Self-care in patients with chronic heart failure

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Abstract

Aim. The study assessed health behaviour in relation to awareness and self-care of patients diagnosed with chronic heart failure.

Methods. The research group consisted of 109 patients with chronic heart failure. The research method was a diagnostic survey with the use of an original questionnaire and the SCHFI scale that assessed the level of independence of the respondents. The scores for this scale ranged from 0 to 100 points, and a higher score meant greater independence of the respondents. The answers were further analysed statistically.

Results. The level of independence of the patients in terms of health behaviour was assessed on average at 61.0 points ± 14.9 points. The independence of the respondents in terms of health control was assessed slightly lower (on average at 52.8 points ± 16.4 points), while the respondents were assessed the lowest in terms of monitoring and controlling the symptoms of the disease (on average at 56.55 points ± 14.75 points).

Conclusions. The health behaviour of patients with chronic heart failure is unsatisfactory. They regard pharmacological treatment as a sufficient strategy, and at the same time they do not follow the recommendations on the use of medications. Therefore, it is advisable to increase efforts towards education and thus higher awareness of patients regarding self-care and the consequences of non-compliance with recommendations.

Keywords: heart failure, self-care, health behaviors

Introduction

Chronic heart failure (CHF) is a disease that constitutes a significant clinical, epidemiological and economic problem, due to its prevalence and unfavorable prognosis. Regardless of the progress made in recent years in the field of diagnosing and treating circulatory system diseases, the number of people with diagnosed heart failure is constantly increasing (Nessler et al., 2023).

Most often, other diseases contribute to the development of CHF, such as: hypertension, coronary artery disease, valvular defects, diabetes and all cardiomyopathies, cardiac arrhythmias, infections and toxic factors triggering inflammation of the heart muscle, as well as COPD and kidney diseases (Kowalczyk, Czyż & Kaźmierska, 2016). They are associated with the development of civilization and the aging of society and affect not only older people, but also increasingly younger generations (Groenewegen, Rutten, Mosterda & Hoes, 2020). CHF correlates with unfavorable prognosis, after all, out of all cardiovascular diseases, is the most common cause of death (Nessler & Siniarski, 2019). It increases the risk of adverse effects, such as increased treatment costs, loss of income due to

absence from work, or the higher frequency of necessary hospitalisations due to exacerbation of symptoms which all negatively affects the health of patients and significantly reduces their quality of life. Experts point out that lifestyle modification, focused on undertaking recommended health behaviour and following the recommendations for pharmacological treatment, is important in the context of CHF treatment and prevention of cardiovascular diseases (Behnoush et al., 2023).

Chronic heart failure is a significant challenge for both the Polish healthcare system and global institutions, as it is associated with a high degree of morbidity and mortality, as well as a high burden of disability and inability to work. As reported by scientists from the Global Burden of Disease, in less than 30 years of observation, the number of people with CHF has doubled, exceeding 64 million people worldwide in 2017 (Global Burden of Disease, 2020; Bartolik et al., 2020). However, estimates of the epidemiology of CHF are scarce and uncertain, as they mostly come from highly developed countries, where the age-adjusted incidence may decrease due to greater access to treatment (Savarese & Lund, 2017). In the European Union (EU) countries, the number of people with CHF also increased significantly in the years 1990-2017, reaching almost 10 million patients in 2017 (Bartolik et al., 2020).

According to statistical data prepared by the Department of Health, the incidence of CHF also increased in Poland and only in 2019 it exceeded one million (3,2% of the general population), with a positive trend stabilising the number of patients with newly diagnosed CHF (Lelonek et al., 2023). Approximately 1-2% of the adult population are people diagnosed with CHF, however, experts point out that this number is much higher, which results from the underdiagnosis of the problem (Smeets et al., 2019). In Poland, patients with CHF constituted 3.2% of the general population in 2018 (Bartolik et al., 2020). The occurrence of heart failure depends on age, which is why there is a sharp increase in the incidence among people over 75 years of age, where the frequency is almost 20% of the population (Global Burden of Disease, 2020).

