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Level of knowledge of prevention of hepatitis C virus infection among nursing students

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Abstract

Introduction. Infection with hepatitis C virus (HCV) may lead to the severe form of chronic hepatitis C. According to the relevant literature, the percentage of infected population worldwide is approximately 2-3%, while in Poland it is about 1.4%. The incidence of hepatitis C is showing an upward tendency. The routes of infection with HCV are mainly associated with the disruption of tissue continuity, contact with infected blood, and via contact with infected medical equipment. The prevention of HCV infection in medical facilities is conditioned by non-specific prophylaxis, the essence of which is the cutting-off of transmission routes.

Objective. The aim of the study was assessment of the level of knowledge concerning prevention of infection with hepatitis C virus among students of nursing at the Higher School in Radom.

Material and Methods. The study was conducted in the first half of 2018, among 141 licentiate students of nursing at the Higher School in Radom. The research method was a diagnostic survey using a questionnaire technique.

Results. The majority of respondents (98.6%) indicated the correct answer and reported that HCV is the 'hepatitis C virus'. A large group of the examined students (94.3%) knew that

'contact with infected blood' may be the source of infection with HCV. The vast majority of respondents (87.9%) reported that infection with HCV may take place 'for example, during a visit to a hairdresser or beautician, when there occurs damage to the skin'. The majority of adolescents (86.5%) knew that 'everyone' is exposed to HCV infection. More than a half of the students in the study (56.0%) knew that approximately 700,000 people in Poland are infected with HCV. In the opinions of the majority of respondents (88.7%) the best diagnostic method in infection with hepatitis C virus is 'blood test for anti-HCV antibodies'. The largest number of students (61.0%) knew that there is no vaccine against hepatitis C, because the efforts to develop this vaccine have failed due to the high variability of the virus. A small group of the examined students (39.0%) had knowledge concerning the possibilities of curing a patient infected with HCV, as long as the disease is diagnosed early. The collected research material was statistically analyzed using the software StatSoft Statistica 13.1 PL and Microsoft Office software package. Non-parametric Pearson's chi-squared test was used. The p values $p < 0.05$ were considered statistically significant.

Conclusions. The examined students had a high level of knowledge concerning the essence and situations of risk of infection with HCV. Students at the specialty of nursing should be motivated to expand their knowledge pertaining to prophylaxis of infection with hepatitis C virus. The risk of infection with HCV associated with occupational exposure should be considered while educating students of the specialty of nursing.

Key words: HCV infection, students' knowledge

Introduction

Infection with hepatitis C virus (HCV) is the cause of hepatitis C. It is estimated that the number of infected people worldwide is within 2-3% of the population, i.e. from 130,000 to 170,000 000 million patients. Data by the World Health Organization show that, in Europe, approximately 15,000,000 people are chronically ill with hepatitis C, and each year about 86,000 patients die due to this disease. These are estimation data, considering a long asymptomatic period of the illness [3]. In Poland, approximately 700,000 people are infected [5]. Infection with hepatitis C virus is an important problem of contemporary medicine in Poland and worldwide. It concerns adults, adolescents, and also children. The sources of infection are humans. HCV is transmitted via blood, and proliferates mainly in hepatic cells, as well as in other organs, i.e. spleen, pancreas, adrenal glands, brain, bone marrow, thyroid, lymph nodes, and peripheral blood mononuclear cells [1].

Analysis of data concerning a population infected with hepatitis C virus demonstrate that since 2009 the incidence of hepatitis C in Poland has an upward tendency. In 2009, in Poland, 1,939 new cases of infection were registered.

The routes of infection with HCV are associated with the disruption of tissue continuity, associated with blood transfusion and other contacts with blood: during tattooing, acupuncture, during treatments at the hairdresser, in association with the use of narcotics via the intravenous route, during delivery, dialysis, during organ transplantation from an infected donor, via medical equipment infected with HCV, and through sexual contact with an infected partner.

The following persons belong to the group at risk specially exposed to HCV infection:

- those who had undergone blood or blood products transfusion before the year 1992;
- hospitalized many times;
- underwent minor surgical procedures (e.g. removal of birthmarks, removal of a tooth), dialysis, endoscopy;
- women who gave birth;
- past history of hepatitis B;
- use narcotics via intravenous route;
- visit tattoo parlours, beauty salons;
- risky sexual contacts;
- use the same beauty tools and toothbrushes;
- health care staff [2,4].

