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ARTYKUŁ ORYGINALNY / *ORIGINAL ARTICLE*

Polish adaptation and reliability testing of the nine-item European Heart Failure Self-care Behaviour Scale (9-EHFScBS)

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Abstract

Background: According to the guidelines of the European Society of Cardiology, education in heart failure (HF) should focus on preparing the patient for self-control and self-care. Only systematic assessment of the level of self-care in HF enables the optimisation and adaptation of education to meet the patient's needs. The research tool commonly used to assess self-care in HF patients is the nine-item European Heart Failure Self-care Behaviour Scale (9-EHFScBS).

Aim: To test the reliability of the Polish version of the 9-EHFScBS.

Methods: A standard guideline was used for the translation and cultural adaptation of the English version of the 9-EHFScBS into Polish. The study included 110 Polish patients (mean age 66.0 ± 11.4 years); 51 men and 59 women. Cronbach's alpha was used for the analysis of the internal consistency of the 9-EHFScBS.

Results: The mean overall level of self-care in the study group was 27.65 points (SD 7.13 points). Good or satisfactory levels of self-care were found in three out of nine analysed variables. The reliability of the self-care scale was alpha = 0.787. The value of Cronbach's alpha after the exclusion of individual statements ranged from 0.75 to 0.81.

Conclusions: The 9-EHFScBS questionnaire is a reliable research tool in assessing the level of self-care among patients with HF in the Polish population.

Key words: European Heart Failure Self-care Behaviour Scale, reliability, self-care, heart failure

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INTRODUCTION

In Poland, heart failure (HF) is a growing clinical and socio-economic problem, requiring a multidisciplinary approach on the part of the health care system [1, 2]. The lack of proper cardiological education preparing patients for self-care is one of the main factors influencing their quality of life [3]. Therefore, there is a need for the implementation of an integrated model of care for HF patients based on a holistic concept, complying with European standards, and actively including patients in the treatment process. The guidelines of the European Society of Cardiology concerning the diagnosis and treatment of acute and chronic HF of 2012 put emphasis on education and developing self-control and self-care capabilities. The abovementioned recommendations include the necessary topics that should be covered during the cardiac education, and the self-care behaviours that should be taught in relation to them [4]. Moreover, this is consistent with the content of the questionnaire discussed in this study.

The educational process should be complemented with a systematic assessment of its results and self-care capabilities, enabling the optimisation and adjustment of educational actions to the needs of patients [5]. A research tool which is widely used for this purpose in HF is the nine-item European Heart Failure Self-care Behaviour Scale (9-EHFScBS), which is an abridged version of the original scale containing 12 items associated with various aspects of self-care. Cross-cultural adaptation and reliability testing of the Polish adaptation of the 12-EHFScBS was published by Uchmanowicz et al. [5]. The internal consistency rate of this Polish adaptation was questionable (0.64) and mostly associated with the limited

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Table 1. The original version and the Polish adaptation of the 9-EHFScBS questionnaire

ORIGINAL VERSION	POLISH ADAPTATION
I completely agree/I don't agree at all: 1 or 2 or 3 or 4 or 5	Całkowicie się zgadzam/Całkowicie się nie zgadzam: 1 lub 2 lub 3 lub 4 lub 5
1. I weigh myself every day	1. Ważę się codziennie
2. If shortness of breath increases, I contact my doctor or nurse	2. Gdy moja zadyszka się nasila, kontaktuję się z moim lekarzem lub pielęgniarką
3. If legs/feet are more swollen, I contact my doctor or nurse	3. Gdy obrzęk stóp/nóg jest większy niż zazwyczaj, kontaktuje się z moim lekarzem lub pielęgniarką
4. If I gain weight more than 2 kg in 7 days, I contact my doctor or nurse	4. Gdy w tydzień przytyję 2 kg, kontaktuję się z moim lekarzem lub pielęgniarką
5. I limit the amount of fluids (not more than 1.5–2 litres a day)	5. Ograniczam ilość płynów, które wypijam (nie więcej niż 1,5–2 litry dziennie)
6. If I experience fatigue, I contact my doctor or nurse	6. Jeśli odczuwam zwiększone zmęczenie, kontaktuje się z moim lekarzem lub pielęgniarką
7. I eat a low-salt diet.	7. Moja dieta jest niskosodowa
8. I take my medication as prescribed.	8. Przyjmuję leki zgodnie z zaleceniami
9. I exercise regularly.	9. Ćwiczę regularnie

availability of health care services in Poland [5]. Due to the need to systematically evaluate self-care capabilities in the Polish setting and to implement for this purpose an easily-completed, useful, and reliable research tool, it was decided to examine the psychometric properties of the shorter version of the EHFScBS. The 9-EHFScBS questionnaire possesses satisfactory psychometric properties, which is confirmed by the results achieved during the adaptation of this research tool in Sweden, Germany, the Netherlands, the United Kingdom, Spain, and Italy [6, 7].

