PERFORMANCE OF SELF-CARE ACTIVITIES AMONG HEART FAILURE PATIENTS AT RANYA GENERAL HOSPITAL KURDISTAN –IRAQ

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ABSTRACT

Background

Heart failure is a major and growing public health problem worldwide that a negative impact on self-care. Self-care is a crucial task for controlling the negative consequences of the illness. Insufficient self-care leads to poor health outcomes and re-hospitalization.

Objectives

The objectives of the present study were to investigate the Self-care activities performance in patients admitted to Ranya general hospital and to explore the relationship between self-care and patients' characteristics.

Patients and Methods

A convenience sample technique was used to enroll 86 patients with heart failure to present a descriptive study conducted at Ranya general hospital from January to November 2019. The data were collected through a questionnaire by direct interview. Participants, self-care was assessed with the Self-care of Heart Failure Index. Verbal consent and ethical approval were obtained, the data analyzed with descriptive and inferential statistical analysis.

Results

The findings revealed that the self-care maintenance, management, and confidence scores were: (52.9±8.8, 63.1±9.3), and (59.6±9.9) respectively. Higher scores indicate better self-care. None of the self-care subscales reached the self-care adequacy cut point of 70. The score of the self-care subscale was higher in better educated, obese patients who had low self-care maintenance and confidence are female. Longer duration and a more severe class of heart failure owned a greater score of self-care management, while self-care maintenance was higher in more severe cases.

Conclusion

Self-care performance was inadequate in heart failure patients; participants' age, gender, educational status, BMI, and the severity of heart failure significantly associated with participants' self-care performance.

Keywords: *Slef-Care; Heart failure; General hospital.*

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INTRODUCTION

Cardiac disease is one of the most prevalent chronic diseases, which causes a great number of mortalities in adults, worldwide. Heart failure (HF) is recognized as one of the frequent and somewhat ultimate of all cardiac disorders [1]. Nowadays, HF is a real global health challenge. According to the most recent data, more than 6.2 million people in the USA are compliant with HF, which is projected to reach over 8 million by 2030, projections show that the prevalence of HF will increase 46% from 2012 to 2030 [2].

Chronic diseases, especially cardiovascular diseases (CVD), are the main causes of morbidity and mortality in developed and developing countries. Among other things, this is due to an increase in life expectancy, changes in habits and lifestyle. Projections indicate that in 2020, CVD will account for more than 20 million deaths annually [3]. Furthermore, the health care burden of HF is increasing globally [4].

Self-care in chronic diseases is related to the maintenance of the appropriate level of physical and psychological well-being; decrease in morbidity and mortality and the use and increase in patient's satisfaction, improvement of quality of life, which made self-care to be a central concern in the care for people with chronic diseases [5].

It is well known that HF is a costly condition that places large demands on self-care. Nordfonn et al. described self-care in heart failure as a naturalistic decision-making process enabling engagement with healthy behaviors like daily monitoring and adherence to the plan of care (self-care maintenance), and adequate management of symptoms, and evaluation of applied treatment actions (self-care management) [6]. According to Conceicao et al self-care is a decision-making process that patients use in choosing behaviors that maintain physiological stability, and response to the symptoms when they occur [7]. Unfortunately, self-care among heart failure patients is poor generally, and the majority of heart failure patients have low self-confidence in performing self-care [9].

Sufficient self-care was found to be a crucial factor to promote the best health outcomes. Consequently, in recent years, there has been a special focus on receiving treatment and self-care [1]. Vellone et al. believed that self-care improves both medical and person-centered outcomes in patients with HF. In the HF subjects, patients who practice better self-care, perceive a better quality of life. Moreover, they probably have lower mortality rates and fewer re-hospitalization [9].

