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Original Article

Assessment of Self-care Practices among Heart Failure Patients in District Head Quarter Hospital Timergara Dir Lower

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ABSTRACT

In both hospitals and the community, nurses play a critical part in the provision of healthcare. The improvement of heart failure patients' self-care behaviors is greatly helped by nurses. **Objective:** To determine the level of self-care practices among heart failure patients at the District Head Quarter Hospital of Timergara Dir Lower. **Methods:** A cross sectional study design was used to determine the level of self-care practices among heart failure patients. Self-Care Heart Failure Index (SCHFI) version 7.2 was used for data collection. After receiving written informed consent, 150 hospitalized heart failure patients were recruited through a consecutive sampling technique from the Department of Internal Medicine and Cardiology at DHQ Hospital Timergara Dir Lower. Data were analyzed with SPSS version 26.0. **Results:** It was found out that 44% of the study participants were females, 56% were males, 80% were married, 6% were illiterate and 86% had caregivers at home. Moreover, the mean score of the self-care subscales were inadequate (i.e., self-care maintenance: 68.5, symptoms perception: 67.26, self-care management: 68.56 and self-care confidence: 69.15, cutoff value: 70). The level of self-care was significantly associated with gender. In-addition, the marital status was significantly associated with the level of self-care in the sub-domains of self-care maintenance (p=0.011) and self-care management (p=0.001). **Conclusions:** Results of the study specified that majority of the heart failure patients had lack of adequate self-care practices. Therefore, efforts should be done to help them in performing an adequate self-care activity to remain healthy and reduce their hospital re-admissions.

INTRODUCTION

The role of nurses in the delivery of healthcare, both in hospitals and in the community, is crucial. Nurses perform a very effective part in the self-care behavior enhancement of patients with heart failure (HF) [1]. Clinical signs of heart failure include shortness of breath (SOB), edema, chest pain, difficulty in sleeping, lethargy, weakness, lack of energy, anxiousness, and depress mood. In addition to receiving medicine, patients should be treated to perform healthy practices. If the patient is not educated regarding self-care behavior, their symptoms will be more worsening [1]. The Heart failure (HF) prevalence is rising rapidly, worldwide more than 64 million people are suffering from this disease and is one of the major causes of mortality [2]. Over eight million individuals will be affected, with a predicted 46% increase in prevalence up to 2030, in every nine deaths, one will be caused by HF [3]. More over 6 million Americans have this disease, and in 2018, there were almost 900,000 newly diagnosed cases of heart failure (American Heart Association, 2018). The major cause of hospitalization is advance age over 65 years. Growing age is also said to be a factor which raise the prevalence of disease, according to documented cases of more than 1,000,000 hospital admissions per year [4]. Similarly, the number of patients with HF in Europe has increased to almost 6.5 million [5]. In Pakistan, uncontrolled obesity, excessive consumption of fast food, a lack of physical

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activity, and unrestricted cigarette use are the key contributors to the rising incidence rate of heart disease. In addition, the cost of treating heart patients is more expensive than the cost of treating other diseases [6]. Especially, in Pakistan, the heart disease patients occupied 35-40% from the total burden of the disease in the country [6]. Heart failure accounts for an average of 2.2% of hospital admissions worldwide, and considered one of the major cause of the re-admission. It is a highly frequent reason for re-admission [4-7]. In the United State (US) and Japan the re-admission rates after 6 months of discharge are estimated to be about 27%, while 25% in Europe. Though, it is expected that this ratio will be increased in the future and 25% of heart failure patients will be re-admitted after the discharge of one month, and around 50% will be re-hospitalized in the six months after discharge [8]. Management of the Heart failure patients involved many factors. Therefore, managing its medical condition is a challenging endeavor. The leading factors are both self-care management and self-care ignorance practices, such as medication ignorance, consistently fail to reduce level of drinking water and salt consumption, uneducated about specific symptoms and treatment accordingly, and failing to follow up properly. The patients ignoring and unawareness not only keep the patient on potential risk but, a main cause of patient re-hospitalization [1]. A number of studies have highlighted that lack of self-care capacity after the hospital discharge as one of the major components responsible for re-admission [9]. Patients suffering from Heart failure is a very much neglected area in Pakistan. There is a dearth of cross-sectional studies on assessing the level of self-care practices among patients suffering from heart failure, which leads to a rush of re-admission, morbidity, and mortality of the Heart Failure patients [10]. Therefore, it is important to assess the level of self-care practices among Heart Failure patients. The current research may help the community by knowing the self-care deficit in heart failure patients, which may improve the health status of the patients, and may also decrease the hospital readmissions and may eventually may reduce the overall health care costs of the country. The purpose of this research was to assess the level of self-care practices among patients suffering from heart failure in district head quarter hospital Lower Dir. Self-care Practice describes all the tasks that the patient carries out on his or her behalf to maintain a satisfactory degree of health and well-being. The "Self-Care Heart Failure Index" was used to measure it (SCHFI v.7.2). An appropriate self-care practice was one with a score of at least 70, while an inadequate self-care practice was one with a score of less than 70.

