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## The assessment of knowledge about viral hepatitis among Polish society

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### ABSTRACT

Viral hepatitis is caused by viruses, the most important of which are hepatitis A virus (HAV), hepatitis B virus (HBV) and hepatitis C virus (HCV). New discoveries and new therapeutic options result in better and better results of treatment. However, the public's awareness of the occurrence of these diseases and the detection of infections as soon as possible is still important, what is associated with better outcomes. In order to assess the basic knowledge about viral hepatitis among Polish society, an online survey spread throughout Poland and covering mainly young people was created. 2205 responses were collected and analyzed. On the basis of the results obtained, it can be concluded that Polish youth have little knowledge about viral hepatitis, what is associated with less awareness of the possibility of infection.

**Keywords:** viral hepatitis A, viral hepatitis B, viral hepatitis C, HAV infection, HBV infection, HCV infection, knowledge assessment

### 1. INTRODUCTION

Viral hepatitis is associated with significant morbidity and mortality around the world. While acute infection may occur self-limiting, unrecognised chronic infection may result in an increased risk of liver cirrhosis, primary liver cancer (especially hepatocellular carcinoma –

HCC) and even death [1]. Hepatitis A virus (HAV) is a small unenveloped RNA virus. Infection with HAV causes acute viral hepatitis, however HAV rarely leads to chronic hepatitis [1]. The virus replicates in the liver and because it is excreted in faeces, the route of its transmission is the fecal-oral route. Concentration of virus in the stool is highest in the 2 weeks before onset of clinical manifestations [2]. Transmission can occur through contaminated food or water and as a result of close contact with an infected person in household and institutional. Especially small children can be responsible for transmission in household [3-7]. Sexual contact and certain sexual practices may also result in transmission of HAV [8].

Hepatitis B virus (HBV) infection is the most common chronic viral infection in the world [9] and is responsible for a significant morbidity and mortality rate due to liver cirrhosis and primary liver cancer in untreated chronically infected persons [1]. The outcome of acute HBV infection depends on age. Roughly 95% of neonates, 20-30% of children and less than 5% of adults develop chronic infection [9]. HBV can be detected in serum, urine, saliva, nasopharyngeal secretions, urine, tears, vaginal secretions, menstrual blood, and semen [10]. The virus can, therefore, be transmitted by perinatal, percutaneous or sexual exposure and via close person-to-person contact in the presence of open cuts. The most common route of transmission is vertical infection [11].

Hepatitis C virus (HCV) is a single-stranded RNA member of the Flaviviridae family [12]. New HCV infections still occur, especially in the poor regions of the world. An HCV vaccine is still not available, despite years of researches [12]. Approximately 75-85% of people infected with HCV will develop chronic viral hepatitis, 5-20% will develop cirrhosis and in 1-5% disease will progress to HCC within 20 years from acute HCV infection [13-15].

HBV and HCV infections account for approximately 57% of cirrhosis and 78% of HCC cases worldwide. Together they are responsible for 1,4 million deaths in the world each year [16]. It is estimated that 248 million people are living with chronic HBV infection [17] and 110 million people are HCV antibody-positive [18].

## **2. AIM OF THE STUDY**

The aim of the study was to evaluate the level of knowledge regarding viral hepatitis among three populations in Poland: heterosexuals excluding medical students, non-heterosexuals excluding medical students and medical students.

## **3. MATERIALS AND METHODS**

A Poland-wide on-line survey was conducted between January and March 2019. 2205 anonymous answers were analysed. The research included 1356 (61.5%) women, 681 (31%) men, 46 (2%) trans men, 12 (0.5%) trans women and 110 (5%) non-binary people. 95.4% were aged 16-29. In order to interpret the results, we divided the study group into people who defined themselves as heterosexual persons (heterosexuals) and people who defined themselves in any other way (non-heterosexuals) constituting the LGBT+ community. 1122 (51%) of the respondents described themselves as non-heterosexuals and 1083 (49%) – as heterosexuals. Almost half of the answers (n=1080; 49%) came from students, of which 40% were medical students (n=435). Among medical students most responses came from students of the fourth

year (n=95; 4.3%). Nearly half of the respondents (n=1077; 49%) lived in cities with a population of over 250,000. To compare the knowledge of heterosexual and non-heterosexual persons, medical students were excluded from both groups. Finally, three studied populations were identified: heterosexuals excluding medical students [HS] (n=735), non-heterosexuals excluding medical students [non-HS] (n=1035) and medical students [MS] (n=435). The detailed characteristics of the study group is presented in Table 1.

Questions regarding knowledge of viral hepatitis included 3 areas: basic general information, vaccines and transmission routes. In the case of basic general information, we have included three short affirmative sentences containing true information about viral hepatitis: “Most hepatitis is caused by viruses”, “There are several types of hepatitis viruses, named after the letters of the alphabet” and “Chronic infection with HBV and / or HCV can lead to liver cirrhosis and primary liver cancer”. Each respondent had to take a stance to them by choosing one of the following options: “I already knew it”, “I wasn’t sure”, “I didn’t know about it”, “I don’t understand” or “I don’t believe that”. Questions regarding transmission routes were multiple-choice questions.

