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Awareness on self-management of heart failure patients at tertiary care center of Andhra Pradesh

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Abstract
Objectives
1. To assess the knowledge on self-care management of patients with heart failure.
2. To find out the association between knowledge on self-care management with selected Demographic variables.

Material and Methods: Cross sectional descriptive research design with a non-probability convenient sampling technique was used in which 155 patients who were diagnosed as a heart failure at cardiology OPD, SVIMS were selected as samples. Data was collecting by using self-care of heart failure Index scale which includes three sub scales 1.self-care maintenance 2.self-care management and 3.self-care confidence. Data analysis by Mean, Standard deviation, Chi- square test and Correlation.

Results: The study findings reveals that in self-care maintenance 27 (17.4%) were having inadequate knowledge, 70 (45.2%) having moderate knowledge, 58 (37.4%) having adequate knowledge, in self-care management, each 52 (33.5%) having no symptoms and were having inadequate knowledge, 30 (19.4%) were having moderate knowledge, 21 (13.5%) were having Adequate knowledge whereas self-care confidence 32 (20.6%) were having inadequate knowledge, 100 (64.5%) were having moderate knowledge and 23 (14.8%) were having adequate knowledge and the distribution of Mean and Standard deviation of knowledge on self-management for self-care maintenance was 2.20 ± 0.715, self-care management was 2.13 ± 1.030 and self-care confidence was 1.94 ± 0.595.

Conclusion: Heart failure disease patients should improve their knowledge and change their behavior to maintain quality of life. Recommended to use self-management programs and create awareness regarding disease progression at community level to change the behavior and promote health status of patients with heart failure.

Keywords: Knowledge, self-management, heart failure

Introduction
Cardiovascular disease (CVD) is a common and chronic disease, contrary to many advances in its treatment and prevention; it is still considered a public health problem in the world [1]. Congestive heart failure is a clinical syndrome in which the structural or functional disorder of the heart causes the heart inability in pumping blood at a rate proper for the metabolic needs of the body [2].

Myocardial dysfunction causes increased intraventricular pressure and decreases cardiac output, eventually leading to pulmonary edema and peripheral edema. Heart failure exacerbating factors are failure in compliance with the medications, food regimen, uncontrolled blood pressure, inadequate treatment, and smoking and drug addiction [3].

Heart failure is the only common CVD that its prevalence and incidence is increasing [4]. More than 37 million people in the world and 15 million in Europe and 6 million in the United States are suffering from heart failure [5].

Heart failure (HF) is a clinical syndrome caused by structural and functional defects in myocardium resulting in impairment of ventricular filling or the ejection of blood. The most common cause for HF is reduced left ventricular myocardial function; however, dysfunction of the pericardium, myocardium, endocardium, heart valves or great vessels alone or in combination is also associated with HF.

Some of the major pathogenic mechanisms leading to HF are increased hemodynamic overload, ischemia-related dysfunction, ventricular remodeling, excessive neuro-humoral stimulation, abnormal myocyte calcium cycling, excessive or inadequate proliferation of the extracellular matrix, accelerated apoptosis and genetic mutations [6] Risk factors for heart failure patient may be divided into two Classifications compliant and non-compliant risk factors.

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Compliant risk factors are those that a person can correct it, including high serum cholesterol level, a diet high in saturated fat, obesity, physical inactive hypertension, cigarette smoking, and alcohol consumption and non-Compliant risk factors are those that an individual can't change, such as age, gender, ethnicity and heredity [7].

Heart failure can be classified as predominantly left ventricular, right ventricular or biventricular based on the location of the deficit. Depending on the time of onset, HF is classified as acute or chronic. Clinically, it is typically classified into two major types based on the functional status of heart: heart failure with preserved ejection fraction (HFpEF) and heart failure with reduced ejection fraction (HFrEF). In patients with HFpEF who are mostly females and older adults, EF is usually more than 50%; the volume of the left-ventricular (LV) cavity is typically normal, but the LV wall is thickened and stiff; hence, the ratio of LV mass/end- diastolic volume is high [8] Efficient management of CHF therefore remains a challenge for both patients and healthcare providers. Congestive heart failure patients face severe symptoms such as fatigue, shortness of breath, and exercise intolerance due to cardiac dysfunction. This substantially affects their physical functioning, quality of life, and mortality rates [9, 10].

