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Comparative analysis of self-care assessment scales in patients with chronic heart failure, advantages and disadvantages

Aim	To compare Russian versions of the scales for assessment of self-care ability in patients with chronic heart failure (CHF), European Heart Failure Self-Care Behavior Scale (EHFScBS_9) and The Self-Care of Heart Failure Index (SCHFI, version 6.2).
Material and methods	Assessment of the self-care ability was performed with Russian versions of EHFScBS_9 and SCHFI (version 6.2) scales in 130 patients with NYHA functional class II-IV CHF primarily of ischemic origin (78.5%). Mean age of patients was 63.2±9.6 years; most of the patients were men (n=92; 70.8%). Patients were managed in accordance with effective guidelines ESC / HFA 2016 and Russian guidelines 2018.
Results	Along with an increase in SCHFI scores, a decrease in EHFScBS_9 scores was observed (r=-0.31, p<0.001). The patients participating in the study showed a low self-care ability at baseline according to results of both scales.
Conclusion	The presence of certain differences between the study scales does not exclude a possibility of using them alone or together for more detailed assessment of the self-care ability.
Keywords	Heart failure; self-care ability; CHF patient self-care ability assessment scales
For citation	Kartamysheva E. D., Lopatin Yu. M. Comparative analysis of self-care assessment scales in patients with chronic heart failure, advantages and disadvantages. Kardiologiia. 2020;60(8):84–89. [Russian: Картамышева Е. Д., Лопатин Ю. М. Сравнительный анализ шкал оценки способности к самопомощи у пациентов с хронической сердечной недостаточностью, преимущества и недостатки. Кардиология. 2020;60(8):84–89]
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Introduction

Following current European and Russian guidelines for the diagnosis and treatment of acute and chronic heart failure (CHF), training patients in self-control and self-care is an important factor in determining the successful management of this category of patients [1, 2]. The gold standard of self-control of patients in CHF can be defined as "daily activities to support the patient's clinical stability" [3]. Training patients in effective self-control and self-care will contribute to the earlier diagnosis of symptoms of decompensated heart failure, timely medical care encounters, and better commitment to treatment. Moreover, it was shown that the timely training of patients with CHF is associated with better prognosis and quality of life [4–6].

Thus, there was a need to develop effective tools to assess the self-control and self-care ability of patients with CHF. Two scores are mostly used for this purpose: the European Heart Failure Self-care behavior Scale 9 item version (EHFScBS_9) [7] and the 22 item Self-Care of Heart Failure Index (SCHFI) [8]. According to Jaarsma et al. [7], such scores can be used in scientific research and in real-world clinical practice. They enable evaluation of patients' self-care ability, and the making of joint decisions with the patient regarding his/her self-care, including during long-term follow-up. The EHFScBS_9 and SCHFI scores have been recently translated into Russian and approved for use in the Russian Federation [9, 10]. However, there has been no comparative evaluation of the advantages and disadvantages of the Russian-language versions of self-care ability scores, which are the subject of this study.

Our objective was to compare the Russian-language versions of EHFScBS_9 and SCHFI used to assess the self-care ability of patients with CHF and to identify their advantages and disadvantages.

Material and Methods

The study included 130 patients with CHF of predominantly ischemic etiology (n=102; 78,5%) who received outpatient cardiology care. The inclusion criteria were that the patients were aged between 18 and 80 years of age, CHF, and a signed informed consent. Exclusion criteria were an age of less than 18s or more than 80, a history of myocardial infarction or unstable angina, cardiac surgery, percutaneous coronary

ISSN 0022-9040. Kardiologiia. 2020;60(8). DOI: 10.18087/cardio.2020.8.n1114

intervention within 30 days before inclusion in the study, inability to read and understand Russian, and disorientation. The study was carried out following the Good Clinical Practice and the Declaration of Helsinki. The Regional Research Ethics Committee approved the study protocol. All patients were informed and signed a consent to participate in the study.

The self-care ability of patients with CHF was assessed using the EHFScBS_9 [9] and SCHFI (version 6.2) [10] scores. Each patient received individual oral instructions on how to complete the questionnaires. Patients answered the questionnaires in the presence of a cardiologist consistently, first EHFScBS_9, then SCHFI, within a single day. If a patient experienced difficulties in answering the questions, additional explanation was provided. Timekeeping was used to register the time required by the patient to complete the questionnaires and for the physician to calculate the results. Difficulties in the process of completing the questionnaires and analyzing the results were assessed on the basis of the patient's and physician's opinions, respectively, expressed in a free form.