The mortality due to CHF is very high and in 2018 alone amounted to over 142.000, constituting over 33% of all deaths, with CHF being the direct cause in 42.000 (Lelonek et al., 2023). Most deaths occurred in people around 80 years of age (78 – men and 81.4 – women), which, compared to previous years, indicates an increase in the average age of death, with women dying more often (Global Burden of Disease, 2020; Bartolik et al., 2020). Such a large number of deaths in people with CHF is the result of both high morbidity and low survival of Polish patients, where 5-year survival is 59.4% and depends on many factors, the most important of which is the stage of the disease, determined by the NYHA classification. According to this classification, it is noted that people in class I are characterised by 10% mortality, which increases to 20% in the next class, while in class III it reaches 20-40%. Unfortunately, in the last, fourth grade, the risk of death is 40-60% (McDonagh et al., 2022).

Aim

The study assesses the health behaviour in patients with chronic heart failure in relation to their disease awareness and self-care. The authors wanted to

determine whether these patients know the most important aspects of treatment, adhere to pharmacological and non-pharmacological methods (diet, physical activity), and if compliance with therapeutic recommendations affects the frequency of hospitalisations. Moreover, an issue of acceptance of the disease was raised and its influence on daily self-care activities.

Methods

The study included 109 patients admitted to the Diabetology, Hypertension and Internal Medicine Department of the University Clinical Hospital in Wrocław, from January 6th to February 28th, 2025. Patients were qualified based on a previously made medical diagnosis: chronic heart failure. Each of the qualified persons, being fully aware of their decisions, gave verbal informed consent to participate in the study, which was anonymous.

All respondents were informed in advance about the possibility of withdrawing from participation in the study at any time during its duration, without a specific reason and without any consequences. During the study, they could ask questions about the study and on doubtful issues related to the answers provided.

For research purposes, an analysis of medical records was used, based on which a research group was distinguished, and then the authors used a diagnostic survey method based on an original questionnaire and the SCHFI (Self-Care of Heart Failure Index) scale that assessed the level of independence of the respondents. The scores for this scale range from 0 to 100 points, and a higher score means greater independence of the respondents. Moreover, the authors used the AIS (Acceptance of Illness) and the ARMS (Adherence to Refills and Medications Scale) scales. On the AIS scale, the respondents could score at least 8 and at most 40 points. A higher number of points meant a higher level of acceptance of the disease. The ARMS scale was used to assess the frequency with which patients did not follow medical recommendations and the principles of therapy. A higher score on the scale meant a higher degree of patients ignoring the principles of disease management imposed on them.

The analysis of quantitative variables was performed by calculating descriptive statistics such as: mean, standard deviations, median, quartiles, and minimum and maximum. The analysis of qualitative variables was done by calculating absolute frequencies and percentages of all values that these variables could take. Correlations between quantitative variables were analysed using the Spearman correlation coefficient. The analysis assumed a significance level of 0.05. Therefore, all p values below 0.05 were interpreted as indicating significant relationships. The analysis was performed in R statistical package, version 4.4.2.

Results

The study included 109 patients with chronic heart failure - 63 women (57.8%) and 46 men (42.2%). The average age of participants was 60.42 ± 12.97 years (aged from 29 to 101) (Tab. 1).

Table 1. *Social, demographic and clinical characteristics of the study group (N=109).*

		n	%
Gender	Women	63	57,80%
	Men	46	42,20%
Age	≤ 30	2	1,83%
	31-40	9	8,26%
	41-50	14	12,84%
	51-60	22	20,18%
	61-70	42	38,53%
	71-80	18	16,51%
	81-90	1	0,92%
	91-100	0	0,00%
	≥ 100	1	0,92%
Place/mode of residence	With spouse or partner	47	43,12%
	With children/other family	34	31,19%
	Alone	25	22,94%
	Care facility	3	2,75%
Education	Vocational	28	25,69%
	Secondary	45	41,28%
	University degree	36	33,03%
Duration of illness (years)	≤ 10	91	83,49%
	11-20	14	12,84%
	21-30	2	1,83%
	31-40	1	0,92%
	≥ 40	1	0,92%
Primary cause of CHF	Ischemic heart disease	11	10,09%
	Arterial hypertension	67	61,47%
	Cardiomyopathy	10	9,17%
	Undetermined	21	19,27%
Hospitalisations during last 6 months	0	73	66,97%
	1	21	19,27%
	2	14	12,84%
	4	1	0,92%
Co-morbidities	Type 1 diabetes	16	14,68%
	Type 2 diabetes	16	14,68%
	Ischemic heart disease	15	13,76%
	COPD	13	11,93%
	Kidney failure	13	11,93%
	Arterial hypertension	83	76,15%

Source: own research

The largest number of respondents lived with their spouses or partners (47 respondents – 43.1%). As many as 34 patients (31.2%) lived with their children/family, 25 people (22.9%) lived alone, and the remaining 3 respondents

(2.8%) lived in a care facility. The majority of participants had secondary education (45 respondents – 41.3%), followed by higher education (36 people – 33.0%). The remaining 28 patients (25.7%) had vocational education (Tab. 1).

