

Factors Affecting Heart Failure Patients' Knowledge About Their Diseases And Self-Care Behaviors: A Sample From Iraq

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ABSTRACT

Background: Self-care, which is one of the indispensable components of heart failure management, is accepted as a universal approach to reduce the utilization of health services (including hospital admissions) and improve heart failure outcomes. **Aim:** This study aimed to determine the factors affecting knowledge and self-care behaviors of individuals with heart failure regarding their disease. **Method:** The descriptive-cross-sectional study was conducted on 200 patients who applied for Al-Sadder Medical Center in Al-Nejef City, Iraq, to treat and control heart failure. The data were collected on 01.05.2021- 28.07.2021 based on self-reports with the Introductory Information Form, the Arabic Dutch Heart Failure Knowledge Scale (A-DHFKS), and the Arabic the Self-care of Heart Failure Index (A-SCHFII). Data were evaluated with descriptive statistics, t-test, one-way ANOVA, Mann Whitney U, Kruskal Wallis H, correlation, and linear regression tests. Tukey and Dunnett were used for post hoc tests. Statistical significance was taken as $p < 0.05$. **Results:** The patients' heart failure knowledge and self-care are low (Arabic Dutch Heart Failure Knowledge Scale: 4.73 ± 2.01 , Arabic the Self-care of Heart Failure Index: 37.67 ± 11.35 , Self-Care Maintenance: 36.87 ± 10.13 , Self-Care Management: 45.25 ± 13.98 , Confidence in Providing Self-Care: 30.88 ± 20.41). Heart failure knowledge scores were higher in those who discussed their problems with a doctor/nurse ($p < 0.05$). Self-care scores increase in cases of high heart failure knowledge, high school and higher education, regular health check-ups for the disease, and knowing the name and effects of the drugs used, and decrease with smoking ($p < 0.05$). **Conclusion:** The patients' knowledge and self-care about heart failure are insufficient, and they are affected by various factors. In order to increase the knowledge of heart failure and patient self-care, it is recommended that health personnel, especially nurses, organize and maintain planned cardiac education programs that should include the affecting factors. **Keywords:** Heart Failure, Knowledge, Self Care Behaviors, Affecting Factors.

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INTRODUCTION

Heart failure, a heterogeneous clinical syndrome, is a common health problem in developed and developing countries and affects 64.34 million people. Although the incidence of heart failure in high-income countries has stabilized or decreased over the

past decade, it remains a global pandemic due to an aging population, an increase in risk factors, the effectiveness of new treatments and an increased survival rate, high morbidity and mortality rates associated with heart failure, and the resulting burden of disability

and health loss (Khan et al., 2024; Lippi and Sanchis-Gomar, 2020). An increase in heart failure rates of 46% is expected from 2012 to 2030 (Benjamin et al., 2019).

The mortality rate (3.9%) increased significantly in young adults, especially compared to older adults (Khan et al., 2024). Despite the burden of heart failure in society, awareness of the disease is lower compared to other cardiovascular diseases (Karabulut et al., 2024). Heart failure patients are under great pressure to manage their symptoms (Lee and Riegel, 2018). Although there are various reasons for this, the contribution of lack of knowledge and education about heart failure and inadequate self-care behaviors is quite high (Karabulut et al., 2024; Lee and Riegel, 2018; Riegel et al., 2017).

Heart failure-specific information is a result of heart failure-specific educational initiatives (Hwang et al., 2020) or the determinant of behavior (Massouh et al., 2020a) is reported as. Good heart failure knowledge and awareness, as well as optimal self-care behaviors, play a vital role in reducing the negative consequences associated with heart failure. However, patients' heart failure information is usually insufficient (Cajita et al. 2016; Karabulut et al., 2024; Nomali et al., 2019; Tawalbeh and Ahmad, 2014; Zeng et al. 2016). Patients' lack of knowledge about heart failure management and self-care measures are considered as determinants of clinical instability and readmission to hospital (Betihavas et al., 2012).

