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ORIGINAL RESEARCH

Self-Care and Health-Related Quality of Life Among Heart Failure Patients in Tagus Valley Regional Hospital, Portugal: A Pilot Study

Sheka Shemsi Seid[1], José Amendoeira[2], Maria Regina Ferreira[2]

[1]School of Nursing, Faculty of Health Sciences, Institute of Health, Jimma University, Jimma, Ethiopia; [2]Department of Nursing, Polytechnic Institute of Santarem, Quality of life Research Center, Santarem, Portugal

Correspondence: Sheka Shemsi Seid, Tel +251 911-298-479, Email sheka.shemsi@ju.edu.et

Introduction: Self-care has been suggested to improve heart failure patients´ health-related quality of life (HRQoL) and decrease the patient mortality rate. However, despite the growing importance of self-care and its obvious relationships with positive health outcomes, the evidence to justify its popularity among Portuguese heart failure (HF) patients is not well documented. Therefore, this study aimed to assess the extent of self-care behavior and level of HRQoL and to examine the relationships between self-care and HRQoL among HF patients.

Methods: A descriptive correlational study design was conducted on 24 HF patients. Data were collected by using a validated Portuguese version of the Self-care Heart Failure Index (SCHFI V. 6.2) and the Minnesota Living with Heart Failure Questionnaire (MLHFQ). The data were analyzed using SPSS version 26. Descriptive, bivariate, and multivariate statistical tests were utilized. Pearson's correlation coefficient and multiple linear regression analysis were performed to determine the relationship between self-care behavior and health-related quality of life. Statistical significance was declared at p-value < 0.05.

Results: The study participant's mean (± SD) age was 66.88 ± 12.8 years. The overall mean (± SD) score of self-care maintenance, management, and confidence were 47.77 ± 15.28, 54.38 ± 18.26, and 70.20 ± 17.64, respectively. Higher SCHFI scores indicate better self-care behavior and only self-care confidence reached the self-care adequacy cut-off point 70. The majority of the study participants 11 (45%) had a poor health-related quality of life. Being a male gender (βs =−0.408, p = 0.049) and having New York Heart Association (NYHA) functional class IV (βs = −0.689, p = 0.009) were associated with poor self-care management. Married marital status (βs = −0.585, p = 0.021) and NYHA class III (βs = 2.612, p = 0.024) and class IV (βs = 2.416, p = 0.034) were associated with the poor emotional HRQol. Poor physical HRQoL was associated with poor self-care management (βs = −2.111, p = 0.007) and better self-care maintenance was associated with a good emotional health-related quality of life.

Conclusion: Study participants had inadequate self-care maintenance, self-care management, and poor health-related quality of life. Significant correlations were observed between self-care management and physical HRQoL as well as between self-care maintenance and emotional health-related quality of life. Further research with representative sample size and rigorous study designs is recommended to evaluate the correlation of self-care behavior and HRQoL and other predicting variables among patients with heart failure.

Keywords: heart failure, self-care, self-management, quality of life, HRQoL, adult

Introduction

In recent decades, globally cardiovascular diseases remain the leading cause of death.[1] The morbidity and mortality rate for HF patients remains high and currently, HF is listed as the cause of death in about one out of every eight deaths[2] and it has been escalating at an alarming rate, affecting more than 64.3 million people worldwide,[3,4] 6 million American adult ≥20 years,[5] and 15 million Europeans.[6,7] It has also been estimated that more than 8 million individuals will be affected by 2030, accounting for a 46% increase in prevalence.[8,9] The prevalence of HF increases with age such that it affects older people with more than 80% of cases in people aged 65 and older.[7]

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In Portugal, the estimated prevalence of HF in the population aged 25 and above is 5.2%[10] and HF is the leading cause of hospitalization for those over the age of 65.[11] The prevalence of HF is slightly higher than that of other European studies and increases sharply with age.[12]

Assuming that current clinical practices are maintained, the prevalence of HF in mainland Portugal is estimated to increase by 30% in 2035 and by 33% in 2060.[13]

Despite the substantial advances in therapies and prevention, mortality and morbidity are still high and HRQoL among heart failure remains poor.[14] Moreover, HF affects the physical, emotional, social, mental, and spiritual aspects interfering with their quality of life and well-being.[15]

Health-related quality of life is commonly defined as the patient's perception of the disease's functional effects,[16] and it may be compromised in HF patients due to their symptoms, functional limitations, and psychological problems.[17] It is an important outcome as it reflects the effect of HF on patients´ daily lives.[18] Improving the HRQoL in these patients is a key management objective and it mainly focused on prolonging patients´ life by maintaining their physiological stability.[19,20]

In recent years various complementary therapeutics cares have been developed and resources devoted to this care have increased to minimize the detrimental effects of HF on patients' physiologic functioning and health-related quality of life.[21]

For example, HF self-care has been suggested to improve patients' quality of life, increase the independence of the patients, decrease the readmissions rate which in turn reduces, healthcare expenditure, healthcare providers´ workload, and, as well as patient mortality rate.[22,23] Studies have defined self-care as a process of maintaining health through health-promoting and preventive practices.[1,21,23] Self-care in heart failure includes diet and drug management, limiting alcohol intake, sodium, and fluid restriction, limitation or cessation of smoking, daily weighting, adhering to the treatment regimen, regular exercise, promptly identifying and responding to symptoms, monitoring signs and symptoms of exacerbation of the disease, and the search for and decision-making for proper treatment.[24–29]

It has been studied that HF patients with good self-care skills, who adhere to the treatment regimen and pay attention to symptoms before they worsen are believed to have a better health-related quality of life.[30]

However, despite the obvious relationship of good self-care with positive health outcomes, across Europe, there is a widespread lack of formal initiatives to empower people with HF to adopt self-care behaviors,[7] as a result, many patients find it difficult to follow self-care advice.[31]

Moreover, in spite of the wealth of international self-care data, in Portugal, there is a lack of evidence about self-care behavior among HF inpatients[32] and the evidence that identifies its level of adequacy and proves its correlation with the HRQoL among Portuguese HF patients is scant and its popularity is not well documented. Therefore, the purposes of this pilot study were to assess the adequacy level of self-care behavior and the level of health-related quality of life and to examine the relationship between self-care behavior and the health-related quality of life among patients with HF who were attending their healthcare at a Tagus Valley Regional Health hospital, Portugal.

