



## Evaluation of Preventive Self-care Behaviors and Its Related Factors in Patients with Heart Failure

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### Authors' contributions

This work was carried out in collaboration between all authors. Author PMS designed the study, collected data, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors SN, MK and FA provided advice for the study design and managed the analyses of the data and supervised writing the manuscript. All authors read and approved the final manuscript.

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### ABSTRACT

**Background:** Self-care behaviors are the most important way to prevent frequent hospitalization, improve the quality of life, and reduce mortality in patients suffering from heart failure.

**Aims:** To assess the preventive self-care behaviors and its associated factors in heart failure patients in Kerman teaching hospitals.

**Place and Duration of Study:** South-East of Iran, Cardiology Clinics of Kerman teaching hospitals from August 2014 to January 2015.

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**Methodology:** This cross-sectional study evaluated preventive self-care behaviors in 150 patients suffering from heart failure by a valid and reliable questionnaire and checklist. Subjects were selected by simple random sampling among patients with heart failure from Cardiology Clinics of Kerman teaching hospitals. The Data was analyzed by using of SPSS, version 20.

**Results:** Most (68.5%) of the subjects were moderate at complying with medication regimen (mean=54.41±8.41) and 78.3% were poor at non-medication regimen (mean=61.04±7.21). Control pulse was poor in the majority of them (91.5%). There was a significant relationship between total mean self-care score and age ( $p=0.05$ ), marital status ( $p=0.03$ ), education ( $p=0.009$ ), the number of hospitalization ( $p=0.02$ ), NYHA functional class ( $p=0.002$ ) and monthly income ( $p=0.003$ ).

**Conclusion:** Due to poor self-care in patients suffering from heart failure and its relationship with some personal factors, it is better to plan for training these patients based on their needs.

*Keywords: Preventive; self-care behaviors; heart failure; Iran.*

## 1. INTRODUCTION

Heart failure is a chronic and growing disease as a result of impaired heart function, so that the heart is unable to meet the metabolic needs of the body [1,2]. About 5 million people suffer from this sickness in the United States and more than 150,000 new cases are added annually [3]. The mean of life expectancy in heart failure patients is about 3 years that is less than serious illnesses such as breast or colon cancer [4]. It leads to mood disorders such as anxiety and fear of the future [5]. Heart failure can have a great impact on quality of life, increased morbidity and mortality of patients because, in addition to being chronic, it often leads to readmission within 30 days after discharge [6,7]. Costs resulting from frequent hospitalizations impose a heavy economic burden on individuals, families and the society despite the fact that many of these visits are preventable [8,9]. The main reason for frequent hospitalization and subsequent outcomes in patients suffering from heart failure is the lack of self-care [10]. Self-care behaviors are activities that people do personally to have a better sense of survival and well-being and patients apply them to prevent disease complications and improve quality of their life. [11] complying with medication and food regimens, daily weighing, being active and following-up the disease are some examples of self-care behaviors [12].

Several studies have emphasized on the importance of self-care. For example Artinian et al. [13] have done a cross-sectional study on 100 African American patients suffering from heart failure over 18 years in the aim of determining self-care behaviors, describing factors which are affecting self-care, and determining the relationship between knowledge and self-care. Their results showed that the majority of subjects performed only three items of

medication regimen and five items of non-medication regimen and were poor in the implementation of 19 items of their regimens. They reported that no significant relationship between the total score of self-care and personal and environmental factors was observed, but a significant positive relationship between knowledge and self-care was recognized.

Lee et al. [14] in their study titled "Event-free survival in adults with heart failure who engage in self-care management" compared events such as the risk of death, readmission, and emergency room admission in three groups of patients with poor, moderate and strong self-care and without symptoms in order to determine the relationship between self-care and events. The results showed that during 364 days 4 deaths, 82 hospitalizations and 5 attendances in emergency room occurred. Those who scored above average for self-care and were asymptomatic were exposed to less risk than those with poor self-care. The researchers concluded that symptomatic patients with heart failure, who scored above average for self-care, had event-free life like asymptomatic people.

In their review study titled "Living with heart failure", Westland and Carson reported that patients with heart failure, as a chronic disease, will render a new identity and should be assessed continuously according to each culture and region and receive appropriate care plans [15]. It seems that self-care is an important component of heart failure management programs and it is necessary to investigate patient's self-care behaviors according to their living area and lifestyle.

