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Level of health behaviours of HCV infected patients treated with dialysotherapy

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Abstract

Introduction. Hepatitis C virus (HCV) infection is one of the greatest epidemiological risks worldwide (3% infected globally). Dialysis patients are the group at high risk of infections transmitted via blood, are often infected with HCV virus, and suffer from acute or chronic hepatitis. Anti-health behaviours enhance the process of liver fibrosis. The objective of the study was recognition of the level of health behaviours in HCV-infected haemodialysis patients.

Materials and Method. The study included 149 adult patients on dialysis infected with HCV, hospitalized in two dialysotherapy centres: the Military Medical Institute and Clinical Hospital in Warsaw. In the study there also participated family members and acquaintances of students of the Higher School in Radom. The study was conducted during the first half of 2017 by a diagnostic survey, using research instrument Health Behaviours Inventory (HBI) according to Z. Juczyński. The questionnaire concerned: eating habits, prophylactic behaviours, everyday health practice, and positive psychological attitude.

Results. 73.8% of respondents presented a high level of health behaviours (7–10 sten scores), mediocre - 19.5% (5–6 sten scores), and low – 6.7% (1–4 sten scores). The highest mean value evidencing health promoting life style of the patients was observed with respect to prophylactic behaviours (4.0 ± 0.4), while eating habits and health practices were on the level 3.9 ± 0.4 – 0.5 . The lowest value indicating the least pro-health behaviours concerned positive psychological attitude (3.7 ± 0.4).

Conclusions. The overall rate of health behaviours of dialysed HCV patients was high. The dominant category was prophylactic behaviours, whereas the lowest results were obtained with respect to positive psychological attitude. The respondents infected with HCV for longer than 10 years, mainly males, those aged 60–84, with primary vocational education, living in rural areas, and non-active occupationally, had the greatest needs for psychotherapy. It is necessary to provide psychological support for dialysis patients infected with HCV.

Key words: HCV infection, dialysotherapy, health behaviours.

Introduction

Hepatitis C virus infection is among the greatest epidemiological risks worldwide [1]. The number of the population infected with HCV increases – 3% of the world population [2]. The highest prevalence of hepatitis C virus is observed in the countries of Eastern Europe – from 1.3–6.0% of the population. It is estimated that in Poland the number of people infected with HCV reaches approximately 1.9% of the population [3]. The risk of infection is related with the fact that HCV is transmitted mainly via blood and blood products. The routes of infection are various types of breaks in the continuity of tissues. Therefore, this type of infection is frequently considered a hospital-acquired infection, mainly among patients treated in surgical wards and dialysis stations [4]. Patients who receive renal replacement therapy are potentially at risk of HCV infection. In the developed countries, the frequency of occurrence of anti-HCV antibodies in dialysis patients is from 5 - 60% [5]. Estimated data of 2004 showed that in Poland anti-HCV antibodies were found in 13.3% of patients on dialysis [6].

In 2012 in Poland, the number of dialysis patients was 18,626, whereas in 2013 – 19,420. A constant increase is observed in the number of patients qualified for dialysis treatment [7]. Dialysis treatment, especially haemodialysis, compels patients and their families to make many sacrifices and self-discipline. The treatment and transport take approximately 6–8 hours, 3 times a week, on average. This requires a change of life style

which contributes to a decrease in the quality of life of the patients. Dialysotherapy places a considerable burden on the daily life of patients from the physical, psychological and social aspects. It favours the occurrence of depression, anxiety, sleep and appetite disorders [8].

Infection with hepatitis C virus leads to acute and chronic hepatitis (approximately 80%), which for many years may take an asymptomatic course [9].

According to researchers, anti-health behaviours enhance the process of liver fibrosis. Therefore, dialysis patients with chronic type C hepatitis need information concerning health promoting life style and emotional support.

The objective of the study was evaluation of the level of health behaviours in dialysis patients infected with HCV.

Materials and Method

The study was conducted during the period from 5 January - 25 May 2017, and included 149 adults infected with HCV treated with dialysotherapy – 81 males (54.4%), and 68 females (45.6%); mean age 55.1. The largest group of respondents, i.e. 53 patients were aged 55-65 (37.1%), and 27 patients were aged 45-50 (18.2%). The largest number of respondents had primary vocational education – 61 (40.9%), followed by those with university education – 42 (28.2%), and secondary school education – 35 (23.5%). The majority of the respondents lived in urban areas – 116 (77.9%), while the reminder – in rural areas (33 – 22.1%). The largest number of respondents – 90 (60.4%) were non-active occupationally, whereas 59 (39.6%) were occupationally active. More than a half of respondents who were non-active occupationally lived on health benefit – 48 (53.3%), while 25 (27.8%) were retired. The majority of patients – 102 (68.5%), had no knowledge concerning the circumstances of acquiring HCV infection, whereas 47 of respondents (31.5%) reported these circumstances (6 patients mentioned dialysotherapy – 4.0%).