Heart failure is usually managed with style of lives changing and medicines, eating habits changes to maintain ideal weight, diminish salt intake, appropriate exercise, smoking cessation reducing and alcohol consumption [11, 12].

Self-care management is a common decision making process involving the choice of behaviors' that maintain physiologic maintenance and the response to symptoms when they occur. Self-care management is an active and deliberate process that begins with recognizing a change in health (i.e., shortness of breath or oedema), evaluating the change, deciding to take action, implementing a treatment strategy (e.g., take an extra diuretic dose), and evaluating the treatment implementation [13].

Heart failure self-care is conceptualized as a process involving maintenance and management. Patients perform self-care maintenance behavior such as medication adherence to keep themselves physiologically stable. Self-care management is performed when a heart failure symptom occurs. The patient must recognize the symptom as related to heart failure, evaluate the importance of the symptom, do something about it, and then evaluate whether or not the treatment was effective. Self-care confidence is not a part of the self-care process; it is an extremely important factor influencing the effectiveness of self-care [14].

The gold-standard of patient self-management in chronic heart failure (CHF) can be defined as "daily activities that maintain clinical stability [15]." This requires that patients monitor their symptoms, adhere to their medication, diet and exercise regimens and manage symptoms by recognizing changes and responding by either adapting behaviors or by seeking appropriate assistance [16].

While targets have been recommended for best CHF management practice (such as to restrict fluid to 1.5 liters per day and to monitor weight changes > 2 kgs over three days), these need to be individualized according to the patient symptom and disease status profile and reset regularly. From the patient perspective, this increases the complexity of self-management and intensifies the cognitive, behavioral and motivational demands of self-care.

However, for most patients the empowerment rendered by self-care resulted in a sense of control and achievement, rather than a feeling of passivity and helplessness. This applies to the partners of patients, as well as to the patients themselves. Within the general framework of the management strategy, the patient must experience some sense of control.

For example, the patient needs to control the diuretics – the diuretics should not control the patient. Thus flexibility of dosage timing needs to fit in with the sociological constraints of the patient's day-to-day life. It is also important to stress that self-care can only work satisfactorily when there is partnership with – and trust in – the healthcare professional team. For example, even in the absence of cognitive impairment, a patient cannot safely alter their own diuretic doses (as a response to their weight and fluid status) unless the parameters are regularly reviewed and reset at a clinic visit. Changes in adipose tissue and muscle mass can render previous "target weights" incorrect, resulting in either heart failure de-compensation on the one hand or dehydration on the other, especially for relatively unstable patients.

Therefore re-setting of weight targets is very important – but takes considerable clinical skill. Evaluation of volume status includes clinical assessment of symptoms suggestive of either hyper- or hypovolemia, measurement of blood pressure, both recumbent and standing; evaluation of jugular venous pressure with patient propped up at 45 degrees, as well as lying flat (ensuring that the veins fill appropriately); rise or fall of serum creatinine and estimation of B-natriuretic peptide. The target weight for the patient self-management can then be reset.

European society of cardiology recommendations for chronic heart failure patient self-management
- Monitor and identify changes in symptoms (e.g. daily weighing)
- Manage symptom changes (e.g. > 2 kg over 3 days) by adapting behaviour (e.g. see their primary care physician)
- Adhere to medication, diet and exercise regimens
- Restrict sodium, fat, cholesterol, alcohol. Limit fluid intake to (1.5–2 l/day)
- Abstain from cigarette smoking
- Report mental health disturbance (e.g. depression, anxiety) to their healthcare professional

Material and Methods
Study design
The study was a cross sectional descriptive research design with a non-probability convenient sampling technique was performed among 155 patients with heart failure in Department of Cardiology, OPD, SVIMS, Tirupati.