The respondents had been ill for an average of 6.84 years ± 6.38 years. The majority of patients were diagnosed no longer than 10 years before (91 people – 83.5%). The primary cause of chronic heart failure was: arterial hypertension (67 people – 61.5%), then ischemic heart disease - 11 people (10.1%), and 10 people (9.2%) indicated cardiomyopathy. The remaining 21 respondents did not know the cause of chronic heart failure (19.3%) (Tab. 1).

In the last 6 months preceding the survey, 21 people (19.3%) had one hospitalisation due to heart failure, 14 people (12.8%) had two hospitalisations and 1 person (0.9%) had four hospitalisations. The remaining 73 respondents (67.0%) were not admitted to hospital in the last six months (Tab. 1).

In addition to chronic heart failure, most of the respondents also suffered from hypertension (83 people - 76.2%). Diabetes was diagnosed less frequently, including type 1 in 16 people (14.7%) and type 2 in another 16 people (14.7%), ischemic heart disease (15 people - 13.8%), COPD (13 people - 11.9%), or kidney failure (13 people - 11.9%) (Tab. 1).

Due to chronic diseases coexisting with chronic heart failure, 101 subjects (92.7%) took medication. The subjects took an average of 5.05 ± 2.3 tablets per day (1-10 tablets). Usually, these were 4 tablets per day (in 12 people – 11.0%), 5 tablets (11 people – 10.1%) or 6 tablets per day (in 16 people – 14.7%). The respondents most often took the medications themselves, taking them out of the package immediately before ingesting them (58 people - 53.2%). Thirty respondents (27.5%) had the medications prepared in a special box and another 21 (19.3%) had them given to them by another person. The respondents usually took medication more often than once a day (54 people - 49.5%). 50 respondents took it once a day (45.9%).

Non-pharmacological methods of treating heart failure were used by 58 people (53.2%). They were: weight loss (42 people – 38.5%), limiting fatty foods and increasing the amount of EFAs (36 people – 33.0%), moderate physical activity (34 people – 31.2%) and a low-sodium diet (28 people – 25.7%). The reported reasons for not using non-pharmacological methods of treatment were: belief that pills are sufficient (17 people - 33.3%), intolerance of food with low salt content (13 people - 25.5%) and not enough time to follow the recommendations (12 people - 23.5%).

The majority of patients believed that the effectiveness of therapy, longer life and better quality of life could be ensured by simultaneously applied pharmacotherapy, surgical treatment in some cases and lifestyle changes (66 people – 60.6%). The greater part of them also knew the consequences of non-compliance: exacerbation of symptoms and increased risk of death (56 people - 51.4%) and the risk of heart attack (33 people - 30.3%).

The respondents most often indicated hypotension and sexual dysfunctions as possible side effects of drugs used in heart failure (46 people - 9.2%). Almost half of the patients had no knowledge in this area (51 people - 46.8%).

Almost half of the participants (46 subjects - 42.2%) admitted that they buy only some of the prescribed drugs due to financial constraints. On average, every third person took original medicines (40 people – 36.7%) and another 54 respondents (49.5%) admitted that it varied in their case. Fifteen patients (13.8%) did not buy original medicines.

Every third person (36 respondents – 33.0%) stopped taking any of the medicines in the last 4 weeks preceding the study. The reasons for discontinuing medication were most often: excessively high cost (11 people – 30.6%) and the onset of unpleasant symptoms (10 people – 27.8%).

According to AIS scale, respondents studied scored an average of 25.67 points ± 7.6 points (range 11-40 points). The results were very diverse, and their average score at a level close to the middle of the scale indicated moderate acceptance of the disease among all respondents (Tab. 2, Fig. 1).