The research method was a diagnostic survey, and the instrument – the standard Health Behaviour Inventory (HBI) according to Juczyński [18]. The items in the questionnaire concerned: correct eating habits (CEH), prophylactic behaviours (PB), everyday health practice (HP), and the respondents' positive psychological attitude (PPA).

While evaluating health behaviours of patients infected with HCV, the last year before the study was taken into consideration. The respondent indicated how often in daily life he/she presented specified health behaviours according to a 5-degree scale: 1) 'almost never'; 2) 'rarely'; 3) 'from time to time'; 4) 'often'; 5) 'almost always'. The results obtained were summed-up. The value of the indicator of intensity of health behaviours remained within the range 24–120 scores. The higher the result, the greater the intensity of health behaviours

practiced by the respondents. The global indicator of health behaviours was converted into the sten scale according to temporary Polish norms provided by the author [18]. The obtained results within the range 1–4 sten scores were low, within 5–6 sten scores – mediocre, and 7–10 sten scores – high. In addition, an intensity of 4 categories of health behaviours was calculated. The indicator was the arithmetic mean of scores in each category.

In order to investigate statistically significant differences between variables, the data was analyzed using non-parametric Pearson Chi square test. Normality of quantitative variables was assessed by means of Shapiro-Wilk test. For non normally distributed variables the Mann-Whitney U test was applied for the comparison of 2 groups, and Kruskal-Wallis test – to compare 3 and more groups. The p values $p < 0.05$ were considered statistically significant. Analysis was performed using statistical software StatSoft Statistica 12.0 PL, and Microsoft Office.

Results

More than $\frac{1}{3}$ of the respondents– 56 (37.6%) reported that they had the infection with HCV diagnosed several months to 5 years ago, 50 respondents (33.6%) had been ill for 5–9 years, while the reminder (43 patients – 26.9%) – for 10 years or more. The largest number of respondents (52– 34.9%) mentioned that the circumstances of the diagnosis were associated with a visit to a specialist due to poor general wellbeing. A small group of respondents (11 – 7.4%) admitted that the family members with whom they lived were also infected with HCV. Table 1 presents the research material in general.

Table 1. Respondents' health behaviours in general.

Variables		Mean	Median	Minimum	Maximum	St.d.
Correct eating habits	CEH	3.9	4.0	2.5	4.7	0.4
Prophylactic behaviours	PB	4.0	4.0	2.7	4.8	0.4
Positive psychological attitude	PPA	3.7	3.8	2.7	4.7	0.4
Health practices	HP	3.9	4.0	2.2	4.7	0.5

The highest mean value evidencing the most health promoting life style was observed with respect to prophylactic behaviours (4.0 ± 0.4). While calculating the arithmetic mean the following questions were considered: avoidance of infections; possessing written telephone numbers to emergency services; observance of doctor's recommendations resulting from patient's diagnostic tests; regularity of reporting for medical examinations. Eating habits and health practices occupied the second position ($3,9 \pm 0,4$; $3,9 \pm 0,5$ respectively). While assessing

correct eating habits the following was considered: type of food consumed – eating a large amount of vegetables and fruits, limited consumption of such products as animal fat, sugar, avoidance of food containing preservatives, avoidance of salt and strongly salted food. The indicator of health practices were items indicating: relaxation and leisure; avoidance of being overworked; control of own body weight; sufficient number of hours of sleep; use of stimulants (tobacco smoking); physical activity – avoidance of excessive physical effort. The lowest value evidencing the respondents least pro-health behaviour was obtained with respect to positive psychological attitude – 3.7 ± 0.4 . The following indicators were used to calculate the arithmetic mean: referring to guidelines by the respondents expressing anxiety about own state of health; limiting to a minimum the situations exerting a depressing effect; determination of emotional state – avoidance of excessively strong emotions, stress, tension, anger, fear or depression; maintenance of social contacts, including with friends, and regulated family life, as well as positive thinking.

Health behaviours of the dialysis patients infected with HCV were analyzed according to gender (Tab. 2).

Table 2. Respondents' health behaviours according to gender.