The aim of the present study was the adaptation of the 9-EHFScBS questionnaire to Polish conditions and the assessment of its reliability.

METHODS

Study group

The study included 110 patients with stable circulatory failure. The study was conducted during follow-up visits at general clinics in 2013. Patients with cognitive impairment preventing them from filling-in the questionnaire were excluded from the study. All participants provided their written consent to participate in the study. The sample size was established on the basis of literature data, according to which the minimum number of participants should be 45 [8]. Consent no. 460/2013 was obtained from the Bioethical Committee of Wrocław Medical University.

The 9-EHFScBS questionnaire

The 9-EHFScBS questionnaire contains nine statements concerning self-care capabilities in HF. Five of these are related to such aspects of self-care as: body mass control, limitation of fluid intake, use of low-salt diet, use of medications as prescribed, and physical activity. The remaining four enable the assessment of the level of symptom reporting (shortness of breath, excessive fatigue, lower extremity swelling, and body mass increase during one week), which could indicate disease progression to a doctor or nurse. Answers to the statements described above are given on the five-point Likert scale: from 1 — "I completely agree" to 5 — "I don't agree at all". The overall result is achieved after aggregating the points from all statements included in the 9-EHFScBS. The scores vary from 9 to 45: the higher the score, the lower the self-care capability. The questionnaire also enables the assessment of the level of self-care in terms of individual statements [6].

The Polish adaptation of the 9-EHFScBS

The English version of the 9-EHFScBS served as a basis for the Polish adaptation of the scale. The original version of the questionnaire and the Polish adaptation are presented in Table 1.

Consent to translate and use the questionnaire was obtained from the authors of the original version. Two independent translators worked on the Polish version of the questionnaire. The two translated versions were then assessed by a team of researchers. The team was composed of five nurses, two doctors, and three psychologists with over ten years of professional experience associated with HF. After verification of the form, its content, and correctness, the questionnaire was subjected to the process of retranslation and presented for approval to the authors of the English version. After consent was granted, the questionnaire was used in a pilot study on a group of 30 patients. The final Polish version of the

Table 2. Socio-demographic and clinical characteristics of the study group

Socio-demographic/clinical feature		Number	Percentage
Sex	Female	51	46.36
	Male	59	53.64
Age (mean ± standard deviation)		66 ± 11.40	
Marital status	Married/living with a partner	73	66.97
	Single	2	1.83
	Separated/divorced	9	8.26
	Widow/widower	25	22.94
Education	None or primary	19	17.59
	Secondary	73	67.59
	Higher vocational or higher	16	14.81
Monthly income	≤ 600 PLN	4	3.64
	601–900 PLN	7	6.36
	901–1200 PLN	13	11.82
	1201–1500 PLN	17	15.45
	1501–1800 PLN	14	12.73
	1801–2100 PLN	17	15.45
	≥ 2101 PLN	30	34.55
Disease duration in years (mean ± standard deviation)		8.80 ± 6.03	
Number of hospitalisations (mean ± standard deviation)		1.75 ± 1.08	
NYHA functional class	I	12	10.91
	II	58	52.73
	III	38	34.55
	IV	2	1.82
Comorbidities	Yes	98	89.09
	No	12	10.91
Medications	Beta-adrenolytics	92	83.64
	Diuretics	90	81.82
	ACEI/ARB	68	61.82
	Digoxin	14	12.73

ACEI/ARB — angiotensin converting enzyme inhibitors/angiotensin receptor blocker; NYHA — New York Heart Association

9-EHFScBS was thus acquired and then subjected to the process of validation in the present study.

Statistical analysis

A significance level of 0.05 was assumed in the study. This means that results with $p < 0.05$ were considered statistically significant. The analysis was conducted with the use of SPSS for Windows 10.0.

For the purpose of correlation analysis, Pearson's r correlation coefficient was used when both scales were calculated on a quantitative scale and the distributions of variables were close to normal. If the distribution was not normal or the variables were not ordinal, Spearman's rho coefficient was utilised. Cronbach's alpha was used to assess the reliability index. Item discriminating power was calculated as an item total correlation. The level of measurement agreement was calculated with the use of the Kappa coefficient.