**Table 1.** Demographic data and characteristics of the study group (n=2205).

<b>Parameter</b>		<b>Value (n)</b>	<b>Value (%)</b>
Age	16–19	820	37,2
	20–29	1283	58,2
	30–39	79	3,6
	40–49	13	0,6
	50–59	7	0,3
	60–69	3	0,1
Sex	Women	1356	61,5
	Men	681	31
	Trans men	46	2
	Trans women	12	0,5
	Non-binary	110	5
Sexual orientation	Heterosexual	1083	49
	Non-heterosexual	1122	51
Place of residence	Village	331	15
	City with up to 50,000 inhabitants	301	13,5

	City of 50,000 to 150,000 inhabitants	263	12
	City of 150,000 to 250,000 inhabitants	233	10,5
	City of over 250,000 inhabitants	1077	49
Education	Not studying	353	16
	Disciples	772	35
	Medical students	435	20
	• 1 <sup>st</sup> year	71	3,3
	• 2 <sup>nd</sup> year	85	3,9
	• 3 <sup>rd</sup> year	85	3,9
	• 4 <sup>th</sup> year	95	4,3
	• 5 <sup>th</sup> year	86	3,9
• 6 <sup>th</sup> year	13	0,7	
	Non-medical students	645	29
Membership in the International Federation of Medical Students' Associations (IFMSA-Poland)	Yes	60	2,7
	No	2145	97,3

## 4. RESULTS

### 4. 1. Basic general information

On question “Most hepatitis is caused by viruses”, HS and non-HS responded in the same way. 61% in each of these groups claimed they already knew about it. Among medical students, 94% indicated this answer (Table 2). To question “There are several types of hepatitis viruses, named after the letters of the alphabet”, non-HS more often indicated that they did not know about it in comparison with HS (17% non-HS VS 14% HS). Almost all medical students already knew about this fact (99%) (Table 3). The highest proportion of the answers "I did not know about it" and "I was not sure" appeared in the question “Chronic infection with HBV and / or HCV can lead to liver cirrhosis and primary liver cancer”. Among HS, 18% of people were uncertain and 23% did not know about it. Among non-HS, knowledge turned out to be slightly lower (21% was not sure, and 24% did not know about it) (Table 4).

### 4. 2. Vaccines

In the question “Is there a vaccine against hepatitis A virus (HAV)?” the answer "I do not know" marked 50% HS, 60% non-HS and 12% MS (Figure 1). In the question about the vaccine against HBV, the answer "I do not know" was marked by 36% HS, 45% non-HS and 4% MS (Figure 2). In turn regarding the vaccine against HCV, the wrong answer (“Yes, it is”) was given by 39% HS, 36% non-HS and 18% MS (Figure 3).

### 4. 3. Transmission routes

54% HS and 59% non-HS did not know or were not sure about HAV transmission routes. The fecal-oral route was indicated by 26% HS, 25% non-HS (Figures 4, 5) and 84% MS (Figure 6). 53% HS and 57% non-HS did not know or were unsure about HBV transmission ways (Figures 7, 8).

Correct answers (blood-borne route, sexual contact, vertical route) were marked by 92%, 72% and 60% MS respectively (Figure 9). In the case of HCV, 13% HS and 16% non-HS believe that it can be infected by the fecal-oral route (Figures 10, 11). Correct answers (blood-borne route, sexual contact, vertical route) were marked by 87%, 70% and 58% MS respectively (Figure 12).

**Table 2.** Answers to the statement: “Most hepatitis is caused by viruses”.

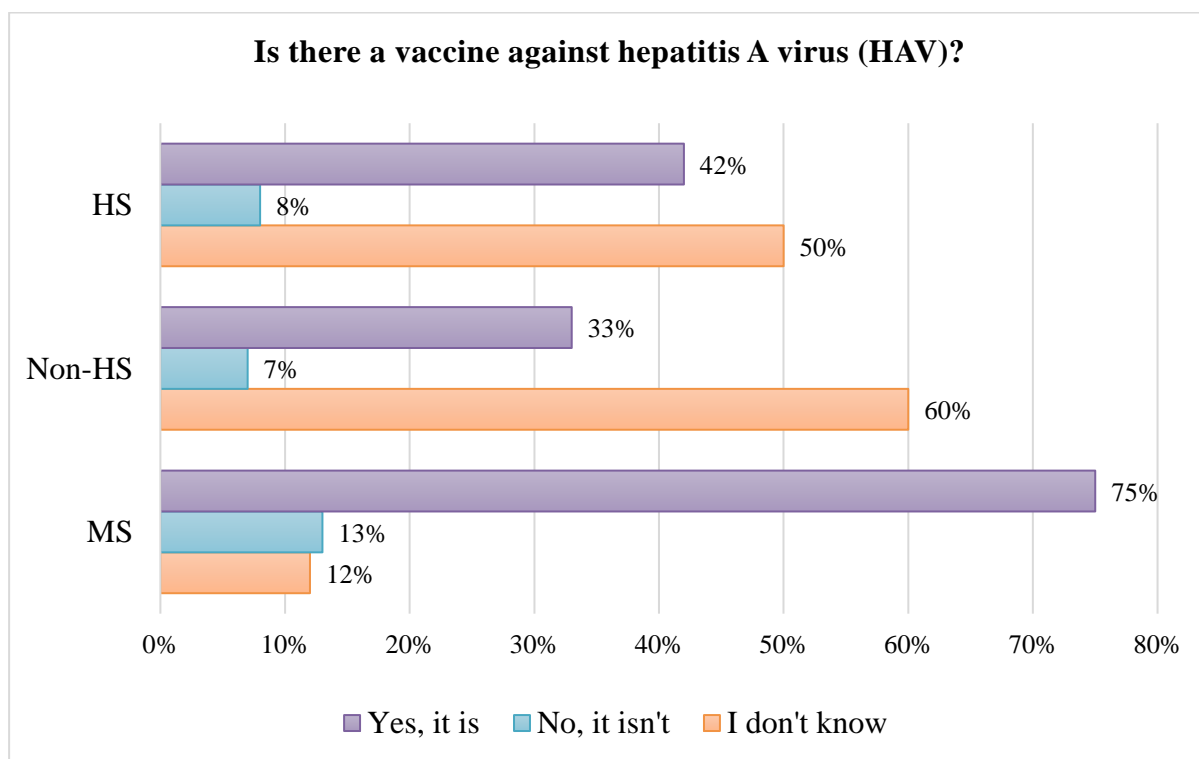
<b>“Most hepatitis is caused by viruses”</b>			
	HS	Non-HS	MS
I already knew it	61%	61%	94%
I was not sure	23%	23%	5%
I did not know about it	16%	16%	1%
I do not understand	0%	0%	0%
I do not believe that	0%	0%	0%