Eligibility criteria
The criteria were as following; patients over age of above 18 to below 70; having HF according to echocardiography (>35% to <45%) and those who are willing to participate in the study and available at the time of data collection. Patients with deterioration of other diseases (hepatic and malignancies) were excluded in the study.

Procedure
Prior permission was obtained from head of the department of cardiology to conduct the study. 155 samples were selected by non probability convenient sampling technique

with minimum of 12-16 cases per day from 8am to 1pm. The samples were retrospectively selected from the registration record and made into a list. The investigator made them to sit comfortably and introduces himself to each participant and explained the purpose of the study and took a written consent, then provided pens and administered the questionnaire to the patients through interview schedule and the responses of the participants were recorded. The data collection work took 15-20 minutes from each participant. After completion of data collection with the help of A.V Aids the investigator explained different self-management aspects and then distributed a self-instructional pamphlet on zones of heart failure to each participant for future references and thanked them for their cooperation. The same procedure was followed for all 155 samples.

Instruments
The data was collected via the demographic characteristics questionnaire, which included 12 questions, with 9 personal information questions including (age, gender, education, marital status, religion, occupation, monthly family income, type of family, and type of work) and 3 questions related to the disease (ejection fraction, heart failure functional class and how long suffering with heart failure in years) and the self-care of heart failure index (SCHFI: Riegel, Dickson & Faulker, 2016) [14], specific for HF patients with a self-report questionnaire with 22 items in 3 sections that include self-care maintenance, self-care management and self-care confidence. Items were measured by Likert's four, five and

six degree scale and their score is from 1 to 6. Total score of questionnaire was 0 to 100. The higher score indicates the desired quality of life. The reliability of questionnaire was established by split half method with Karl Pearson correlation coefficient formula r = 0.9

Statistical analysis
SPSS version 12.0 for windows was used to analyze the data. To describe the characteristics of research units, firstly the descriptive statistics including central (mean & standard deviation) indicators and frequency distribution were calculated, and then Chi-square test and Correlation test for analysis of main variables were used.

Results
Demographic characteristics
Altogether 155 HF patients participated in the present study of shows that majority of patients 61 (39.4%) belongs to the age group of 51-60 years, 91 (58.7%) were males, 56 (36.1%) were illiterate, 131 (84.5%) were married, 125 (80.6%) were Hindu's, 52 (33.5%) were unemployed, 88 (56.8%) their income was in between 3908/--11707/-, 95 (61.3%) belongs to were nuclear family, 69 (44.5%) were doing having sedentary work and 109 (70.3%) (Table-1)

Disease related characteristics
Patient are with 40-45% EF, 85 (54.8%) belongs to II stage of NYHA classification and 74 (47.7%) were suffering from 1-3 years duration. (Table-1)

Table 1: Percentage and frequency distribution of demographic variables and questions related to disease process

S. No.	Demographic variable	Frequency (f)	Percentage (%)
	Age (In yrs)		
1.	Below 30	5	3.2
	31– 40	13	8.4
	41 – 50	028	18.1
	51– 60	61	39.4
	61 & Above	48	31
	Gender		
2.	Male	91	58.7
	Female	64	41.3
	Education		
3.	Illiterate	56	36.1
	Primary	39	25.2
	Middle	39	25.2
	High School	2	1.3
	Intermediate	13	8.4
	Graduate	6	3.9
	Marital status		
4.	Married	131	84.5
	Unmarried	1	6
	Widow/Widower	23	14.8
	Religion		
5.	Hindu	125	80.6
	Muslim	10	6.5
	Christian	20	12.9
	Occupation		
6.	Elementary occupation	40	25.8
	Plant & machine	17	
	Craft & related work	7	4.5
	Skilled Agricultural & Fishery workers	32	20.6
	Skilled workers & shop	5	3.2
	Clerks	2	1.3
7.	**Monthly family income in (Rs)**		
	< 3907	20	12.9