Considering this point that 6%-10% of the population over 65 years in Iran suffer from heart failure [16] and according to a study in the south-east of Iran lifestyle plays a more prominent role

than genetics in the development of coronary artery disease [17]. Based on the experiences of the researcher in these areas, patients with heart failure are frequently hospitalized which force them a high amount of cost and decreased quality of life consequently. As these experiences are confirmed by other researchers' studies [18] and regarding above mentioned points, this study was conducted to determine self-care behaviors among heart failure patients referring to heart clinics in the south-east of Iran.

## **2. MATERIALS AND METHODS**

### **2.1 Research Design and Setting**

This descriptive cross-sectional study was done in the cardiology clinics in three teaching hospitals of University of Kerman which is the largest city in the South-East of Iran.

### **2.2 Sampling**

Participants were selected by simple random sampling among patients with heart failure from cardiology clinics in three teaching hospitals of Kerman University of sciences (n= 150). Inclusion criteria were patients' consent to participate in the study, physician's confirmation of the heart failure according to patient's records, heart failure class II and higher, at least 6 months passed since the diagnosis, age of 18 years and more and awareness of people, time and place while exclusion criteria was suffering from psychological disorder, verbal communication and hearing problems or other chronic disease.

### **2.3 Instrumentation and Data Collection**

The tools for data collection were a valid and reliable questionnaire and a checklist. These questionnaire and checklist were obtained from a study about the effect of education on knowledge and self-care behaviors of patients suffering from heart failure in the hospitals affiliated to Kerman University of Medical Sciences [19].

The questionnaire had two parts. The first part with 12 items was for demographic characteristics such as age, gender, marital status, occupation, number of hospitalization, education, duration of heart failure, the degree of illness, the presence of someone to take care, monthly income, ability to self-care and training status. The second part was divided into two subsections with 14 items concerning medication regimen, 34 items for non-medication regimen consisting food, being active, proper rest, daily

weighing, smoking, and follow up that were scored by Likert scale ranging from always (4), often (3), sometimes (2), rarely (1) and never (0).

The checklist was related to the observation of the patients' ability to control their pulse with three items marked by the researcher as Yes/No. Correct answer was scored 1 and the incorrect answer was scored zero. In all parts, the minimum score was zero and the maximum score was 56 in medication regimen, 136 in non-medical regimen and 3 in pulse control. The scores were uniformed based on previous studies, and the scores in each domain were calculated based on 100. Preventive Self-care behaviors were classified into three levels of well (75-100), moderate (50-75), and poor (<50). For the purpose of accuracy, the whole study was conducted by the researcher.

### **2.4 Ethical Consideration**

This study was approved by Ethics committee and research center of Kerman University of medical science. All participants were informed about aims of the study and their oral consents were obtained before entering this research.

### **2.5 Statistical Analysis**

Data was analyzed by Statistical Package for Social Sciences (SPSS), version 20. Descriptive statistics to describe data, t-test and ANOVA were performed. The value of  $p < 0.05$  was considered significant in all tests.

## **3. RESULTS**

### **3.1 Demographic Information**

From a total of 150 subjects, 51.3% were men with a mean age of  $64.7 \pm 11.3$  and 58.7% were retired. Most participants (62%) were married and the rest were single, divorced or widowed, but most of them (70%) had someone to help them at home. Most participants (40%) were educated at an elementary level and just could read and write and a significant percentage (32.5%) were illiterate. The mean duration of having heart failure was  $3 \pm 2.5$  years and most participants (76%) had NYHA functional class II and III. The mean frequency of hospitalizations was  $5.3 \pm 4.3$  times. Most subjects (67.5%) believed that they have the ability to take care of themselves. 46% of them had not received any training regarding heart failure and most of them (51.3%) had received some information from their physicians (Table 1).

**Table 1. Demographic information and their relationship with preventive self-care behaviors**

Variable	Category	Frequency	Percent	Test statistic	P
Age	Less than 60	39	26	F= 9.31	0.05
	60-69	55	36.6		
	Above 70	56	37.4		
Gender	Man	77	51.3	t= 1.24	0.37
	Woman	73	48.7		
Marital status	Single	1	0.7	F= 12.21	0.03
	Married	93	62		
	Widowed and divorced	56	37.3		
Occupation	Employed	25	16.6	F= 2.04	0.28
	Non-employed and housewife	37	24.7		
	Retired	88	58.7		
The number of hospitalization	1-2	43	28.7	F= 12.21	0.02
	3-4	56	37.3		
	More than 5	51	34		
Education	Illiterate	49	32.6	F= 12.93	0.009
	Elementary Reading and Writing	60	40		
Duration of heart failure	Middle school and more	41	27.4	F= 2.49	0.46
	Less than one year	30	20		
	1-3 years	71	47.3		
The degree of illness	More than 3 years	49	32.5	F= 12.71	0.002
	II	52	34.7		
	III	62	41.3		
	IV	36	24		
Presence of someone for the care	Yes	105	70	t= 1.43	0.2
	No	45	30		
Monthly income	Less than 10,000,000 Rials	69	46	F= 12..83	0.003
	10,000,000 – 30,000,000 Rials	56	37.3		
	Higher than 30,000,000 Rials	25	16.7		