Gender		Mean	Median	Minimum	Maximum	St. d.	MW U test	p
CEH	K	3.9	4.0	2.5	4.5	0.4	-1.631	0.103
	M	3.9	4.0	2.8	4.7	0.4		
PB	K	4.0	4.0	2.8	4.8	0.4	-0.387	0.699
	M	4.0	4.2	2.7	4.7	0.4		
PPA	K	3.8	3.8	2.8	4.7	0.4	0.972	0.331
	M	3.7	3.8	2.7	4.5	0.4		
HP	K	3.9	4.0	2.2	4.5	0.5	-1.155	0.248
	M	3.9	4.2	2.3	4.7	0.5		

Analyses of numerical data concerning health behaviours of respondents according to gender showed a lack of significant differences between men and woman. The results were comparable considering correct eating habits (females and males 3.9 ± 0.4), prophylactic behaviours (females and males: 4.0 ± 0.4), and health practices (females and males 3.9 ± 0.5). Positive psychological attitude slightly more often characterized females than males (females 3.8 ± 0.4 , males (3.7 ± 0.4).

Analysis of data according to age did not confirm any significant relationship ($p>0.05$). The categories of health behaviours were also evaluated according to the respondents' education level; here also no significant relationships were found ($p>0.05$). Health behaviours

of the respondents were analyzed in the context of the place of residence (Tab. 3).

Table 3. Respondents' health behaviours according to place of residence.

Place of residence		Mean	Median	Minimum	Maximum	St. d.	MW U test	p
CEH	W	3.8	3.8	2.5	4.7	0.5	2.089	0.037
	M	4.0	4.0	2.8	4.7	0.4		
PB	W	4.0	4.0	2.8	4.5	0.4	0.887	0.375
	M	4.0	4.2	2.7	4.8	0.4		
PPA	W	3.6	3.8	2.8	4.2	0.4	1.589	0.112
	M	3.8	3.8	2.7	4.7	0.4		
HP	W	3.8	4.0	2.7	4.5	0.5	1.333	0.183
	M	3.9	4.1	2.2	4.7	0.5		

Based on the collected data related with health behaviours in 4 groups of patients with HCV infection, with consideration of their place of residence, no significant differences were observed according to rural and urban place of residence ($p>0.05$). A considerably higher level of prophylactic behaviours was noted in respondents living both in rural (4.0 ± 0.4) and urban areas (4.0 ± 0.4), compared to positive psychological attitude (urban areas 3.8 and rural areas 3.6). Correct prophylactic behaviours in rural areas (4.0 ± 0.4) significantly differed from positive psychological attitude of respondents living in rural areas (3.6 ± 0.4).

Data concerning the health behaviours were analyzed from the aspect of occupational activity of respondents infected with HCV (Tab. 4).

Table 4. Respondents' health behaviours according to occupational activity.

Occupational activity		Mean	Median	Minimum	Maximum	St. d.	MW U test	"p"
CEH	active	3.9	4.0	2.8	4.7	0.4	0.375	0.708
	non-active	3.9	4.0	2.5	4.7	0.4		
PB	active	4.0	4.0	2.8	4.5	0.4	0.953	0.341
	non-active	4.0	4.0	2.7	4.8	0.4		
PPA	active	3.7	3.7	2.8	4.3	0.4	1.743	0.081
	non-active	3.8	3.8	2.7	4.7	0.4		
HP	active	3.9	4.0	2.5	4.5	0.5	0.613	0.540
	non-active	3.9	4.0	2.2	4.7	0.5		

Analysis of the data related with the respondents' health behaviours in 4 groups of behaviours

did not show any significant differences according to occupational activity ($p>0.05$).

Health behaviours of dialysis patients infected with HCV were also analyzed according to the time elapsed from the diagnosis of infection (Tab. 5).

Table 5. Respondents' health behaviours and number of years elapsed from the diagnosis of HCV infection.

Number of years elapsed from diagnosis of HCV infection		Mean	Median	Minimum	Maximum	St. d.	KW test p
PPA	<5	3.8	3.8	3.0	4.5	0.3	14.38084 p=0.0008
	5-9	3.9	3.9	3.0	4.7	0.4	
	≥ 10	3.5	3.5	2.7	4.3	0.5	
CEH	<5	4.1	4.0	3.5	4.7	0.3	16.37539 p=0.0003
	5-9	3.9	4.0	2.8	4.7	0.4	
	≥ 10	3.7	3.7	2.5	4.7	0.5	
HP	<5	4.1	4.2	3.5	4.7	0.3	14.19112 p=0.0008
	5-9	3.9	4.1	2.5	4.5	0.4	
	≥ 10	3.6	3.7	2.2	4.7	0.7	
PB	<5	4.1	4.2	3.3	4.5	0.3	3.360697 p=0.1863
	5-9	4.1	4.2	3.2	4.5	0.3	
	≥ 10	3.9	4.0	2.7	4.8	0.6	

The following relationship was observed – the shorter the duration of infection with hepatitis C virus, the higher the mean value of their functioning in each category of behaviours. This relationship was statistically significant for positive psychological attitude ($p=0.0008$), positive eating habits ($p=0.0003$), and health behaviours ($p=0.0008$), while it was insignificant for prophylactic behaviours ($p=0.186$).