Self-care, which is one of the indispensable components of heart failure management, is accepted as a universal approach to reduce the utilization of health services (including hospital admissions) and improve heart failure outcomes (Abdulhussein and Abd-Ali, 2020; Massouh et al., 2020a; Riegel et al., 2017). The

European Guidelines for the Diagnosis and Treatment of heart failure have been emphasizing self-care as an important part of heart failure management and patient empowerment since 2008 (Ponikowski et al., 2016). Adequate self-care is strongly associated with the chance of survival after heart failure (Keteyian et al., 2014.)

Self-care behaviors include activities aimed at maintaining self-care (such as taking medications as prescribed, exercising regularly, eating low salt), follow-ups (such as monitoring symptoms, not disrupting doctor's appointments, monitoring weight changes) and management (such as monitoring signs and symptoms that indicate an exacerbation of the disease, such as fluid retention symptoms, and seeing a doctor in these cases, research and decision-making to arrange treatment) (Al-Sutari and Ahmad, 2017; Riegel et al., 2016). However, heart failure patients are not engaged in self-care behaviors.

The self-care maintenance, management and confidence behaviors of heart failure patients are low (Aghajanloo et al., 2021). a comparative study conducted in 15 countries and three regions (America, Europe, Australia) shows that the knowledge and self-care behaviors of heart failure patients are low, knowledge is a good predictor of self-care behaviors, self-care is below optimal, and a culture- and country-specific approach is required to improve self-care behavior (Jaarsma et al., 2013).

Siabani et al. (2016) reported that the factors affecting the self-care of patients with heart failure should be examined with large-scale research and in different cultures. It is important that the planned work in this direction was previously carried out in a limited number in Iraq. In order to develop educational and supportive cardiac education programs to include hospital and home care, in

particular to improve the educational programs currently provided in accordance with the needs of patients and to ensure patient participation, comprehensive data on the information and self-care behaviors of heart failure patients and the factors affecting them are needed. This study aims to determine the factors affecting the knowledge and self-care behaviors of heart failure patients related to their diseases.

MATERIAL- AND METHOD

Research and Sampling

The study is a descriptive and cross-sectional/relational study was composed of patients admitted to the cardiac care unit, emergency department and internal units (Cardiac Care Unit, Medical Emergency Department and Medical Ward) of Al-Sadder Medical Center (Al-Sadder Medical City) affiliated to Al-Ashraf Health Directorate in Al-Najaf City for heart failure treatment and control. The number of samples was determined as 80% statistical power and $\alpha=0.05$ significance level for one-way ANOVA test in G*Power 3.1.9 program and 180 for the effect size at the intermediate level determined as $f=0.25$.

However, taking into account the lost data that may occur during the study, 200 patients were taken into sampling. Individuals who were diagnosed with heart failure at least 6 months ago, over the age of 18, do not have chronic psychiatric, cognitive and communication problems, do not have physical and cognitive disabilities to answer data collection forms, have phone and internet access, are literate, speak Arabic and volunteer to participate in the study were taken into the study. The patients were determined according to random sampling method.

Data Collection Tools

The data were collected by using the Introductory Information Form, Arabic Dutch Heart Failure Knowledge Scale (A-DHFKS) and Arabic Self-Care of Heart Failure Index (A-SCHFI).

Introductory Information Form

The form prepared by the researcher according to the literature consists of two parts: the sociodemographic characteristics of the patients (13 questions) and the characteristics of disease and self-care (22 questions).