Methods

Study Design and Period

An institutional-based descriptive correlational study was conducted at Tagus Valley Regional Health hospital from November, 27th, 2020 to January 30th, 2021.

Study Setting and Period

The study was conducted at Tagus Valley Regional Health hospital, which is found in the city on 65 km (40 mi) towards the northeast of the capital Lisbon, Portugal. The hospital is currently providing different services for approximately 192,000 people in the catchment areas. The cardiology unit of the hospital has the following sectors: coronary unit, cardiology care unit, arrhythmology unit, cardiac patient-external consultation unit, and heart failure unit. There were approximately 50 HF patients who were on the follow-up care at the cardiac daycare of the hospital.

Study Participants

In this study, all patients who were 18 years old or above, had been diagnosed with HF and who were attending their healthcare at the Tagus Valley Regional Health hospital during the study period and fulfilling inclusion criteria were conveniently included in the study. Patients who were critically ill and unwilling to give informed consent were excluded from the study.

Data Collection Tools

Data was collected by using, structured self-administered questionnaires which were mainly adopted from the previous studies that were undertaken using the Portuguese language.[11,33] The tool consists of four different sections, which include socio-demographic characteristics, clinical characteristics, self-care components, and health-related quality of life.

Heart failure self-care behavior was assessed using a Self-care Heart Failure Index (SCHFI) version 6.2, which is known in Portugal as Escala de Autocuidado para a Pessoa com Insuficiência Cardíaca (EACPIC – Self-Care Scale for Persons with Heart Failure),[11] the tool was originally developed in English and later on translated and adapted to the Portuguese language by Marques et al.[11] The Portuguese version of the SCHFI, used in this study, presents a Cronbach's alpha coefficient for the total scale of 0.858, revealing a good reliability and validity.[32] The scale consists of three subscales: self-care maintenance (10 items), self-care management (6 items), and self-care confidence (6 items). The score for the SCHFI self-care dimension ranges from 10 to 40 for self-care maintenance, 4–24 for management, and 6–24 for confidence. Most questions are based on a 4-point Likert scale. Following the scoring rules, scores on each of the SCHFI scales were standardized from zero to 100, meaning zero is the worst self-care behavior and 100 is the best.[34]

Health-related quality of life (HRQoL) was assessed by using the Portuguese version of the Minnesota Living with Heart Failure Questionnaire (MLHFQ), a 21-item scale.[33] The tool has a physical (8 items) and emotional (5 items) subscale and was used to evaluate how much the disease and its treatment had affected the patient's life in the last month (4 weeks).[35] Items are rated on a 6-point scale ranging from 0 (no effect) to 5 (very much). The maximum total score of the MLHFQ is 105, with a higher score indicating a worse quality of life.[33,35] The Portuguese version of MLHFQ has been shown to be a valid and reliable instrument and the Cronbach alpha coefficient was mentioned to be 0.97.[33]

Data Gathering Process

All respondents were provided with a research information sheet describing what was involved in the study. Consent was signed by the respondents who were willing to participate in the study. On signing the consent form, each respondent was provided with the coded questionnaire. Questionnaires were given only to those patients who had signed the consent form. Furthermore, the clinical profile such as the etiology of HF, New York Heart Association (NYHA) HF functional class, associated comorbidities, and ejection fractions of the patients was recorded by data collectors after the patient filled the questionnaire. The data was collected by professional nurses and the data collection was closely supervised by supervisors to check for its completeness and clarity before data entry.

Data Operationalization and Analysis

The collected data was checked for its completeness, consistency, and accuracy, then data was coded, and entered into SPSS version 26 for analysis. The post hoc power analysis done using G*power calculator version 3.1 (Supplementary Materials). Descriptive statistics including means, standard deviations, frequencies, and percentages were performed to describe sociodemographic and clinical characteristics as well as the level of adequacy of self-care practice, and health-related quality of life.

To determine the adequacy level of patient's self-care behavior each self-care subscales were standardized to a score of 0 to 100 range based on these formulas: for the self-care maintenance scale at the first step, the reverse coding of the item (#8) was made, then based on the formula (sum of Section A items - 10) * 3.333 the scale was standardized. Similarly, for self-care management, and self-care confidence scale (sum of Section B items – 4) * 5 and (sum of Section C items – 6) * 5.56 formulas were used to standardize each subscale, respectively.[34] After the

standardization was made, the adequacy level of self-care score was set using the established cut-off point for adequate self-care (≥70 mean score) and inadequate self-care (<70 mean score) for each subscale. Calculating a total combined SCHFI score is strongly discouraged by the author of the scale,[34] hence, a total self-care score was not calculated in this study.

The level of HRQoL was determined using the total score, and categorized as Good, Moderate, and Poor quality of life, for HF patients who score less than 24, 24–45, and greater than 45, respectively.[35] However, continuous measures of HRQoL (total score) were used to evaluate the associations between HF self-care and HRQoL. The normality of data was evaluated and confirmed using Shapiro–Wilk and Kolmogorov–Smirnov test. The bivariate analysis was performed using Pearson's correlation coefficient to determine candidate variables for multivariate analysis and to identify the correlation between self-care and health-related quality of life. The patient characteristics used in the analysis were age, gender (male or female), marital status (currently married/currently unmarried), professional activities as (active worker/retired), living arrangement as (Alone/live with family members), presence of associated diseases (yes/no) number of comorbidities, and educational status as (attended/not attended), New York Heart Association (NYHA)(4 -level ordinal), and Ejection fraction.

Multiple linear regressions were then performed for each dimension of self-care and HRQoL using independent variables that were correlated in bivariate analysis, as well as variables that are predictors of both self-care and HRQoL in previous studies.[19,30,36,37] The adjusted model was controlled for the above-listed independent variables. Statistical significance was determined at $p < 0.05$.

Ethical Considerations

The study complies with the Declaration of Helsinki and was performed following approval by the ethical committee of the Tagus Valley Regional Health hospital. The data collectors explained the objectives, contents, and importance of the study before starting to fill out the questionnaires, and consent to carry out the study in the health facility was sought before inviting the patient to participate in the study. Participants were informed of the time that they have to spend going through the study procedures and they were given the right to refuse to answer any question that they thought they were not comfortable with. They were also granted the right to withdraw from the study at any time that they did not feel comfortable continuing. Confidentiality of personal information was assured, and participants were required to sign a written consent form before participating in the study. Data collected shall be used only for this study.

