.0	17.0	99.0
		% within Age Group	56.6%	18.2%	25.3%	100.0%
	25-34	Count	59	23	24	106
		Expected Count	73.9	13.9	18.2	106.0
		% within Age Group	55.7%	21.7%	22.6%	100.0%
	35-44	Count	69	11	12	92
		Expected Count	64.1	12.1	15.8	92.0
		% within Age Group	75.0%	12.0%	13.0%	100.0%
	45-54	Count	70	7	11	88
		Expected Count	61.4	11.6	15.1	88.0
		% within Age Group	79.5%	8.0%	12.5%	100.0%
	55-64	Count	47	3	9	59
		Expected Count	41.1	7.8	10.1	59.0
		% within Age Group	79.7%	5.1%	15.3%	100.0%
>65	Count	49	4	5	58	
	Expected Count	40.4	7.6	9.9	58.0	
	% within Age Group	84.5%	6.9%	8.6%	100.0%	
Total	Count	350	66	86	502	
	Expected Count	350.0	66.0	86.0	502.0	
	% within Age Group	69.7%	13.1%	17.1%	100.0%	

Another correlation that has been found is that between the age group and the question whether the mode of transmission of hepatitis C can be blood transfusion, syringe exchange, as seen in Table 7.

**Table 7.** The correlation between age group and the question of whether hepatitis C can also be transmitted through blood transfusions and syringe exchange

			The mode of transmission of Hepatitis C is blood transfusion, exchange of syringes			Total
			Correct	Incorrect	Do not know	
Age Group	18-24	Count	79	3	17	99
		Expected Count	84,4	3,2	11,4	99,0
		% within Age Group	79,8%	3,0%	17,2%	100,0%
	25-34	Count	81	7	18	106
		Expected Count	90,4	3,4	12,2	106,0
		% within Age Group	76,4%	6,6%	17,0%	100,0%
	35-44	Count	82	1	9	92
		Expected Count	78,4	2,9	10,6	92,0
		% within Age Group	89,1%	1,1%	9,8%	100,0%
	45-54	Count	83	2	3	88
		Expected Count	75,0	2,8	10,2	88,0
		% within Age Group	94,3%	2,3%	3,4%	100,0%
	55-64	Count	52	1	6	59
		Expected Count	50,3	1,9	6,8	59,0
		% within Age Group	88,1%	1,7%	10,2%	100,0%
>65	Count	51	2	5	58	
	Expected Count	49,5	1,8	6,7	58,0	
	% within Age Group	87,9%	3,4%	8,6%	100,0%	
Total	Count	428	16	58	502	
	Expected Count	428,0	16,0	58,0	502,0	
	% within Age Group	85,3%	3,2%	11,6%	100,0%	

Next question, related to the possibility of creating a chronic carrier, after infection with HCV, we can conclude a connection between the age group and knowledge regarding the possibility to become chronic carrier after infection. Most age groups stated (53.8 percent to 87.9 percent) that after HCV infection, it is possible to be a chronic carrier, as presented in Table 8.

**Table 8.** The correlation between age group and the question of whether you once become infected with HCV can become a chronic carrier

			Once infected, is it possible to be a chronic carrier			Total
			Correct	Incorrect	Do not know	
Age group	18-24	Count	55	16	28	99
		Expected Count	65,3	16,2	17,6	99,0
		% within Age Group	55,6%	16,2%	28,3%	100,0%
	25-34	Count	57	22	27	106
		Expected Count	69,9	17,3	18,8	106,0
		% within Age Group	53,8%	20,8%	25,5%	100,0%
	35-44	Count	63	13	16	92
		Expected Count	60,7	15,0	16,3	92,0
		% within Age Group	68,5%	14,1%	17,4%	100,0%
	45-54	Count	62	18	8	88
		Expected Count	58,0	14,4	15,6	88,0
		% within Age Group	70,5%	20,5%	9,1%	100,0%
	55-64	Count	43	9	7	59
		Expected Count	38,9	9,6	10,5	59,0
		% within Age Group	72,9%	15,3%	11,9%	100,0%
>65	Count	51	4	3	58	
	Expected Count	38,2	9,5	10,3	58,0	
	% within Age Group	87,9%	6,9%	5,2%	100,0%	
Total	Count	331	82	89	502	
	Expected Count	331,0	82,0	89,0	502,0	
	% within Age Group	65,9%	16,3%	17,7%	100,0%	