The Arabic Dutch Heart Failure Knowledge Scale (A-DHFKS)

The Arabic Dutch Heart Failure Knowledge Scale (A-DHFKS) van der Wal et al. it was developed by in 2005 to measure the knowledge of heart failure patients about general disease information (4 items), heart failure management (6 items for diet, fluid management and activity) and symptom recognition (5 items). The scale has been translated into Arabic and used in clinical practice in Lebanon (Massouh et al., 2020b, 2020a; Tawalbeh et al., 2017). The scale consists of a total of 15 multiple choice items with 1 score for correct answers and 0 for incorrect answers. A high score obtained from the scale indicates that the level of knowledge is high, and a low score indicates that the level of knowledge is low. The Cronbach's Alpha coefficient of the original scale is 0.62 (van der Wal et al., 2005). Tawalbeh et al. (2017) and Tawalbeh (2018) determined the Cronbach's Alpha coefficients of the Arabic scale as 0.88 and 0.87.

Arabic Self-Care of Heart Failure Index (A-SCHFI)

Riegel et al. to evaluate the self-care of heart failure patients. The index developed by (2000) and revised in 2004 and 2009 (Riegel et

al., 2000, 2004, 2009), consists of three sub-dimensions, self-care maintenance, self-care management and self-confidence in providing self-care, and a total of 22 items. Each sub-dimension score is calculated separately and standardized between 0-100. Dec. A score of 70 and above from the lower dimensions indicates that self-care is sufficient, and a high score indicates a higher level of self-care (Riegel et al., 2009). The Cronbach's alpha of the self-care maintenance sub-dimension was found to be 0.55, the self-care management sub-dimension was found to be 0.59, and the self-confidence sub-dimension in self-care provision was found to be 0.82 (Riegel et al., 2009).

The sub-dimension of maintaining self-care is related to the behaviors of individuals to maintain self-care. The lowest 10 and the highest 40 points are taken from this sub-dimension. Ten questions (1-10. questions) The items found in this sub-dimension are evaluated between "1= Never or rarely, 2: Sometimes, 3: Often, 4: Always or daily". The items in this sub-dimension are evaluated between "1= Never or rarely, 2: Sometimes, 3: Often, 4: Always or Decently". 8 In the sub-dimension of Maintaining self-care. the substance is reversed. The scoring of the self-care Maintenance sub-dimension is performed as follows: (The sum of the scores in section A is 10) $\times 3.333$. The sub-dimension of self-care management; 6 questions involving concerns, reaction to symptoms and management when they occur (11-16. it is evaluated with questions).

The assessment of this sub-dimension is, "Have you had difficulty breathing or swelling in your ankle in the last month?" if the answer to the question is yes, it will be evaluated. This is the 11th in the lower dimension. the scoring of the item is evaluated as "0: I didn't notice, 1: Not fast, 2: A little fast, 4: Fast, 5: Very fast", and the response of the next four items is

evaluated as "1: Low, 2: A little, 3: Possible, 4: High". The evaluation of the last item on the self-care management scale is made in the form of "0: I haven't tried anything, 1: I'm not sure, 2: I'm a little sure, 3: I'm sure, 4: I'm pretty Sure". This subscale score is calculated as follows: (the sum of the scores in section B is -4) $\times 5$. The potential score is between 0 and 100, and a high score indicates a higher level of management. The Self-Confidence sub-dimension in Providing self-care aims to evaluate the fulfillment of certain tasks of self-care. Six articles (17-22. the questions in the lower dimension evaluated by questions) are evaluated as "1: I'm not sure, 2: I'm a little sure, 3: I'm very sure, 4: I'm extremely sure" (Riegel et al., 2009). The lowest score to be taken from the Self-Confidence sub-dimension in Providing self-care is six, and the highest score is 24. The scoring of the self-confidence sub-dimension (the sum of the scores in section C is -6) is calculated using the formula $\times 5.56$. If a score of 70 and above is obtained from the lower dimension, self-care is evaluated as sufficient.