METHODS

The research was undertaken through cross sectional study design to assess the level of self-care practices among heart failure patients. The study was conducted in District Head Quarter (DHQ) hospital Timergara Lower Dir and the study population was patients diagnosed with HF and admitted to the above-mentioned facility. Cardiology and medical wards of the hospital were selected for the study. Last three months admitted HF patients were considered as the study populations. To recruit participants, consecutive sampling technique was used in the current study. The estimated sample size for the study was n=150, calculated through Raosoft Sample Size Calculator with specifications as study population: 245, confidence level: 95%, margin of error: 0.05 and response distribution: 50%. All patients diagnosed with HF and meeting the study criteria were selected for the study. Patients were evaluated by the researcher to decide their suitability for inclusion. Patients of both genders, aged 18 or above, diagnosed with HF and admitted to the DHQ Hospital Timergara District Lower Dir. Moreover, those patients who can easily understand the Urdu language were also included. Patients were excluded, who were not willing to participate in the research voluntarily, mentally ill, having visual or auditory problems and unconscious. As well as Heart Failure patient who were the member of the health care team. Self-care Heart Failure Index version 7.2 was used for data collection after informed written consent was taken from study participants. The questionnaire consists of two parts. The first one is demographic characteristics which includes 5 items, and the second portion consists of 39 items alienated across 4 scales: Part A: Self-care maintenance, which includes 10 items. Part B: self-care monitoring which includes 11 items, Part C: Self-care management, which consists of 8 items, and part D: self-care confidence, which consists of 10 items. Each domain score was further standardized accordingly. The questionnaire was translated to national (Urdu) language according to the translation protocols. The content validity index of the Urdu version was 0.89. Data collected from pilot test were used to assess the reliability of the Urdu version of SCHFI 7.2. The calculated Cronbach's alpha was 0.93, indicating excellent reliability [5, 11]. Before the commencement of data collection, an approval was obtained from the Institutional Ethical Review Board (ERB) of the Khyber Medical University, Peshawar Khyber Pakhtunkhwa. Then an official permission was obtained from the medical superintendent of DHQ Hospital Lower Dir. Finally, the patients were approached and a written informed consent was taken from them before further proceeding with the data collection. All patients who participated in the study were volunteers, and study

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participants were given the right to opt out of the study at any time. Data were analyzed by Statistical Package for Social Sciences (SPSS) version 26.0. Data were interpreted by descriptive and inferential statistics. Data were summarized by descriptive statistics by calculating means and standard deviations for numerical variables, while frequency and percentages were calculated for the categorical variables. Inferential statistics were used to find the association between demographic variables and mean score of self-care practice subscales. In this regard, independent sample t-test and One Way ANOVA was used. p-value of less than 0.05 was set as the level of significance.

RESULTS

Table 1 shows that, there were more male study participants 84 (56%) and 66 (44%) were female. The result shows that there was a range in the marital status of the study subjects from unmarried to widow. A large proportion of study participants were married 120 (80%), followed by widow 18 (12%), the unmarried subjects 6 (4.0%), and 6 (4%) were divorced. Majority study participants were intermediate and secondary level. Illiterate ratio was 9 (6%), primary education 18 (12.0%), secondary school certificates subjects were 51 (34%), higher secondary education 54 (36%), and 18 (12%) were graduates. A large proportion of the research subjects 129 (86%) responded that they had caregivers at home, while 21 (14%) replied that they don't have any caregiver at home.