Evaluation of self-care in HF aims to promote improvements in patients' quality of life, making them more active in decision making about the way of life, taking responsibility for the behaviors that lead to the improvement of their health [10]. Assessment of self-care in heart failure patients will help the nurse to determine the quality and quantity of knowledge and education needed. The evaluation of self-care in HF is fundamental in the approach of HF patients so that nurses can contribute effectively to the development of skills that facilitate the adoption of adaptive strategies that contribute to the maintenance of independence in self-care, in-process autonomy. The objective of this study was to identify self-care in terms of self-care maintenance, management, and confidence in heart failure patients at Ranya General Hospital., and find out the association between patients' self-care performance and their characteristics.

PATIENTS AND METHODS

Eighty-Six HF patients were recruited for this descriptive study at the Ranya General Hospital through a convenience sample technique, from January to November 2019. The inclusion criteria included idiopathic heart failure patients, both genders, admitted to medical wards, able to communicate in Kurdish, and willing to participate in the study.

The research proposal was approved by the ethics committee at the College of Medicine / University of Sulaimani and participants' verbal consent was obtained before starting data collection. The data were collected through a questionnaire that includes 2 parts; the first part contains participants' socio-demographic and clinical characteristics such as (Age, gender, educational status, occupation, Body Mass Index, duration of disease, New York Heart Association (NYHA) classification..... etc.). The second part includes data regarding the Self-Care which is assessed by the Self-Care of Heart Failure Index (SCHFI).

The SCHFI consists of three subscales (22 items) of self-care: self-care maintenance, self-care management, and self-care confidence. Self-care maintenance includes 10 items, where each item was rated on an ordinal scale, ranging from (1 to 4), with

1 corresponding to never or rare adherence to self-care maintenance, and 4 correspondings to consistent adherence to self-care maintenance. Overall, the global score of self-care maintenance ranges from (10 to 40). Self-care management consists of six items of symptom recognition, treatment implementation, and treatment evaluation. The lowest and highest score obtained was (4 and 24), respectively. Self-care confidence consists of six items, with a lowest and highest score of (6 and 24), respectively. The reliability and validity of this instrument were both confirmed in previous research and its developer recommends scoring three subscales individually (scores range from 0 to 100) instead of determining a total summary score [11]. Higher scores indicate superior patient self-care and adequate self-care is designated by a score of (> 70) on any subscale [12.]

The data were analyzed through the Social Package of Social Science SPSS (version 24) for the window. Descriptive statistics; Frequency, Percentage, Mean and Standard Deviation) were performed to find out a profile of the participants' demographic/clinical characteristics and calculate SCHFI scores. Inferential statistics (t-test and ANOVA) were to determine the relationship between self-care scores and participants' characteristics. P-value considered being significant at the level of (≤ 0.05).

RESULTS

The vast majority of participants were elderly. More than two-thirds 39.4% classified as 'youngest old 65 - 74 years old, more than one-fifth 23.3% were either 'middle-old 75 - 84 years old or 'oldest-old 85 years old, whereas, only the age of 14% of the sample was < 65 years. The mean age was 73.5 ± 11.8. Most of the participants were male 58.1%, and illiterate 44.2%, regarding the duration of the condition (46.5%) of participants complained of heart failure between (1-5) years, the severity of heart failure according to NYHA was 62.8%,20.9% and 16.3% for class 111, 1V and 11 respectively. Table 1.

The scores of SCHFI subscales revealed that the higher mean scores belong to self-care management 63.1±9.3 with a range of 37.5 - 75. The self-care confidence comes as the second rank with a mean ± SD of 59.6±9.9, while the score of self-care maintenance was lowest at 52.9±8.

The results indicated that the scores of self-care maintenance were gradually decreased with increasing age; it ranged from 56.5 ± 7.9 in younger patients, <65 years to 50.4. ± 4.8 among oldest-old, ≥ 85 years, despite this decreasing of the scores, the difference was not significant statistically. Also, the scores of self-care management were higher than maintenance, but it was similar in all age groups, 66.3 ± 11.9 in <65 years old and 60.9 ± 9.9, 60.3 ± 7.7, and 64.2 ± 7.9 in youngest-old, middle-old, and oldest-old respectively. While self-care confidence score was higher significantly in younger heart failure patients, <65 years old 67.4 ± 10.5 when compared to the elderly, it was 52.3± 11.4 in the ≥ 85 years old. The difference was highly significant statistically, $p < 0.01$ as shown in table 3.