RESULTS

The socio-demographic and clinical characteristics of the 110 patients participating in the study are presented in Table 2. The study group included 59 (53.64%) men and 51 (46.36%) women. Their mean age was 66 ± 11.40 years. The majority of the individuals studied were in a relationship (66.97%) and had secondary education (67.59%). The mean disease duration was 8.80 ± 6.03 years. The mean number of hospitalisations was 1.75 ± 1.08. The majority of patients were in New York Heart Association functional classes II (52.73%) and III (34.55%). Comorbidities were found in 89.09% of patients.

Table 3. Descriptive statistics for the 9-EHFScBS questionnaire

Question no.	Variable	Mean	SD	Min	Max
1	I weigh myself every day	3.71	1.44	1	5
2	If shortness of breath increases, I contact my doctor or nurse	3.11	1.43	1	5
3	If legs/feet are more swollen, I contact my doctor or nurse	3.13	1.44	1	5
4	If I gain weight more than 2 kg in 7 days, I contact my doctor or nurse	3.88	1.30	1	5
5	I limit the amount of fluids (not more than 1.5–2 litres a day)	2.31	1.32	1	5
6	If I experience fatigue, I contact my doctor or nurse	3.33	1.32	1	5
7	I eat a low-salt diet	2.74	1.32	1	5
8	I take my medication as prescribed	1.45	0.89	1	5
9	I exercise regularly	4.01	1.17	1	5
Overall level of self-care		27.65	7.13	11	40
Overall level of self-care on a 0–100 scale		51.82	19.82	5.56	86.11

Table 4. Reliability analysis for the 9-EHFScBS questionnaire

Variable SELF-CARE		Item total correlation — discriminating power	Cronbach's alpha after item removal
1	I weigh myself every day	0.48	0.77
2	If shortness of breath increases, I contact my doctor or nurse	0.59	0.75
3	If legs/feet are more swollen, I contact my doctor or nurse	0.60	0.75
4	If I gain weight more than 2 kg in 7 days, I contact my doctor or nurse	0.54	0.76
5	I limit the amount of fluids (not more than 1.5–2 litres a day)	0.55	0.76
6	If I experience fatigue, I contact my doctor or nurse	0.58	0.75
7	I eat a low-salt diet	0.42	0.77
8	I take my medication as prescribed	0.02	0.81
9	I exercise regularly	0.40	0.78

The mean overall self-care level in the study group was 27.65 points (SD 7.13 points). A high or satisfactory level of self-care (a mean value of 1 or 2 on the Likert scale) concerned 3 out of 12 analysed variables: limited fluid consumption (statement no. 5), use of a low-salt diet (statement no. 7), and use of medications as prescribed (statement no. 8). The score analysis in other statements pointed to an insufficient level of self-care. The highest mean score pointing to a low level of self-care was achieved by the study group in the statement concerning regular physical activity: M = 4.01 (SD 1.17). For the sake of ease of interpretation of the results and comparing them with another tool for self-care assessment described in the literature (the SCHFI), the overall self-care level was converted onto a 1–100 scale proposed by Vellone et al. [9]. The detailed statistical characteristics in the individual statements of the Polish version of the 9-EHFScBS questionnaire were presented in Table 3.

Table 4 includes discriminating power indices together with a calculated reliability index (Cronbach's alpha method) for the entire scale after the elimination of a given variable. The 9-EHFScBS self-care scale achieved a reliability of alpha = 0.787 in the present analysis. This means that the scale is characterised by a good reliability index. The values of alpha after the exclusion of individual statements were in the range between 0.75 and 0.81. The strongest correlation with the total level of self-care was found in the statement concerning contact with a doctor or nurse in the case of larger than usual lower extremity swelling (0.60). The weakest correlation was found in the statement related to the use of medications as prescribed (0.02).

DISCUSSION

The 9-EHFScBS is a research tool that is increasingly used to assess the level of self-control and self-care among patients with HF [10–12].

In this study, an attempt was made to validate and adapt the 9-EHFScBS questionnaire, which is applied in cases of HF, to the Polish conditions. According to Farkowski's [13] observations, the process of translation and cultural adaptation

of research tools for the Polish setting may be associated with certain difficulties. Firstly due to the specific meanings of terms describing the symptoms of a given disease, and secondly because of specifically Polish terms of address dependent on gender. The questionnaire has undergone translation by two independent translators, and then, in order to avoid incorrect translations, phrases typical of HF were handed over to experts on the disease for analysis. This version was approved by the authors of the original version and used in a pilot study, in which there were no problems with the patients' understanding of the questionnaire. In addition, the questionnaire did not need to use gender-related terms of address because the questions are formulated in the first-person singular.