Results

Socio-Demographic Characteristics of the Study Participants

A total of 24 heart failure patients that were attending their healthcare in the cardiology unit during two months of data collection period were included in the study. Among the study population, the majority, 20 (83.3%) were males. The mean (± SD) age of the study participant was 66.88 ± 12.8 years with the range of 43–90 years. Regarding marital status more than half, 16 (66.7%) were married and the majority of study participants live in the home, 20 (83.3%). Of all participants, 17 (70.8%) of HF patients had attended primary education and retired from their jobs. Among the study participant, majority, 20 (83.3%) were living with their family members and 10 (41.7%) had less than 5 years of history with the diseases and more than half, 14 (58.3%) of them had a history of hospitalization due to HF out of which 9 (64.3%) had visited the hospital for less than or equal to 2 times (Table 1).

Clinical Characteristics of the Study Participants

The study participants frequently reported HF causes were acute myocardial infarction and valvular heart diseases 4 (16.67%). Study participants were predominantly NYHA functional class II, 12 (52%) and most, 22 (91.7%) of them had associated comorbidities out of which hypertension accounted for more than half, 16 (66.7%) of them. On average, the study participant had more than two (2.7 ± 1.40) comorbidities and the mean ± SD of Left Ventricular Ejection Fraction (LVEF) was 37 ± 12%, (Table 2).

Table 1 Distributions of Socio-Demographic Characteristics of Heart Failure Patients at the Cardiology Unit in Tagus Valley Regional Health Hospital, Portugal, January 2021 (N = 24)

Sociodemographic Variables		Frequency	(%)	Mean (SD)
Age				66.88±12.8
Sex	Male	20	83.3%	
	Female	4	16.7%	
Marital status	Married	16	66.7%	
	Single	3	12.5%	
	Widowed	2	8.3%	
	Divorced	3	12.5%	
Residence	Home	20	83.3%	
	Apartment	4	16.7%	
Educational status	No formal education	2	8.3%	
	Primary education	17	70.85%	
	Secondary education	3	12.5%	
	Higher education	2	8.3%	
Professional activities	Retired	17	70.8%	
	Active worker	7	29.2%	
Living arrangement	Alone	4	16.7%	
	With family/partner	20	83.3%	
Duration of illness (HF)	Less 5 years	10	41.7%	
	5–10 years	4	16.7%	
	More than 10 years	4	16.7%	
	Do not remember	6	25%	
History of hospitalization	Do not remember	2	8.3%	
	No	8	33.3%	
	Yes	14	58.3%	
Frequency of hospitalization	≤ 2 times	9	64.3%	
	>2 times	5	35.7%	

Heart Failure Self-Care Index Score and Level of HF Patients' Health-Related Quality of Life at the Tagus Valley Regional Health Hospital

The average SCHFI scores for maintenance, management, and confidence were 47.77 ± 15.28, 54.38 ± 18.26, and 70.20 ± 17.64, respectively. Overall, these findings indicated that poor self-care maintenance and management with the sample mean well below the established cut-off for adequate self-care score (a mean score of 70). However, study participants had good self-care confidence with a mean score above the established cut-off for adequate self-care score.

Table 2 The Distribution of Clinical Characteristics of Heart Failure Patients at the Cardiology Unit, Tagus Valley Regional Health Hospital, Portugal, January 2021 (N = 24)

Clinical Variable		Frequency	(%)
Etiology	Known	14	58.3%
	Unknown	5	20.8%
	No information	5	20.8%
Specified etiologies of HF	Acute myocardial infarction	4	16.67%
	Valvular heart disease	4	16.67%
	Hypertension	2	8.3%
	Cardiomyopathy	2	8.3%
	Others	2	8.3%
NYHA functional class	Class I	4	17.4%
	Class II	12	52.2%
	Class III	3	13%
	Class IV	4	17.4%
Presence of comorbidities	Yes	22	91.7%
	No	2	8.3%
Types of comorbidities	Ischaemic heart disease	13	54.2%
	Vascular diseases	10	41.7%
	Diabetes	10	41.7%
	Hypertension	16	66.7%
	Obesity	11	45.8%
Mean			SD
Average No. of comorbidities		2.71	1.40
Left ventricular ejection fraction		37	12

The mean score of HF patients' HRQoL was 44 ± 29.12. The mean physical and emotional subscale scores were 19.79 ± 12.81 and 10.08 ± 8.23, respectively (Table 3).

Regarding the level of HRQoL, 11 (45.8%) of study participants had a poor HRQoL meanwhile only one-third, 8 (33.3%) had a good health-related quality of life (Figure 1).

Bivariate Analysis of the Relationship Between Patient Characteristics, Self-Care, and Health-Related Quality of Life Among Heart Failure Patients

The result from the current study indicated the existence of a significant association among the included variables. The bivariate analysis results revealed that marital status was significantly associated with total HRQoL score and emotional dimension. Married study participants were significantly more likely than single participants to have a better health-related quality of life (lower HRQoL score indicates good HRQoL). The physical dimension was also significantly associated with the living arrangement. Participants who were living with their family members were significantly more

Table 3 The Distribution of Self-Care of Heart Failure Index Score and Health-Related Quality of Life

Self-care of Heart Failure Index Score	Range	Mean	SD	Median (IQR)
Self-care maintenance score	(0–100)	47.77	15.28	43.33(37.49–60.83)
Self-care management score	(0–100)	54.38	18.26	55(41.25–70)
Self-care confidence score	(0–100)	70.20	17.64	66.72(61.16–82.01)
Health-Related Quality Of Life				
HRQoL Total score	(0–105)	44.00	29.12	43.50(15–66.5)
HRQoL physical dimension score	(0–40)	19.79	12.81	22.50(6–29)
HRQoL emotional dimension score	(0–25)	10.08	8.23	8.50(2.5–16)

likely than those who were living alone to have a better physical quality of life (lower physical dimension score indicates good HRQoL). The emotional dimension of HRQoL was significantly and positively associated with an HF patient's self-care maintenance score. Education status was significantly and positively associated with HF patients´ self-care management. A higher level of education was associated with better self-care management. Self-care confidence was not significantly associated with any of the included variables (Table 4).

Multivariate Analysis of Factors Associated with Self-Care Behavior of the Study Participants

Multivariate analysis showed that self-care management was significantly associated with gender, physical dimension score, and NYHA function class IV. The result showed that male HF patients were significantly less likely than female patients to have higher self-care management scores (βs = −0.408, p = 0.049) and HF patients with worst (class IV) functional capacity by NYHA were significantly less likely to have higher self-care management scores (βs = −0.689, p = 0.009).