Regarding the difference of self-care scores according to gender males showed significantly lower self-care management scores 60.8 ± 9.2 than females 66.3 ± 8.5, ($p < 0.05$). Despite the variation in the scores of self-care management in females 66.3 ± 8.5 and males 60.8 ± 9.2, the difference did not reach significant levels. Also, the score of self-care maintenance in males 52.6 ± 7.9 and females 53.2 ± 8.3 was similar, as presented in table 4.

The scores of all self-care subscales increased with the progress of participants' level of education, in illiterate the self-care maintenance was 50.3 ± 6.2, management 58.6 ± 9.0, and confidence 55.4 ± 10.3, while it increased in secondary school graduate (which was highest educational level) to 55.9 ± 8.6, 66.8 ± 7.8, and 63.9 ± 3.3, respectively. The differences were significant statistically, $p < 0.05$, table 5.

Table (6) shows a significant relationship between the scores of self-care maintenance and confidence and participants' body weight, ($p < 0.05$). Normal-weight participants owned higher self-care maintenance 55.6 ± 8.9 and confidence 63.8 ± 9.8 than obese one 50.4 ± 9.3 and 56.7 ± 6.8 respectively. Whereas, the score of self-care management was slightly higher in normal-weight 64.5 ± 8.4 than obese subjects 61.8 ± 11.4, while the difference was not significant statistically.

The result of the current study as presented in table 7 identified a significant relationship between the score of self-care management and duration of heart failure, patients who had the condition for more than five years owned greater scores 66.3 ± 9.1 than other lower duration categories. Furthermore, there was no significant difference in the score of self-care maintenance and confidence according to the duration of the disease.

The results as shown in the above Table revealed that the self-care management scores were similar in class IV 65.5±6.4 and class III 64.7±9.4 higher than class II 53.9±6.6, the differences were significant (F-test; 9.93 and $p < 0.01$). Otherwise, the scores of self-care confidence were low in classes III and IV 60±10.6 and 55.1±9.7 respectively than class II 64.3±2.1, the difference was significant statistically (F-test; 3.7 and $p < 0.05$). Whereas, the scores of self-care maintenance were similar in classes II, III, and IV; 56.6±8.6, 52.9±8.6, and 50.3±4.9 respectively, therefore self-care maintenance not correlated to the severity of heart failure.

Table 1. Distribution of participants' socio-demographic and clinical characteristics.

Socio-demographic/ clinical characteristics		Frequency	Percentage
Age Groups / Years	Not elderly < 65	12	(14)
	Youngest-old 65 – 74	34	(39.4)
	Middle-old 75 – 84	20	(23.3)
	Oldest-old ≥ 85	20	(23.3)
	Mean ± SD	73.5 ± 11.8	
Gender	Female	36	(41.9)
	Male	50	(58.1)
Educational Levels	Illiterate	38	(44.2)
	primary school	32	(37.2)
	secondary school	16	(18.6)
Body Mass Index (BMI)	Normal	32	(37.2)
	Overweight	35	(40.7)
	Obese	19	(22.1)
Duration of disease	< 1 Year	10	(11.6)
	1 – 5 Years	40	(46.5)
	> 5 Years	36	(41.9)
NYHA Classification	Class II	14	(16.3)
	Class III	54	(62.8)
	Class IV	18	(20.9)
Total		86	(100)

Table 2. Distribution of SCHFI subscales scores.

SCHFI* Subscale	Mean	SD**	Minimum	Maximum
Self-care Maintenance	52.9	8	37.5	75
Self-care Management	63.1	9.3	45.8	83.3
Self-care Confidence	59.6	9.9	37.5	87.5

***SCHFI: self-care heart failure index, **SD: standard deviation**

Table 3. Association of SCHFI subscale scores with age groups.

