

## Knowledge and Self-Care Scores among Older Patients with Heart Failure: Subanalysis of a Multicenter Trial- HELEN-II

Eneida Rejane Rabelo-Silva<sup>1,2\*</sup>, Marco Aurélio Lumertz Saff<sup>2</sup>, Karen Brasil Ruschel<sup>2,3</sup>, Leticia Lopez Pedraza<sup>2</sup>, Vânia Hirakata<sup>2</sup>, Emiliane Nogueira de Souza<sup>4</sup> and Claudia Mota Mussi<sup>2</sup>

<sup>1</sup>Universidade Federal do Rio Grande do Sul (UFRGS), Rua São Manoel, Bairro Rio Branco, Porto Alegre, RS, Brazil

<sup>2</sup>Hospital de Clínicas de Porto Alegre (HCPA), Rua Ramiro Barcelos, Bairro Santa Cecília, Porto Alegre, RS, Brazil

<sup>3</sup>Instituto de Avaliação de Tecnologia em Saúde (IATS), Rua Ramiro Barcelos, Bairro Santa Cecília, Porto Alegre, RS, Brazil

<sup>4</sup>Universidade Federal das Ciências da Saúde de Porto Alegre (UFCSPA), Rua Sarmento Leite, Centro Histórico, Porto Alegre, RS, Brazil

**\*Corresponding Author:** Eneida Rejane Rabelo-Silva, Universidade Federal do Rio Grande do Sul (UFRGS), Rua São Manoel, Bairro Rio Branco, Porto Alegre, RS, Brazil.

**Received:** February 06, 2020; **Published:** February 19, 2020

### Abstract

**Aims and Objectives:** To conduct a comparative analysis of heart failure knowledge scores and self-care abilities between middle-aged and older adults.

**Background:** Studies of self-care skills and behaviors in older adults in the heart failure setting are being discussed. Among older patients, self-care ability is challenging, as it involves complex behaviors, attitudes, and decision-making processes.

**Design:** This is a subgroup analysis of a multicenter randomized clinical trial (NCT-01213875).

**Methods:** Patients included had Heart Failure with reduced ejection fraction and were stratified by age:  $\leq 65$  years (middle-aged) and  $> 65$  years (older). Knowledge and self-care were extracted from the trial database.

**Results:** In a sample of 252 patients, predominantly male, the final knowledge score after 6 months of follow-up differed significantly between the middle aged and older subgroups (65.9% vs. 59.4% respectively). There were no between-group differences in self-care scores at the end of follow-up.

**Conclusion:** The incidence and prevalence of heart failure increase with age. Our study suggests that younger patients have greater knowledge of their disease when compared to older patients.

**Relevance to Clinical Practice:** Knowing the profile of patients with heart failure allows the implementation of individualized nursing education interventions in different health settings, thus contributing to the reduction of unfavorable outcomes.

**Keywords:** Heart Disease; Knowledge; Self-Care; Nursing; Older Patients

### Introduction

Heart failure (HF) is a complex clinical syndrome characterized by a growing incidence as the population ages, rising from 0.3 per 1,000 in the population under age 55 to 18 per 1,000 in those aged 85 years or older [1]. Among older adults, HF is one of the leading

reasons for hospital admission and readmission (with rates of readmission within 3 - 6 months of discharge ranging from 27 to 47%); it thus represents a major clinical and economic burden for health systems [2,3]. About half of all HF readmissions are related to multiple comorbidities, polypharmacy, and disorders related to HF rather than HF itself. The impaired cognitive and functional abilities resulting from aging also contribute to this unfavorable scenario [3] and have a negative impact on these patients' quality of life and health knowledge [4].

Proper self-care behavior can prevent HF exacerbations and improve treatment outcomes. Self-care is considered an important element of chronic disease management. The development of self-care skills for everyday living has been associated with improved quality of life and reduced hospitalization and mortality rates [4]. However, self-care is often unsatisfactory in patients with HF, which can have negative repercussions for these outcomes [5]. Among older patients, self-care ability is challenging, as it involves complex behaviors, attitudes, and decision-making processes [6].

Within this context, comprehensive care programs that provide health care education rather than only conventional treatment of the clinical condition have been recommended for older patients with HF [5]. Implementation of specific interventions to improve disease knowledge, provide health education and build social support can directly and indirectly promote proper self-care behaviors [4].

Studies of self-care skills and behaviors in older adults are being discussed [2,7-9]. The present article reports the results of a subgroup analysis of a randomized clinical trial (RCT) [10] in which an individual home-based intervention, with an emphasis on HF education and everyday self-care practices, was administered to interventional group participants. Our subanalysis will compare HF knowledge scores and self-care skills between middle-aged and older participants of this RCT.