After preliminary analysis of the collected research material, it was subjected to further statistical analysis. The raw results obtained were converted into standard sten scores: 1–4 sten scores – low results; 5–6 sten scores – mediocre; 7–10 sten scores – high. The numerical data obtained were demonstrated in a Table, with consideration of two independent variables (Tab. 6).

Table 6. Health Behaviours Inventory for total number of respondents by the number of years elapsed from the diagnosis of HCV infection and respondents' gender.

STEN SCORES		Total	No. of years elapsed from diagnosis of HCV infection			Gender		
			<5	5-9	≥10	K	M	
3	n	3	0	0	3	1	2	
	%	2.0%	0.0%	0.0%	7.0%	1.5%	2.5%	
4	n	7	0	1	6	3	4	
	%	4.7%	0.0%	2.0%	14.0%	4.4%	4.9%	
5	n	12	1	5	6	6	6	
	%	8.1%	1.8%	10.0%	14.0%	8.8%	7.4%	
6	n	17	3	2	12	10	7	
	%	11.4%	5.4%	4.0%	27.9%	14.7%	8.6%	
7	n	73	40	26	7	33	40	
	%	49.0%	71.4%	52.0%	16.3%	48.5%	49.4%	
8	n	33	12	16	5	14	19	
	%	22.1%	21.4%	32.0%	11.6%	20.6%	23.5%	
9	n	4	0	0	4	1	3	
	%	2.7%	0.0%	0.0%	9.3%	1.5%	3.7%	
Total		n	149	56	50	43	68	81
Pearson chi square significance		-	p<0.00001			p=0.89		

It was found that 73.8% of respondents infected with HCV and dialysed remained within the range of high results (7–10 sten scores), which evidenced that these patients presented a high intensity of health promoting behaviours. Approximately $\frac{1}{5}$ of respondents obtained mediocre results (5–6 sten scores), which confirmed that they showed health behaviours on a mediocre level. The lowest percentage of respondents (6.7%) obtained low results (1–4 sten scores), i.e. a small group of patients demonstrated anti-health behaviours. The largest number of patients infected with HVC and dialysed (49.0%) obtained 7 sten scores, followed by those qualified into 8 sten scores (22.1%), and 6 sten scores (11.4%). Few respondents were qualified into 4 sten scores (4.7%), 9 sten scores (2.7%) and 3 sten scores (2.0%). None of the respondents was ascribed 1, 2 and 10 sten scores.

Based on the results obtained in sten scores, with respect to independent variables it was found that the highest level of health behaviours was presented by respondents with university education (30 patients – 74.1%), which was statistically significant ($p=0.007$), and those with the shortest period from infection <5 years (40 patients – 71.4%) – $p<0.00001$. Health promoting behaviours were more frequently presented by males (40 males – 49.4%), compared to females (33 females – 48.5%), respondents aged 50–59 (23 – 51.1%), those living in urban areas (59 – 59.0%), and occupationally active (30 – 50.8%). In turn, the lowest

level of health knowledge (1–4 sten) was observed in respondents who had been infected with HCV ≥ 10 years (21.0%). These were mainly males (8.4%), respondents aged 60-84 (4.7%), with primary vocational education (9.7%), living in rural areas (9.1%), and non-active occupationally (7.8%).

Discussion

In recent years, infection with hepatitis C virus has been one of the most serious epidemiological risks worldwide. Considering the lack of pain complaints, and the lack of other ways of manifestation of HCV infection, this disease is frequently diagnosed at an advanced stage, which is cirrhosis of the liver leading to its total failure [10].

The study covered 149 adult patients infected with HCV and treated with dialysotherapy. Analysis of the collected research material included independent variables, such as: gender, age, education level, place of residence, and occupational activity.

According to researchers, knowledge of the risk of transmitted infection to people in own surrounding and prophylactic actions are an extremely important element in the prevention of hepatitis C virus infection. Correct health behaviours may considerably slow down the development of the illness due to HCV infection [11]. Pro-health nutrition is especially important in cirrhosis caused by infection with hepatitis C virus. Bad eating habits hinder the process of treatment [12]. Incorrect nutrition, and malnutrition of patients with cirrhosis deteriorates the clinical condition of this organ by 50-90% [13,14]. According to specialists, health practices, especially in daily living in home conditions, support the treatment of cirrhosis, and may prevent many complications [15].