Moreover, the present study also indicated that there was a significant relationship between HF patients' physical dimension and self-care management scores (βs = −2.111, p = 0.007). When HF patients´ physical dimension score increases (poor physical quality of life) their self-care management score decreases (poor self-care management); and each one-point increase in Physical HRQoL dimension score (poor physical HRQoL) was associated with a decrease in the likelihood of having better self-care management score. On the other hand, poor physical HRQoL dimension score was significantly associated with poor self-care management scores. The self-care management model reached significance (Adjusted R^2 = 0.499, p = 0.024), thus, 49.9% of the variance in self-care management score among patients with HF in this sample is explained by the combined effects of included predictors (Table 5).

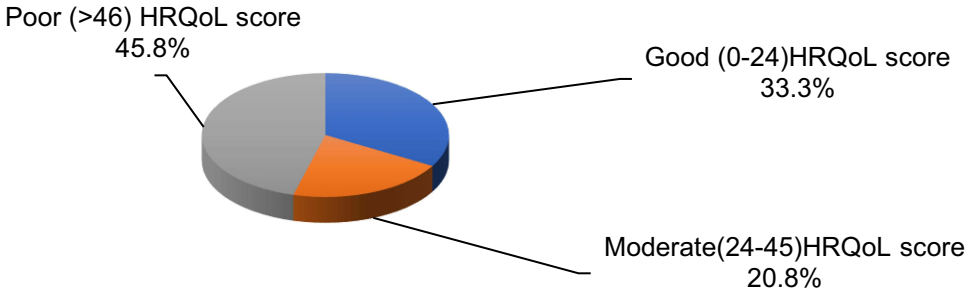

Figure 1 The level of health-related quality of life among study participants.

Table 4 Pearson's r Correlation Coefficients for Variables Associated with Self-Care and Health-Related Quality of Life

Clinical Variables	Self-Care Maintenance	Self-Care Management	Self-Care Confidence	Total HRQoL	Physical Dimension	Emotional Dimension
Age	0.354	−0.138	0.126	0.177	0.257	0.094
Gender (male)	0.016	−0.09	0.122	−0.032	−0.073	−0.162
Marital status (married)	−0.013	0.058	0.303	−0.409*	−0.397	−0.461*
Professional activity (active)	−0.18	0.154	−0.22	−0.086	−0.159	−0.007
Associated disease (yes)	0.35	−0.088	−0.11	0.065	0.044	0.087
Living arrangement (with family)	−0.195	0.041	0.269	−0.275	−0.429*	−0.186
Educational status	−0.154	0.442*	−0.188	−0.016	−0.176	0.122
NYHA functional class	−0.124	−0.197	−0.322	0.219	0.308	0.272
No. of comorbidity	−0.079	−0.314	−0.104	−0.04	0.023	0.025
Ejection fraction	0.325	−0.024	−0.002	0.067	0.037	−0.01
Self-care maintenance	1	0.332	0.227	0.347	0.269	0.412*
Self-care management	0.332	1	0.198	0.251	0.035	0.385
Self-care confidence	0.227	0.198	1	−0.113	−0.192	−0.082
Total HRQoL	0.347	0.251	−0.113	1	0.933**	0.946**
Physical dimension	0.269	0.035	−0.192	0.933**	1	0.825**
Emotional dimension	0.412*	0.385	−0.082	0.946**	0.825**	1

Notes: *Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed). The categories in the brackets are reference categories.

Multivariate Analysis of Predictors Heart Failure Patients Health-Related Quality of Life

The findings from the multivariate analysis indicated that there were significant associations between the patient's marital status, NYHA functional class III, class IV, self-care maintenance, and emotional health-related quality of life.

Married HF patients were significantly less likely to have a poor emotional HRQoL (βs = −0.585, p = 0.021). Heart failure patients with class III and class IV functional capacity by NYHA were significantly more likely to have a Poor emotional HRQoL (βs = 2.612, p = 0.024) and (βs = 2.416, p = 0.034) respectively.

Furthermore, the study showed that self-care maintenance had a significant positive relationship with the emotional health-related quality of life. For every one-unit increase in self-care maintenance score, the emotional HRQoL score increases by 0.353, holding other all variables constant (βs = 2.879, p = 0.015). The emotional HRQoL model reached significance (Adjusted R^2= 0.532, p = 0.032). Therefore, 53.2% of the variance in the emotional HRQoL score among patients with HF in this sample was explained by the combined effects of included predictors. However, the data had not found a significant association between patient characteristics, total HRQoL, and Physical HRQoL scores (Table 6).

Discussions

The use of self-care has been suggested to improve health-related quality of life, increase the independence of the patients, decrease readmissions rate which in turn reduces nurses' workload, healthcare expenditure and, the patient's mortality rate.[28,38,39] This study sought to assess the adequacy of self-care behavior, the level of health-related quality of life, and their relationship in patients with HF attending healthcare at Tagus Valley Regional Health hospital, Portugal.

