



Self-care Behaviour of the Elderly with Heart Failure and its Associated Factors in Hospitals of Gonbad Kavus in 2018

Saeed Eimer¹, Gholam Reza Mahmoodi-Shan^{2*}

1. Department of Geriatric Nursing, Faculty of Nursing and Midwifery, Golestan University of Medical Sciences, Gorgan, Iran.

2. Nursing Research Center, Faculty of Nursing and Midwifery, Golestan University of Medical Sciences, Gorgan, Iran.

*Correspondence: Nursing Research Center, Faculty of Nursing and Midwifery, Golestan University of Medical Sciences, Gorgan, Iran. Tel: +98-9111770989. Email: mahmoodigh@yahoo.com

Received June 06, 2019; Accepted June 11, 2019

Abstract

Background: Heart Failure is a common chronic disease and the cause of the elderly's mortality worldwide. It has imposed a high financial burden on health systems and families. Self-care is an important aspect of nursing and treating such patients. The aim of study was to determine the self-care behavior and its association with demographic and clinical factors in the elderly with heart failure.

Methods: The cross-sectional study was conducted on 120 elderly with heart failure, admitted to Cardiology Wards of Khatam Al-Anbia, Shohada, and Payambar Azam Hospitals of Gonbad Kavus County in 2018. The convenience sampling method was used to recruit participants. For data collection the Miller Self-care Behaviour Scale and the elderly's demographic information checklist were used. Data were presented in descriptive statistics, and analyzed using ANOVA, independent t-test and Spearman's correlation test in SPSS ver 16. The significant level was used $p < 0.05$.

Results: The self-care scores were 66.08 ± 8.44 for HF elderly patients. The Self-care Behavior score were 68.25 ± 1.01 and 64.12 ± 0.7 in women and men respectively ($p = 0.004$). There were no significant correlations between the elderly's scores of self-care with ejection fraction percentages and education levels.

Conclusions: The mean scores of self-care in the elderly with HF were low. Therefore, the self-care of the elderly with heart failure should be improved by training.

Keywords: Elderly; Self-care; Heart failure

[10.29252/jgbfnm.17.1.12](https://doi.org/10.29252/jgbfnm.17.1.12)

Introduction

Heart Failure (HF) is a common cardiovascular disorder which is regarded as a chronic, progressive and disabling disease that increases by aging (1). According to the World Health Organization (WHO) report, the cardiovascular diseases impose a heavy burden of medical budget to developing countries. In Iran, cardiovascular diseases are the most common causes of mortality as well as being the causes of about 41% of deaths (2). It is estimated that cardiovascular diseases will be the first cause of disability in the world by 2020. (3) Patients with heart failure are faced with changes in self-care needs due to the consequences of disease and the related treatments, thus they need the Self-care Behavior (SB) to face with disease problems (4). The regular self-care and follow-up, changes in lifestyle, accepting education and designed programs can increase longevity and will improve the quality of life in the elderly (5). Self-care is an important component of disease control and a relative process that leads to purposive behaviors and selections, which in turn indicates the individual attitude and knowledge (6).