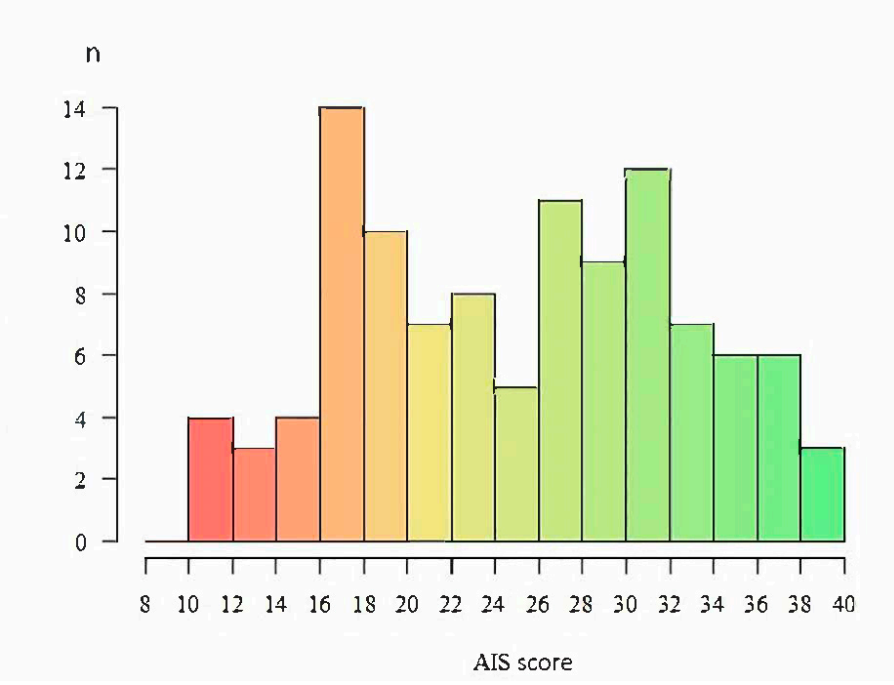
Table 2. *Results of the AIS disease acceptance scale (N=109).*

AIS								
N	**No data**	**Mean**	**SD**	**Median**	**Min**	**Max**	**Q1**	**Q3**
109	0	25,67	7,56	26	11	40	19	32

SD – standard deviation, Q1 – lower quartile, Q3 – upper quartile

Source: own research

Fig.1. *Distribution of results of the AIS disease acceptance scale (N=109).*



Source: own research

The SCHFI (Self-Care of Heart Failure Index) scale checked the level of independence of the respondents. The level of patients' independence in terms of health behaviour was assessed on average at 61.0 points ± 14.9 points, while in terms of health control was slightly lower (mean 52.8 points ± 16.4 points). Participants scored worst regarding monitoring and controlling disease symptoms (mean 56.55 points ± 14.75 points) (Tab. 3).

Table 3. *SCHFI scale results (N=109).*

SCHFI	N	No data	Mean	SD	Median	Min	Max	Q1	Q3
Health behaviour	109	0	60.96	14.9	60	15	100	52.5	72.5
Health control	109	0	52.79	16.42	54.35	13.04	95.65	41.3	63.04
Monitoring and controlling disease symptoms	109	0	56.55	14.75	57.58	15.15	96.97	48.48	66.67

SD – standard deviation, Q1 – lower quartile, Q3 – upper quartile

Source: own research

Finally, The ARMS (Adherence to Refills and Medications Scale) scale was used to assess the frequency with which patients did not follow medical recommendations and the principles of therapy. The overall score according to the ARMS scale was 21.12 points ± 4.67 points, and converted into the percentage of possible points, gave a result of 25.3%.. The degree of ignoring the rules related to taking medications amounted 13.2 points ± 3.46 points (21.7%), and the degree of ignoring the recommendations related to refilling medications and prescriptions was 32.58 points ± 1.84 points (32.6%) (Tab. 4, Fig. 2).