Table 5 Multivariate Analysis of Predictors Heart Failure Patient's Self-Care

Variables	B	Std. Error	Beta	T	p	95.0% CI	Model Statistics
Self-care maintenance							
Gender (male)	6.829	8.263	0.17	0.826	0.423	−11.021–24.68	F=2.508 Adjusted R^2= 0.396 p=0.061
Age	0.464	0.247	0.389	1.883	0.082	−0.068–0.997	
NYHA (I)							
Class II	0.44	7.252	0.015	0.061	0.953	−15.228–16.108	
Class III	−18.943	10.711	−0.419	−1.769	0.1	−42.083–4.197	
Class IV	−17.365	9.905	−0.433	−1.753	0.103	−38.763–4.034	
Attended education	−7.617	10.659	−0.141	−0.715	0.487	−30.644–15.41	
Live with family	−4.079	9.047	−0.102	−0.451	0.66	−23.623–15.465	
Total HRQoL score	−0.838	0.606	−1.597	−1.382	0.19	−2.148–0.472	
Physical dimension score	0.497	0.86	0.417	0.578	0.573	−1.36–2.354	
Emotional dimension score	3.159	1.243	1.701	2.542	0.025[a]	0.474–5.843	
Self-care management							
Gender (male)	−19.566	8.988	−0.408	−2.177	0.049[a]	−38.984–0.147	F=3.294 Adjusted R^2=0.499 p=0.024
Age	0.082	0.268	0.058	0.307	0.764	−0.497–0.622	
NYHA (I)							
Class II	−7.663	7.889	−0.214	−0.971	0.349	−24.707–9.381	
Class III	−5.583	11.652	−0.103	−0.479	0.64	−30.755–19.59	
Class IV	−33.064	10.775	−0.689	−3.069	0.009[a]	−56.342—9.786	
Attended Education	11.678	11.595	0.181	1.007	0.332	−13.372–36.728	
Living with family	−12.634	9.841	−0.263	−1.284	0.222	−33.895–8.627	
Total HRQoL score	1.236	0.66	1.971	1.873	0.084	−0.189–2.66	
Physical dimension score	−3.008	0.935	−2.111	−3.217	0.007[a]	−5.029–0.988	
Emotional dimension score	1.019	1.352	0.459	0.754	0.464	−1.901–3.939	
Self-care confidence							
Gender (male)	14.619	11.665	0.315	1.253	0.232	−10.58–39.819	F=1.248 Adjusted R^2=0.097 p=0.347
Age	0.732	0.348	0.532	2.103	0.055	−0.02–1.484	
NYHA (I)							
Class II	4.765	10.238	0.138	0.465	0.649	−17.354–26.883	
Class III	16.694	15.121	0.32	1.104	0.29	−15.973–49.361	
Class IV	−15.884	13.983	−0.343	−1.136	0.276	−46.092–14.325	
Attended education	0.888	15.047	0.014	0.059	0.954	−31.619–33.396	
Living with family	22.53	12.771	0.486	1.764	0.101	−5.06–50.121	
Total HRQoL score	0.366	0.856	0.604	0.427	0.676	−1.484–2.215	
Physical dimension score	−1.09	1.214	−0.792	−0.898	0.385	−3.712–1.532	
Emotional dimension score	0.425	1.754	0.198	0.242	0.812	−3.365–4.214	

Note: [a]P<0.05, The categories in the brackets are reference categories.

Table 6 Multivariate Analysis of Predictors Heart Failure Patients Health-Related Quality of Life

Variables	B	Std. Error	Beta	T	95% CI	p-value	Model
Total HRQoL							
Age	0.467	0.751	0.205	0.621	−1.186–2.12	0.547	F=1.382 Adjusted R^2= 0.166 p= 0.300
Gender (male)	19.466	19.958	0.255	0.975	−24.46–63.392	0.35	
Married	−32.247	17.613	−0.533	−1.831	−71.012–6.518	0.094	
Active worker	−4.536	18.357	−0.072	−0.247	−44.938–35.867	0.809	
Comorbidities	−27.449	27.29	−0.266	−1.006	−87.513–32.615	0.336	
Live with family	24.748	27.773	0.324	0.891	−36.379–85.876	0.392	
NYHA (I)							
Class II	5.2	18.525	0.091	0.281	−35.574–45.973	0.784	
Class III	41.875	23.558	0.486	1.778	−9.974–93.725	0.103	
Class IV	34.387	21.959	0.45	1.566	−13.944–82.719	0.146	
Self-care maintenance	0.995	0.579	0.522	1.718	−0.28–2.27	0.114	
Self-care management	0.435	0.37	0.273	1.176	−0.379–1.248	0.264	
Self-care confidence	−0.364	0.489	−0.221	−0.744	−1.441–0.713	0.472	
Physical dimension							
Age	0.236	0.345	0.236	0.684	−0.524–0.996	0.508	F=1.189 Adjusted R^2=0.090 p= 0.391
Gender (male)	4.335	9.175	0.129	0.472	−15.858–24.528	0.646	
Married	−14.484	8.097	−0.544	−1.789	−32.305–3.336	0.101	
Active worker	−2.58	8.439	−0.094	−0.306	−21.153–15.993	0.766	
Comorbidities	−15.344	12.545	−0.338	−1.223	−42.956–12.267	0.247	
Live with family	7.479	12.767	0.222	0.586	−20.621–35.58	0.57	
NYHA (I)							
Class II	−0.1	8.516	−0.004	−0.012	−18.844–18.644	0.991	
Class III	20.624	10.829	0.544	1.904	−3.212–44.459	0.083	
Class IV	8.452	10.095	0.251	0.837	−13.767–30.67	0.42	
Self-care maintenance	0.469	0.266	0.56	1.762	−0.117–1.055	0.106	
Self-care management	0.028	0.17	0.041	0.167	−0.346–0.402	0.87	
Self-care confidence	−0.203	0.225	−0.279	−0.901	−0.698–0.292	0.387	
Emotional dimension							
Age	0.08	0.159	0.125	0.505	−0.27–0.43	0.624	F=3.183 Adjusted R^2=0.532 p=0.032
Gender (male)	4.634	4.224	0.214	1.097	−4.663–13.932	0.296	
Married	−9.996	3.728	−0.585	−2.681	−18.202- −1.791	0.02[a]	
Active worker	−1.2	3.885	−0.068	−0.309	−9.752–7.351	0.763	
Comorbidities	−8.276	5.776	−0.284	−1.433	−20.989–4.438	0.18	
Live with family	9.281	5.879	0.429	1.579	−3.658–22.219	0.143	

(*Continued*)

Table 6 (Continued).

Variables	B	Std. Error	Beta	T	95% CI	p-value	Model
NYHA (I)							
Class II	0.671	3.921	0.042	0.171	−7.959–9.302	0.867	
Class III	13.023	4.986	0.535	2.612	2.048–23.998	0.024[a]	
Class IV	11.229	4.648	0.519	2.416	0.999–21.459	0.034[a]	
Self-care maintenance	0.353	0.123	0.655	2.879	0.083–0.623	0.015[a]	
Self-care management	0.164	0.078	0.364	2.099	−0.008–0.336	0.06	
Self-care confidence	−0.094	0.104	−0.203	−0.912	−0.322–0.133	0.381	

Note: [a]P<0.05, The categories in the brackets are reference categories.