	3908 – 11707	88	56.8
	11708 – 19515	40	25.8
	19516 – 29199	5	3.2
	39033 – 78062	2	1.3
8.	**Type of family**		
	Nuclear	95	61.3
	Joint	2	1.3
	Extended	58	37.4
9.	**Type of work**		
	Sedentary	69	44.5
	Moderate	69	44.5
	Heavy	17	11
10.	**Ejection fraction**		
	35 - 45%	46	29.7
	40 - 45%	109	70.3
11.	**Heart failure functional classification (NYHA)**		
	I	24	15.5
	II	85	54.8
	III	45	29
	IV	1	6
12.	**Duration of heart failure in years**		
	1 - 3	74	47.7
	4 – 6	55	35.5
	7 – 9	18	11.6
	10 & Above	8	5.2
	Total	155	100

Level of knowledge among heart failure patients by using self-care of heart failure index scale
Regarding to health status of the patient shows level of knowledge on Self-care maintenance 27 (17.4%) were having inadequate knowledge, 70 (45.2%) having moderate knowledge, 58 (37.4%) having adequate knowledge, in self-care management each 52 (33.5%) having no symptoms and having inadequate knowledge, 30 (19.4%) were having moderate knowledge, 21 (13.5%) were having Adequate knowledge whereas self-care confidence 32 (20.6%) were having inadequate knowledge, 100 (64.5%) were having moderate knowledge and 23 (14.8%) were having adequate knowledge (Table-2) and the Mean and Standard deviation for self-care maintenance was 2.20 and 0.715, self-care management was 2.13 and 1.030 and self-care confidence was 1.94 and 0.59 (Table-3).

Table 2: Level of knowledge on self-care of heart failure index among heart failure patients

S. No.	Domains	Level of knowledge	Frequency (f)	Percentage (%)
1.	Self-care maintenance	Inadequate knowledge	27	17.4
		Moderate knowledge	70	45.2
		Adequate knowledge	58	37.4
2.	Self-care management	No symptoms	52	33.5
		Inadequate knowledge	52	33.5
		Moderate knowledge	30	19.4
		Adequate knowledge	21	13.5
3.	Self-care confidence	Inadequate knowledge	32	20.6
		Moderate knowledge	100	64.5
		Adequate knowledge	23	14.8

Table 3: Shows mean and standard deviation for self-care of heart failure index at three domains

S. No.	Domains	Mean	Standard deviation
1.	Self-care maintenance	2.20	0.715
2.	Self-care management	2.13	1.030
3.	Self-care confidence	1.94	0.595

Item wise analysis shows that the self-management among heart failure patients shows that 36.1% patients frequently weight his/her self, 42.6% has check ankles for swelling frequently, 55.5% patients always keep doctor or nurse appointments, 37.4% take low salt diet frequently, 30.1% recognize very quickly it is a symptom of heart failure, 51.5% quickly call doctor or nurse for guidance, 66.5% patients very confident to keep his/her self-free of heart failure symptoms, 55.5% patients somewhat confident to recognize changes in health if occur. The association of demographic variables with level of knowledge on self-management of heart failure among heart failure patient's, gender has obtained chi-square value of 13.752 with 'p' value 0.001 was significant at 0.01; religion has obtained chi-square value of 14.505 with 'p' value 0.006; occupation has obtained chi-square value of 22.142 with 'p' value 0.036; monthly family income was obtained chi-square value of 15.384 with 'p' value 0.052; ejection fraction has obtained chi-square value of 12.965 with 'p' value of 0.002 which were significant at $p < 0.05$. (Table-4).