Despite the roles of self-care behavior in preventing serious problems and complications of HF, the evidence indicate the high prevalence of improper implementation of SB in these patients. Studies indicated that SB is low in most patients with heart failure (7). Shojaei et al. found that only 26% of patients with heart failure exhibited optimal SB (9). Self-care is a new trend in health care and refers to a group of health measures that are implemented by a person. Self-care is an activity that is performed by people for promoting health, prevent diseases, limit diseases, and preserve health. These measures are implemented without professional help, but their knowledge and skills are taught to people (10). Self-care is a multi-dimensional structure, including lifestyle management, treatment of minor morbidities, management of chronic diseases, and care after discharge from hospital (11). Daily weighting, contact with physician in the case of any inflammation of legs, ankles, calf, and abdomen, caring daily urinary excretion, regular consumption of drugs according to physicians' prescription, and preventing too much drinking are examples of SB in patients with heart failure (12). Self-care is a strategy for adapting to life events and stress, and causes the lack of dependency. It consists of special activities that mitigate disease symptoms and preserve and promote health levels. Self-care is an important aspect of treatment in patients with heart failure (13). Lack of motivation for learning SB, lower physical ability, depression, cognitive disorders, loneliness, low of social support, and low literacy level are important barriers to learning and to compliance with SB in the elderly with heart failure (14). Given the nurses' roles in promoting health levels and teaching SB, such behaviors can be identified and accordingly planned interventions can be developed to promote levels of SB which in turn lead to develop health levels of the elderly with heart failure (15). Therefore, the present study was conducted with the aim to determine the association of SB with some relevant demographic and clinical factors in order to teach patients and plan for promoting SB levels and enable the elderly to do their self-care activities.

Methods

This cross-sectional study was done on 120 elderly with heart failure admitted to Khatam Al-Anbia, Shohada, and Payambar Azam hospitals of Gonbad-e Kavus County in 2018. The participants were selected by convenience sampling method. The inclusion criteria were ; age over 60 years, the history of heart failure classes 1 or 2, according to the physician's diagnosis

and based on the classification of American Heart Society, the ejection fraction of 40% or less, the history of hospitalization for at least 3 times, and 6 months after the diagnosis of heart failure, and no psychiatric disorder. An incomplete questionnaire was an exclusion criterion of the study. For data collection, the researcher visited the cardiology wards in Khatam Al-Anbia hospital, Shohada hospital, and Payambar Azam hospital. The samples were informed about the research purpose, and were requested to respond to the questionnaire. According to a study by Shojaei et al. and consideration of standard deviation of 9.22, error level of 1.84, and alpha coefficient of 0.05, the sample size was equal to 98, however, 120 samples with heart failure were considered as there was the probability of non-respondents and incomplete questionnaires (16). Data was gathered using questionnaire including demographic information (age, sex, marital status, educational level, and ethnicity), clinical information such as diabetes disease, hypertension, history of smoking, drug abuse, diet, ejection fraction percentage, and hospitalization duration) and Miller's questionnaire of SB in cardiac patients was also utilized for measuring the self-care (17). The questionnaires were completed by researchers via interviews with the elderly. The instrument has 20 items with answering on a 5-point Likert Scale including modify diet, reduce smoking, exercise, administer medications, and manage stress. The minimum score of the questionnaire was 20 and the maximum score was 100. The score range from 20 to 79 indicated the acceptable SB, while the scores of 80 to 100 indicated the unacceptable SB. The validity and reliability of the instrument were confirmed by Niakan et al. (20). Ethical considerations were observed in the research. All of the elderly received the explanations for the research process, filled in the written consent forms, and were ensured about the confidentiality of information. The codes were used instead of full name for recording data. The research permission was obtained from the research deputy of the universities. The code of ethics (IR.GOUMS.REC.1397.027) was obtained from the committee of ethics in Golestan University of Medical Sciences. In the study, the qualitative variables were described by frequency and percentage; while the quantitative variables were depicted by mean and standard deviation. The data normality was examined by Shapiro-Wilk test. The independent t-test was used to compare the mean self-care levels in two groups; and the ANOVA were utilized for more than two groups. Spearman's correlation test was performed to determine the correlation between two quantitative variables. The data analysis was performed in SPSS Statistics for Windows, version 16 (SPSS Inc., Chicago, Ill., USA) at a significance level of 0.05.