The finding from this study showed that HF patients had inadequate self-care maintenance and self-care management behavior. This finding is consistent with several other similar studies that have been done in developing and developed countries. For instance, self-care maintenance has been reported as low in Taiwan,[40] Mexico,[41] Iran,[24] the USA,[30] Canada,[37] and Italy.[36] Similarly, self-care management has been also reported as quite low in almost all studied populations.[30,37,42] This implies that the majority of the study participants never or rarely performed self-care behavior in areas such as daily monitoring their weight, limiting salt consumption and engaging in minimal physical activity, limiting fluid intake, and taking their medications as prescribed.[43] The main reasons why HF patients found self-care practice difficult could be related to its complex nature, the long-term character of the behavioral changes needed, lack of perceived need for self-care, and motivation, difficulties in understanding and communicating with health professionals on the follow-up recommendations, and decision-making related to the disease.[31,44] The poor self-care practice by patients might also be due to the lack of consistent self-care education, patient empowerment to self-care, and underdevelopment of self-care support provision.[7] Heart failure patients would have been benefited from self-care practice by having fewer hospitalization, longer survival, and better HRQoL if they had consistently practiced self-care in their daily life.[26] The present study implies that there is a need for HF patients to improve their self-care maintenance and management practices. One study carried out in Portugal suggest that education on symptom recognition can change self-care behaviours and is a key element in disease management by patients,[45] thus designing a customized individual self-management education, with teaching materials adjusted to each patient's educational level is recommended to prevent inadequate self-care.[31] Moreover, it has been studied that the introduction of care manager nurses who directly works with individual patients, providing the necessary information and advice to promote patient empowerment, helping them to make lifestyle changes, monitoring their conditions is highly effective in increasing patient health knowledge, self-management skills, and readiness to make changes in health behaviours.[46] Therefore, healthcare providers should give more emphasis to self-care education, patient empowerment, and other self-care recommendations during each follow-up evaluation.

The positive finding in this study is that HF patients had adequate self-care confidence which is very encouraging because, how confident a patient is directly affected their performances of other self-care aspects and the self-care confidence is a vital predictor of whether persons were labeled as skilled, inconsistent, or novice in their adherence to heart failure self-care practices.[30] This finding is also in line with the other study that was undertaken to adapt SCHFI version 6.2 to the Portuguese language which stated that HF patients had difficulties in maintenance and management of the disease meanwhile they were still self-confident.[11]

Regarding the level of HRQoL, the majority of study participants in this study had a poor health-related quality of life. This indicates that the majority of HF patients' life in this setting is much more affected by the disease condition and its management. Poor HRQoL was also observed from other similar studies carried out in Ethiopia,[19] Brazil,[47] the United States,[48] and Spain.[49] However, in contrast to our findings, the study conducted in Taiwan had reported that heart failure

patients involved in that study had a good HRQoL in general.[40] The differences might be attributed to the differences in the size of the study population, heart failure functional classes, and left ventricular ejection fraction (LVEF) among study participants. In Taiwan, 60% of the study participants had NYHA class II (better) and 41.1% on average left ventricular ejection fraction as compared to our study where only 52.2% had class II functional heart failure class and 37% an average LVEF. This is because patients with a better heart failure functional the class had a better HRQoL than those who did not have it.[30,37,50]

Information on the distribution and factors associated with heart failure self-care behavior can provide a basis for developing effective disease maintenance and management strategies.[42] The present study identified sociodemographic and clinical characteristics that significantly influence heart failure patients' self-care behaviors. The result of multivariate analysis indicated that the male gender, heart failure functional class IV, and a poor physical HRQoL were associated with poor self-care management. However, this study had found no significant correlations at all between self-care maintenance, confidence, and sociodemographic/clinical variables. Factors associated with heart failure self-care were inconsistent throughout various studies that were undertaken around the globe. For example, Seto et al[37] reported that better self-care was associated with low ejection fraction, older age, and better quality of life meanwhile in other studies it was reported that functional class III and IV was associated with self-care confidence,[30] higher education was associated with self-care maintenance and management while living alone and better functional class were associated with self-care confidence,[42] marital status (being unmarried) was associated with self-care abilities.[24] Similarly, in other research self-care maintenance was significantly and positively associated with education, disease duration, and living conditions, and self-care management was significantly and positively associated with education and the number of hospital admissions.[43] These variations may be in part due to the differences in the groups of heart failure patients participating in these studies (eg, inclusion and exclusions criteria), the setting of the study, geographical location, sample sizes, and the level of self-care promotions and education being given to the patients. This implies a need for further research into predictors of heart failure patients' self-care practice to understand the factors that have led to these inconsistencies between study findings.

The results from this study also identified heart failure patients' characteristics that were significantly associated with health-related quality of life. For instance, marital status (being married) was significantly associated with the better emotional HRQoL, and having a poor HF functional class (III and IV) was associated with the poor emotional health-related quality of life. This finding is similar to several other studies.[30,37,42,50] Overall health-related quality of life and physical HRQoL were not significantly associated with any sociodemographic and clinical variables. In contrast to the present finding in several other studies, factors such as age, gender, living arrangement, economic status were found to be significantly associated with health-related quality of life.[2,16,51] This could be due to the difference in the study setting, sample size, and participant compositions.

When we explored the correlation between self-care and HRQoL the finding showed that self-care maintenance among the study participants was highly statistically significant and was an independent predictor of the emotional health-related quality of life. This was the case both before and after adjustment for clinical and sociodemographic characteristics that were included in the analysis. The current finding also revealed that physical HRQoL was found to be an independent predictor of self-care management after adjustment was made for other variables. Patients with a better physical and emotional HRQoL may believe that they have more energy, are less symptomatic, and properly manage their heart failure.[41] The result from this study suggests that nurses and other healthcare providers need to first identify patients with heart failure who lack good physical HRQoL and the self-care maintenance behaviors required to manage their condition at home and then focus should be given to specific educational interventions to build self-care maintenance skills before discharge which in turn helps improve heart failure patients´ physical health-related quality of life.

Conclusions

Heart failure patients attending their healthcare at Tagus valley Regional Health hospital had inadequate self-care maintenance and self-care management behaviors. The majority of the study participants had a poor health-related quality of life. There was a significant correlation between self-care maintenance and the emotional dimension HRQoL and between self-care management and the physical dimension of health-related quality of life.

The result from this research may be useful to inform nurses, and other healthcare providers about the need for further research with representative sample size and rigorous study designs to evaluate the correlation of self-care behavior and health-related quality of life among patients with heart failure.

Limitations of the Study

The study could not establish a cause-and-effect relationship due to its cross-sectional nature. The data collection method was self-report rather than direct observation of the patient's self-care practice which could result in bias in the findings of the study. Considering the small size nature of the study, the factors we used for the final regression model were only those factors that had been correlated in bivariate analysis and the previous other studies, for this reason, other possible factors that were not adjusted for during the current study may influence observed associations. Furthermore, this pilot study was conducted by using small sample size, hence the findings cannot be generalized to the general population.