## Methods

### Design

This is a subgroup analysis of a multicenter randomized clinical trial HELEN-II RCT [10], registered in the Clinical Trials under number NCT-01213875.

### Data collection

This study enrolled patients from two public hospitals in Southern Brazil from 10/8/2009 to 11/1/2012. In this sub-analysis all patients included were stratified dichotomously by age:  $\leq 65$  years (middle-aged group) and  $> 65$  years (older group).

According to the HELEN-II RCT [10] the eligibility criteria were admission for acute decompensation of HF with reduced ejection fraction ( $\leq 45\%$ ), age  $\geq 18$  years, and written informed consent for participation in the RCT. The exclusion criteria were major barriers to communication (short term memory loss, confusion, dementia); diagnosis of acute HF secondary to sepsis, myocarditis, or acute coronary syndrome; and barriers to contact during follow-up (living more than 20 km away from the study centers or having no possibility of telephone contact).

Three nurses trained in the management of patients with HF instructed the intervention group (IG) in the study guidelines. These consisted of four home visits (HV), interspersed with four telephone contacts, to reinforce disease education and self-care abilities. During the visit, nurses reviewed and oriented patients, caregivers and family members with regard to their knowledge of the disease and self-care to the prescribed recommendations. These recommendations included: pharmacological orientations (posology and medication effects) and also non-pharmacological strategies of care (weight control, hydro-saline restriction, physical activity, and annual vaccination).

The total follow-up period for each patient was 6 months. The control group (CG) received no intervention. Both groups continued to receive conventional follow-up at their facilities of origin, which could include multi-professional outpatient visits.

A standardized structured questionnaire was used to collect identifying information, sociodemographic and clinical variables and questions related to the reason for HF decompensation.

The primary outcomes were the change in scores of disease knowledge and self-care skills between study enrollment (close to hospital discharge) and at the end of the 6-month follow-up period. To measure knowledge of HF, a validated 14-item questionnaire was applied [11]. Knowledge was considered appropriate when the patient scored 70% or higher. To measure self-care skills, the validated 12-item European Heart Failure Self-Care Behaviour Scale (EHFScBS) was used. EHFScBS scores range from 12 (best self-care) to 60 points (worst self-care) [12].

### Ethical considerations

The study has been approved by the Research Ethics Committees of both institutions. Informed consent forms were signed by the patients or their families in the original RCT.

### Data analysis

The sample size was estimated for the outcome of readmissions (emergency-room visits and rehospitalization), as described elsewhere [10]. Statistical analyses were carried out in SPSS version 20.0. Between-group comparisons for sociodemographic and clinical characteristics were carried out through the t-test, chi-square test, and Mann-Whitney U, as appropriate. Continuous variables were expressed as mean and standard deviation or median and interquartile range. Analysis of covariance (ANCOVA) corrected for baseline score values was applied for the age-stratified groups ( $\leq 65$  years and  $> 65$  years of age). A two-tailed P-value  $< 0.05$  was considered statistically significant.

### Results

A total of 1,822 patients admitted with acute decompensated HF were potentially eligible. Among these, 1,570 met at least one criterion for exclusion and were not enrolled. The final sample analyzed consisted of 252 patients, stratified by age ( $\leq 65$  years,  $n = 131$ ;  $> 65$  years,  $n = 121$ ). The distribution of patients into IG and CG by age was similar ( $\leq 65$  years: IG,  $n = 67$ , CG,  $n = 64$ ;  $> 65$  years: IG,  $n = 56$ , CG,  $n = 65$ ;  $P = 0.519$ ).

Of the 252 patients included, 158 (63%) were male. The only sociodemographic characteristic that differed significantly between groups was the marital status variable "married/cohabitating". There was no significant difference in knowledge and self-care scores between the middle aged and older groups at baseline. Characteristics of the groups are presented in table 1.