Results

In the present study, 120 patients with heart failure were participated of whom and 55.8% of them were male. The Mean age was 69.75 ± 7.72 . Most participants (34.2%) were Turkmen, 42.5% were illiterate, 35% were with diabetics, 88.3% were with hypertension, 19.2% currently smoked cigarettes, and 25% had a history of drug abuse. Furthermore, self-care scores were 66.08 ± 8.44 . (Table 1)

Table 1. Demographic and clinical characteristics of the elderly with heart failure

Name of variable	Class	N	%	
Sex	Male	67	55.8	
	Female	53	44.2	
Ethnicity	Fars	37	30.8	
	Turkmen	41	34.2	
	Turk	19	15.8	
	Sistani and Baluch	23	19.2	
Education level	Illiterate	51	42.5	
	Primary school	35	29.2	
	Secondary school and higher	34	28.3	
Diabetes	Yes	42	35	
	No	78	65	
Hypertension	Yes	106	88.3	
	No	14	11.7	
History of Medication	Yes	105	87.5	
	No	15	12.5	
History of smoking	Yes	23	19.2	
	No	97	80.8	
Drug abuse	Yes	30	25	
	No	90	75	
Diet	Normal	13	10.8	
	Low salt	72	60	
	Diabetes	30	29.2	
		Mean ± SD	Minimum	Maximum
Age		69.75 ± 7.72	61	90
Ejection fraction percentage		47.23 ± 10.15	15	60
Hospitalization duration		5.4 ± 1.53	1	9
Systolic blood pressure		136.23 ± 13.27	98	168
Diastolic blood pressure		78.06 ± 9.28	58	100
Heart rate count		80.81 ± 9.29	42	106
Self-care score		66.08 ± 8.44	44	89

Table 2. Comparison of self-care scores based on demographic and clinical variables

Variable	Classes	Mean ±SD	P-value
Gender	Male	64.12 ± 1.07	0.004
	Female	68.52 ± 1.01	
Age	<70	65.36 ± 0.98	0.26
	≥ 70	67.14 ± 1.24	
Education level	Illiterate	64.7 ± 1.01	0.29
	Primary school	67.47 ± 1.41	

	Secondary school and higher	66.76 ± 1.73	
Ethnicity	Fars	65.72 ± 1.43	0.87
	Turkmen	65.53 ± 1.49	
	Turk	66.68 ± 1.6	
	Sistani and Baluch	67.1 ± 1.57	
Diabetes	Yes	66.33 ± 1.09	0.81
	No	65.94 ± 1.04	
Hypertension	Yes	65.81 ± 0.82	0.35
	No	68.07 ± 2.1	
History of smoking	Yes	64.34 ± 0.8	0.27
	No	66.5 ± 2.06	
History of medication	Yes	65.83 ± 0.83	0.4
	No	67.8 ± 2.01	
Drug abuse	Yes	64.4 ± 1.91	0.21
	No	66.65 ± 0.81	
Diet	Normal	68.84 ± 2.21	0.28
	Low salt	65.16 ± 1.07	
	Diabetes	91.66 ± 1.2	

The mean score of self-care was 68.52 ± 1.01 in women and 64.12 ± 1.07 in men. The independent t-test indicated the significant difference between self-care scores of both groups ($P = 0.004$). There was no significant difference between other demographic variables, including age, education level, and ethnicity and the self-care scores. (Table 2)

The self-care scores were 64.34 ± 0.8 and 66.5 ± 2.06 in non-smokers and smokers respectively, and the difference was not statistically significant. Furthermore, there was no significant relationship between other clinical characteristics, including type of diet, drug abuse, medication history, hypertension, and diabetes with self-care scores.

There was no significant correlation between hospitalization duration, diastolic blood pressure, systolic blood pressure, and ejection fraction percentage with self-care score (Table 3).