**Table 3.** Answers to the statement: “There are several types of hepatitis viruses, named after the letters of the alphabet”

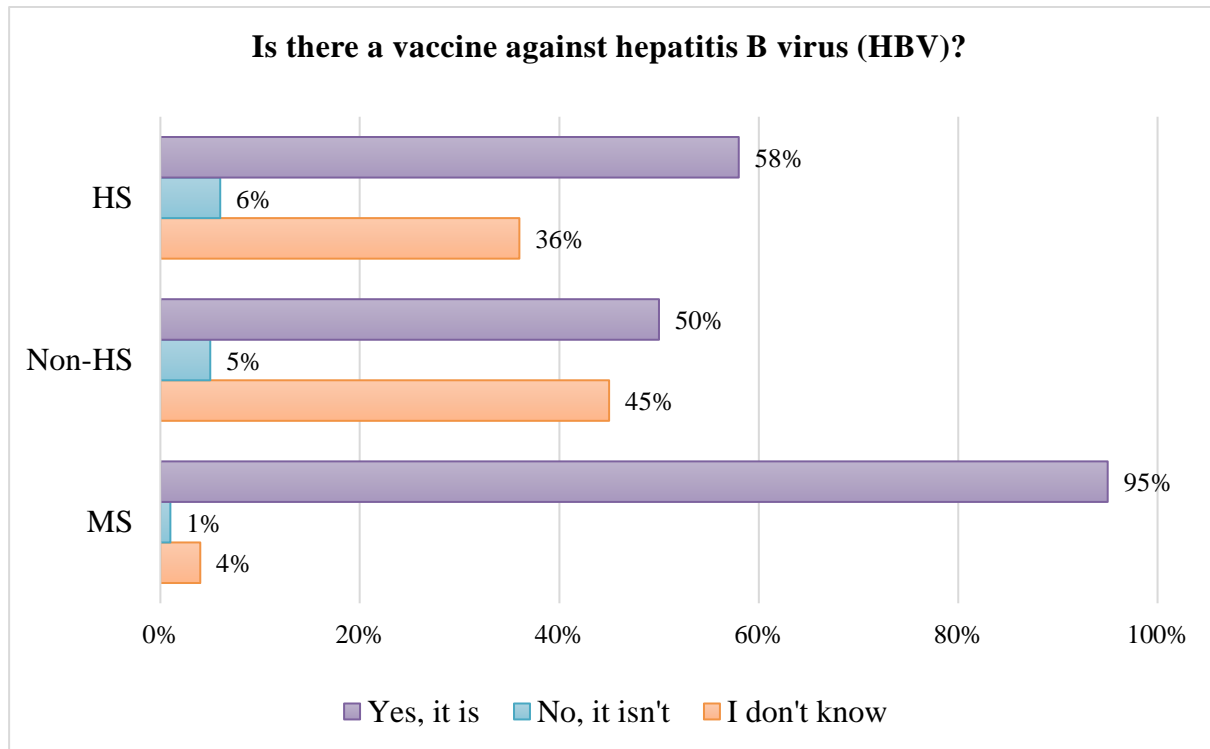
<b>“There are several types of hepatitis viruses, named after the letters of the alphabet”</b>			
	HS	Non-HS	MS
I already knew it	79%	75%	99%
I was not sure	7%	8%	0%
I did not know about it	14%	17%	1%
I do not understand	0%	0%	0%
I do not believe that	0%	0%	0%

**Table 4.** Answers to the statement: “Chronic infection with HBV and / or HCV can lead to liver cirrhosis and primary liver cancer”

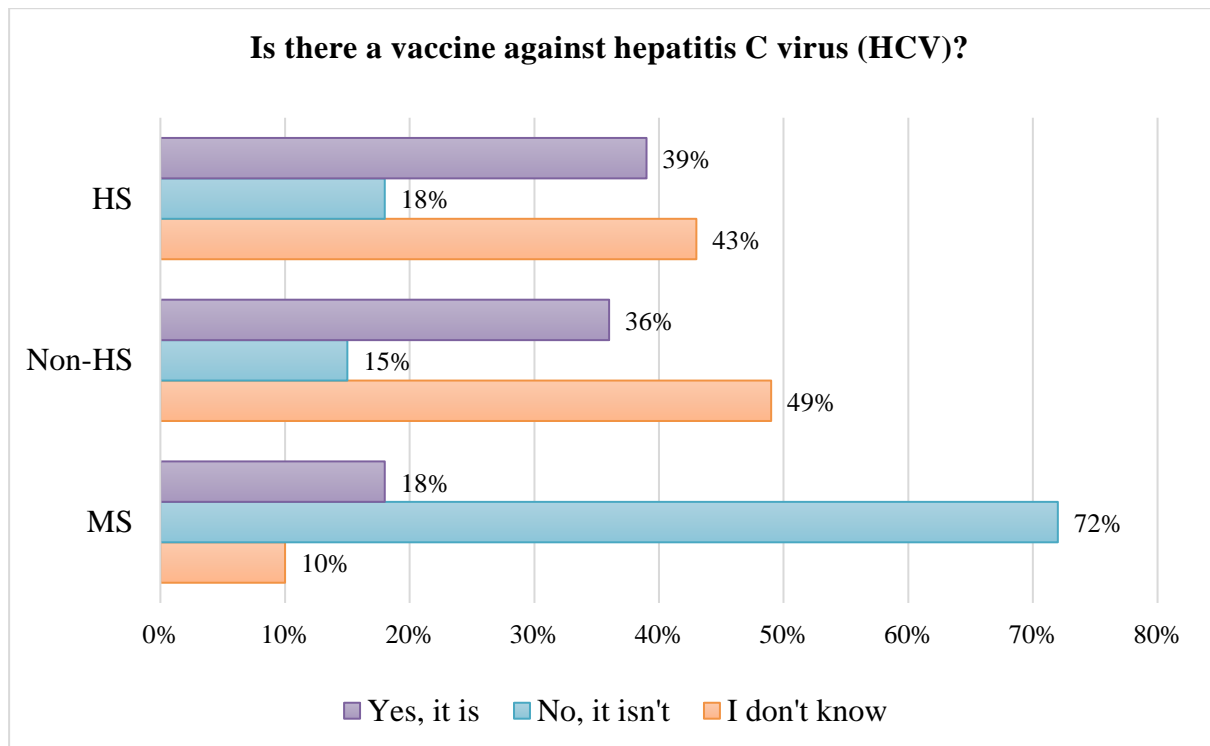
<b>“Chronic infection with HBV and / or HCV can lead to liver cirrhosis and primary liver cancer”</b>			
	HS	Non-HS	MS
I already knew it	59%	54%	97%
I was not sure	18%	21%	2%
I did not know about it	23%	24%	1%
I do not understand	0%	1%	0%
I do not believe that	0%	0%	0%