Variables		Frequency (%)
Age	Mean + SD	55.98 + 15.280
Gender	Male	84 (56%)
	Female	66 (44%)
Marital Status	Single	6 (4.0%)
	Married	120 (80.0%)
	Divorced	6 (4.0%)
	Widow	18 (12.0%)
Education level	Illiterate	9 (6.0%)
	Primary	18 (12.0%)
	Secondary	51 (34.0%)
	Intermediate	54 (36.0%)
	Graduate	18 (12.0%)
	Post Graduate	00 (0%)
Care-givers at home	Yes	129 (84.0%)
	No	21 (14.0%)

Table 1: Demographic characteristics of the study participants

The Table 2 shows that in all domains of self-care behavior, there are was low/inadequate self-care practice score.

Variables(Subscales of Self-care Practice)	Categories/Levels	N (%)
Self-care Maintenance	Inadequate self-care practices	120 (80%)
	Adequate self-care practices	30 (20%)
Symptoms Perception	Inadequate self-care practices	108 (72%)
	Adequate self-care practices	42 (28%)
Self-care Management	Inadequate self-care practices	93 (62%)
	Adequate self-care practices	57 (38%)
Self-care Confidence	Inadequate self-care practices	102 (68%)
	Adequate self-care practices	48 (32%)

Table 2: The frequency (N) and percentage (%) distribution of different domains of self-care behavior in the (HF) patients

Table 3 shows the mean score of the self-care practice in all four domains. It indicated that in all categories the mean score revealed an inadequate self-care practice.

Variables	Mean ± SD
Self-care Maintenance	68.05±6.71
Symptoms Perception	67.26±5.65
Self-care Management	68.56±8.61
Self-care Confidence	69.15±5.79

Table 3: Mean Score of the Subscales/domains of Self-care Practice

Table 4 shows comparison of mean scores of the four self-care behavior/practice domains with the demographic variables involved in the study. It indicated that there was a significant association between gender, marital status and the presence/absence of caregivers at home. In this regard, it was found the mean self-care practice score of females was significantly lower than males in all the four subdomains of the self-care practice. Additionally, the marital status shows a significant association with self-care maintenance and self-care management subdomains of the self-care practice. Moreover, the presence of caregivers at home showed a significantly higher score than those patients with no caregivers with respect to all four subscales of the self-care practice. Conversely, the other variables, i.e., age of the participants and educational status showed no significant association with the self-care practice mean score.

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Demographic variables		Mean ± SD Self-care Maintenance Mean Score	Sig.	Mean ± SD Symptom Perception	Sig.	Mean ± SD Self-care Management	Sig.	Mean ± SD Self-care Confidence	Sig.
Age (Years)	18 to 32	70.33 ± 7.64	F= 1.35	64.49 ± 3.32	F=0.51	69.79 ± 15.41	F= 0.16	74.16 ± 1.44	F= 0.959
	33 to 47	66.25 ± 5.30	p= 0.27	67.61 ± 5.74	p=0.68	66.87 ± 7.54	p=0.922	67.75 ± 5.32	p= 0.420
	48 to 62	69.88 ± 6.63		68.11 ± 6.08		68.89 ± 8.86		69.04 ± 7.13	
	63and above	66.25 ± 7.18		66.44 ± 5.49		68.94 ± 8.34		69.37 ± 4.13	
Gender	Male	70.44 ± 6.20	t= 3.09	69.33 ± 5.6	t= 3.19	71.98 ± 8.13	t= 3.517	68.30 ± 5.04	t= -1.247
	Female	65.00 ± 6.17	p= 0.003	64.62 ± 4.62	p=0.003	64.2 ± 7.26	p=0.001	70.34 ± 6.51	p= 0.219
Education Level	Illiterate	61.66 ± 8.88	F= 1.49	66.67 ± 8.79	F= 0.84	63.54 ± 3.6	F=0.509	74.16 ± 5.77	F= 0.811
	Primary	65.41 ± 6.69	p= 0.220	65.58 ± 4.64	p= 0.508	69.79 ± 8.53	p=0.729	70 ± 3.53	p= 0.525
	Secondary	70.14 ± 6.40		69.05 ± 4.77		67.27 ± 8.98		68.68 ± 4.51	
	Higher	67.50 ± 6.85		65.94 ± 5.72		69.44 ± 8.67		68.19 ± 6.9	
	Secondary	69.58 ± 4.85		68.11 ± 7.36		70.83 ± 10.2		70.41 ± 7.14	
Marital Status	Gradation	67.50 ± 7.07	F= 4.162	66.30 ± 1.53	F=2.584	73.43 ± 19.89	F=3.243	73.75 ± 1.76	F=0.304
	Single	67.98 ± 6.73	p= 0.011	67.76 ± 5.74	p=0.065	68.97 ± 8.0	p=0.030	69.02 ± 6.19	p=0.822
	Married	80.00 ± 0.00		71.74 ± 00		62.5 ± 00		72.00 ±	
	Divorced	66.66 ± 6.05		63.40 ± 4.84		65.1 ± 10.15		68.33 ± 2.58	
	Widow	68.66 ± 7.01		68.05 ± 5.5		69.62 ± 8.69			
Care-givers at Home	Yes	64.28 ± 1.88	t= 3.403	62.42 ± 4.11	t= 2.581	62.05 ± 4.57	t= 2.24	69.77 ± 5.94	t= 2.919
	No		p= 0.002		p=0.013		p=0.03	65.71 ± 2.78	p= 0.010