Table 3. Comparison of stress level between intervention and control groups before and after intervention

Self-care score		Hospitalization duration	Diastolic blood pressure	Systolic blood pressure	Ejection fraction percentage
	Correlation	0.14	0.11	-0.05	0.06
	P-value	0.12	0.24	0.61	0.54

Discussion

Based on the results of the present study, $M \pm SD$ of self-care scores of the elderly with heart failure was below the range of 20 to 79, indicating the low SB in elderly women and men over the age of 60. Shojaei et al. indicated that only 26% of patients exhibited good SB; and three fourth

of the patients had low or moderate self-care (16). Azarpad also found that half of the patients exhibited moderate SB, and another half portrayed good SB (23). In a study by Khoshtarash et al., only 61% of patients presented good SB, and the rest had weak and moderate SB (21). Aboutalebi et al. found that 31.9% of patients had moderate SB, and only 7% had good SB (22). The present study indicated that there was a significant difference between men and women in terms of mean scores of self-care; in that the elderly women had better SB than the elderly men. In contrast with the present contribution and while most of the participants were Turkman, but Shojaei et al. found that men with heart failure showed better SB than women (16). However, Khoshtarash et al. found no significant difference between male and female participants in terms of SB (21). In the present study, there was no significant relationship between SB and chronic diseases; hence, it was consistent with Khoshtarash et al.'s study who investigated the SB and its relevant factors in people with heart failure (21). In studies by Aboutalebim Shojaei, Azarpad, Artinin and Chriss, the incidence of other chronic diseases decreased the SB (16, 22, 23, 24, and 25). The present research pointed out that there was no significant relationship between education level and self-care, but results of similar studies indicated better self-care in high school diploma and academic education groups than other groups. Rockwell argued that patients with higher education levels had higher judgment and decision making power for doing SB (26). In the present study, Miller's self-care questionnaire was used to measure self-care scores in heart patients. Shojaei et al. used the European questionnaire of SB in patients with heart failure (16). Miller's self-care questionnaire measures good diet, quitting smoking, physical activity, using a drug regimen, and mitigating effects of stressful variables. However, the European questionnaire of self-care behavior includes the examination of daily weight, annual injection of Influenza vaccine, doing exercise, and some adverse variables for the elderly with heart failure. In the present study, there was no significant relationship between the ejection fraction (EF) and self-care, while its relationship was significant in a research by Azarpad et al. who found that patients with ejection fraction of 30%-40% had weaker SB (23). In a study by Shojaei et al., the SB became weaker by reduction of ejection fraction percentage of heart (16). Shahbaz et al. indicated that tolerating several chronic diseases simultaneous with heart failure such as (1) hypertension and diabetes decreased the adherence to SB, while the relationship was not significant in the present study (27). Based on the present research findings, the SB had no significant relationship with age, ejection fraction, smoking, and drug abuse; and the result was consistent with a study by Bagheri et al (28). The present study investigated the elderly over and under the age of 70 and they had no significant difference in terms of age probably because all samples were over the age of 60 years and the age diversity was not that high, however, in a study by Shojaei et al. entitled " SB in patients with heart failure", the SB demonstrated an inverse significant relationship with age (16); consequently, their result was consistent with Azarpad's research (23). Based on Riegel et al. (2010) wrote: Changes in patients due to aging, such as vision, hearing, and cognitive loss disable them in the self-care. On the other hand, the elder patients become dependent on others due to the loss of most abilities with regards to SB (26). Alizadeh et al. (2011), Shojaei et al. (2009), and Azarpad (2005) achieved inconsistent results with the present study. In their studies, the SB portrayed an inverse significant relationship with age; in other words, the patients' self-care behavior decreased at higher age (16, 23, 29). In the present study, most of the elderly were married while 6 participants were divorced; hence, it was impossible to investigate the association of SB with marital status. In a study by Khoshtarash et al., single participants showed better SB than married or divorced participants, however, their difference was not significant (21). Shojaei et al. also found that married people exhibited better SB than wid-