Age Group		Self-care Index Subscales		
		Maintenance	Management	Confidence
< 65 Years	Mean	56.5	66.3	67.4
	SD	7.9	11.9	10.5
65 – 74 Years Youngest-Old	Mean	52.5	60.9	61.8
	SD	8.4	9.9	7.4
75 – 84 Years Middle-Old	Mean	54.1	63.8	58.8
	SD	9.4	7.7	6.5
≥ 85 Years Oldest-Old	Mean	50.4	64.2	52.3
	SD	4.8	7.9	11.4
Total	Mean	52.9	63.1	59.6
	SD	8	9.3	9.9
Comparative Significant	F	1.69	1.23	8.51
	p	0.18	0.30	0.0001

Table 4. Association of SCHFI subscale scores with patients' gender.

Gender		Self-care Index Subscales		
		Maintenance	Management	Confidence
Female	Mean	53.2	66.3	57.5
	SD	8.3	8.7	12.5
Male	Mean	52.8	60.8	61.2
	SD	7.9	9.2	7.6
Total	Mean	52.9	63.1	59.6
	SD	8	9.3	9.9
Comparative Significant	t-test	- 0.25	- 2.84	1.71
	p	0.80	0.006	0.09

Table 5. Association of SCHFI subscale scores with participants' education.

Levels of Education		SCIFI Subscale		
		Maintenance	Management	Confidence
Illiterate	Mean	50.3	58.6	55.4
	SD	6.2	9	10.3
Primary	Mean	53.4	61.8	61.2
	SD	8.8	9.3	9.8
Secondary	Mean	55.9	66.8	63.9
	SD	8.6	7.8	3.3
Total	Mean	52.9	63.1	59.6
	SD	8	9.3	9.9
Comparative Significant	F	4.69	5.19	7.88
	p	0.012	0.008	0.001

Table 6. Association of SCHFI subscale scores with participants' BMI.

Body Mass Index		Self-care Index Items		
		Maintenance	Management	Confidence
Normal	Mean	55.6	64.5	63.8
	SD	8.9	11.4	9.8
Overweight	Mean	53.1	63.5	58.1
	SD	5.1	7.7	9.4
Obese	Mean	50.4	61.8	56.7
	SD	9.3	8.4	6.8
Total	Mean	52.9	63.1	59.6
	SD	8	9.3	9.9
Comparative Significant	F	3.79	0.51	5.12
	p	0.03	0.6	0.008

Table 7. Association of SCHFI subscale scores with the duration of HF.

Duration of Heart Failure		Self-care Index Items		
		Maintenance	Management	Confidence
< 1 Year	Mean	50.3	57.1	56.7
	SD	11	6.5	11
1 – 5 Years	Mean	53.1	61.7	61.5
	SD	9	9.1	6.5
> 5 Years	Mean	53.5	66.3	58.5
	SD	5.6	9.2	12.3
Total	Mean	52.9	63.1	59.6
	SD	8	9.3	9.9
Comparative Significant	F	0.67	5.15	1.41
	p	0.51	0.008	0.25

Table 8. Association of SCHFI subscale scores with the severity of HF.

Heart Failure Severity NYHA* Classes		SCIFI Subscale		
		Maintenance	Management	Confidence
Class II	Mean	56.6	53.9	64.3
	SD**	7.5	6.6	2.1
Class III	Mean	52.9	64.7	60
	SD	8.6	9.4	10.6
Class IV	Mean	50.3	65.5	55.1
	SD	4.9	6.4	9.7
Total	Mean	52.9	63.1	59.6
	SD	8	9.3	9.9
Comparative Significant	F-test	2.58	9.93	3.72
	p	0.082	0.0001	0.029

***NYHA: New York Heart Association, **SD: Standard Deviation**

DISCUSSION

This descriptive study examined the self-care activities of patients admitted to the medical wards at Ranya general hospital. Analysis of the characteristics variables of the patients recruited in this study showed that the majority of study participant was elderly, more than one-third classified as youngest old according to WHO classification for the elderly. Most of the participants were male, the level of education for most of them was low. Furthermore, more than two-thirds were overweight; the duration of heart failure for almost half was one to five years, the severity of heart failure for almost two-thirds was class III according to New York Heart Association (NYHA) classification.