Prevention of the spread of hepatitis C virus infections in medical facilities is possible exclusively on the route of non-specific prophylaxis, the essence of which is cutting-off of the routes of transmission. In Poland and worldwide there is still a lack of specific methods of prevention of HCV infection, e.g. by an active immunization (preventive vaccinations), or passive immunization (specific immunoglobulins).

Objective

The aim of the study was assessment of the level of knowledge concerning prevention of infection with hepatitis C virus among students of nursing at the Higher School in Radom.

Material and Methods

The study was carried out from February-March 2018, among 141 licentiate students of the specialty of nursing (106 females and 35 males), at the Higher School in Radom. The research method was a diagnostic survey using a questionnaire technique. The research

material was collected using two research tools: an author-constructed questionnaire containing items pertaining to the socio-demographic situation of the students, and a modified questionnaire ‘*Assessment questionnaire for students (pre- and post)*’ developed by the Polish group of HCV Experts. The original version of the questionnaire is available on the website [6].

The collected research material was statistically analyzed using the software StatSoft Statistica 13.1 PL and a Microsoft Office software package. Non-parametric Pearson's chi-squared test was used. The p values $p < 0.05$ were considered statistically significant.

Results

The study included 106 females -75.2% and 35 males – 24.8% aged 19-50. The largest group were students aged over 30 (70 – 49.6%), whereas the smallest group those aged 19 – 25 (38 – 27.0%). It was found that the respondents age was 31.6 ± 8.0 , with the youngest participant in the study aged 19, and the oldest 50 (median 30) (Fig.1).

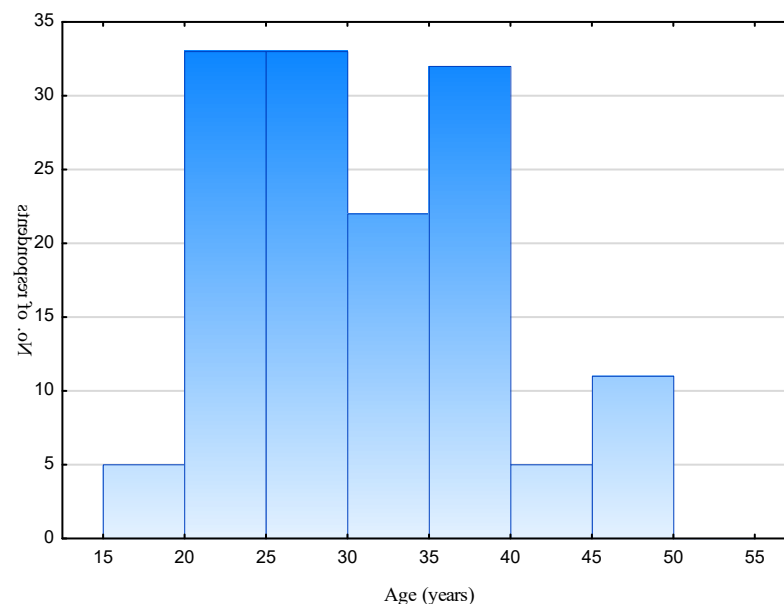


Figure 1. Histogram presenting respondents by age.

It was observed that 90 students (63.8%) were urban inhabitants, and 51 (36.2%) lived in rural areas. The majority of the examined students (62.4%) reported that there was no hepatitis C virus infection in their family, while one-fourth of respondents (25.5%) had no knowledge concerning this problem. Analysis of numerical data demonstrated that 17 students had this problem in their family - 16 family members were ill with hepatitis C (11.3%), and one respondent was infected with HCV.

Students at the speciality of nursing were asked the question: ‘*What is HCV?*’, which was the first question in the modified questionnaire ‘*Assessment questionnaire for students (pre- and post-*’, according to the Polish Group of HCV Experts (Tab.1).

Table 1. Knowledge of what is HCV (gender, age).

What is HCV?		Total	Gender		Age [years]			
			F	M	18-25	26-30	>30	
it is flu virus	n	2	1	1	1	1	0	
	%	1.4%	0.9%	2.9%	2.6%	3.0%	0.0%	
it is hepatitis C virus	n	139	105	34	37	32	70	
	%	98.6%	99.1%	97.1%	97.4%	97.0%	100%	
it is a virus that causes visual impairment	n	0	0	0	0	0	0	
	%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Total		n	141	106	35	38	33	70
Stat.: (Chi ²), "p"		-	p=0.40645		p=0.36417			

The majority of students (98.6%) selected the correct answer and reported that HCV is ‘hepatitis C virus’. Two respondents (1.4%) provided an incorrect response and indicated that this is a ‘flu virus’. None of the respondents mentioned that HCV ‘is a virus that causes visual impairment’. The differences between answers according to gender and age were statistically insignificant ($p > 0.05$). The largest number of correct replies were provided by persons aged over 30. The results of the study demonstrate that the level of knowledge concerning what is HCV was higher, the higher the students’ age. It was found that the differences according to the respondents’ place of residence and their possible contact with persons infected with hepatitis C virus (family members) were also statistically insignificant ($p > 0.05$).