### 3.2 Self-care Behaviors

#### 3.2.1 Adherence to medication regimen

Most subjects (68.5%) complied with medication regimen moderately while only 3.5% got a good score. the total mean scores of the adherence to medication regimen was  $54.41 \pm 8.41$ . Based on mean scores, t-test and ANOVA, there was a statistical significant inverse relationship between the medication adherence and age ( $p=0.04$ ), frequency of hospitalization ( $p= 0.03$ ) and NYHA functional class ( $p= 0.002$ ), and there was a statistical significant direct relationship between self-care behaviors and marital status ( $p= 0.02$ ), education ( $p=0.009$ ), and monthly income ( $p= 0.002$ ). No statistical significant difference was found between gender, duration of disease and

the presence of someone to help for taking care ( $P>.05$ ).

#### 3.2.2 Adherence to non-medication regimen

For non-medical regimen most of participants (78.3%) obtained poor scores and only 1.6% scored "well", and total mean scores of the participants in this study were ( $61.04 \pm 7.21$ ). Most subjects were also poor at pulse control (91.5%) and nobody scored well. Based on mean scores, t-test and ANOVA, there was a statistical significant inverse relationship between non-medication adherence and age ( $p=0.02$ ), frequency of hospitalization ( $p= 0.04$ ) and NYHA functional class ( $p= 0.009$ ) and there was a statistical significant direct relationship between self-care behaviors and marital status ( $p= 0.01$ ),

education ( $p=0.001$ ), and monthly income ( $p= 0.005$ ).

No statistical significant difference was found between gender and duration of disease and the presence of someone to help for taking care ( $P>.05$ ).

### 3.2.3 Overall of self-care behaviors

Total mean score indicated that overall of self-care behaviors in subjects were poor ( $45.98\pm9.58$ ), and no one scored well in this regard. Table 1 shows that there is a statistical significant inverse relationship between the self-care behaviors with age ( $p=0.05$ ), frequency of hospitalization ( $p= 0.02$ ) and NYHA functional class ( $p= 0.002$ ), and there was a statistical significant direct relationship between self-care behaviors and marital status ( $p= 0.03$ ), education ( $p=0.009$ ), and monthly income ( $p= 0.003$ ).

No statistical significant difference was found between gender and duration of disease and the presence of someone to take care ( $P>.05$ ).

Fig. 1 shows the distribution of the participants in each of the domains of preventive self-care behaviors.

## 4. DISCUSSION

The results showed that the score of the majority of subjects were moderate for medication regimen, which is consistent with results of study

of Moonan et al. [20] which reported that only 10% of a total of 7247 patients suffering from heart failure who were discharged from hospital took prescribed medication on time. Gray [21] reported that the reasons of non-compliance of heart failure patients are their lack of knowledge about the medication regimen, and their lack of financial means to purchase medication. However, this finding was inconsistent with the results of Ni et al. [22] because they found that the majority of patients followed their medication regimen. However, this discrepancy can be attributed to the findings of Dickson et al. [23] that concluded self-care behaviors in patients with heart failure is closely related to the psychological status, social support, social norms, religion and the culture of patients.

Based on the research findings, the majority of subjects were poor at adherence to non-medication. The findings of several studies showed that heart failure patients act poorly on daily weighing, because of their lack of faith in daily weighing, lack of access to appropriate tools and their inability to interpret the results [24,25]. The study of Jaarsma et al. [26] titled "Comparison of self-care behaviors of heart failure patients in 15 countries worldwide" showed that on average more than 40% of patients did not follow their medication regimen and more than 54% were poor at observing the food diet and fluid restriction. Mangolian et al. [19] concluded that the lack of knowledge is the major reason of non-compliance with non-medical regimen.