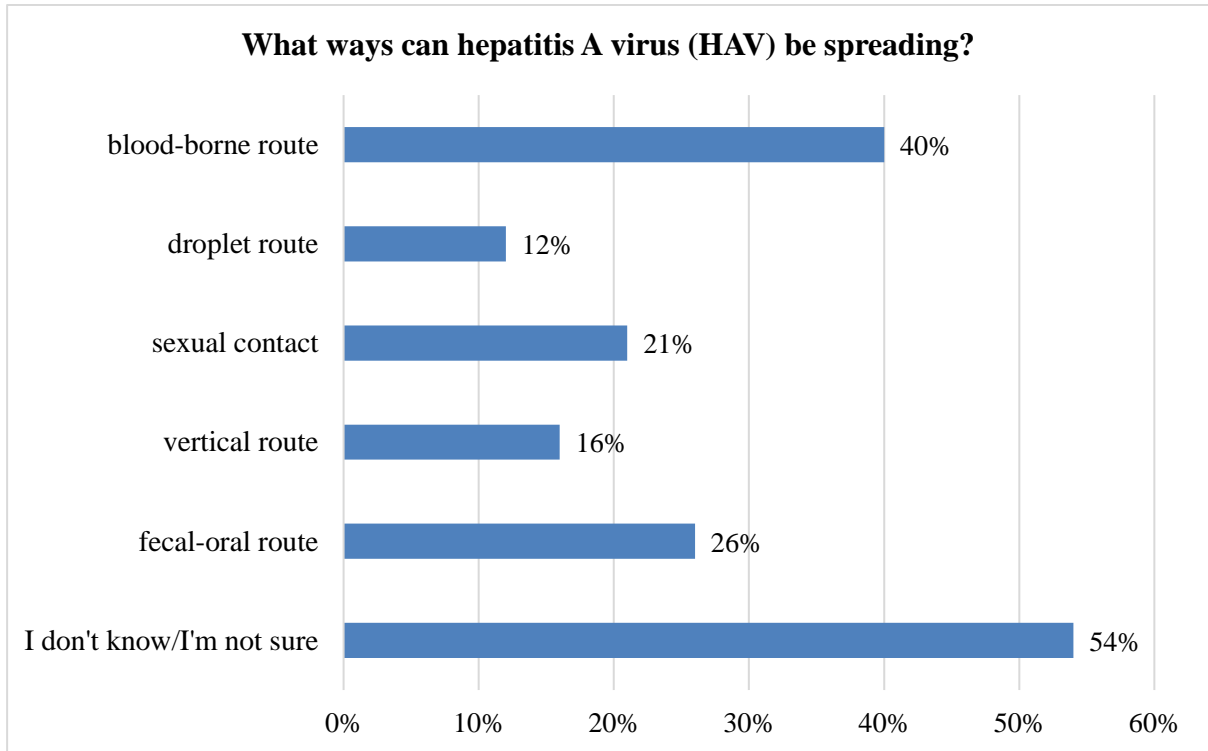
**Figure 1.** Answers to the question: “Is there a vaccine against hepatitis A virus (HAV)?”