The subsequent item in the questionnaire concerned the sources of HCV infection (Tab. 2).

Table 2. Sources of infection with HCV in respondents' opinions (gender, age).

In your opinion, in what way is it possible to become infected with HCV?		Total	Gender		Age [years]			
			F	M	18-25	26-30	>30	
through contact with infected blood	n	133	102	31	35	32	66	
	%	94.3%	96.2%	88.6%	92.1%	97.0%	94.3%	
by handshake, cuddling	n	1	0	1	0	1	0	
	%	0.7%	0.0%	2.9%	0.0%	3.0%	0.0%	
through alimentary route	n	5	3	2	2	0	3	
	%	3.5%	2.8%	5.7%	5.3%	0.0%	4.3%	
through common use of cutlery with infected person	n	2	1	1	1	0	1	
	%	1.4%	0.9%	2.9%	2.6%	0.0%	1.4%	
Total		n	141	106	35	38	33	70
Stat.: (Chi), "p"		-	p=0.21331		p=0.44902			

The largest number of respondents (94.3%) reported that the source of infection with HCV may be 'contact with infected blood'. Five respondents (3.5%) mentioned 'alimentary route', while two students (1.4%) indicated 'common use of cutlery with an infected person' as the source of infection with HCV. One respondent (0.7%) admitted that it is possible to become infected 'by handshake, cuddling'. Statistical analysis did not show statistically significant relationships between the source of HCV infection reported by the students according to: gender, age, place of residence, or the problem of HCV infection in a family ($p > 0.05$). A tendency was observed that males, the youngest respondents, rural inhabitants, and persons with deficit of knowledge concerning the problem of the occurrence of hepatitis C in their family, more frequently provided incorrect answers.

The examined students indicated in the questionnaire the situations, which in their opinions, create the risk of HCV infection (Fig. 2).

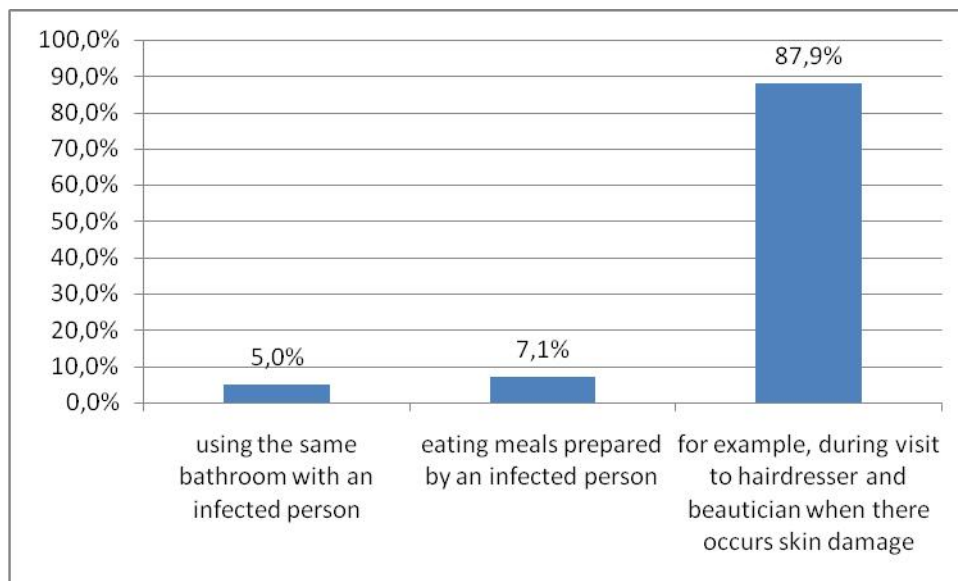


Figure 2. Situations in which, according to respondents' opinions, infection with hepatitis C virus may take place.