Table 4: Association between the demographic variables with level of knowledge on self-management among heart failure patients

S. No.	Demographic variables	Level of knowledge						Chi-square X^2	P value
		Inadequate (≤ 50)		Moderate (51-69)		Adequate (70-100)			
		f	%	f	%	f	%		
	Age in yrs								
1.	Below 30Years	-	-	-	-	5	8.6	17.137*	0.029
	41 - 50 Years	6	22.2	11	15.7	11	19		
	51 - 60 Years	9	33.3	31	44.3	21	36.2		
	61 & Above	12	44.4	23	32.9	13	22.4		
	Gender								
2.	Male	24	88.9	40	57.1	27	46.6	13.752**	0.001
	Female	3	11.1	30	42.9	31	53.4		
	Education								
3.	Illiterate	14	51.9	26	37.1	16	27.6	14.521NS	0.151
	Primary	5	18.5	20	28.6	14	24.1		
	Middle	7	25.9	18	25.7	14	24.1		
	Intermediate	1	3.7	5	7.1	7	12.1		
	Graduate			1	1.4	5	8.6		
	Marital status								
4.	Married	22	81.5	59	84.3	50	86.2	1.567NS	0.815
	Unmarried			1	1.4				
	Widow/Widower	5	18.5	10	14.3	8	13.8		
	Religion								
5.	Hindu	17	63.0	56	80.0	52	89.7	14.505**	0.006
	Muslim	2	7.4	3	4.3	5	8.6		
	Christian	8	29.6	11	15.7	1	1.7		
	Occupation								
6.	Unemployed	11	40.7	22	31.4	19	32.8	22.142**	0.036
	Elementary Occupation	5	18.5	16	22.9	19	32.8		
	Plant and machine	2	7.4	10	14.3	5	8.6		
	Craft and related	1	1.37	4	5.7	2	3.4		
	Skilled Agricultural & Fishery workers	3	11.1	16	22.9	13	22.4		
	Skilled workers & shop	3	11.1	2	2.9				
	Clerks	2	7.4						
	Monthly family income								
7	Rs< 3907	1	3.7	10	14.3	9	15.5	15.384**	0.052
	Rs.3908 - 11707	15	55.6	40	57.1	33	56.9		
	Rs 11708 – 19515	7	25.9	17	24.3	16	27.6		
	Rs 19516 – 29199	2	7.4	3	3	4.3			
	Rs 39033 – 78062	2	7.4						
	Type of family								
8	Nuclear	14	51.9	44	62.9	37	63.8	1.942NS	0.746
	Joint			1	1.4	1	1.7		
	Extended	13	48.1	25	35.7	20	34.5		
	Type of work								
9	Sedentary	14	51.9	32	45.7	23	39.7	1.592NS	0.810
	Moderate	11	40.7	31	44.3	27	46.6		
	Heavy	2	7.4	7	10.0	8	13.8		
	Ejection fraction								
10	35 - 45%	11	40.7	21	30.0	14	24.1	12.965**	0.002
	40 - 45%	16	59.3	49	70.0	44	75.9		
	Total	27	100	70	100	58	100		

Correlation for knowledge statements Reveals that all the knowledge statement were positively correlated at $p<0.01$ level and exercising 30 min/daily negatively correlated at $p<0.05$ level (Table-5) and the correlation of demographic variables with level of knowledge on self-management of heart failure among heart failure patient's, age, education, heart failure functional class (NYHA) were positively correlated at $p<0.01$ and gender, type of work and ejection fraction was negatively correlated at $p<0.05$ (Table-6)

Table 5: Distribution of correlation for knowledge statements on self-management among heart failure patients

S. No.	Knowledge statements based on self-care of heart failure index scale	Karl Pearson correlation r value	P-value
1.	Weigh yourself?	0.495**	0.000
2.	Check your ankles for Swelling?	0.144	0.074
3.	Try to avoid getting sick (e.g., flu shot, avoid ill people)	0.410**	0.000
4.	Do some physical activity?	0.274**	0.001