The main findings of this study revealed that the patients who participated in the present study did not reach the cut point for adequate self-care practice. In this study, the scores obtained for the SCHFI subscales, were all below 70 points (table 2) which is the minimum limit score indicative of appropriate self-care.

The self-care management scale, which deals with patient's responses to the symptoms when they occur, had the highest scores than self-care confidence and maintenance respectively. Whereas, self-care maintenance scale refers to behaviors to maintain physiological stability; including items such as weighing, checking symptoms, preventing further complications, performing physical activity, consulting a health care professional, and footing medications which are continuity of the care, it will be difficult for the heart failure patients to follow it for a long period, because of age-related, physical and cognitive problems. Being chronically ill may decline self-care confidence, using medications, restriction of water and some kind of food for a long period without curing may lead to the disappointment of patients regarding this treatment.

Similar results of SCHFI subscale scores were found by Concecao et al., their results indicated inappropriate self-care; the scores of self-care maintenance, management: and confidence were about fifty percent [7.] Also, the finding supported by previous different studies [13-14] conducted in developing and developed countries.

Furthermore, our finding was in line with a recent regional study conducted in Iran and found the heart failure patients' adherence to self-care as low, less than one-quarter of heart failure patients had some adherence to self-care. The adherence to a low sodium diet, limiting excess fluid intake, doing a steady physical activity, and weight monitoring were inadequate [15]. Whereas, the finding was slightly higher than the Brazilian study which found self-care maintenance, management, confidence [16].

The current study finding indicated that self-care confidence significantly lower among the oldest-old, low educated, obese, and a more severe class of heart failure, whereas, patients' gender or duration of HF did not affect self-care confidence. Furthermore, females, better educated, longer duration of heart failure, and class IV experienced higher self-care management significantly, while self-care management did not affect by the patient's age or BMI. Also, self-care maintenance was poor in low-educated and obese patients, there was no relation between self-care maintenance and patients' age; gender; and duration or severity of heart failure.

Our explanation for the above finding the elderly may complain from much age-related deterioration in the health status which leads to loss of confidence in them-self, the poor psychological condition and feeling aloneness among widows or separate also decrease self-care confidence. The higher self-care management among females may result from that the female had better management skills and follow guidelines better than males. Living longer with heart failure leads to gain more knowledge and information on the disease and its management.

The relation of self-care that was statistically significant in the factor analyses with the severity of heart failure according to NYHA classes, self-care management increased with the progress of heart failure's class, patients with class IV and III had better self-care management than class II. Whereas self-care confidence was opposite to the above finding, it was decreased with the progressing of disease's class. Patients with worsening heart failure conditions may perceive a greater need to take care of themselves, and the confidence decline gradually with the worsening and progressing of their condition even taking great care of themselves. the result of the study was agreed with the study of Sewagegn et al, who reported that NYHA functional class was significantly associated with poor adherence to self-care treatment [17]. Also, that the result agreed with the study conducted in Italy, in which patients with functional class IV obtained worse self-care in the three subscales [18].

A systematic review found that age, health-related quality of life, gender, education, New York Heart Association class, depressive symptoms, and left ventricular ejection fraction was most often correlated with the self-care score in patients with heart failure [19]. A recent study supported our findings regarding gender-related self-care and found that self-care is inadequate in both genders with chronic heart failure and reported that the females have better self-care than males [20]. Also, in an Italian study, the men were found to have more than quadrupled the risk of poor self-care than women [21].

