Article

Patient's knowledge, gender, and physical activity level as the predictors of self-care in heart failure patients

Mifetika Lukitasari,[1,2] Ulfia Fitriani Nafista[3]

[1]Department of Nursing, Faculty of Health Sciences, Universitas Brawijaya, Malang, Indonesia; [2]Brawijaya Cardiovascular Research Center, Universitas Brawijaya, Malang, Indonesia; [3]Nursing Faculty, University of Indonesia, Depok, Indonesia

Abstract

Introduction: Self-care management is the fundamental approach for Heart Failure (HF) management and is influenced by patient ability in preventing rehospitalization, mortality, and morbidity. Therefore, this study aims to investigate the predictors of a patient's ability in HF self-care management.

Design and Methods: A cross-sectional study was carried out on 96 patients with HF. The data were collected through interviews using questionnaires on demographic characteristics, physical activity (IPAQ), knowledge (Dutch Heart Failure Knowledge Score), and self-care management (Self Care Heart Failure Index). Subsequently, the data were analyzed using logistic regression analysis, and the best fit model for predicting self-care management in HF patients was generated.

Results: The proportion of samples was 56.3% female, with mostly primary school (50%) as their education level. Furthermore, the proportion of patients with adequate HF self-care management was only 21% of the total participant. Based on the results, the patient's physical activity level, HF knowledge, and gender were verified as a predictor of self-care management.

Conclusions: The HF knowledge level, physical activity level, and gender were the predictors of HF self-care management.

Introduction

Heart Failure (HF) is the major cause of death and disability that has affected approximately 26 million people worldwide due to non-communicable diseases.[1] It was responsible for more than 10% of the total health expenditure for cardiovascular disease in the USA.[2] In 2017, approximately 5.7 million people in the US suffered from HF with a projection of more than 8 million HF patients in 2030.[3] Previous data showed that despite considerable improvement after 60-90 days of hospitalization, patients suffered from high mortality and frequent rehospitalization due to an episode of acute decompensation.[4] Meanwhile, frequently rehospitalized HF patients are more susceptible to a reduced quality of life. HF patients need to deal with the complexity of care leading to a lack of self-care behaviors. Self-care in HF is focused on treatment adherence, lifestyle modifications, disease symptoms monitoring, and response to HF exacerbations. This makes adequate self-care behavior to be important for successful HF management and ideal quality of life, reduced rehospitalization, as well as mortality rate.[5–7] Several factors that contribute to self-care behavior include patients' sociodemographic factors, knowledge of HF, and physical activity levels.[8–10] A previous study suggested that depression, cognitive function, and patients' cognitive function are the predictors of self-care behavior.[11] The identification of these predictors is essential to support the formulation of effective educational strategies to meet individuals' needs. Therefore, this study aims to investigate the predictors of a patient's ability in HF self-care management.

Design and Methods

A cross-sectional study was carried out on 96 HF patients in RSD Dr. Soebandi Jember from October 2019 to March 2020. Adult HF patients with the stable condition, without cognitive limitation, and no paralysis were also included. However, HF patients with NYHA level IV and congenital heart disease were excluded. The data were collected using a structured questionnaire with a face-to-face interview, while purposive sampling was used to select respondents. The instrument used included European Heart Failure Self-care Behaviour Scale (SCHFI) for self-care level assessment,[12] IPAQ questionnaire for physical activity measurement,[13] Dutch Heart Failure Knowledge Scale for HF knowledge assessment,[14] and sociodemographic questionnaire. The data were analyzed using logistic regression to identify the predictors of self-care behavior.

Results and Discussions

Socio-demographic and clinical characteristics showed that out of 96 participants, the proportion of women was 56,3% (Table 1). The proportion of NYHA class was similar between adequate and inadequate self-care management group, their marital status, and physical activity level. Meanwhile, a significant difference between adequate and inadequate self-care management groups was also observed in the mean for respondents' age, level of edu-

Significance for public health

Self-care is the most essential part of Heart Failure (HF) management in the community. It improvement needs to consider related factors to ameliorate patient outcomes, prevent mortality, and morbidity in HF. This study suggested that women with higher physical activity levels and a good knowledge of HF had better self-care management in the community.

cation, and knowledge on HF.