Data Sharing Statement

The datasets used during the current study are available from the corresponding author on reasonable request.

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References

1. Riegel B, Lee CS, Dickson VV. Medscape. Self care in patients with chronic heart failure. *Nat Rev Cardiol*. 2011;8(11):644–654. doi:10.1038/nrcardio.2011.95
2. Liu MH, Wang CH, Huang YY, Cherng WJ, Wang KW. A correlational study of illness knowledge, self-care behaviors, and quality of life in elderly patients with heart failure. *J Nurs Res*. 2014;22(2):136–145. doi:10.1097/JNR.0000000000000024
3. Lippi G, Sanchis-Gomar F. Global epidemiology and future trends of heart failure. *AME Med J*. 2020;2020:5.
4. Groenewegen A, Rutten FH, Mosterd A, Hoes AW. Epidemiology of heart failure. *Eur J Heart Fail*. 2020;22(8):1342–1356. doi:10.1002/ejhf.1858
5. Virani SS, Alonso A, Aparicio HJ, et al. Heart disease and stroke statistics—2021 update. *Circulation*. 2021;143(8):e254–e743. doi:10.1161/CIR.0000000000000950
6. Zaya M, Phan A, Schwarz ER. Predictors of re-hospitalization in patients with chronic heart failure. *World J Cardiol*. 2012;4(2):23–30. doi:10.4330/wjc.v4.i2.23
7. Network H. Heart failure policy and practice in Europe; 2020.
8. Lawson CA, Zaccardi F, Squire I, et al. 20-year trends in cause-specific heart failure outcomes by sex, socioeconomic status, and place of diagnosis: a population-based study. *Lancet Public Health*. 2019;4(8):e406–e20. doi:10.1016/S2468-2667(19)30108-2
9. Mozaffarian D, Benjamin EJ, Go AS, et al. Heart disease and stroke statistics-2016 update: a report from the American Heart Association. *Circulation*. 2016;133(4):e38–360.
10. Gouveia M, Ascenção R, Fiorentino F, et al. Current costs of heart failure in Portugal and expected increases due to population aging. *Revista Portuguesa de Cardiologia*. 2020;39(1):3–11. doi:10.1016/j.repce.2019.09.009
11. Marques CP, Lopes MJ, Rebola E, Pequito T. Autocuidado no doente com insuficiência cardíaca self-care in patients with heart failure. *Revista Ibero-Americana de Saúde e Envelhecimento*. 2016;2(1):439.
12. Ceia F, Fonseca C, Mota T, et al. Prevalence of chronic heart failure in Portugal: a community-based study: EPICA study. *Eur J Heart Fail*. 2000;2(S1):72–73. doi:10.1016/S1388-9842(00)80262-7
13. Fonseca C, Brás D, Araújo I, Ceia F. Heart failure in numbers: estimates for the 21st century in Portugal. *Revista portuguesa de cardiologia*. 2018;37(2):97–104. doi:10.1016/j.repc.2017.11.010
14. Savarese G, Lund LH. Global public health burden of heart failure. *Card Fail Rev*. 2017;3(1):7–11. doi:10.15420/cfr.2016:25:2
15. Paz LFA, Medeiros CA, Martins SM, Bezerra S, Oliveira Junior W, Silva MBA. Quality of life related to health for heart failure patients. *Rev Bras Enferm*. 2019;72(suppl 2):140–146. doi:10.1590/0034-7167-2018-0368
16. Baert A, De Smedt D, De Sutter J, et al. Factors associated with health-related quality of life in stable ambulatory congestive heart failure patients: systematic review. *Eur J Prev Cardiol*. 2018;25(5):472–481. doi:10.1177/2047487318755795
17. Erceg P, Despotovic N, Milosevic DP, et al. Prognostic value of health-related quality of life in elderly patients hospitalized with heart failure. *Clin Interv Aging*. 2019;14:935–945. doi:10.2147/CIA.S201403
18. Chen X, Xin Y, Hu W, Zhao Y, Zhang Z, Zhou Y. Quality of life and outcomes in heart failure patients with ejection fractions in different ranges. *PLoS One*. 2019;14(6):e0218983. doi:10.1371/journal.pone.0218983
19. Seid MA. Health-related quality of life and extent of self-care practice among heart failure patients in Ethiopia. *Health Qual Life Outcomes*. 2020;18(1):27. doi:10.1186/s12955-020-01290-7