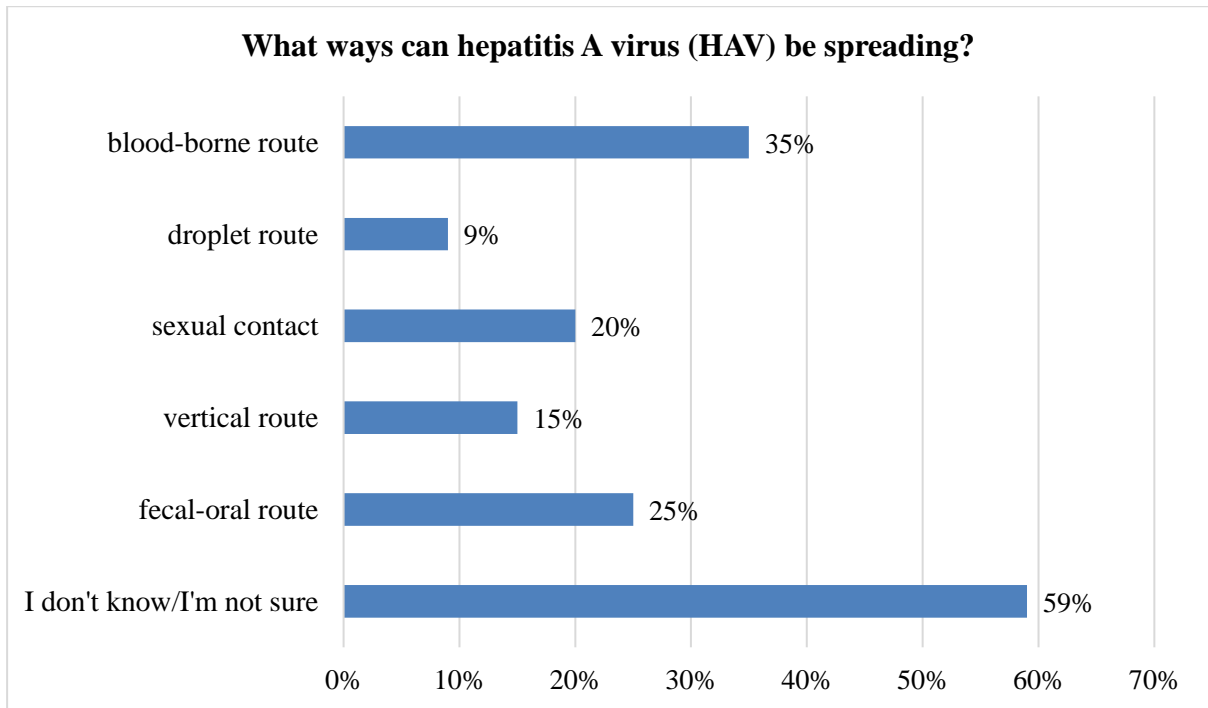
**Figure 2.** Answers to the question: “Is there a vaccine against hepatitis B virus (HBV)?”



**Figure 3.** Answers to the question: “Is there a vaccine against hepatitis C virus (HCV)?”

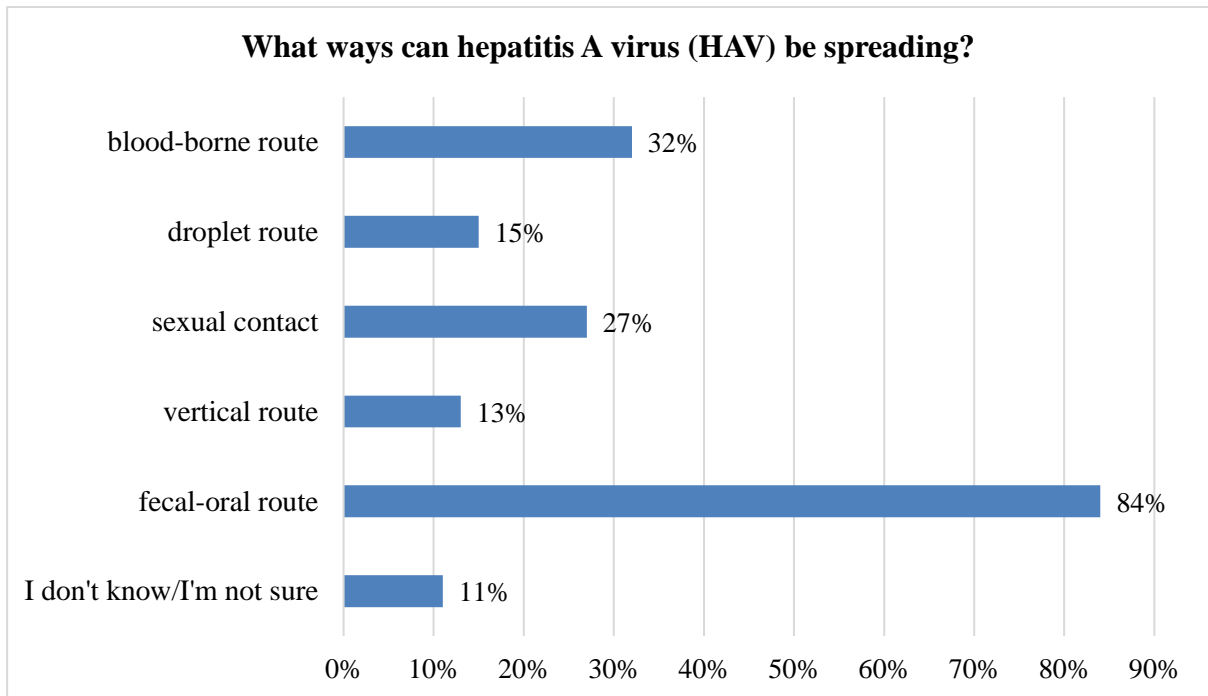


**Figure 4.** HS group answers to the question: “What ways can hepatitis A virus (HAV) be spreading?” (multiple choice question)