The result showed that most HF patients had inadequate self-care management, where people with adequate self-care were 22%, while the rest were inadequate (Table 2). Based on the activity level measured using IPAQ score and analyzed with regression logistic to determine a correlation with self-care, it shows an adequate correlation of p = 0.042.

Based on the predictors of self-care management as shown in Table 3, gender played a significant role in patient self-care level. The results showed that women have better self-care compared to men with an odds ratio of 6.527, 95%CI (1.680-25.352). Furthermore, HF patients' knowledge also contributed to management adequacy with an odds ratio of 39.694, 95%CI (6.923-227.583). A high physical activity level was discovered as the predictor of adequate self-care management compared to a low physical activity level with an odds ratio of 6.572, 95%CI (1.410-30.640). This model was considered fit based on the result of the Hosmer Lemeshow test, which showed a significance of 0.571. Meanwhile, the pseudo-R-square score showed that the adequacy of self-care management is explained by women's gender, high physical activity, and good knowledge on HF by 45.2%.

Participants who had adequate self care management were women patients, high physical activity level, and adequate knowledge on HF. This study also showed that most patients with HF in the community had inadequate self-care management. Therefore, self-care promotion needs to be enhanced from the primary level as prevention to follow-up programs for patients after hospitalization. This makes it necessary to promote their self-care on HF management, improve cardiovascular health level, and personal management.[15] There is also a need for continuous training to educate patients on their chronic condition and maintain life quality.[16] Knowledge on HF was a strong predictor of HF patients' self-care management in the community.[17] A previous study showed that the higher the knowledge the better their self-care level, even 9 months after being discharged from the hospital.[18,19] This is because knowledge is closely related to education received by patients from a health care professional. This plays a critical role in patient self-care regiment, form an understanding of weight management, daily intake, lowering alcohol level, smoking reduction, daily physical exercise, medication, and adhering to health care professional.[20] An introduction to patient self-care should continue to be carried out as periodic education in the community for patients to improve their quality of life. Therefore, multidisciplinary education strategies are considered an effective method in improving self-care management.

Sociodemographic factors such as gender, level of education, income, and age were considered as the predictors of self-care management in HF patients.[21] This study suggested that among all these factors, only gender significantly contributed to self-care behavior while the others did not show any significance. A previous study showed that a higher level of education, living alone, and a New York Heart Association (NYHA) functional classification

Table 1. Table of Socio Demography and Clinical Characteristic.

Characteristics	Adequate Self-Care (n=21)	Inadequate Self-Care (n=75)	p value
Age	64.10±11.55	57.76±12.64	0.041
Educational Level			0.000
Not Attended School	1 (4.8)	5 (6.7)	
Primary School	5 (23.8)	43 (57.3)	
Junior High School	3 (14.3)	14 (18.7)	
Senior High School	4 (19)	11 (14.7)	
Higher Education	8 (38.1)	2 (2.7)	
Gender			0.017
Male	14 (66.7)	28 (37.3)	
Female	7 (33.3)	47 (62.7)	
Marital Status			0.440
Married	19 (90.5)	73 (97.3)	
Unmarried	2 (9.5)	2 (2.7)	
NYHA CLASS			0.987
Class I	3 (14.3)	10 (13.3)	
Class II	13 (61.9)	46 (61.3)	
Class III	5 (23.8)	19 (25.3)	
Physical Activity Level			0.591
Low	2 (9.5)	8 (10.7)	
Moderate	11 (52.4)	30 (40)	
High	8 (38.1)	37 (49.3)	
Knowledge on HF			0.000
Good	10 (47.6)	3 (4.0)	
Poor	11 (52.4)	72 (96)	

Table 2. Multivariate logistic regression for self-care level and indpendent variable.