EHFScBS_9 consists of nine items describing the ability for self-care. The score is based on the five-point Likert scale, where the minimum (1 point) corresponds to the answer "strongly agree" and the maximum (5 points) is "strongly disagree". The total score varies from 9 to 45, where the lower the score, the better self-care ability [7, 9].

The SCHFI score consists of 22 items reflecting compliance with the recommendations, monitoring and recognition of HF symptoms, and patient's confidence in self-care. This score includes 3 sections: A – self-care maintenance (10 questions), B – self-care management (6 questions), C – self-care confidence (6 questions). Questions are scored from 1 to 4, except for questions 11 and 16 where 0 can be selected [8, 10]. The total score can be from 20 to 89. The higher the score, the better the ability to self-care. The SCHFI score uses formulas for conversion to standardized measures. The maximum possible sum of standardized scores is 305 [8, 10].

The results were statistically processed using the STATISTICA 16.0 (SPSS 16) and Microsoft Office Excel software. The total score, results for individual items and questions, mean values (M), standard deviation (SD), and correlation criteria were estimated. The Kolmogorov-Smirnov and Shapiro-Wilk tests were used to confirm the normality of the distribution of the quantitative variables. The differences were statistically significant at $p<0.05$.

Table 1. Mean score and standard deviation for each item of EHFScBS_9

Item	Baseline (M±SD)
1. I weigh myself every day	3.0±1.4
2. If shortness of breath increases I contact my doctor or nurse	2.2±1.1
3. If legs/feet are more swollen, I contact my doctor or nurse	2.3±1.1
4. If I gain weight more than 2 kg in 7 days I contact my doctor or nurse	3.3±1.6
5. I limit the amount of fluids	2.1±1.0
6. If I experience fatigue I contact my doctor or nurse	2.9±1.4
7. I eat a low-salt diet	2.1±1.0
8. I take my medication as prescribed	1.4±0.7
9. I exercise regularly	1.8±0.8

Results

The study included 130 patients with CHF between the ages of 18 and 80 (mean age 63.2±9.6 years, 92 (70.8%) male and 38 (29.2%) female). The majority of patients (90 (69.2%)) had CHF of New York Heart Association (NYHA) functional class (FC) II, and the remaining 37 (28.5%) and 3 (2.3%) patients had FC III and IV CHF, respectively. The mean value of left ventricular ejection fraction (LVEF) was 47.1±11.6% (12-69%). 76 (58.5%) patients had sinus rhythm, the remaining 54 (41.5%) patients had atrial fibrillation. The most common comorbidities were hypertension (n=87, 66.9%), peripheral vascular disease (n=71, 54.6%), obesity (n=52, 40%), hyperlipidemia (n=48, 36.9%), type 2 diabetes (n=36, 27.7%).

The mean score and standard deviation for each item of EHFScBS_9 are shown in Table 1.

The mean self-care score was 21.3±8.1. The minimum EHFScBS_9 score was 9, and the maximum was 43. The best results (lowest score) were observed in items 8, 9, 5, 7, and 2.

When completing the following EHFScBS_9 items, the majority of respondents gave a minimum score of 1 and 2: 8 (n=116; 89.2%), 9 (n=104; 80%), 7 (n=87; 66.9%).

The mean SSCHFI scores and standard deviations for each question are shown in Table 2.

The total SCHFI score was 50.8±8.8, and the standardized score was 136.8±40.3. The minimum standardized EHFScBS_9 score was 32, and the maximum was 274.