As for the question of whether pregnant women with hepatitis C can transmit the disease to their babies, then we can say that there is a correlation link between age groups and the question. So, most age groups have stated (65.7 percent to 82.8 percent) that pregnant women with hepatitis C can transmit the disease to infants, as presented in Table 9.

**Table 9.** The correlation between age group and the question of whether pregnant women with hepatitis C can transmit the disease to their babies

			Can pregnant women with hepatitis C transmit the disease to their babies			Total
			Correct	Incorrect	Do not know	
Age group	18-24	Count	65	23	11	99
		Expected Count	72,0	10,5	16,6	99,0
		% within Age Group	65,7%	23,2%	11,1%	100,0%
	25-34	Count	73	9	24	106
		Expected Count	77,1	11,2	17,7	106,0
		% within Age Group	68,9%	8,5%	22,6%	100,0%
	35-44	Count	67	10	15	92
		Expected Count	66,9	9,7	15,4	92,0
		% within Age Group	72,8%	10,9%	16,3%	100,0%
	45-54	Count	70	4	14	88
		Expected Count	64,0	9,3	14,7	88,0
		% within Age Group	79,5%	4,5%	15,9%	100,0%
	55-64	Count	42	4	13	59
		Expected Count	42,9	6,2	9,9	59,0
		% within Grupmosha	71,2%	6,8%	22,0%	100,0%
	>65	Count	48	3	7	58
		Expected Count	42,2	6,1	9,7	58,0
		% within Age Group	82,8%	5,2%	12,1%	100,0%
Total	Count	365	53	84	502	
	Expected Count	365,0	53,0	84,0	502,0	
	% within Age Group	72,7%	10,6%	16,7%	100,0%	

### Conclusions and discussions

As a conclusion on the research conducted, we can sum up that:

- More than half of the population have knowledge about the cause of hepatitis C, where most informed were women, with more than one third of correct answers.
- In terms of occupation, professionals were mostly informed, followed by unemployed and students. Moreover, professionals turned out to be more informed about the cause of hepatitis C with nearly half of correct answers.
- Female participants, nearly a third of them are informed about the vaccine against HCV, while male respondents were less informed but in overall more than half of the respondents were informed that there is still no vaccine to protect against HCV.
- Regarding means of transmission, more than half of the participants were informed that HCV can also be transmitted through tattooing and piercing procedures.
- Only third of the respondents get tested for hepatitis C during routine blood tests.
- There exists a relationship between the age group of respondents and knowledge regarding the question that hepatitis C can be transmitted by the partner.
- There exists a relationship between the age group of respondents and knowledge regarding

the question that the route of transmission of hepatitis C is also transfusion of blood, exchange of syringes.

- There exists a relationship between age group and knowledge regarding the question that if you are infected once it is possible to be a chronic carrier. So, most age groups have stated that after HCV infection, it is possible to be a chronic carrier.
- There exists a relationship between age group and knowledge regarding the question that pregnant women with hepatitis C, can transmit the disease to infants. So, most age groups have stated that pregnant women with hepatitis C can

carry the disease to their babies.

**Conflict of interest:** There is no conflict of interest to any of the authors of this article.

**Funding agency:** The study was not funded by any authority.

**Authors contribution:**

- Idea owner of this study: ARB, PR
- Study design: ARB, PR
- Data gathering: FK
- Writing and submitting manuscript: ARB, LS, AX
- Editing and approval of final draft: ARB and PR

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