Variables	Sig	B	Exp (B)	95% CI for Exp (B)	
				Lower	Upper
Physical Activity Level (High)	0,017	1.883	6.572	1.410	30.640
Knowledge on HF	0.000	3.681	39.694	6,923	227,583
Gender	0,007	1.876	6.527	1.680	25.352

were associated with better self-care maintenance, management, and confidence.[22] A detailed study on gender differences also showed that 37% of married women were less likely to report adequate self-care maintenance compared to unmarried women.[23] Several studies showed that gender was not the predictor of self-care management in HF patients.[20,24] Meanwhile, it affected the outcome as suggested in a previous study which stated that there are different outcomes between men and women based on mortality and rehospitalization after practicing self-care management.[8] This indicated that self-care needs to be implemented based on gender differences to improve patients' prognoses.

HF condition will significantly affect a patient's tolerability to daily activities as shown in the NYHA classification. It was also shown that continuous exercise will improve patients' physical activity level, which contributed to HF patients' self-care adequacy. Meanwhile, providing an understanding of patient output such as activity related to their part for personal self-care is the key for patients and families to maintain a quality life. This makes it necessary for patients with activities limitations to create a certain modification and acceptance related to the change for a better self-care.[25] The health care professional motivation and supervision will improve patients' daily exercise to ameliorate patients' physical activity level and self-care adequacy. Therefore, in clinical practice, patients' confidence and self-efficacy in practicing regular physical exercise should be supported to improve their physical activity level and self-care management.

Although self-care itself is highly associated with clinical symptoms, there is a need for intervention and targeted self-cate to reduce the number of clinical event.[26] The level of patient's NYHA showed no contributions on patient's self-care in this study, therefore, further report on clinical level is recommended. Another reason that contributed to patient level of self-care is the duration of HF diagnosis because those who has been diagnosed with HF more than 1 year usually is 1.8 times better for self-care.[20] Therefore, comprehensive assessment on self-care and its determinants is essential in HF patient care to achieve better outcome.[27]

Conclusions

The results showed that continuous education on activity restriction and their treatment regimens are important to promote adequate self-care in HF patients. Although a woman can have adequate self-care, there is a need to study and promote self-care in both males and females. Therefore, further study is recommended to investigate the other factors related to the level of self-care in HF patients to reduce the number of rehospitalization and mortality.

References

1. Ponikowski P, Anker SD, AlHabib KF, et al. Heart failure: preventing disease and death worldwide. ESC Heart Failure 2014;1:4–25.
2. 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).
3. Savarese G, Lund LH. Global Public Health Burden of Heart Failure. Card Fail Rev 2017;3:7–11.
4. Rockwell JM, Riegel B. Predictors of self-care in persons with heart failure. Heart & Lung 2001;30:18–25.
5. Asadi P, Ahmadi S, Abdi A, et al. Relationship between self-care behaviors and quality of life in patients with heart failure. Heliyon 2019;5:e02493.
6. Calero-Molina E, Hidalgo E, Rosenfeld L, et al. The relationship between self-care, long-term mortality, and heart failure hospitalization: insights from a real-world cohort study. Eur J Cardiovasc Nurs 2022;21:116–26.
7. Kessing D, Denollet J, Widdershoven J, et al. Self-care and all-cause mortality in patients with chronic heart failure. JACC: Heart Failure 2016;4:176–183.
8. Abe R, Sakata Y, Nochioka K, et al. Gender differences in prognostic relevance of self-care behaviors on mortality and hospitalization in patients with heart failure – A report from the CHART-2 Study. J Cardiol 2019;73:370–378.
9. Chriss PM, Sheposh J, Carlson B, et al. Predictors of successful heart failure self-care maintenance in the first three months after hospitalization. Heart & Lung 2004;33:345–353.
10. Bagheri –Saweh MI, Lotfi A, Salawati Ghasemi S. Self-care behaviors and related factors in chronic heart failure patients. Int J Biomed Public Health 2018;1:42–47.

Correspondence: Mifetika Lukitasari , Department of Nursing, Faculty of Health Sciences, Universitas Brawijaya, Jl. Puncak Dieng, Kunci, Kalisongo, Kec. Dau, Malang, East Java Indonesia 65151.
Tel.: +62 341 5080686, Fax: +62 341 5080686.
E-mail: mifetika.fk@ub.ac.id

Key words: Self-care, heart failure, heart failure knowledge, heart failure physical activity.