Table 4: Comparison between Demographic Variables and Self-care Practice Score

DISCUSSION

The objective of this study was to assess the level of self-care practices among heart failure patients. For this purpose, SCHFI version 7.2 scale was used. Accordingly, the study showed that the mean score of all the four sub-domains of the self-care were lower than the cutoff point of 70, which indicated an inadequate self-care practice. The findings are congruent with a study conducted in United State of America (USA) in 2019, which revealed that score of all sub-scales of self-care were inadequate [12]. Similarly, another study conducted in Jordan also showed that the mean self-care practice score was lower than the cut-off value [13]. Moreover, other studies also indicated a low self-care score in all domains of self-care practice [14-16]. The average age of the participants was 55.98 ± 15.280 years, which indicates that it was the sample of younger and was similar to a study conducted by Davis *et al.*, but different from the other study population conducted on heart failure patients, which indicated older age patients [17, 18]. There were no statistically significant associations between age categories and self-care behavior by applying analysis of variance (one-way ANOVA), results for the four sub-domains of self-care behavior. It was in line with another study conducted in Colombia in 2012, the study findings communicated that there were no age differences in the self-care score [19]. In contrast, a study conducted in Isfahan, Iran in 2019 showed that age effects on the self-care behavior such as age-related changes in vision, hearing loss and as well as cognitive impairment led to disability in self-care. Old age patients are mostly dependent on others, because they are facing some difficulties in managing their care [20]. The reason for this study findings is different due to younger participant's involvement in the study with a mean age of 55.98, most of the study participants was younger and was able to perform their self-care activities by themselves. The study participants were mostly able to understand and perform activities independently. In the current study there was a significant difference in gender regarding self-care behavior especially in the sub-domains of self- care behavior. The male participants of the study were more self-care oriented as compared to female subjects. The study was in line with another study conducted in Australia (Queensland) in 2016, the study revealed that the male study participants were more self- care oriented as compared to female study participants. This significant difference between genders in self-care in our sample is due to the effect of culture, as it was reported that males are often more socially dominant and get more care assistance in Pakistani society; therefore, they felt more confidence in self-care [21]. In contrast a study conducted in Ethiopia in 2014, the finding of the study revealed that gender was not an important factor of self-care behavior predictor [22]. Similarly, a study conducted in Pakistan (Karachi) in 2017, which revealed that gender did not influence the overall Self-care behavior [23]. Align with previous studies conducted in Colombia in 2012, the study findings reported that, there were no differences in both groups either in the improved self-care behavior scale score between women and me [19]. Interestingly, a study conducted in Italy 2015 revealed that male participants of the study were less self-care oriented compared to female participants in the sub-