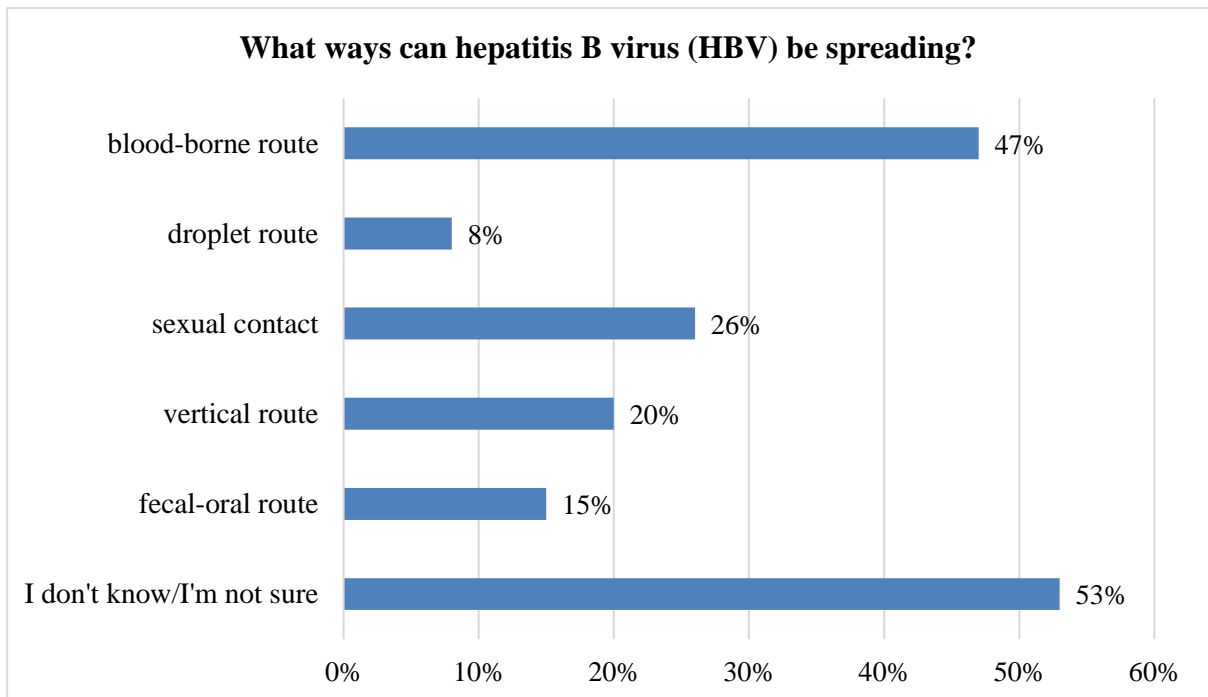


**Figure 5.** Non-HS group answers to the question: “What ways can hepatitis A virus (HAV) be spreading?” (multiple choice question)