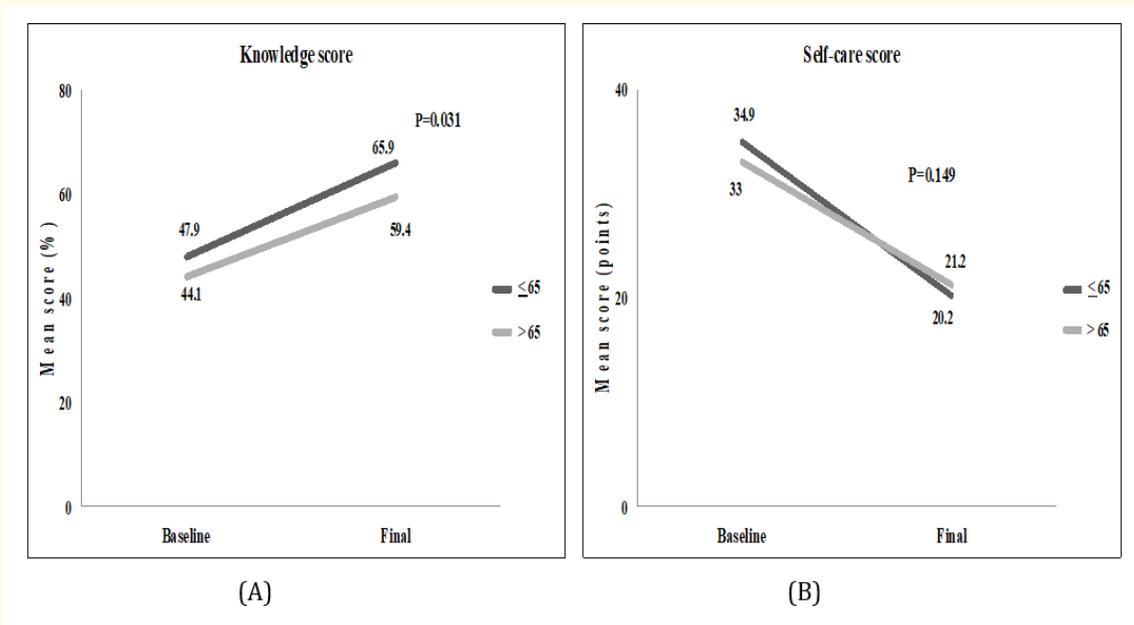
Figure 1 shows the change in scores for the primary outcomes throughout the follow-up period. At the end of the study, HF knowledge and self-care scores had improved in both age groups. For the knowledge questionnaire, the mean percentage of right answers at baseline was 47.9% for the middle-aged group and 44.1% for the older group. After 6 months of follow-up, this rate had increased to 65.9% in middle-aged patients vs. 59.4% in older patients ( $P = 0.031$ ). Self-care questionnaire scores also improved for both groups, declining from 34.9 at baseline to 20.2 at the end of the study in the middle-aged group and from 33 to 21.2 in the older group. The between-group difference was not significant ( $P = 0.149$ ).

### Discussion

This study compared disease knowledge and self-care scores in two age groups ( $\leq 65$  years vs.  $> 65$  years) of patients with HF with reduced ejection fraction. We found that age is a variable that contributes significantly to better knowledge of one's disease. As the elderly population has been growing worldwide, so has the prevalence of non-communicable diseases. In part because of increasing survival rates for acute coronary syndrome, HF now predominantly affects older adults, and is thus commonly associated with comorbidities [13].

Variable	Overall n = 252	Group 1: ≤ 65 years n = 131	Group 2: > 65 years n = 121	P*
Sex, male <sup>†</sup>	158 (63)	87 (55)	71 (45)	0.255
Marital status, married/cohabitating <sup>†</sup>	154 (61)	84 (54)	70 (45)	< 0.001
Ejection fraction (%) <sup>‡</sup>	30±9	28±9	31±8	0.053
Duration of HF (years) <sup>‡</sup>	10±9	9±9	11±10	0.313
<b>Number of medications<sup>†</sup></b>				0.421
≤ 5	115 (49)	65 (52)	50 (46)	
> 5	119 (51)	60 (48)	59 (54)	
<b>Comorbidities<sup>†</sup></b>				
Hypertension	175 (69)	88 (50)	87 (50)	0.603
COPD	39 (15)	17 (44)	22 (56)	0.302
Dyslipidemia	79 (31)	35 (44)	44 (56)	0.113
Diabetes mellitus	92 (36)	41 (45)	51 (55)	0.098
Baseline HF knowledge score (%) <sup>‡</sup>	46±16	48±16	44±16	0.062
Baseline HF self-care score (points) <sup>‡</sup>	34±7	35±8	33±6	0.060

**Table 1:** Sociodemographic and clinical characteristics of patients with acute decompensated HF, stratified by age (middle-aged vs. older).  
<sup>†</sup>: n (%); <sup>‡</sup>: Mean ± standard deviation; \*: t-test.; HF: heart failure; COPD: Chronic Obstructive Pulmonary Disease.