The validity and reliability of the Arabic version of the scale (A-SCHFI) was determined by Deek et al. in 2016 and it was used in patients with heart failure in Iraq by Abdulhussein and Abd-Ali (2020), Marzoog et al. (2019) and Massouh et al. (2020a, 2020b). The Cronbach's alpha coefficient of the Arabic scale was found to be 0.97 in the self-care maintenance sub-dimension, 0.87 in the self-care management sub-dimension and 0.97 in the self-confidence in providing self-care sub-dimension (Deek et al., 2016). Tawalbeh et al. (2017), Tawalbeh (2018) found the Cronbach's Alpha coefficient of the scale (SCHFI v.6.2) to be 0.87. Tawalbeh et al. (2017) found the Cronbach's Alpha coefficients of the Self-Care Maintenance, Self-Care Management, and Self-Confidence in Providing Self-Care subscales of the SCHFI v.6.2 scale to be 0.87, 0.85, and 0.86, respectively.

Collection of Data

Data were collected by the researcher between 08.30-17.00 on weekdays, Monday-Thursday. Before the examination, patients were asked to fill out the Introductory Information Form, A-DHFKS and A-SCHF1 in the waiting room according to their self-reporting. When this was not possible, data were collected by question-answer method. Data were collected by the researcher between 01.05.2021 - 28.07.2021.

Statistical Analysis

The data were evaluated in SPSS (Statistical Package for Social Sciences) 25.0 package program. Student t-test and ANOVA were used as parametric tests for two- and three-independent group comparisons of the total scale score of A-SCHF1 with normal distribution, Tukey and Dunnett were used for post hoc analyses. Mann Whitney U and Kruskal Wallis H tests from nonparametric tests were used in the Self-Care Maintenance, Self-Care Management and Self-Care Self-Confidence subscale of non-normally distributed A-DHFKS and two and three independent group comparisons of A-DHFKS, post hoc analyses were performed using the corrected Mann Whitney U test (Significance was evaluated according to $p=0.016$ when three groups were found in the comparisons used for further analysis, $p=0.0125$ when four groups were found). The relationships between independent and dependent variables were examined with a multiple linear

Ethical Approval

Ethical approval was obtained from the Ethics Committee of Muğla Sıtkı Koçman University Health Sciences for the research

(14.04.2021 date and 210033 -72 issue). Written permission has been obtained from Al-Sadder Medical Center (Al-Sadder Medical City) and Cardiac Center Directorate (Director of Najaf Cardiac Center) affiliated to Al-Ashraf Health Directorate (Al-Ashraf Health Directorate) where the data will be collected (04.04.2021 date and 12278 number). After the information was given to the patients participating in the study, their written and oral consents were obtained. During the study, the Helsinki Declaration on Human Rights was adhered to.

RESULTS

The descriptive characteristics of the participants are given in **Table 1**. 51.5% of the participants are women and 71.5% are married. 59.6% of the participants, most of whom have primary education and below education, are not working. Patients with an average age of 64 ± 11.51 years, 5.71 ± 2.60 children, have 1.80 ± 1.01 chronic diseases and only 19.5% are able to do daily personal care. The mean ejection fraction of heart failure patients was 46.17 ± 10.13 and 77.5% of them were NYHA class III-IV. 67% of patients have been admitted to the hospital in the last year.

However, 35.5% have been to regular health checkups and 60.5% do not know the name and effects of the drugs used. 94.5% of patients reported that their lives were negatively affected due to their diseases, 48.5% had talked to a doctor/nurse to cope with the problems they experienced related to heart failure, 54.5% had insufficient information about disease treatment and care, 59.5% had received training for disease treatment and care, but 57.1% found the training they received partially sufficient, and 87.5% wanted to receive training for disease and care.

Table 1. Descriptive Characteristics of the Patients (n=200).