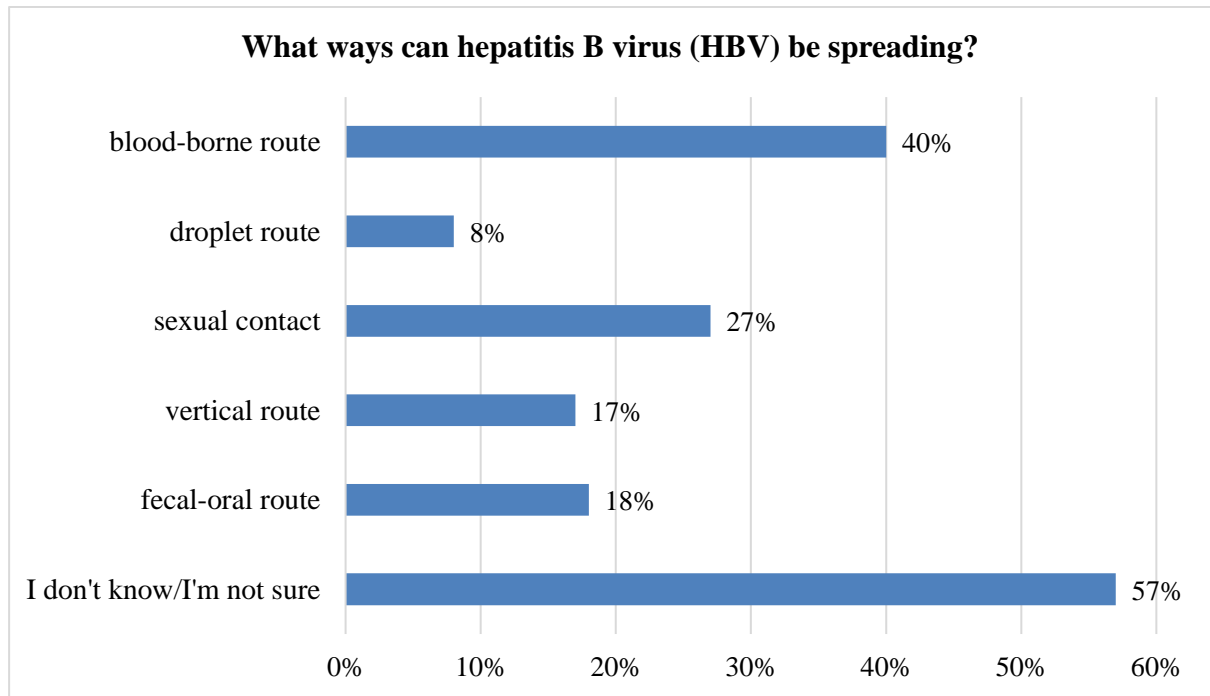




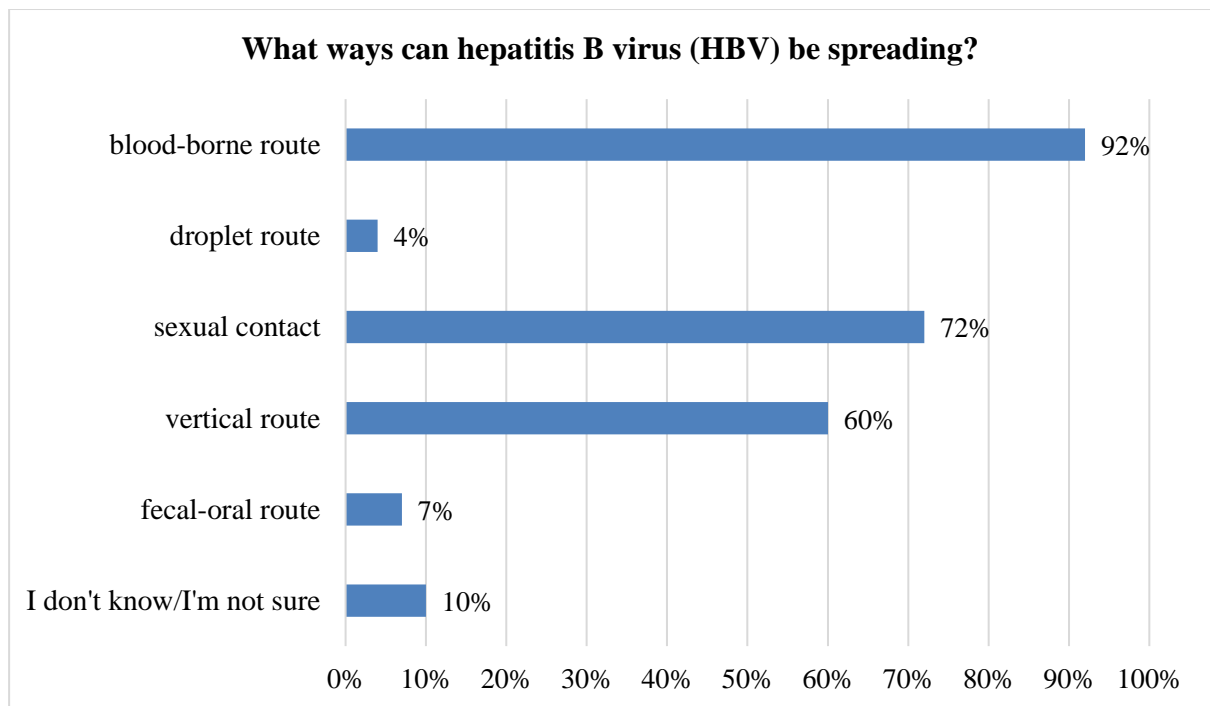
**Figure 6.** MS group answers to the question: “What ways can hepatitis A virus (HAV) be spreading?” (multiple choice question)



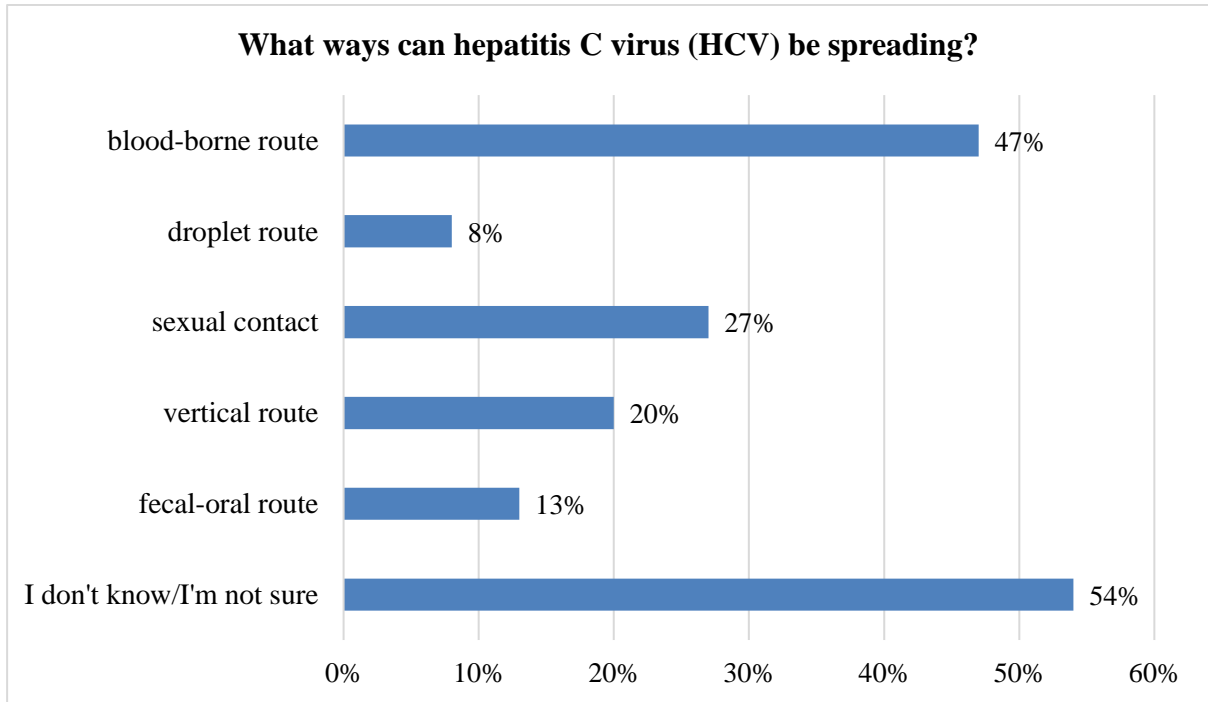
**Figure 7.** HS group answers to the question: “What ways can hepatitis B virus (HBV) be spreading?” (multiple choice question)