**Figure 1:** Heart Failure knowledge and self-care scores, stratified by age throughout 6 months of follow-up.  
 (A) Disease knowledge scores at baseline (P = 0.062; 95%CI -0.18 to 7.69) and study end (P = 0.031; 95% CI 0.46 to 9.79);  
 (B) Self-care scores at baseline (P = 0.060; 95%CI -0.08 to 3.79) and study end (P = 0.149; 95%CI -3.41 to 0.52).  
 Between-group comparison (≤ 65 years vs. > 65 years) performed by ANCOVA with Bonferroni adjustment.

This has increased the complexity of HF management; multidisciplinary teams with multiple strategies to recognize and better approach the various factors that have a negative impact on maintenance of clinical stability are required.

In this study, middle-aged patients (age  $\leq 65$  years) had a greater positive variation in disease-knowledge scores than the older group. However, neither group had adequate knowledge then based on the mean scores. For self-care scores, despite a greater positive variation in the middle-aged group, the difference was not significant when compared to the improvement in scores achieved by older patients. It is important highlight that in this article the hypothesis was to analyze the sample according to the stratification by age independently of the intervention. These findings suggest that being younger has a favorable influence on disease knowledge, but not on self-care skills. We can also infer the marital status (specifically, being married or cohabitating) has a positive impact on improvement of knowledge and self-care scores.

Aging is associated with factors such as increasing treatment complexity (polypharmacy) and social vulnerability, which, together, can contribute negatively to knowledge and self-care in HF [14]. A study that evaluated 270 older patients (mean age 72 years) found that those in a marital relationship had better cognitive function than those living alone or without a partner [15]. Another study also showed that marital status is an independent factor associated with the prognosis of older patients with decompensated HF [14]. In addition to marital status, greater educational attainment has been shown to increase self-care scores as evaluated by the EHFScB Scale [15]. Male gender, on the other hand, appears to have a negative influence: when comparing men to women within the same age group, male patients score worse on self-care measures. Self-care behavior is considered a decision-making process and is thus affected by deficits in memory, attention, and executive functions, which, together, can interfere with perception and interpretation abilities (e.g. early recognition of the signs and symptoms of HF decompensation) [16]. In this sense, the literature has been highlighting the potential utility of aerobic physical activity for patients with HF, especially older adults, because exercise is known to improve cognitive function and have a positive effect on autonomic heart regulation [17].

A recent RCT evaluated the effect of family caregivers' involvement in the self-care of 256 patients with HF under risk of rehospitalization [18]. Patients allocated to the IG and their family caregivers received a culturally appropriate educational session on the importance of self-care and symptom management, together with actions to support self-care. The main findings included a significant reduction in readmissions and an improvement in maintenance of self-care and confidence. These results suggest that family involvement has a positive influence on the self-care of patients with HF. Educational interventions which include the family in self-care are still incipient, even though this strategy is explicitly recommended in existing HF management guidelines [19].

Within a context where HF already accounts for approximately 50% of all hospitalizations in South America [20] and considering its higher prevalence in older adults, the stratification of patients according to their sociodemographic characteristics is a necessary strategy to allow customized patient management and promote integrated control of multiple comorbidities.

### Limitations of the Study

This study did not include an evaluation of participants' cognitive state, a factor that could have played a role in the outcomes of interest. The current literature discusses aspects related to barriers of communication and self-care in patients with HF, however in the original study patients that presented major barrier of communication (short term memory loss, confusion, dementia) were not included. Our results showed a gain of knowledge of 18 points in the middle-aged group, but the impact of this gain on clinical outcomes was not evaluated in this subanalysis. Finally, because of the nurses' time of travel, financial costs of the project, besides telephone calls as a strategy to promote patient engagement for self-care (focus of the intervention), we chose to delimit a certain geographic area. It is recognized that it is possible that patients at high risk of decompensation were excluded from the study.

## Conclusion

In this subgroup analysis of middle-aged vs. older participants of a randomized clinical trial, HF knowledge and self-care scores improved in both groups at the end of a 6-month follow-up period. Throughout this period, disease-knowledge scores were significantly higher in middle-aged patients than in the older group. It is suggested that in studies in this scenario, the incorporation of new health technologies associated with active participation of caregivers and/or family members may positively influence the promotion of self-care and health knowledge.

## Relevance to Clinical Practice

The ascending curve of life expectancy in the world population directs the eyesight to the elderly patients. Thus, studies that cover this population guide us to the understanding of behaviors, attitudes, and the commitment to the health. In addition, the engagement of the family and/or caregivers is a cornerstone in the management of care in different settings for this population.