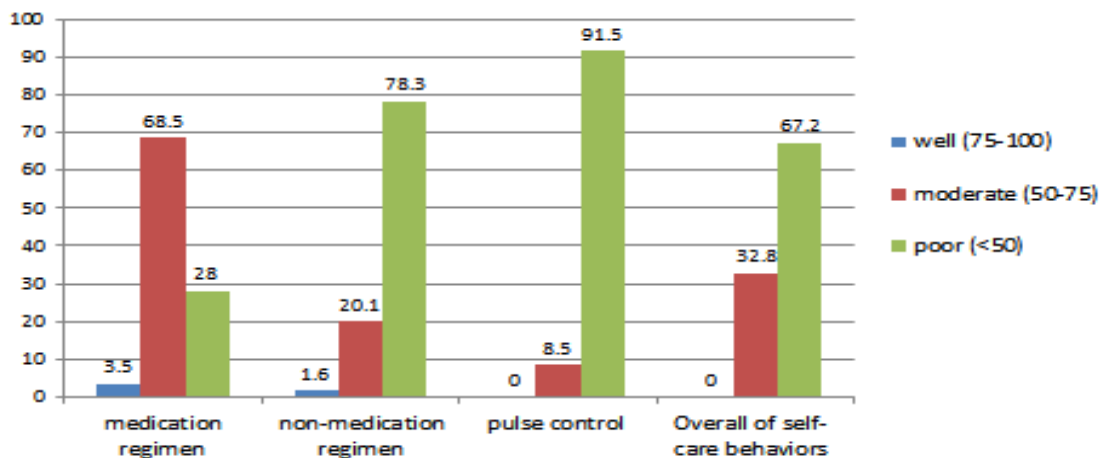


Fig. 1. The distribution of the participants in each of the domains of preventive self care behaviors

The results about the pulse control showed that most subjects acted poorly in this regard. Mangolian et al. [19] showed that the patients who were untrained in pulse control could not appropriately control pulse.

The results showed that the overall score for self-care behaviors in patients with heart failure was poor which is consistent with several studies [21,26]. Researchers have mentioned some factors affecting self-care including knowledge, attitude, physical ability, family and community support, cultural context, and adaptation to the new situation [23,26].

A significant relationship was found between self-care behaviors and age, such that younger patients enjoyed better self-care. These results are consistent with the results of other studies such as studies conducted by Shojaei et al. [25] and Aboutalebi et al. [27] that showed there was an inverse relationship between age and self-care behaviors. Orem believes that self-care needs are different according to people's age [28] and Carlson et al. [29] concluded that older patients have problems in self-care due to reduced ability.

The results showed that married people had better self-care behaviors. The study of Shojaei et al. [25] showed that married people had more knowledge about self-care behaviors and being married was effective on the knowledge of heart failure patients. Aboutalebi et al. [27] reported that the married people had better self-care than non-married people. It seems that the spouse can improve patient's self-care and adaptation by emotional support [24].

This study showed that people with higher education had better self-care significantly, which is consistent with the studies that showed self-care behaviors in people with diploma and higher education were better [19,24,27]. Khoshtarash et al. [24], quoting Rockwell, have written: "Patients with higher education have better judgment and can make better decision for self-care".

According to the results, there was a significant relationship between income and self-care behaviors. Mangolian et al. and Aboutalebi et al. found similar results [19,27]. However, Khoshtarash et al. did not observe a significant difference between income and self-care, and attributed it to small size of sample [24].

It was found that the self-care behaviors in patients who had more hospitalizations were

significantly poorer, which is similar to the results of Shojaei et al.'s [25] study that showed there was an inverse relationship between the number of hospitalizations and the self-care behaviors. It seems that although they experienced repeated hospitalization, they did not show a change in behavior and in fact poor self-care was a factor for readmission. Other studies also confirmed that one of the main reasons of readmission is poor self-care [7,10].

Another result of the study revealed that self-care got poorer with increasing classes of heart failure. Rockwell believes that the progression of heart failure will lead to intensified shortness of breath and fatigue, and the patients are incapable of self-care [30].

## 5. CONCLUSION

Based on the results of the study, self-care behavior of patients suffering from heart failure was poor and the most important factors influencing on self-care behaviors are education, marriage status, and age. Therefore, nurses should try to improve self-care behavior of these patients and to identify factors influencing on self-care and barriers to self-care behaviors and develop and implement systematic and organized programs for these patients. It is also recommended that some studies be conducted on facilitators and barriers to self-care in heart failure patients in different cultures. Since Patients with heart failure need to adapt with permanent changes in their lives and self-care behaviors facilitate coping and increase the quality of life, it's suggested that health managers and planners to consider policies that create solutions to identify and promote self-care behaviors in patients with heart failure.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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