ows/widowers, notwithstanding single people received the higher scores (16). In a study by Mansouri et al., there was a significant relationship between SB and marital status (30), while in a research by Tung et al. aiming to describe the SB in patients with heart failure, the married participants had better self-care than single ones (31). Marti et al. found no significant relationship between the SB and marital status (32). In the present study, the elderly with a history of at least three times of hospitalization due to the heart failure were selected regarding the inclusion criterion, however the association of number of hospitalization and SB was not measured as a variable. Furthermore, the relationship between hospitalization duration and SB was measured, and no significant relationship was found. According to Shojaei et al., the SB was weaker in patients with further number of hospitalization (16). Azarpad et al. investigated the SB in cardiac patients and found no significant relationship between the number of hospitalization and SB (23). Khosh-tarash et al. also found no significant relationship between the number of hospitalization and SB (21). It can be concluded that the SB should be taught and the patients should obtain higher self-care every time of hospitalization. The elderly with heart failure need SB to face their disease problems. Therefore, the identification of such behavior and encouraging the patients to participate and take the responsibility for their correct implementation of the behavior can lead to control of disease complications. Perhaps the reason for different results of the present study and other studies in that all samples of the present study were the elderly over the age of 60. Since most of the elderly with heart failure had low self-care scores, the nurses are suggested paying attention to predictive factors of self-care in educational and healthcare programs for the elderly with heart failure. Research limitations: The research data were collected subjectively and according to patients' statements and interviews, in addition to this limitation that there was no possibility of observing the patient behavior. Different results could be obtained if the behaviors were more objective and were investigated by a long follow-up. Another limitation of study was the process of data collection through interviews and completion of questionnaires by patients. Since the questionnaire was self-report, it was not a totally reliable method for investigating the self-care, but as the researcher contributed to collection and completion of questionnaire, the information had high reliability. Future studies are suggested investigating the life status (whether patient lives alone or with family), supportive and social sources, income level, and applied sources by patients for the self-care (nurses, physicians, family, reading book, etc...), number of hospitalization, hours of sleeping, exercise, and walking.

Conclusion

Given the results of the present study, the elderly with heart failure indicated lower self-care scores, therefore the self-care training is suggested to improve their health levels and quality of life. Furthermore, the medical teams should teach patients about self-care. Studies should be also conducted to investigate the nurses' performance, attitudes, and knowledge about SB and its barriers.

Acknowledgements

The present study was derived from a master's thesis on the elderly nursing in nursing research center of the faculty of nursing and midwifery at Golestan University of Medical Sciences with a the code of ethics (IR.GOUMS.REC.1397.027). We are deeply grateful to the nursing research center, the deputy of research and postgraduate education of university, as well as faculty of nursing and midwifery of Golestan University of Medical Sciences, esteemed authorities and personnel of hospitals in addition to all patients who participated in the present study.

References

1. Ponikowski P, Anker SD, AlHabib KF, Cowie MR, Force TL, Hu S, et al. Heart failure: preventing disease and death worldwide. *ESC Heart Fail.* 2014; 1(1):4-25. [DOI:10.1002/ehf2.12005]
2. Asgari MR, Jafarpoor HA, Soleimani M, Ghorbani R, Askandarian R, Jafaripour I. Effects of early mobilization program on depression of patients with myocardial infarction hospitalized in CCU. *Koomesh.* 2015; 16(2): 175-184. [Persian] [DOI: 10.17795/mejrh-24168]
3. Kuller LH. *Epidemiology principle and control of disease for nurses.* Tehran Boshra Publicacation; 2004; 35-56.
4. Jaarsma T, Stromberg A, Martensson J, Dracup K. Development and testing of the European Heart Failure Self-care Behaviors Scale. *Eur J Heart Fail.* 2003; 5(3): 363-370. [DOI: 10.1016/S1388-9842(02)00253-2]
5. Khodadadi AA, Smaeli H. Evolution of Knowledge of the principles of self-care in acute coronary syndrome patients admitted to Aliebn Abitaleb Rafsanjan university hospital during 2009. *Commun Health J.* 2010; 5: 8-16.
6. Riegel B, Dickson VA. Situation-specific theory of heart failure¹⁷. Self-care. *J Cardiovasc Nurs.* 2008; 23(3): 190-196. [DOI:10.1097/01.JCN.0000305091.35259.85]
7. Kessing D, Denollet J, Widdershoven J, Kupper N. Fatigue and self-care in patients with chronic heart failure. *Eur J Cardiovasc Nurs.* 2016; 15(5):337-44. [DOI: 10.1177/1474515115575834]
8. Oksel E, AkbiyIk A, Kocak G. Self-care behavior analysis of patients with chronic heart failure *European Journal of Cardiovascular Nursing.* 2009; 8(1_suppl): S22-S22. [DOI: 10.1016/S1474-5151(09)60071-2]
9. Park j, Park k. *Social prevention medicine and health service,* Translated by H. Shojaei Tehrani. 2nd ed. Tehran: Samat pub; 1997: 41-2.
10. Eftekhar H, Mohammad K, Tavafian SS, Mirkarimi K, Ramezanzadeh A. The perceived of selfcare among general people living in south of Tehran, Iran. *irje.* 2009; 5 (1):33-9. [Persian]