Given our findings, it is evident that knowing the profile of patients with HF allows to implement individualized nursing education interventions, and thus contribute to the reduction of unfavorable outcomes.

## Conflict of Interest

The authors declare no conflict of interests.

## Impact Statement: What does this Paper Contribute to the Wider Global Clinical Community?

- This study describes a comparative analysis of heart failure knowledge scores and self-care abilities between middle-aged and older adults.
- In the heart failure scenario the disease-knowledge scores were significantly higher in middle-aged patients than in the older group.

## Bibliography

1. Dunlay SM and Roger VL. "Understanding the epidemic of heart failure: past, present, and future". *Current Heart Failure Reports* 11 (2014): 404-415.
2. Attaallah S., et al. "Self-Care Among Older Adults With Heart Failure". *Gerontology and Geriatric Medicine* 2 (2016).
3. Azad N and Lemay G. "Management of chronic heart failure in the older population". *Journal of Geriatric Cardiology* 11 (2014): 329-337.
4. Zou H., et al. "Identification of factors associated with self-care behaviors using the COM-B model in patients with chronic heart failure". *European Journal of Cardiovascular Nursing* 16 (2017): 530-538.
5. Wang Q., et al. "Effectiveness of a PRECEDE-based education intervention on quality of life in elderly patients with chronic heart failure". *BMC Cardiovascular Disorders* 17 (2017): 262.
6. Uchmanowicz I., et al. "Cognitive deficits and self-care behaviors in elderly adults with heart failure". *Clinical Interventions in Aging* 12 (2017): 1565-1572.
7. Riegel B., et al. "Self-Care for the Prevention and Management of Cardiovascular Disease and Stroke: A Scientific Statement for Healthcare Professionals From the American Heart Association". *Journal of the American Heart Association* 6 (2017).

8. Xu J., *et al.* "Using vignettes to understand heart failure self-care". *Journal of Clinical Nursing* 27 (2018a): 3554-3560.
9. Xu J., *et al.* "Heart Failure Rehospitalization and Delayed Decision Making: The Impact of Self-care and Depression". *Journal of Cardiovascular Nursing* 33 (2018b): 30-39.
10. de Souza EN., *et al.* "A nurse-based strategy reduces heart failure morbidity in patients admitted for acute decompensated heart failure in Brazil: the HELEN-II clinical trial". *European Journal of Heart Failure* 16 (2014): 1002-1008.
11. Rabelo ER., *et al.* "Cross-cultural adaptation and validation of a disease knowledge and self-care questionnaire for a brazilian sample of heart failure patients". *Revista Latino-Americana de Enfermagem* 19.2 (2011): 277-284.
12. Feijo MK., *et al.* "Cross-cultural adaptation and validation of the European Heart Failure Self-Care Behavior Scale for Brazilian Portuguese". *Revista Latino-Americana de Enfermagem* 20 (2012): 988-996.
13. Albuquerque DC., *et al.* "I Brazilian Registry of Heart Failure - Clinical Aspects, Care Quality and Hospitalization Outcomes". *Arquivos Brasileiros de Cardiologia* 104 (2015): 433-442.
14. Matsushita M., *et al.* "Social determinants are crucial factors in the long-term prognosis of severely decompensated acute heart failure in patients over 75 years of age". *Journal of Cardiology* (2018).
15. Vogels RL., *et al.* "Cognitive impairment in heart failure: a systematic review of the literature". *European Journal of Heart Failure* 9 (2007): 440-449.
16. Dickson VV., *et al.* "Cognitive influences on self-care decision making in persons with heart failure". *American Heart Journal* 154 (2007): 424-431.
17. Rego MLM., *et al.* "Cognitive Deficit in Heart Failure and the Benefits of Aerobic Physical Activity". *Arquivos Brasileiros de Cardiologia* 110 (2018): 91-94.
18. Deek H., *et al.* "An evaluation of involving family caregivers in the self-care of heart failure patients on hospital readmission: Randomised controlled trial (the FAMILY study)". *International Journal of Nursing Studies* 75 (2017): 101-111.
19. McMurray JJ., *et al.* "ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2012: The Task Force for the Diagnosis and Treatment of Acute and Chronic Heart Failure 2012 of the European Society of Cardiology. Developed in collaboration with the Heart Failure Association (HFA) of the ESC". *European Heart Journal* 33 (2012): 1787-1847.
20. Bocchi EA. "Heart failure in South America". *Current Cardiology Reviews* 9 (2013): 147-156.

**Volume 2 Issue 3 March 2020**

**©All rights reserved by Eneida Rejane Rabelo-Silva., *et al.***