5.	Keep doctor or nurse appointments?	0.274**	0.001
6.	Eat a low salt diet?	0.304**	0.000
7.	Exercise for 30 minutes?	0.183*	0.023
8.	Forget to take one of your medicines?	-0.089	0.272
9.	Ask for low salt items when eating out or visiting others?	0.372**	0.000
10.	Use a system (pill box, reminders) to help you remember your medicines?	0.379**	0.000
11.	How quickly do you Recognize it's a symptom of heart failure?	0.721**	0.000
12.	Reduce the salt in your diet	0.628**	0.000
13.	Reduce the fluid intake	0.744**	0.000
14.	Take an extra water pill	0.750**	0.000
15.	Call your doctor or nurse for guidance	0.407**	0.000
16.	How Sure were you that the remedy helped or did not help?	0.713**	0.000
17.	Keep yourself free of heart failure symptoms?	0.387**	0.000
18.	Follow the treatment advice you have been given?	0.437**	0.000
19.	Evaluate the importance of your symptoms?	0.336**	0.000
20.	Recognize changes in your health if occur?	0.231**	0.004
21.	Do something that will relieve you symptoms?	0.327**	0.000
22.	Evaluate how well a remedy works?	0.383**	0.000

Table 6: Distribution of correlation for demographic variables on self-management among heart failure patients

S. No.	Demographic variable	Karl-Pearson correlation r value	P-value
1.	Age	-0.316**	0.000
2.	Gender	0.174*	0.031
3.	Education	0.281**	0.000
4.	Marital status	-0.025	0.754
5.	Religion	-0.074	0.363
6.	Occupation	0.119	0.141
7.	Monthly Family Income (Rps)	0.009	0.915
8.	Type of Family	-0.048	0.551
9.	Type of Work	-0.192*	0.017
10.	Ejection fraction	-0.159*	0.048
11.	Heart Failure functional class (NYHA)	-0.362**	0.000
12.	Duration of heart failure (yrs)	0.014	0.867

Discussion
The purpose of the study was to assess the knowledge on self-management of heart failure attending cardiology out-patient department, SVIMS, Tirupati. The assessment helps to provide knowledge regarding various aspects of self-management to heart failure patients.

Chronic heart failure (CHF) is one of the most common causes of hospital admissions and readmissions. Managing CHF requires a comprehensive treatment plan that consists of medication treatment and behavioral change. However, patients often feel unprepared for their self-management role in the community, especially during the period of transition after discharge from hospital. Therefore, an effective intervention to promote CHF self-management is needed.

Chronic heart failure (CHF) is a severe chronic disease that affects more than 26 million people worldwide. It significantly reduces the health-related quality of life and increases the risk of hospitalization and mortality. To improve health outcomes, it is recommended that patients with CHF undertake self-management, such as daily monitoring of body weight to assess fluid balance and seek early clinical support in the event of symptoms, which may indicate de- compensation. This has been consistently outlined by evidence-based clinical guidelines for CHF and is practically supported by CHF clinics and rehabilitation programs in standard care. Despite these clinical efforts, patient compliance with self-management recommendations is often suboptimal for activities such as body weight recording, fluid restrictions, and medication adherence. Time constraints, limited knowledge, and insufficient ongoing clinical support are some of the reported barriers to the self-management of CHF. Poor compliance with self-management recommendations often leads to delays in essential treatment and increases the risk of mortality and hospitalization [17].

The discussion of the present study was based on findings obtained from descriptive and inferential statistics analysis of the collected data. It was presented in the view of the objectives of the study.

The first objective of the study was to assess the knowledge on self-management of heart failure patients. The study revealed that in self-care maintenance 27 (17.4%) were having inadequate knowledge, 70 (45.2%) having moderate knowledge, 58 (37.4%) having adequate knowledge, in self-care management each 52 (33.5%) having no symptoms and inadequate knowledge, 30 (19.4%) were having moderate knowledge, 21 (13.5%) were having Adequate knowledge whereas in self-care confidence 32 (20.6%) were having inadequate knowledge, 100 (64.5%) were having moderate knowledge and 23 (14.8%) were having adequate knowledge. The mean and standard deviation shows that for self-care maintenance was 2.20 ± 0.715, self-care management was 2.13 ± 1.030 and self-care confidence was 1.94 ± 0.595. So, the null hypothesis H01 which states that there is no significant difference in knowledge on self-management of heart failure patients was rejected.