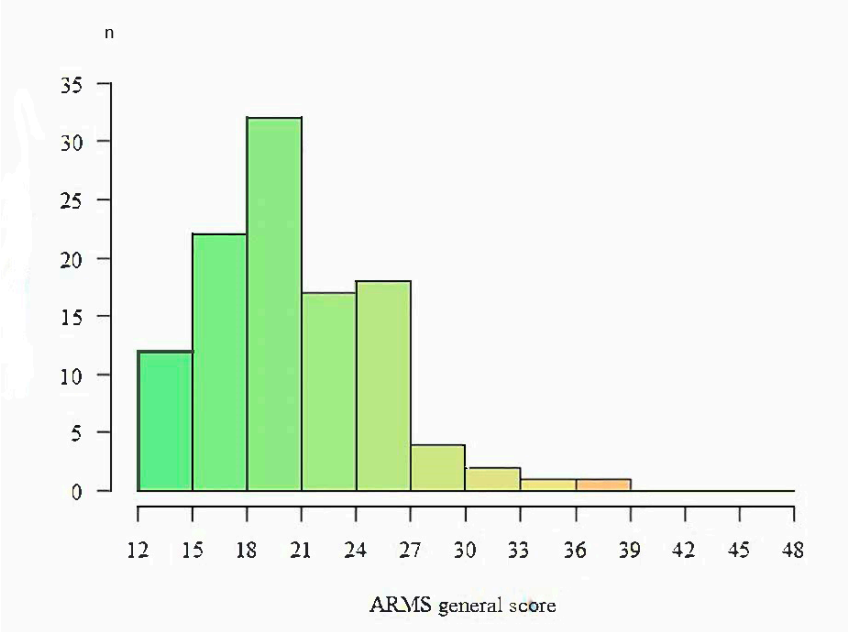
Table 4. *General score of the ARMS scale (N=109).*

ARMS	Score range	%	N	Mean	SD	Median	Min	Max	Q1	Q3
General ARMS score	12 – 48	25.33	109	21.12	4.67	21	13	37	18	24
Taking medications	8 - 32	21.67	109	13.20	3.46	13	8	25	11	16
Refilling medications and drugs	4 - 16	32.58	109	7.91	1.84	8	4	13	7	9

SD – standard deviation, Q1 – lower quartile, Q3 – upper quartile

Source: own research

Fig.1.
Distribution of results of the ARMS scale (N=109).



Source: own research

No relationship was found between the frequency of hospitalisations and patients' non-adherence to therapeutic recommendations. Correlations between the frequency of hospitalisations and the ARMS scale results in general (p=0.648 r=0.04), in the category of taking medications (p=0.982 r=0.00) and in the category of medication and prescription refills (p=0.281 r=0.10) were statistically insignificant (p>0.05) (Tab. 4).

Table 5. *Relationship between the frequency of hospitalisations and non-adherence to therapeutic recommendations (N=109).*

Parameter	**Hospitalisations due to heart failure during last 6 months**
	Spearman correlation coefficient
General ARMS score	r=0,044, p=0,648
Taking medications	r=-0.002, p=0.982
Refilling medications and drugs	r=0.104, p=0.281

Source: own research

Likewise, there were no significant relationships between the level of acceptance of the disease by the examined patients and their level of independence in terms of undertaking health behaviour (p=0.059 r=0.18), their level of independence in terms of controlling their health status (p=0.211 R=0.12) and

their level of independence in terms of monitoring and controlling symptoms (p=0.073 R=0.17) (Tab. 6)).

Table 6. *Relationship between acceptance of the disease and self-care (SCHFI/AIS) (N=109).*

SCHFI	AIS
	Spearman correlation coeffcient
Health behaviour	r=0.181, p=0.059
Health control	r=0.121, p=0.211
Monitoring and controlling disease symptoms	r=0.172, p=0.073

Source: own research

Discussion

The study showed that patients accepted the occurrence of heart failure to a moderate extent, and their level of independence in terms of health behaviour was not satisfactory. Even if their independence in terms of health control was at an average level, monitoring and controlling the symptoms of the disease was unsatisfactory. However, most of the respondents had knowledge and awareness that the effectiveness of the treatment and a better quality and longer life can be ensured by multidirectional action, including both compliance with the prescribed pharmacotherapy, as well as lifestyle changes, and even, in selected cases, the need for surgical treatment. However, almost half of the respondents did not have sufficient knowledge in this area.

The study by Greta Ghizzardi et al. focused on the influence of motivational interviewing on improving self-care behaviour in patients with heart failure. It was shown that a patient-centered conversation, influencing an increase in their internal motivation to implement behaviour including compliance with pharmacological recommendations and disease treatment and optimisation of clinical results, has a moderate effect on increasing patients' self-confidence in terms of self-care and self-care management. At the same time, it was observed that motivational interviewing significantly improves the maintenance of self-care through adherence to treatment and monitoring symptoms (Ghizzardi et al., 2022). Also, the study by Hood et al. confirmed that compliance with recommendations is an essential element of effective pharmacotherapy in self-care of patients with heart failure and is associated with improved treatment outcomes and, above all, with reduced mortality (Hood et al., 2018).