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domain of self-care behavior, self-care maintenance and self-care management. Male participants represented very poor self-care behavior regarding heart failure management [24]. In the current study the relation between marital status and the self-care maintenance and self-care management was significant, which is congruent with the study conducted in USA in 2015, finding of the study revealed that those people who were married performed self-care more effectively as compared to those, who were unmarried and divorced. The spouse provides health care assistance in Heart Failure management [25]. The current study is in line with a study, conducted in Australia (Queensland) in 2016, the study revealed that married people having a spouse were found to perform self-care management behavior better than those who are divorced or single and living alone. The spouses provided important psychological and physical support in assisting better health care in Heart Failure patients [21]. Furthermore, finding of the current study is consistent with the study conducted in Northwest Ethiopia in 2021, findings of the study was that being divorced or separated was strongly associated with a slight but important reduction in the self-care behavior score [26]. Moreover, a study conducted in Germany in 2013, aligns with the current study that has found that unmarried patients are more likely to be less interested in self-care as compared to married patients. Furthermore, unmarried patients had less good social support needed for physical activities and good self-care behavior [27]. In the current study care-givers were significantly associated with self-care behavior. This strengthens the findings of earlier studies which also reported that caregiver at home facilitates heart failure patients and their self-care behavior. The current Study findings was aligned with a study conducted in Chicago (USA) in 2016, the findings of the study revealed the importance of caregivers and insist in the presence of caregivers, to support the heart failure patient in assisting in their self-care behavior. Furthermore, the researcher elaborated that taking medication, and performing physical activities without a caregiver as a big challenge for the heart failure patients without a caregiver [28]. The current study is consistent with a study conducted in Queensland in 2016, according to the finding of study, those patients having care-giver at home, their performance in self-care behavior was very good at the baseline [21]. Furthermore, in connection with previous research finding revealed the same result that care-giver at home offered physical and psychological support to patients suffering from heart failure problem. A systematic review revealed that caregivers facilitated the HF patients in self-care activities including salt (sodium restrictions), symptoms recognition and medication management by support and daily reminders [25]. This showed that role of patients' caregivers in self-care management approaches would benefit heart failure self-care. Similarly, the current study supported the results of prior study conducted in Pakistan in 2017. The study findings were; care-givers at home and family members benefit the heart failure patient in managing their self-care, which represent the Pakistani culture in which self-care is not only limited to the self; it is in fact a family culture in which every individual of the family supports and cares for the patient [23]. The study further revealed that 95.6% of patients were living in joint families [23]. Moreover, a study conducted in the USA in 2015, the study findings revealed that caregiver support enhances the self-care behavior of heart failure patients by providing assistance in disease management. If the relationship between the patient and caregiver is consistent and healthy, then the disease management occurs without difficulty, whereas, if the relationship is incongruent then it develops distress on heart failure patient, which worsening the health status of the patient [29]. The current study differs from a research study conducted in Italy in 2015, which revealed that caregivers at home were not statistically significant for the management of heart failure patients. The aforementioned study further explained the finding in detail, that patient reported of having the caregiver at home were more practically compromised with a $p< 0.001$, similarly with higher comorbidity of p-value of less than 0.001, and they were cognitively more impaired with a $p < 0.001$ [24]. This was a cross-sectional study design. Therefore, interventional studies can be helpful for heart failure patients to evaluate the effectiveness of interventions to improve the self-care practices of the heart failure patients.

CONCLUSIONS

It is concluded that majority of the heart failure patients are unable to perform an adequate self-care practice. The significant socio-demographic factors associated with the level of self-care practices are gender, marital status and presence of caregivers at home. Therefore, there is a need of interventions to enable the heart failure patients to perform an adequate level of self-care practices, which will keep them healthy and will reduce their hospital readmissions.

Conflicts of Interest

The authors declare no conflict of interest.

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REFERENCES

[1] Norman J, Fu M, Ekman I, Björck L, Falk K. Effects of a mindfulness-based intervention on symptoms and signs in chronic heart failure: A feasibility study. European Journal of Cardiovascular Nursing. 2018 Jan; 17(1): 54-65. doi: 10.1177/1474515117715843.