The results of the present study revealed that better-educated patients had higher self-care in terms of maintenance, management, and confidence. Higher educated had a better opportunity to gain information about their conditions from different sources, while the source of low educated patients limited to the health care professional which is limited in the region. As in our study, the greater the patient's level of education, the greater his/her ability to understand the disease, signs/symptoms, and the easier the decision making for health promotion, recovery, and protection. The literate patients were found to have better self-care compared to the illiterate in the three subscales in the Medeiros and Medeiros study [22]. The result supported by a survey conducted by the Rio Grande does Sul, in which patients with higher education levels presented higher self-care scores [23]. Furthermore, an Iranian study Asadi et al. found a significant correlation between marital status and self-care ability, in which it shows the higher scores in unmarried people ($P < 0.05$) [1].

It was expected that a long time of experience with the disease will be associated with better self-care management performance because being with the chronic condition for a longer duration leads to a better opportunity for getting knowledge and education about managing and dealing with the disease. The study of Riegel et al. agreed with this finding and reported that the theoretical model of the SCHFI is based on naturalistic decision-making, where decision-making depends on the experience and knowledge that has been developed through experience [11] For HF patients, the key to naturalistic decision-making is the recognition of the symptoms, which would explain the expectation of high scores in self-care management for patients with a long time of experience with the disease. Self-care requires learning, understanding, interpreting, and responding skills, and decision-making is an important process for health management [24].

Conclusions

In this study with a sample of Kurdish patients in Ranya General Hospital with heart failure, self-care in terms of self-care (maintenance, management, and confidence) was inadequate but similar to those with patients of other countries. Self-care maintenance was higher in better educated and normal weight, while the performance of self-care management was better in females, more educated, longer duration, and more severe heart failure. Also, self-care confidence was higher in younger than 65 years old, better educated, and less severe HF class.

The results of this research will be useful for the development of nursing interventions that can promote/improve self-care in this population, especially using the use of the self-care model in HF to develop interventions. Educational actions, using nursing consultations, can and should be used to empower patients to symptoms recognition and management.

REFERENCE

1. Asadi P, AhmadiSh, Abdi A, Shareef O, Mohamadyari T, Miri J; Relationship between self-care behaviors and quality of life in patients with heart failure, Heliyon,2019, 5(9), e02493. doi.org/10.1016/j.heliyon.2019.e02493.

2. Benjamin EJ, Muntner P, Bittencourt MS. Heart disease and stroke statistics-2019 update: A report from the American Heart Association. Circulation, 2019, 139(10):e56–e528

3. Stout KK, Daniels CJ, Aboulhosn JA, Bozkurt B, Broberg CS, Colman JM, Crumb SR, Dearani JA, Fuller S, Gurvitz M, Khairy P, Landzberg MJ, Saidi A, Valente AM, Van Hare GF, 2018 AHA/ACC Guideline for the Management of Adults with Congenital Heart Disease, J Am Coll Cardiol (2018), doi: 10.1016/j.jacc.2018.08.1029.

4. Savarese G and Lund LH. Global Public Health Burden of Heart Failure. Card Fail Rev. 2017;3(1):7–11. DOI: 10.15420/cfr.2016:25:2.

5. Fortin, M., Chouinard, M., Diallo, B.B. Integration of chronic disease prevention and management services into primary care (PR1MaC): findings from an embedded qualitative study. BMC Fam Pract, 2019, 20(7). doi.org/10.1186/s12875-018-0898-z.

6. Nordfonn OK, Morken IM, Bru LE, Husebø AML, Patients' experience with heart failure treatment and self-care-A qualitative study exploring the burden of treatment. J Clin Nurs. 2019,28(9-10):1782-1793. doi: 10.1111/jocn.14799. Epub 2019 Feb 10.

7. Conceicao AP, Santos MA, Santos B, Cruz DALM. Self-care in Heart Failure Patients, Rev. Latino-Am. Enfermagem, 2015, 23(4):578-86 DOI: 10.1590/0104-1169.0288.2591

8. Savarese G and Lund L (2017) Global Public Health Burden of Heart Failure. Card Fail Rev. 2017;3(1):7–11. DOI: 10.15420/cfr.2016:25:2.