The presented study showed that the respondents obtained the highest mean value, which evidenced the most health promoting life style with respect to prophylactic behaviours (4.0 ± 0.4), while the lowest value concerning positive psychological attitude (3.7 ± 0.4). Correct eating habits and health practices remained on a similar level ($3.9 \pm 0.4-0.5$). Analysis of data pertaining to the respondents' health behaviours in 4 groups of behaviour according to gender did not show any significant differences between males and females ($p > 0.05$). Comparable results were observed with respect to correct eating habits (females and males: 3.9 ± 0.4), prophylactic behaviours (females and males: 4.0 ± 0.4), and health practices (females and males: 3.9 ± 0.5).

The researchers indicate that in patients infected with HCV, negative psychological reactions are observed, such as: fatigue, depression, fear, anxiety, and low self-esteem [16]. Own study showed that females were slightly more frequently characterized by a positive psychological attitude than males, which is evidenced by a higher mean value (females:

3.8±0.4; males: 3.7±0.4). Comparable results were obtained in both females and males concerning correct nutritional habits (3.9±0.4), prophylactic behaviours (4.0±0.4), and health practices (3.9±0.5). No big differences in correct prophylactic behaviour, health practices and eating habits were observed in analysis performed according to age groups. A slight difference concerned positive psychological attitude. The respondents aged 30–49 and 50–59 presented a less positive psychological attitude (3.7±0.4), compared to the respondents' other health behaviours in the same age groups (4.1±0.4). It was found that education level exerted an effect on health behaviours. The respondents with university education demonstrated a higher level of correct eating habits (4.0±0.3), prophylactic behaviours (4.1±0.3), and health practices (4.1±0.3), than those who had primary education level (3.8±0.7). It was noted that the respondents were not characterized by much varied psychological attitude towards themselves. Based on the results of own study, no significant differences in health behaviours of patients infected with HCV were observed according to their place of residence (rural or urban). However, a higher level of prophylactic behaviours was found in both respondents living in rural areas (4.0±0.4) and urban areas (4.0±0.4) with respect to positive psychological attitude (urban areas 3.8±0.4 and rural areas 3.6±0.4). Based on the results of the presented study, a tendency was observed that the shorter the period of the illness, the higher the mean value of functioning in each category of behaviours. This relationship was statistically significant for positive psychological attitude ($p=0.0008$), positive eating habits ($p=0.0003$), and health behaviours ($p=0.0008$). With respect to prophylactic behaviours, the results were insignificant ($p=0.186$). A similar tendency was noted in patients who had the disease diagnosed >5 years, where positive psychological attitude was (3.8±0.3), with higher positive eating habits (4.1±0.3), positive health behaviours (4.1±0.3), and prophylactic behaviours (4.1±0.3).

The study of patients infected with HCV conducted in Poland in 2015 using the Health Behaviours Inventory (HBI) showed that the majority of respondents presented a mediocre level of intensification of health behaviours. Females were characterized by a significantly higher level of health behaviours [17]. Based on own analysis of the results of evaluation of health behaviours of dialysis patients infected with HCV, it was found that 73.8% of respondents obtained high results (7–10 sten scores), which evidenced that their health behaviours were on a high level; $\frac{1}{5}$ of respondents remained within the range of mediocre results (5–6 sten scores), i.e. they demonstrated a mediocre intensity of health promoting behaviours. A small group of respondents (6.7%) obtained low results (1–4 sten scores), which means that patients infected with HCV and treated by dialyses showed anti-health

behaviours. Respondents who had university education and the shortest duration of infection presented the highest level of health behaviours. Health promoting behaviours were more frequently demonstrated by males, respondents aged 50–59, those living in urban areas and occupationally active. In turn, anti-health behaviours were most often revealed by respondents who had been infected for ≥ 10 years, mainly males, respondents aged 60–84, with primary vocational education level, living in rural areas, and occupationally non-active.

Conclusions

1. Patients infected with HCV and treated with dialysotherapy presented a high level of health behaviours in 4 domains. The highest indicator concerned prophylactic behaviours (4.0), while the lowest – positive psychological attitude (3.7).
2. Patients who had been infected with HCV for a period longer than 10 years, mainly males, respondents aged 60-84, those with primary vocational education level, living in rural areas, and occupationally non-active, had the greatest needs for psychotherapy.
3. It is necessary to provide psychological support for HCV patients who are treated with dialysotherapy.

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