[2] Nomali M, Alipasandi K, Mohammadrezaei R. Knowledge regarding Heart Failure: A Reflection on Current Disease Knowledge State among Iranian Patients with Heart Failure. The Journal of Medical Research. 2019 Jul; 5(4): 155-8. doi: 10.31254/jmr.2019.5405.

[3] Benjamin EJ, Blaha MJ, Chiuve SE, Cushman M, Das SR, Deo R, *et al*. Heart disease and stroke statistics—2017 update: a report from the American Heart Association. Circulation. 2017 Mar; 135(10): e146-603. doi: 10.1161/CIR.0000000000000491.

[4] Albert NM, Cohen B, Liu X, Best CH, Aspinwall L, Pratt L. Hospital nurses' comfort in and frequency of delivering heart failure self-care education. European Journal of Cardiovascular Nursing. 2015 Oct; 14(5): 431-40. doi: 10.1177/1474515114540756.

[5] Jeyanantham K, Kotecha D, Thanki D, Dekker R, Lane DA. Effects of cognitive behavioural therapy for depression in heart failure patients: a systematic review and meta-analysis. Heart Failure Reviews. 2017 Nov; 22(6): 731-41. doi: 10.1007/s10741-017-9640-5.

[6] Iqbal Z, Parveen M, Azhar M, Parveen M, Afzal M, Awan MF, *et al*. Effect of nursing led discharge instructions on improvement of post discharge care management in heart failure patients at tertiary care hospital of Karachi, Pakistan. Journal of Pakistan Medical Association. 2020 Mar; 70(8): 1324-8. doi: 10.5455/JPMA.10911.

[7] Shimokawa H, Miura M, Nochioka K, Sakata Y. Heart failure as a general pandemic in Asia. European Journal of Heart Failure. 2015 Sep; 17(9): 884-92. doi: 10.1002/ejhf.319.

[8] Giuliano KK, Danesh V, Funk M. The relationship between nurse staffing and 30-day readmission for adults with heart failure. The Journal of Nursing Administration. 2016 Jan; 46(1): 25. doi: 10.1097/NNA.0000000000000289.

[9] Fadeyi M and Jampolis S. Application of a Multi-Disciplinary Approach to Reduce Heart Failure Readmissions in the Post-Acute (Home Care) Setting. Journal of Cardiac Failure. 2016 Aug; 22(8): S91. doi: 10.1016/j.cardfail.2016.06.288.

[10] Riegel B, Barbaranelli C, Carlson B, Sethares KA, Daus M, Moser DK, *et al*. Psychometric testing of the revised self-care of heart failure index. The Journal of Cardiovascular Nursing. 2019 Mar; 34(2): 183. doi: 10.1097/JCN.0000000000000543.

[11] 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. European Journal of Cardiovascular Nursing. 2015 Apr; 14(2): 126-36. doi: 10.1177/1474515113518443.

[12] Awoke MS, Baptiste DL, Davidson P, Roberts A, Dennison-Himmelfarb C. A quasi-experimental study examining a nurse-led education program to improve knowledge, self-care, and reduce readmission for individuals with heart failure. Contemporary Nurse. 2019 Jan; 55(1): 15-26. doi: 10.1080/10376178.2019.1568198.

[13] Tawalbeh LI. The effect of cardiac education on knowledge and self-care behaviors among patients with heart failure. Dimensions of Critical Care Nursing. 2018 Mar; 37(2): 78-86. doi: 10.1097/DCC.0000000000000285.

[14] González B, Lupón J, Domingo MD, Cano L, Cabanes R, De Antonio M, *et al*. Educational level and self-care behaviour in patients with heart failure before and after nurse educational intervention. European Journal of Cardiovascular Nursing. 2014 Oct; 13(5): 459-65. doi: 10.1177/1474515113510810.

[15] Boyde M, Song S, Peters R, Turner C, Thompson DR, Stewart S. Pilot testing of a self-care education intervention for patients with heart failure. European Journal of Cardiovascular Nursing. 2013 Feb; 12(1): 39-46. doi: 10.1177/1474515111430881.