11. Rabelo ER, Aliti GB, Domingues FB, Ruschel KB, Brun ADO. What to teach to patients with heart failure and why: The role of nurses in Heart Failure Clinics. *Rev Lat Am Enfermagem*. 2007; 15 (1):165-70. [[DOI: 10.1590/S0104-11692007000100024](https://doi.org/10.1590/S0104-11692007000100024)]
12. González B, Lupóna J, Parajóna T, Urrutiaa A, Herrerosa J, Vallea V. Use of the European Heart Failure Self-care Behavior Scale (EHFSCBS) in a Heart Failure Unit in Spain. *Rev Esp Cardiol*. 2006; 59(2):166-70. [[DOI: 10.1016/S1885-5857\(06\)60126-6](https://doi.org/10.1016/S1885-5857(06)60126-6)]
13. Riegel B, Moser DK, Anker SD, Appel LJ, Dunbar SB, Grady KL, et al. State of the science: promoting self-care in persons with heart failure: a scientific statement from the American Heart Association. *Circulation*. 2009; 120(12):1141-63. [[DOI:10.1161/CIRCULATIONAHA.109.192628](https://doi.org/10.1161/CIRCULATIONAHA.109.192628)]
14. Riegel B, Moser DK, Anker SD, Appel LJ, Dunbar SB, Grady KL, et al. State of the science: promoting self-care in persons with heart failure: a scientific statement from the American Heart Association. *Circulation*. 2009; 120(12):1141-63.
15. Niakan M, Paryad E, Shekholeslami F, Leili EK, rad MA, Bonakdar HR, et al. Self-care behaviors in patients after myocardial infarction. *J Holist Nurs Midwifery*. 2013; 23(2):63-70. [Persian]
16. Shojaee F, Asemi S, Najaf yarandi A, Hosseini F. Self-care behaviors in patient with heart failure. *Payesh journal*. 2009; 8(4): 361-369. [Persian]
17. Conn VS, Taylor SG, Wiman P. Anxiety, depression, quality of life, and self-care among survivors of myocardial infarction. *Issues Ment Health Nurs*. 1991; 12 (4):321. [[DOI: 10.3109/01612849109010014](https://doi.org/10.3109/01612849109010014)]
18. Coyle MK. Depressive symptoms after a myocardial infarction and self-care. *Archives of psychiatric nursing*. 2012; 26(2): 127-34. [[DOI:10.1016/j.apnu.2011.06.004](https://doi.org/10.1016/j.apnu.2011.06.004)]
19. Niakan M, Paryad E, Kazemnezhad Leili E, Shekholeslami F. Depressive symptoms effect on self-care behavior during the first month after myocardial infarction. *Glob J Health Sci*. 2015; 7(4): 382-391. [[DOI:10.5539/gjhs.v7n4p382](https://doi.org/10.5539/gjhs.v7n4p382)]
20. Momeni m, Khoshtarash m, Ghanbari Khanghah A, Salehzadeh A, Rahmatpour P. Self-care behaviors and related factors in patients with heart failure referring to medical & educational center of heart in Rasht. *J Holist Nurs Midwifery*. 2013; 23(1): 22-29. [Persian]
21. Abootalebi GH, Vosooghi N, Mohammadnejad E, Namadi M, Akbari M. Study of the self-care agency in patients with heart failure. *IJCCN*. 2012, 4(4): 203-208. [Persian]
22. Azarbad M. The survey of the relationship between self-care behaviors and self-care needs in patient with heart failure referred to Shahid Rajaei's medical-educational and research center of cardiovascular 2005. MSc thesis Nursing and midwifery faculty, Iran University of Medical Sciences.