9. Vellone E, Fida R, Ghezzi V, D'agostino F, Biagioli V, Paturzo M, Str€omberg A, Alvaro R, and Jaarsma T, 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) (2017) 180–189.

10. Medeiros J and Medeiros C; Assessment of Self-Care in Heart Failure Patients, Cogitare Enferm. 2017, 22(3): e51082,. doi.org/10.5380/ce.v22i3.51082.

11. Riegel B, Lee CS, Dickson VV, Carlson B. An update on the self-care of heart failure index. J Cardiovasc Nurs 2009;24:485e97.

12. Liou H, Chen H, Hsu S, Lee S, Chang C and Wu M; The effects of a self-care program on patients with heart failure, Journal of the Chinese Medical Association, 2015, 78 (2015) 648e656 Available online at www.sciencedirect.com

13. Seto E, Leonard K, Cafazzo J, Masino C, Barnsley J, and Ross H (2011) Self-care and Quality of Life of Heart Failure Patients at a Multidisciplinary Heart Function Clinic, J CARDIOVASC NURS, 2011, 26(5):377-85. DOI:10.1097/JCN.0b013e31820612b8

14. Dennison CR, McEntee ML, Samuel L, Johnson BJ, Rotman S, Kielty A, et al. Adequate health literacy is associated with higher heart failure knowledge and self-care confidence in hospitalized patients. J Cardiovasc Nurs. 2011;26(5):359–67.

15. Seid, M. A., Abdela, O. A., & Zeleke, E. G. Adherence to self-care recommendations and associated factors among adult heart failure patients. From the patients' point of view. PloS one, 2019, 14(2), e0211768. doi:10.1371/journal.pone.0211768

16. Medeiros J and Medeiros C; Assessment of Self-Care in Heart Failure Patients Cogitare Enferm. 2017, (22)3: e51082. doi.org/10.5380/ce.v22i3.51082

17. Sewagegn N, Fekadu S, Chanie T. Adherence to Self-Care Behaviours and Knowledge on Treatment among Heart Failure Patients in Ethiopia: The Case of a Tertiary Teaching Hospital. J Pharma Care Health Sys, 2015, S4-001 10: 2376–0419.

18. Cocchieri A, Riegel B, D'Agostino F, Rocco G, Fida R, Alvaro R, et al. Describing self-care in Italian adults with heart failure and identifying determinants of poor self-care. Eur J Cardiovasc Nurs. 2015;14(2) . doi.org/10.1177/1474515113518443.

19. Sedlar N, Lainscak M, Mårtensson J, Strömberg A, Jaarsma T and Farkas J: Factors related to self-care behaviours in heart failure: A systematic review of European Heart Failure Self-Care Behaviour Scale studies. EUR J CARDIOVASC NUR 2017, 16(4) 272–282.

20. Mei J, Tianb Y, Chaia X, Fana X; Gender differences in self-care maintenance and its associations among patients with chronic heart failure. International Journal of Nursing Sciences, 2019, 6(1), 58-64.https://doi.org/10.1016/j.ijnss.2018.11.008

21. Dellafiore F, Arrigoni C, Pittella F, Conte G, Magon A, Caruso R: Paradox of self-care gender differences among Italian patients with chronic heart failure: findings from a real-world cross-sectional study. BMJ Open 2018;8:e021966. doi:10.1136/bmjopen-2018-021966

22. Medeiros J and Medeiros C; Assessment of Self-Care in Heart Failure Patients Cogitare Enferm. (22)3: e51082, 2017. doi.org/10.5380/ce.v22i3.51082

23. Linn AC, Azzolin K, de Souza EN. Association between self-care and hospital readmissions of patients with heart failure. Rev. bras. enferm. 2016;69(3) [acesso em 17 jan 2017]. Disponível: http://dx.doi.org/10.1590/0034-7167.2016690312i.

24. Vellone E, Riegel B, Cocchieri A, Barbaranelli C, D'Agostino F, Glaser D, et al.Validity and reliability of the caregiver contribution to self-care of heart failure index. J Cardiovasc Nurs. 2013;28(3):245-55