Boyounghwang (2014) [18] conducted a cross sectional study on knowledge is insufficient for self-care among heart failure patients with psychological distress in patients with heart failure recruited from multiple cardiology practices in rural areas of California. The purpose of the study was to

assess higher or low levels of knowledge. Sample size was 612. Data was collected by using HF knowledge scale and European HF self-care behavior scale and the patients was divided into 4 groups and collect the data by using questionnaires, The study findings reveal that the 4 groups did not differ in socio-demographics, but were different in NYHA class, co-morbidities, and scores on depression, anxiety and perceived control. In the multi variant analysis, knowledge, depressive symptoms and perceived control were significant predictors of self-care, as was the interaction between knowledge and anxiety and concluded that screening and treatment of depression and anxiety is important in improving self-care among HF patients.

The second objective of the study was to find out the association between the demographic variables and knowledge on self-management of heart failure among heart failure patients. The results shown that there was association with gender and obtained chi-square value of 13.752 significant at 0.01; religion has obtained chi-square value of 14.505; occupation has obtained chi-square value of 22.142 with 'p' value 0.036; monthly family income was obtained chi-square value of 15.384 with 'p' value 0.052; ejection fraction has obtained chi-square value of 12.965 with 'p' value of 0.002 which were significant at $p<0.05$ so, null hypothesis H02 which states that there may be no significant association between demographic variables and level of knowledge on self-management among heart failure patients was rejected.

In the correlation with level of knowledge on self-management of heart failure among heart failure disease patients weighting?, avoiding sick, physical activity?, keeping medical appointments, low salt diet, ask for low salt items, use a system to help remember medicines, recognizing symptoms, reducing salt in diet, reduce fluid intake, take an extra water pill, call the doctor for guidance, how sure the remedy works?, free of heart failure symptoms?, treatment advice?, evaluate importance of symptoms, recognize changes in the health?, do something to relieve the symptoms?, evaluate how well a remedy works? Were positively correlated at $p<0.01$ and exercise for 30 minutes were negatively correlated at $p<0.05$.

Mahin Nomali, Kian Alipasandi (2019) [19] conducted a cross sectional study on Knowledge regarding Heart Failure A Reflection on Current Disease Knowledge State among Iranian Patients with Heart. The aim of the study was to determine the knowledge regarding HF among Iranian patients with HF. The sample size were 190 patients older than 18 years old with diagnosis of HF for at least 3 months by an HF specialist, NYHA function class II to IV and an ability of reading and writing Farsi language were included during June 2017 and January 2018 by consecutive sampling. Data were collected in a short form, including demographic and clinical variables. Knowledge regarding HF was measured by the Dutch HF knowledge scale with 15- multiple choice item. The score range varied between 0 (no knowledge) and 15 (optimum knowledge). Scores were reported totally and in 3 areas of knowledge. Scores higher than the median was considered as higher knowledge. The study findings reveals that From June 2017 to January 2018, 160/190 patients with median age (IQR) of 59 (16) years old participated in the study (response rate of 84.2%). 67.5% of study patients were male (83.5%). 87.5% of them were married. The majority of patients were with NYHA function class II (60.6%), and with an etiology of ischemic heart disease (65.0%). The median and IQR of total, general, HF treatment, and symptoms/ symptom recognition knowledge were 8 (7-10), 12 (9-14), 2 (1.25-3), and 4 (3- 5), respectively. Low level of total, general, HF treatment, and symptoms and symptom recognition knowledge among Iranian patients with HF were 55%, 60%, 58.8%, and 71.9%, respectively and concluded that Patients with HF had low levels of total, general, HF treatment, and symptoms/symptom recognition knowledge. Thus, there is an essential need to be improved by an appropriate intervention, especially on knowledge of symptoms /symptom recognition.

Conclusion
The overall findings of this study suggest a possible benefit of standardized multidisciplinary hospital based patient education in the acute and sub-acute phase of heart failure rehabilitation (phase1-2). Disease specific knowledge persists over time and the results can indicate that a multidisciplinary patient education is beneficial to maintain sufficient self-care adherence, higher age was associated with lower levels of knowledge and majority of the patients are illiterate and constituted as vulnerable group in the present study.

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