The assessment of compliance with the prescribed drugs among the surveyed patients showed that almost half of them did not purchase all the prescribed medications for financial reasons, which in the case of 33% resulted in discontinuation of therapy, while almost 14% of the respondents bought substitutes.

Izabella Czykieta's study demonstrated that the vast majority of patients with heart failure did not neglect taking pharmaceuticals and filling prescrip-

tions, which positively translated into a high level of self-care (Czykieta, 2023). However, the studies by P. Pobrotyn et al. (Pobrotyn et al., 2021) and J. Mei et al. (Mei, Tian, Chain & Fan, 2018) point that maintaining self-care in patients with heart failure was insufficient in most cases, with a significantly lower level of self-care in men.

Experts indicate that the treatment of chronic heart failure should not be limited to pharmacological treatment, but include many non-pharmacological strategies, focusing primarily on lifestyle changes through the implementation of pro-health behaviour (Nessler et al., 2023). Our study showed that patients did not adhere to non-pharmacological methods of treating the disease, simply because most of them considered pharmacological treatment as sufficient. The awareness of weight loss, changing the diet by limiting salt, fatty foods and increasing EFAs, lost out to the lack of time to follow the recommendations and the taste of an unlimited diet. Many authors confirm the occurrence of problems with diet adherence in patients with heart failure. B. Riegel et al. argue that it is the result of incorrect interpretation of recommendations or misunderstanding of the indicated restrictions (Riegel et al., 2019). Moreover, according to B. Jankowska-Polańska et al., patients with heart failure most often declare self-care by taking medications and keeping to the dates of check-ups, while they show low levels in terms of body weight control and physical activity, which is often due to the older age of these patients and their isolation (Jankowska-Polańska et al., 2020). Many studies confirm that patients with heart failure often require hospitalisation due to deterioration of their health condition, with one of the contributing factors being the lack of self-control and non-adherence to treatment recommendations (Lelonek, 2016; Skrzyński, Rzepecki, Jędrzejczak & Lazar-Sito, 2018).

Our research did not confirm the relationship between adherence to treatment recommendations and the frequency of hospitalisation due to deterioration of heart failure symptoms. However, many other reports indicate that proper education of patients with heart failure and active training in self-control may be a good way to improve compliance with treatment recommendations, and thus reduce the level of anxiety and effectively control the occurring symptoms, which translates into a reduction in the number of hospitalisations due to deterioration of health condition (Czykieta, 2023; Belfiore, Stranieri, Novielli & Portincasa, 2024).

The level of acceptance of a chronic disease is crucial in the self-care of patients with heart failure, influencing the improvement of health condition in every aspect, thus improving the quality of life of these patients (Ghizzardi et al., 2022). Our study did not show any relationship between the level of disease acceptance and the degree of independence in the sphere of their health behaviour, in terms of health control and monitoring and controlling symptoms.

W. Skrzyński et al. argue that the most important factor in accepting the disease and undertaking treatment is the emotional support obtained from the close relatives, which significantly helps to overcome the difficulties and stress that occur in chronic diseases requiring numerous limitations and undertak-

ing many treatment strategies (Skrzyński, Rzepecki, Jędrzejczak & Lazar-Sito, 2018).

The research by ND Eze et al. showed that in selected diseases and specialist areas of care, the use of telemedicine interventions can be an effective form of therapy, helping patients cope with health problems, increasing their physical activity, improving the quality of their diet and nutrition, as well as improving their mental health and reducing disease-related exacerbations. This review also demonstrated that such patients report a high level of disease acceptance and satisfaction with services (Eze, Mateus & Cravo Oliveira Hashiguchi, 2020).

Finally, self-care of patients with chronic heart failure is of strategic importance, as it not only relieves the healthcare system, e.g. through fewer hospitalisations, but also allows for the redirection of resources, thus increasing the effectiveness of care. Therefore, patient education and taking responsibility for the disease treatment process should be regarded equally with pharmacotherapy.

Conclusions

The knowledge of patients with chronic heart failure regarding the most important aspects of the treatment of this disease is insufficient.

Patients with chronic heart failure follow the recommendations for pharmacotherapy only to a small extent. However, they believe that pharmacotherapy is a sufficient treatment of their disease, thus considering non-pharmacological methods of treatment to be unnecessary.

Compliance with therapeutic recommendations in patients with chronic heart disease does not affect the frequency of hospitalisations.

Acceptance of chronic heart disease does not affect the self-care activities of patients struggling with this condition

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