20. Gallagher AM, Lucas R, Cowie MR. Assessing health-related quality of life in heart failure patients attending an outpatient clinic: a pragmatic approach. *ESC Heart Fail*. 2019;6(1):3–9. doi:10.1002/ehf2.12363
21. Riegel B, Dickson VV. A situation-specific theory of heart failure self-care. *J Cardiovasc Nurs*. 2008;23(3):190–196. doi:10.1097/01.JCN.0000305091.35259.85
22. McDonagh TA, Metra M, Adamo M, et al. 2021 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure. *Eur Heart J*. 2021;42(36):3599–3726. doi:10.1093/eurheartj/ehab368
23. Jaarsma T, Hill L, Bayes-Genis A, et al. Self-care of heart failure patients: practical management recommendations from the Heart Failure Association of the European Society of Cardiology. *Eur J Heart Failure*. 2021;23(1):157–174. doi:10.1002/ejhf.2008
24. Asadi P, Ahmadi S, Abdi A, Shareef OH, Mohamadyari T, Miri J. Relationship between self-care behaviors and quality of life in patients with heart failure. *Heliyon*. 2019;5(9):e02493. doi:10.1016/j.heliyon.2019.e02493
25. Lee CS, Bidwell JT, Paturzo M, et al. Patterns of self-care and clinical events in a cohort of adults with heart failure: 1 year follow-up. *Heart Lung*. 2018;47(1):40–46. doi:10.1016/j.hrtlng.2017.09.004
26. Vellone E, Fida R, Ghezzi V, et al. Patterns of self-care in adults with heart failure and their associations with sociodemographic and clinical characteristics, quality of life, and hospitalizations: a cluster analysis. *J Cardiovasc Nurs*. 2017;32(2):180–189. doi:10.1097/JCN.0000000000000325
27. Vellone E, Fida R, D'Agostino F, et al. Self-care confidence may be the key: a cross-sectional study on the association between cognition and self-care behaviors in adults with heart failure. *Int J Nurs Stud*. 2015;52(11):1705–1713. doi:10.1016/j.ijnurstu.2015.06.013
28. Liou HL, Chen HI, Hsu SC, Lee SC, Chang CJ, Wu MJ. The effects of a self-care program on patients with heart failure. *J Chin Med Assoc*. 2015;78(11):648–656. doi:10.1016/j.jcma.2015.06.004
29. Vellone E, Chung ML, Cocchieri A, Rocco G, Alvaro R, Riegel B. Effects of self-care on quality of life in adults with heart failure and their spousal caregivers: testing dyadic dynamics using the actor–partner interdependence model. *J Fam Nurs*. 2014;20(1):120–141. doi:10.1177/1074840713510205
30. Buck HG, Lee CS, Moser DK, et al. Relationship between self-care and health-related quality of life in older adults with moderate to advanced heart failure. *J Cardiovasc Nurs*. 2012;27(1):8–15. doi:10.1097/JCN.0b013e3182106299
31. Jaarsma T, Cameron J, Riegel B, Stromberg A. Factors related to self-care in heart failure patients according to the middle-range theory of self-care of chronic illness: a literature update. *Curr Heart Fail Rep*. 2017;14(2):71–77.
32. Delgado B, Lopes I, Mendes T, et al. Self-care in heart failure inpatients: what is the role of gender and pathophysiological characteristics? A Cross-Sectional Multicentre Study. *Healthcare*. 2021;9(4). doi:10.3390/healthcare9040434
33. Carvalho VO, Guimarães GV, Carrara D, Bacal F, Bocchi EA. Validação da versão em português do Minnesota Living with Heart Failure Questionnaire. *J Arquivos Brasileiros de Cardiologia*. 2009;93:39–44. doi:10.1590/S0066-782X2009000700008
34. Riegel B, Lee CS, Dickson VV, Carlson B. An update on the self-care of heart failure index. *J Cardiovasc Nurs*. 2009;24(6):485–497. doi:10.1097/JCN.0b013e3181b4baa0
35. Riegel B, Moser DK, Glaser D, et al. The Minnesota Living with Heart Failure Questionnaire: sensitivity to differences and responsiveness to intervention intensity in a clinical population. *Nurs Res*. 2002;51(4):209–218. doi:10.1097/00006199-200207000-00001
36. Buck HG, Dickson VV, Fida R, et al. Predictors of hospitalization and quality of life in heart failure: a model of comorbidity, self-efficacy and self-care. *Int J Nurs Stud*. 2015;52(11):1714–1722. doi:10.1016/j.ijnurstu.2015.06.018
37. Seto E, Leonard KJ, Cafazzo JA, Masino C, Barnsley J, Ross HJ. Self-care and quality of life of heart failure patients at a multidisciplinary heart function clinic. *J Cardiovasc Nurs*. 2011;26(5):377–385. doi:10.1097/JCN.0b013e31820612b8
38. Riegel B, Moser DK, Anker SD, et al. State of the Science. *Circulation*. 2009;120(12):1141–1163. doi:10.1161/CIRCULATIONAHA.109.192628
39. Toukhsati SR, Jaarsma T, Babu AS, Driscoll A, Hare DL. Self-care interventions that reduce hospital readmissions in patients with heart failure; towards the identification of change agents. *Clin Med Insights Cardiol*. 2019;13:1179546819856855. doi:10.1177/1179546819856855
40. Tung HH, Lin CY, Chen KY, Chang CJ, Lin YP, Chou CH. Self-management intervention to improve self-care and quality of life in heart failure patients. *Congest Heart Fail*. 2013;19(4):E9–E16. doi:10.1111/chf.12014
41. Riegel B, Driscoll A, Suwanno J, et al. Heart failure self-care in developed and developing countries. *J Card Fail*. 2009;15(6):508–516. doi:10.1016/j.cardfail.2009.01.009
42. Koirala B, Dennison Himmelfarb CR, Budhathoki C, Davidson PM. Heart failure self-care, factors influencing self-care and the relationship with health-related quality of life: a cross-sectional observational study. *Heliyon*. 2020;6(2):e03412. doi:10.1016/j.heliyon.2020.e03412
43. Siabani S, Driscoll T, Davidson PM, Najafi F, Jenkins MC, Leeder SR. Self-care and its predictors in patients with chronic heart failure in Western Iran. *J Cardiovasc Nurs*. 2016;31:22–30. doi:10.1097/JCN.0000000000000211
44. Oosterom-Calo R, van Ballegooijen AJ, Terwee CB, et al. Determinants of heart failure self-care: a systematic literature review. *Heart Fail Rev*. 2012;17(3):367–385. doi:10.1007/s10741-011-9292-9
45. Sousa JP, Oliveira C, Pais-Vieira M. Symptom perception management education improves self-care in patients with heart failure. *Work*. 2021;69(2):465–473. doi:10.3233/WOR-213491
46. Ciccone MM, Bux F, Cortese C, et al. Feasibility and effectiveness of a disease and care management model in the primary health care system for patients with heart failure and diabetes (Project Leonardo). *Vasc Health Risk Manag*. 2010;6:297–305. doi:10.2147/VHRM.S9252
47. Jorge AJL, Rosa MLG, Correia D, et al. Evaluation of quality of life in patients with and without heart failure in primary care. *Arq Bras Cardiol*. 2017;109(3):248–252. doi:10.5935/abc.20170123
48. Auld JP, Mudd JO, Gelow JM, Hiatt SO, Lee CS. Self-care moderates the relationship between symptoms and health-related quality of life in heart failure. *J Cardiovasc Nurs*. 2018;33(3):217–224. doi:10.1097/JCN.0000000000000447
49. Comin-Colet J, Anguita M, Formiga F, et al. Health-related quality of life of patients with chronic systolic heart failure in Spain: results of the VIDA-IC Study. *Rev Esp Cardiol*. 2016;69(3):256–271. doi:10.1016/j.rec.2015.07.030
50. Britz JA, Dunn KS. Self-care and quality of life among patients with heart failure. *J Am Acad Nurse Pract*. 2010;22:480–487. doi:10.1111/j.1745-7599.2010.00538.x
51. Chu SH, Lee WH, Yoo JS, et al. Factors affecting quality of life in Korean patients with chronic heart failure. *Jpn J Nurs Sci*. 2014;11(1):54–64. doi:10.1111/jjns.12002