Table 2. Mean scores and standard deviations for EHFScBS_9 questions

Question	Baseline (M ± SD)
1. Weigh yourself?	1.9 ± 0.9
2. Check your ankles for swelling?	2.6 ± 1.0
3. Try to avoid getting sick (e.g., flu shot, avoid ill people)?	2.7 ± 1.1
4. Do some physical activity?	2.4 ± 1.0
5. Keep your doctor or nurse appointments?	3.5 ± 0.7
6. Eat a low salt diet?	2.5 ± 1.0
7. Exercise for 30 minutes?	2.1 ± 1.0
8. Forget to take one of your medicines?	1.4 ± 0.6
9. Ask for low salt items when eating out or visiting others?	1.8 ± 0.9
10. Use a system (pill box, reminders) to help you remember your medicines?	2.7 ± 1.3
11. If you had trouble breathing or ankle swelling in the past month... How quickly did you recognize it as a symptom of heart failure?	1.5 ± 0.7
If you have trouble breathing or ankle swelling, how likely are you to try one of these remedies?	
12. Reduce the salt in your diet	2.5 ± 1.0
13. Reduce your fluid intake	2.4 ± 1.0
14. Take an extra water pill	2.4 ± 1.1
15. Call your doctor or nurse for guidance	2.2 ± 1.1
16. How sure were you that the remedy helped or did not help?	1.7 ± 0.8
In general, how confident are you that you can:	
17. Keep yourself free of heart failure symptoms?	2.0 ± 0.8
18. Follow the treatment advice you have been given?	3.0 ± 0.9
19. Evaluate the importance of your symptoms?	2.3 ± 0.9
20. Recognize changes in your health if they occur?	2.3 ± 0.9
21. Do something that will relieve your symptoms?	2.3 ± 0.8
22. Evaluate how well a remedy works?	2.1 ± 0.7

The best result was obtained in Section B (Management of self-care) with 46.5±20.1. Section A (Maintenance of self-care) was 45.6±14.9, and Section C (Confidence in self-care) was 44.5±18.8.

The highest scores in section A were for items 5, 3, 2, and 10; in section B for items 12, 13, and 14; and in section C for items 18, 19, and 20

The highest number of respondents scored a maximum of 3 and 4 when answering the SCHFI questions: 5 (n=119; 91.5%), 18 (n=94; 72.3%), 3 (n=76; 58.5%), 10 (n=72; 55.4%).

Detailed examination of items in both scores found several analogies: item 8 of EHFScBS_9 ("I take my medication as prescribed") was consistent with question 5 of SCHFI score ("Keep doctor or nurse appointments?"), item 9 of EHFScBS_9 ("I exercise regularly") with question 4 of SCHFI ("Do some physical activity?"), item 7 of EHFScBS_9 ("I eat a low-salt diet") corresponded to question 6 of SCHFI ("Eat a low salt diet?"), items 2 ("If shortness of breath increases I contact my doctor or nurse") and 3 ("If legs/feet are more swollen, I contact my doctor or nurse") of EHFScBS_9 are consistent with question 15 of SSHFI ("If you have trouble breathing or ankle swelling, how likely are you to try one of these remedies? Call your doctor or nurse for guidance").

Correlation analysis revealed that the relationship between the total EHFScBS_9 and SSHFI scores was naturally negative ($r= -0.31$, $p<0.001$).

23 (17.7%) patients with CHF had no difficulty with completing the EHFScBS_9 and SSHFI questionnaires. According to the patients, the main difficulties in using the EHFScBS_9 score were associated with the five-point Likert scale. As for the SCHFI score, the main difficulties were associated with a large number of questions to be answered. The mean duration of completing the EHFScBS_9 and SSCHFI questionnaires was 2.6±1.1 and 5.2±1.5 minutes, respectively. The mean duration of computing the results by the physician was 0.2±0.04 minutes and 3.2±0.5 minutes, respectively.

Discussion

Given the increasing role of educating patients with cardiovascular diseases, including CHF, and creating motivation for self-control and self-care, a need was defined to develop tools that would allow for effective control of self-care skills in real-world clinical practice. The best-known tools are the European Heart Failure Self-care Behaviour score 9 item version (EHFScBS_9) [7] and the 22 item Self-Care of Heart Failure Index (SCHFI) [8]. However, no comparative assessment of

ISSN 0022-9040. Kardiologiia. 2020;60(8). DOI: 10.18087/cardio.2020.8.n1114

Переход на новую форму

Уважаемые коллеги!

Компания АО «Сервье» сообщает о завершении с января 2018 г. производства формы лекарственного препарата Предуктал МВ 35 мг и полном переходе на новую форму выпуска – Предуктал ОД 80 мг.