It was observed that the largest number of students (78 – 87.9%) reported that infection with HCV may take place 'for example during a visit to a hairdresser or beautician when there occurs skin damage'. The differences according to gender, age, place of residence, the problem of the occurrence of hepatitis C in a family were statistically insignificant ($p > 0.05$).

The students were asked to indicate who, in their opinion, is exposed to becoming afflicted with hepatitis C (Fig. 3).

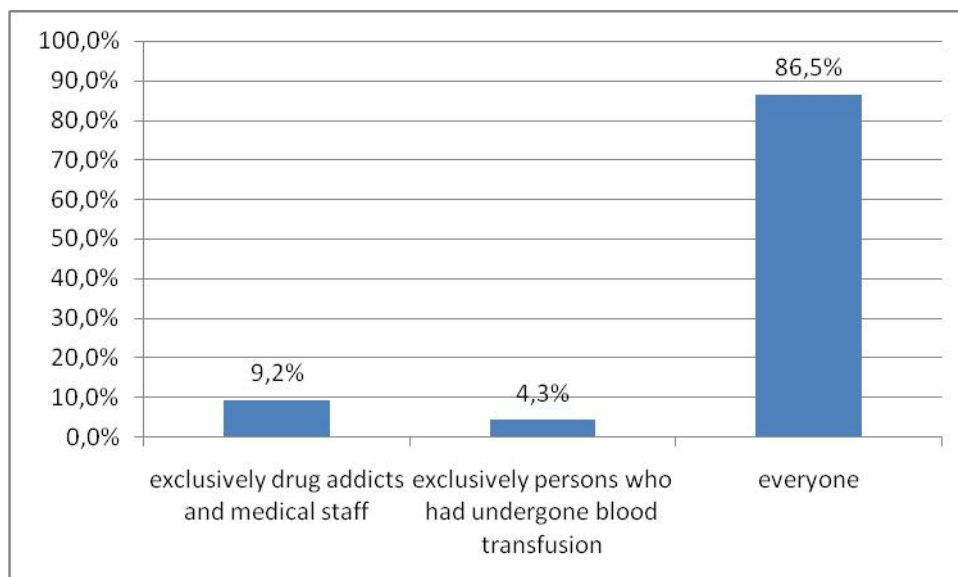


Figure 3. Persons who according to respondents' are exposed to infection with HCV.

The vast majority of respondents (124, 86.5%) reported that 'everyone' is exposed to infection with HCV. As many as 13 students in the study (9.2%) admitted that 'exclusively

drug addicts and medical staff' may become infected with HCV, while 6 respondents (4.3%) mentioned that HCV infection concerns 'exclusively persons who had undergone blood transfusion'. The respondents' replies did not significantly differ according to gender, age, place of residence, and the problem of hepatitis C virus infection in a family ($p>0.05$).

Students were asked to express their opinions concerning the number of the population infected with HCV in Poland (they selected one reply) (Tab. 3).

Table 3. Students' knowledge concerning the number of the population infected with HCV in Poland (gender, age).

Number of population infected with HCV in Poland is:		Total	Gender		Age [years]		
			F	M	18-25	26-30	>30
approx. 7,000	n	42	31	11	13	5	24
	%	29.8%	29.3%	31.4%	34.2%	15.2%	34.3%
approx. 700,000	n	79	63	16	22	24	33
	%	56.0%	59.4%	45.7%	57.9%	72.7%	47.1%
slightly over 2,500	n	20	12	8	3	4	13
	%	14.2%	11.3%	22.9%	7.9%	12.1%	18.6%
Total	n	141	106	35	38	33	70
Stat.: (Chi ²), "p"		-	p=0.18315		p=0.09687		

The largest number of respondents (79, 56%) correctly reported that in Poland there are approximately 700,000 infected patients. Approximately one-third of respondents (42, 29.8%) indicated an incorrect number of persons infected with HCV in Poland – 'approximately 7,000'. The smallest number of students (20, 14.2%) also incorrectly considered that this is 'slightly over 2,500 persons'. Gender, students' age and the occurrence of the problem of hepatitis C in a family had no significant effect on the replies selected by the respondents ($p>0.05$). The number of infected persons – 'approximately 7,000' was twice as often reported by rural than urban inhabitants (43.1% vs. 22.2%) – the difference was statistically significant ($p=0.00441$).

The respondents reported many methods by which it is possible to verify the presence of HCV infection (Tab. 4).

Table 4. Students' knowledge concerning possibilities of diagnosing infection with HCV (gender, age).