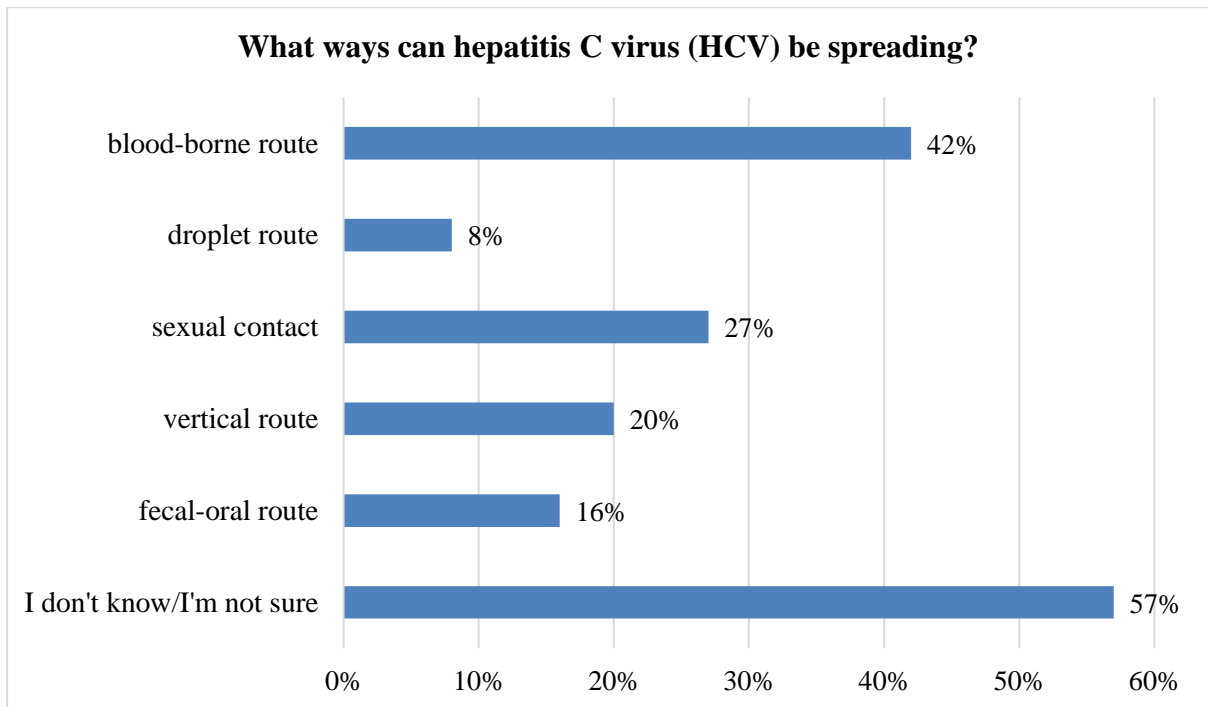
**Figure 8.** Non-HS group answers to the question: “What ways can hepatitis B virus (HBV) be spreading?” (multiple choice question)



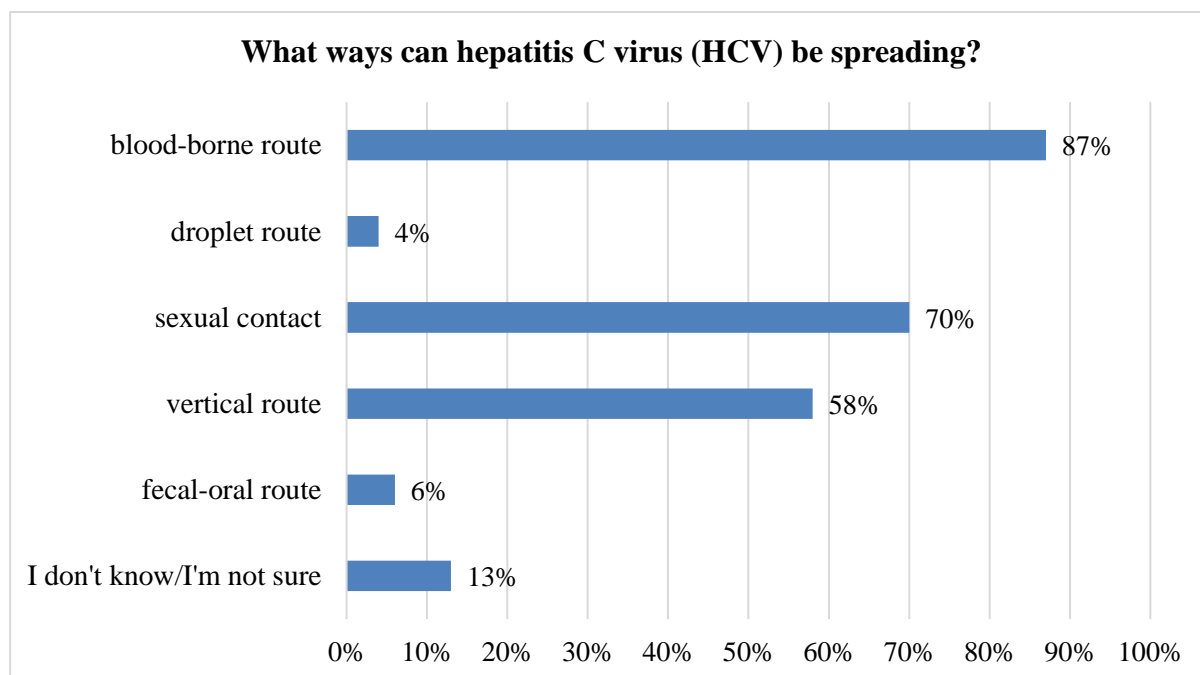
**Figure 9.** MS group answers to the question: “What ways can hepatitis B virus (HBV) be spreading?” (multiple choice question)



**Figure 10.** HS group answers to the question: “What ways can hepatitis C virus (HCV) be spreading?” (multiple choice question)



**Figure 11.** Non-HS group answers to the question: “What ways can hepatitis C virus (HCV) be spreading?” (multiple choice question)



**Figure 12.** HS group answers to the question: “What ways can hepatitis C virus (HCV) be spreading?” (multiple choice question)

## 5. CONCLUSIONS

The knowledge of young people about viral hepatitis is too small. Particularly important for epidemiological reasons is the knowledge about the possible transmission routes of individual hepatitis viruses. The knowledge of non-heterosexual people is similar or lower compared to the knowledge of heterosexual people. In order to improve the awareness of Poles about viral hepatitis, more educational campaigns should include the topic of hepatitis virus infections.

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