23. Artinian NT, Magnan M, Sloan M, Lange MP. Self-care behaviors among patient with heart failure. *Heart Lung*. 2002; 31(3): 161-72. [[DOI:10.1067/mhl.2002.123672](https://doi.org/10.1067/mhl.2002.123672)]
24. Chriss PM, Sheposh J, Carlson B, Riegel B. Predictors of successful heart failure self-care maintenance in the first three months after hospitalization. *Heart & Lung: The Journal of Critical Care*. 2004; 33(6): 345-53. [[DOI:10.1016/j.hrtlng.2004.03.004](https://doi.org/10.1016/j.hrtlng.2004.03.004)]
25. Rockwell JM, Riegel B. Predictor of self-care in persons with heart failure. *Heart & Lung: The Journal of Critical Care* 2001; 30(1): 18-25. [[DOI:10.1067/mhl.2001.112503](https://doi.org/10.1067/mhl.2001.112503)]
26. Shahbaz A, Hemmati-Maslakpak M. Relationship of self-care behaviors with hospital readmission in people with heart failure. *Cardiovascular Nursing Journal* 2017; 6(2):2433. [persian]
27. Bagheri saweh MI, Ashketorab T. The Study of Self-care behaviors and its related factors in patients with congestive heart failure hospitalized in cardiology wards of Tohid Hospital in Sanandaj city. *SJNMP*. 2016; 1 (3): 1-11. [[DOI:10.29252/sjnmp.1.3.1](https://doi.org/10.29252/sjnmp.1.3.1)]
28. Alizadeh Z, Ashktorab T, Nikravan Mofrad M, Zayeri F. Correlation between perceived social support and self-care behaviors among patients with heart failure. *JHPM*. 2014; 3 (1): 27-34. [Persian]
29. Mansouri KH, Hasavari F, Sedghi Sabet M. Self-care status and its related factors in patients with heart failure. *JHC*. 2018; 19(4):232-41.
30. Tung HH, Chen SC, Yin WH, Cheng CH, Wang TJ, Wu SF. Self-care behavior in patients with heart failure in Taiwan. *Eur J Cardiovasc Nurs*. 2012; 11(2):175-82. [[DOI:10.1016/j.ejcnurse.2011.02.002](https://doi.org/10.1016/j.ejcnurse.2011.02.002)]
31. Marti CN, Georgiopoulou VV, Giamouzis G, Cole RT, Deka A, Tang WH, et al. Patient-reported selective adherence to heart failure self-care recommendations: a prospective cohort study the Atlanta cardiomyopathy consortium. *Congest Heart Fail*. 2013; 19(1):16-24. [[DOI:10.1111/j.1751-7133.2012.00308.x](https://doi.org/10.1111/j.1751-7133.2012.00308.x)]

Bibliographic information of this paper for citing:

Eimer S, Mahmoodi-Shan GH.R. Self-care Behaviour of the Elderly with Heart Failure and its Associated Factors in Hospitals of Gonbad Kavus in 2018.

J Res Dev Nurs Midw, 2020; 17(1): 12-21.

Copyright © 2019, Saeed Eimer, Gholam Reza Mahmoodi-Shan.