[16] Gheiasi SF, Roohani M, Hanifi N, Kamali K. The impact of a training program based on learning needs on self-care behaviors among patients with heart failure. Evidence Based Care. 2017 Apr; 7(1): 15-24. doi: 10.22038/EBCJ.2017.21040.1487.

[17] Davis KK, Mintzer M, Himmelfarb CR, Hayat MJ, Rotman S, Allen J. Targeted intervention improves knowledge but not self-care or readmissions in heart failure patients with mild cognitive impairment. European Journal of Heart Failure. 2012 Sep; 14(9): 1041-9. doi: 10.1093/eurjhf/hfs096.

[18] White M, Garbez R, Carroll M, Brinker E, Howie-Esquivel J. Is "teach-back" associated with knowledge retention and hospital readmission in hospitalized heart failure patients? Journal of Cardiovascular Nursing. 2013 Mar; 28(2): 137-46. doi: 10.1097/JCN.0b013e31824987bd.

[19] Rodríguez-Gázquez MD, Arredondo-Holguín E, Herrera-Cortés R. Effectiveness of an educational program in nursing in the self-care of patients with heart failure: randomized controlled trial. Revista

DOI: https://doi.org/10.54393/pjhs.v4i01.476

Latino-Americana De Enfermagem. 2012 Apr; 20: 296-306. doi: 10.1590/S0104-11692012000200012.

[20] Rezamand F, Shahnazi H, Hassanzadeh A. Effectiveness of continuous-care model on self-care in patients with heart failure: application of line follow-up. Scandinavian Journal of Caring Sciences. 2019 Dec; 33(4): 940-8. doi: 10.1111/scs.12692.

[21] Dinh TT. A Self-management program for people with heart failure in Hanoi, Vietnam: a cluster randomised controlled trial (Doctoral dissertation, Queensland University of Technology). 2016. Available at: https://eprints.qut.edu.au/101527/1/Thi%20T_huy%20Ha_Dinh_Thesis.pdf.

[22] Beker J, Belachew T, Mekonin A, Hailu E. Predictors of adherence to self-care behaviour among patients with chronic heart failure attending Jimma University Specialized Hospital Chronic Follow up Clinic, South West Ethiopia. Journal of Cardiovascular Diseases & Diagnosis. 2014 Oct; 2(6): 1000180. doi: 10.4172/2329-9517.1000180.

[23] Gowani A, Gul R, Dhakam S. Self-care and its predictors among patients with heart failure in Karachi, Pakistan. British Journal of Cardiac Nursing. 2017 Jul; 12(7): 333-8. doi: 10.12968/bjca.2017.12.7.333.

[24] 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. European Journal of Cardiovascular Nursing. 2015 Apr; 14(2): 126-36. doi: 10.1177/1474515113518443.

[25] Buck HG, Harkness K, Wion R, Carroll SL, Cosman T, Kaasalainen S, *et al.* Caregivers' contributions to heart failure self-care: a systematic review. European Journal of Cardiovascular Nursing. 2015 Feb; 14(1): 79-89. doi: 10.1177/1474515113518434.

[26] Dessie G, Burrowes S, Mulugeta H, Haile D, Negess A, Jara D, *et al*. Effect of a self-care educational intervention to improve self-care adherence among patients with chronic heart failure: a clustered randomized controlled trial in Northwest Ethiopia. BMC Cardiovascular Disorders. 2021 Dec; 21(1): 1-1. doi: 10.1186/s12872-021-02170-8.

[27] Kocalevent RD, Hinz A, Brähler E. Standardization of the depression screener patient health questionnaire (PHQ-9) in the general population. General Hospital Psychiatry. 2013 Sep; 35(5): 551-5. doi: 10.1016/j.genhosppsych.2013.04.006.

[28] Ahmad FS, Barg FK, Bowles KH, Alexander M, Goldberg LR, French B, *et al*. Comparing perspectives of patients, caregivers, and clinicians on heart failure management. Journal of Cardiac Failure. 2016 Mar; 22(3): 210-7. doi: 10.1016/j.cardfail.2015.10.011.

[29] Kitko LA, Hupcey JE, Pinto C, Palese M. Patient and caregiver incongruence in advanced heart failure. Clinical Nursing Research. 2015 Aug; 24(4): 388-400. doi: 10.1177/1054773814523777.