Новая лекарственная форма – Предуктал ОД (МНН триметазидин) – капсулы с пролонгированным высвобождением, дозировка 80 мг, упаковка №30 и №60.

Режим дозирования новой формы Предуктал ОД 80 мг – одна капсула в сутки. Благодаря инновационной технологии при приеме препарата обеспечивается пролонгированное высвобождение триметазидина в ЖКТ с поддержанием его стабильной концентрации в плазме крови в течение 24 часов. Применение новой формы препарата позволит значительно увеличить приверженность пациентов лечению за счет однократного приема, что в свою очередь позволит более эффективно контролировать симптомы стабильной стенокардии.

Фармакокинетическая эквивалентность Предуктала МВ для двукратного приема (35 мг) и новой формы Предуктала ОД 80 мг для однократного приема доказана в сравнительном исследовании, необходимом для регистрации препарата и проведенном согласно европейским требованиям и стандартам.

Предуктал ОД 80 мг сохраняет все свойства Предуктала МВ 35 мг, обеспечивая:

- высокую эффективность по снижению приступов стенокардии;
- улучшение функционального класса ИБС и ХСН;
- уменьшение ремоделирования миокарда и повышение выживаемости больных.

Компания АО «Сервье» направляет максимум своих усилий на удовлетворение потребностей пациентов благодаря вкладу в терапевтический прогресс. Именно это послужило стимулом для создания инновационной, более удобной и эффективной формы выпуска. Использование Предуктала ОД 80 мг позволит повысить приверженность большинства пациентов проводимой терапии на фоне высокой эффективности и переносимости.

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the advantages and disadvantages of these scores has yet been performed. Both self-care ability assessment scores have been approved in the Russian Federation [9, 10], which is why a comparison is required.

Only 10 (7.7%) patients score 9, which is the EHFScBS_9 score. The results for the SHSFI score were similar. Only 3 of 130 (2.3%) patients had a total (non-standardized) score of more than 70; 13 (10%) patients scored more than 60. Interestingly, despite the small but significant differences between the results of all three sections of the SCHFI score ($p<0.0001$), the highest score was obtained in Section B (Self-care Management). This advantage was likely due to patients' initial basic knowledge of CHF symptoms and additional measures to improve their condition. Thus, comorbid patients with CHF included in our study demonstrated low self-care ability. A similar situation occurred during the analysis of self-care ability in patients with CHF in other countries [4, 5].

The best self-care scores (minimum EHFScBS_9 and maximum SSCHFI) were reported in the corresponding items of both scores on the control of swelling syndrome, salt intake, the administration of additional diuretics, compliance with guidelines, and the use of various devices to help remember to take medicines.

In our opinion, the SSCHFI score (22 questions) enables evaluation of the self-care ability of patients with CHF in more details than the EHFScBS_9 score (9 questions), by dividing and focusing attention on three main self-care sections: maintenance, management, and confidence. Much attention is paid not only to the patient's ability to seek advice from a doctor or nurse, but also to take certain measures to improve his/her state beyond daily self-monitoring. At first glance, the EHFScBS_9 questions are almost the same as the SCHFI questions in Sections A and B. However, a detailed comparison of the scores revealed only four issues of similar meaning. Section C in the SCHFI score is a significant addition, allowing for the evaluation of self-care confidence in patients with CHF. Moreover, unique formulae are used to compute the SCHFI scores and calculate standardized scores for each questionnaire section. We believe this to be essential. For example, in 10–12 patients who most often had the same non-standardized score of 59, the standardized score varied from 162 to 179.

When patients were required to complete the questionnaires and doctors required to calculate the results, the SCHFI score took more time than the EHFScBS_9 score. This is entirely expected since the SCHFI score contains more questions, while unique formulae are needed to calculate the total score. On the other hand, patients with CHF were more likely to face difficulties completing the EHFScBS_9 questionnaire, requiring additional explanations from the physician.

Conclusion

Thus, a comparative analysis of the European Heart Failure Self-Care Behaviour Scale and the Self-care of Heart failure Index (version 6.2) showed that both scores are simple, and effective peer-to-peer tools for assessing self-care in patients with CHF. Although there are some differences between these scores, they may well be used both independently and in combination, complementing each other in real-world clinical practice, as well as in clinical trials.

No conflict of interest is reported.

The article was received on 04/02/2020

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