How can you check if you are infected with HCV?		Total	Gender		Age [years]		
			F	M	18-25	26-30	>30
buying a simple test in a pharmacy and performing this test at home	n	8	4	4	2	2	4
	%	5.7%	3.8%	11.4%	5.3%	6.1%	5.7%
performing a blood test for the presence of HCV antibodies	n	125	95	30	36	28	61
	%	88.7%	89.6%	85.7%	94.7%	84.9%	87.1%
vaccination	n	8	7	1	0	3	5
	%	5.7%	6.6%	2.9%	0.0%	9.1%	7.1%
Total	n	141	106	35	38	33	70
Stat.: (Chi ²), "p"		-	p=0.18142		p=0.50070		

The largest number of students (125, 88.7%) mentioned that the best diagnostic method is 'performing a blood test for the presence of HCV antibodies', whereas 8 respondents each (5.7% each) indicated that infection with HCV may be diagnosed by 'vaccination' or by means of a simple test available in a pharmacy to be independently performed at home. The respondents' answers did not significantly differ according to gender, age, place of residence, and the fact of the presence of family members infected with HCV ($p > 0.05$).

The respondents answered questions associated with prophylaxis, and vaccination against hepatitis C (Tab. 5).

Table 5. Students' knowledge concerning possibilities of HCV prophylaxis (gender, age).

Is there an effective vaccine against hepatitis C?		Total	Gender		Age [years]			
			F	M	18-25	26-30	>30	
NO, but vaccines against hepatitis A and hepatitis B also protect against hepatitis C	n	15	9	6	1	3	11	
	%	10.6%	8.5%	17.1%	2.6%	9.1%	15.7%	
NO, until today efforts to develop an effective vaccine have failed due to high variability of the virus	n	86	69	17	24	23	39	
	%	61.0%	65.1%	48.6%	63.2%	69.7%	55.7%	
YES, vaccine has been available in pharmacies for several years	n	40	28	12	13	7	20	
	%	28.4%	26.4%	34.3%	34.2%	21.2%	28.6%	
Total		n	141	106	35	38	33	70
Stat.: (Chi ²), "p"		-	p=0.16498		p=0.20888			

The largest number of respondents (86, 61.0%) reported that there is no vaccine against hepatitis C, because efforts to develop an effective vaccine have failed due to high variability of the virus; 10.6% of the students admitted that there is no vaccine against hepatitis C; however, the existing vaccines against hepatitis A and hepatitis B also protect against hepatitis C. More than one-fourth of respondents (40, 28.4%) incorrectly mentioned that a vaccine against hepatitis C 'has been available in pharmacies for several years'. The replies did not significantly differ statistically according to gender, age, place of residence, and the fact of the presence of HCV infection in a family ($p > 0.05$).

One of the items in the questionnaire concerned students' knowledge pertaining to the possibilities of curing persons infected with HCV (Tab. 6).

Table 6. Possibilities of curing a person infected with HCV in respondents' opinions (gender, age).

Is there a possibility to cure a person infected with HCV?		Total	Gender		Age [years]			
			F	M	18-25	26-30	>30	
YES, as long as the disease is diagnosed early enough	n	55	38	17	18	14	23	
	%	39.0%	35.9%	48.6%	47.4%	42.4%	32.9%	
YES, but exclusively by liver transplantation	n	32	26	6	9	8	15	
	%	22.7%	24.5%	17.1%	23.7%	24.2%	21.4%	
NO, there is no effective medicine for this disease	n	54	42	12	11	11	32	
	%	38.3%	39.6%	34.3%	29.0%	33.3%	45.7%	
Total		n	141	106	35	38	33	70
Stat.: (Chi ²), "p"		-	p=0.38292		p=0.45625			

Students most frequently answered that there is a possibility to cure a person infected with HCV as long as the disease is diagnosed early enough (55, 39.0%). According to a group of 38.3% students there is no effective medicine for hepatitis C, whereas a part of the respondents (22.7%) mentioned that the only treatment is live transplantation. The respondents' replies did not significantly differ statistically according to gender, age, place of residence, and the presence of the problem of HCV infection in a family ($p>0.05$).

Conclusions

1. The examined students had a high level of knowledge concerning the essence and situations of risk of infection with HCV.
2. Students at the speciality of nursing should be motivated to expand their knowledge pertaining to prophylaxis of infection with hepatitis C virus.
3. The risk of infection with HCV associated with occupational exposure should be considered while educating students of the specialty of nursing.

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