Psychometric analysis was performed through the assessment of Cronbach's alpha coefficient, which is a measure of the internal consistency of a research tool. According to the data in the literature, the optimum value of Cronbach's alpha should be ≥ 0.90. Coefficient values ≥ 0.80 are considered as good, ≥ 0.70 as acceptable, ≥ 0.60 as doubtful, ≥ 0.50 as weak, and < 0.50 as unacceptable [14].

In terms of the above, the reliability value achieved in the present analysis is acceptable. A similar Cronbach's alpha coefficient of 0.80 was achieved in the original version of the 9-EHFScBS [6]. Moreover, it was higher than in the previous version of the questionnaire, which contained 12 statements concerning self-care [15]. Similarly, the Polish version of the 12-EHFScBS adapted by Uchamnowicz et al. [5] had a lower Cronbach's alpha than the shortened version of the scale. According to the authors of the Polish version of the 12-EHFScBS, the lower value of internal consistency of the tool was due to the limited availability of medical services, which was supported by the high values of internal correlation coefficients of the variables, determined by the availability of health care and the lower level of correlation of the variables dependent on the patient with the total value of the scale [5]. Furthermore, three statements were eliminated in the abridged version of the scale, including one concerning influenza immunisations, which may improve the psychometric properties of the abridged EHFScBS. The reliability of the tool was also proven in other cultural adaptations: Swedish — 0.78 and 0.77; Dutch — 0.97 and 0.73; Italian — 0.78; German — 0.71; Spanish — 0.85; and American — 0.80 [6, 7, 16, 17]. Only in the British population was a slightly lower Cronbach's alpha achieved [18], but the use of this scale in the English language seems to be justified, and the legitimacy of the use of the 9-EHFScBS in various cultural adaptations is confirmed by the data presented above. It should be emphasised that self-care capability measured with the 9-EHFScBS questionnaire may be influenced by the differences between health care systems in individual countries, including socio-economic conditions [5, 7]. Moreover, each statement used in the scale may be interpreted separately and treated as a factor determining the level of self-care in HF [6, 7].

CONCLUSIONS

The 9-EHFScBS is a credible/reliable research tool for assessing the level of self-care among HF patients in the Polish population.

Implications for practice

The 9-EHFScBS is a simple research tool that can be used to systematically evaluate the self-care capabilities of patients with HF. The results obtained using this questionnaire can be a valuable source of information on the effectiveness of educational activities undertaken within multidisciplinary management programmes. Moreover, due to the satisfactory psychometric properties in many countries, it may become a common tool used in cross-cultural research.

Conflict of interest: *none declared*

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Polska adaptacja i ocena rzetelności kwestionariusza the nine-item European Heart Failure Self-care Behaviour Scale (9-EHFScBS)

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Streszczenie

Wstęp: Zgodnie z wytycznymi Europejskiego Towarzystwa Kardiologicznego działania edukacyjne w zakresie niewydolności serca powinny się skupiać na przygotowaniu pacjenta do samokontroli i samoopieki. Jedynie systematyczna ocena poziomu samoopieki wśród osób z niewydolnością serca umożliwia optymalizację i dostosowywanie działań edukacyjnych do potrzeb pacjentów. Narzędziem badawczym powszechnie stosowanym do oceny samoopieki wśród osób z niewydolnością serca jest the 9-item European Heart Failure Self-care Behaviour Scale (9-EHFScBS).

Cel: Celem pracy była adaptacja do warunków polskich i ocena rzetelności kwestionariusza 9-EHFScBS.

Metody: Do adaptacji kulturowej i tłumaczenia wykorzystano angielską wersję 9-EHFScBS. W badaniu uczestniczyło 110 pacjentów (59 kobiet, 51 mężczyzn) w średnim wieku 66 lat (SD 11,40 pkt.). Zgodność wewnętrzną polskiej adaptacji skali 9-EHFScBS oceniano na podstawie wartości współczynnika α-Cronbacha.

Wyniki: Średni ogólny poziom samoopieki w grupie badanej wynosił 27,65 pkt. (SD 7,13 pkt.). Dobry lub zadowalający poziom samoopieki dotyczył 3 spośród 9 analizowanych zmiennych. Skala samoopieki osiągnęła miarę rzetelności $\alpha = 0{,}787$. Wartości współczynnika α-Cronbacha po wykluczeniu poszczególnych twierdzeń mieściły się w zakresie 0,75–0,81.

Wnioski: Kwestionariusz 9-EHFScBS jest rzetelnym narzędziem badawczym w ocenie poziomu samoopieki wśród pacjentów z niewydolnością serca w populacji polskiej.

Słowa kluczowe: European Heart Failure Self-care Behaviour Scale, rzetelność, samoopieka, niewydolność serca

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