Acknowledgment: The author is grateful to Brawijaya University, Malang, for the funding, support, and motivation during this study.

Contributions: All authors contributed equally, namely UFN conducted this study and ML served as supervisors and reviewed the final article.

Conflict of interests: The author declares no conflict of interest.

Funding: This study was financially supported by Brawijaya University through the Hibah Peneliti Pemula scheme.
Clinical Trials: This study has been approved by the Health Research Ethics Committee of Saiful Anwar Hospital.

Availability of data and materials: All data generated or analyzed during this study are included in this published article.

Informed consent: Written informed consent was obtained from a legally authorized representative(s) for anonymized patient information to be published in this article.

Conference presentation: Part of this paper was presented at the 2nd International Nursing and Health Sciences Symposium that took place at the Faculty of Medicine, Universitas Brawijaya, Malang, Indonesia.

Received for publication: 11 December 2021.
Accepted for publication: 10 May 2022.

Licensee PAGEPress, Italy
Healthcare in Low-resource Settings 2023; 11(s1):11179
doi:10.4081/hls.2023.11179

11. Cameron J, Worrall-Carter L, Riegel B, et al. Testing a model of patient characteristics, psychologic status, and cognitive function as predictors of self-care in persons with chronic heart failure. Heart & Lung 2009;38:410–418.
12. Riegel B, Lee CS, Dickson VV, et al. An Update on the Self-Care of Heart Failure Index. J Cardiovasc Nurs 2009;24:485–497.
13. Maddison R, Mhurchu C, Jiang Y, et al. International Physical Activity Questionnaire (IPAQ) and New Zealand Physical Activity Questionnaire (NZPAQ). Int J Behavioral Nutrition Physical Activity 2007;4:62.
14. van der Wal MHL, Jaarsma T, Moser DK, et al. Development and Testing of the Dutch Heart Failure Knowledge Scale. Eur J Cardiovasc Nurs 2005;4:273–277.
15. Prihatiningsih D, Widaryati W. Self-Care Behavior in Heart Failure Patients: Impact on Cardiovascular Health Profile. Jurnal Keperawatan 2021;12:23–32.
16. Bagheri –Saweh MI, Lotfi A, Salawati Ghasemi S. Self-care behaviors and related factors in chronic heart failure patients. International Journal of Biomedicine and Public Health 2018;1:42–47.
17. Lee KS, Moser DK, Dracup K. Relationship between self-care and comprehensive understanding of heart failure and its signs and symptoms. Eur J Cardiovascular Nurs 2018;17:496–504.
18. Meng X, Wang Y, Tang X, et al. Self-management on heart failure: A meta-analysis. Diabetes & Metabolic Syndrome: Clinical Research & Reviews 2021;15:102176.
19. Róin T, Á Lakjuni K, Kyhl K, et al. Knowledge about heart failure and self-care persists following outpatient programme-a prospective cohort study from the Faroe Islands. Int J Circumpolar Health 2019;78:1653139.
20. Fetensa G, Fekadu G, Turi E, et al. Self-care behaviour and associated factors among chronic heart failure clients on follow up at selected hospitals of Wollega zones, Ethiopia. Int J Afr Nurs Sci 2021;15:100355.
21. 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;32:180–189.
22. 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:e03412.
23. Lee CS, Riegel B, Driscoll A, et al. Gender differences in heart failure self-care: A multinational cross-sectional study. Int J Nurs Studies 2009;46:1485–1495.
24. 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 (Basel) 2021;9:434.
25. Nursita H, Pratiwi A. Peningkatan Kualitas Hidup pada Pasien Gagal Jantung: A Narrative Review Article (Improved Quality of Life in Heart Failure Patients: A Narrative Review Article). Jurnal Berita Ilmu Keperawatan 2020;13:10–21.
26. 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: J Acute Critical Care 2018;47:40–46.
27. Meng X, Wang Y, Tang X, et al. Self-management on heart failure: A meta-analysis. Diabetes Metabol Syndr 2021;15:102176.