Characteristics	n	%
Age ($\bar{X} \pm Ss = 64 \pm 11.51$)		
18-49 years old	18	9.0
50-64 years old	73	36.5
65 years and older	109	54.5
Gender		
Woman	103	51.5
Male	97	48.5
Marital Status		
Single, widowed, divorced	57	28.5
Married	143	71.5
Number of Children ($\bar{X} \pm Ss = 5.71 \pm 2.60$)		
Childless	7	3.5
With 1-3 children	40	20.0
With 4 or more children	153	76.5
Education Status		
Illiterate and literate	113	56.5
Primary Education	49	24.5
High school and above	38	19.0
Employment Status		
Non-working and housewife	119	59.6
Employee (Civil servant, worker, self-employed, farmer)	61	30.5
Retired	20	10.0
Monthly Income		
Income is less than expense	126	63.0
Income is equal to and surplus	74	37.0
Health Insurance		
No	196	98.0
Yes	4	2.0

Characteristics	n	%
People He Lived With		
With Spouse/Children/Parents and relatives	68	34.0
Together with his wife and children	132	66.0
Smoking/Tobacco Use		
No	86	43.0
Left	74	37.0
I'm using	40	20.0
Alcohol Use		
No	195	97.5
Left	5	2.5
Doing Your Own Daycare		
No	55	27.5
Yes	39	19.5
Partly	106	53.0
Presence of Chronic Disease		
No	15	7.5
Yes	185	92.5
Type of Chronic Disease		
Diabetes	115	57.5
COPD	32	16.0
Hypertension	147	73.5
Valvular heart disease	12	6.0
Coronary artery disease	51	25.5
Other (back vertebral surgery)	2	1.0
Ejection Fraction (%) $\bar{X} \pm Ss = 46.17 \pm 10.13$		
40 and under	59	29.5
41-49	58	28.0
50 and above	85	42.5

Characteristics	n	%
NYHA class		
I	13	6.5
II	32	16.0
III	90	45.0
IV	65	32.5
Time (years) of first diagnosis of heart failure $\bar{x} \pm ss = 4.52 \pm 3.89$		
1-5 years	146	73.0
6-10 years	39	19.5
11 years and above	15	7.5
Going for regular health check-ups		
No, I don't go at all, I go when I get sick	129	64.5
Yes, I go regularly	71	35.5
Number of Hospitalizations for Heart Failure ($\bar{X} \pm Ss = 7.04 \pm 11.46$)		
Never lying down	18	9.0
1-2 times lying down	71	35.5
Lying 3-4 times	32	16.0
5 and above	79	39.5
Hospitalization for heart failure in the past year		
No	66	33.0
Yes	134	67.0
Knowing the Name and Effects of the Drugs Used		
No	121	60.5
Yes	20	10.0
Partly	59	29.5
How the Disease Affects Life (Work, Family)		
It didn't impress, it affected positively	11	5.5
Negatively affected	189	94.5

Characteristics	n	%
Methods of Coping with the Problems Experienced for the Treatment and Care of the Disease		
I'll figure it out myself	10	5.5
I talk to my family	89	44.5
I'll figure it out with friends	4	2.0
I talk to the doctor or nurse	97	48.5
Knowledge of Disease Treatment and Care		
Insufficient	109	54.5
Sufficient	22	11.0
Partially adequate	69	34.6
Training Status for Disease Treatment and Care		
No	81	40.5
Yes	119	59.5
Finding the Education Received Sufficient (n=119)		
Insufficient	41	34.5
Sufficient	10	8.4
Partially adequate	68	57.1
Willingness to Receive Education for Illness and Care		
No	25	12.5
Yes	175	87.5

Table 2 shows the average A-DHFCS and A-SCHFI scores of the patients. The average A-DHFCS score of heart failure patients is 4.73 ± 2.01 . Patients with A-SCHFI score averages of 37.67 ± 11.35 received a score of 36.87 ± 10.13 from the Self-Care Maintenance sub-dimension, 45.25 ± 13.98 from the Self-Care Management sub-dimension and 30.88 ± 20.41 from the Self-Confidence sub-dimension in Providing Self-Care.

Table 2. Mean A-DHFCS and A-SCHFI Scores of Patients (n=200).

Scales and Their Sub-Dimensions	Min – Mak.	$\bar{X} \pm Ss$
Arabic Dutch Heart Failure Knowledge Scale	0.00-11.00	4.73 $\pm$ 2.01
Maintaining Self-Care	10.00-66.66	36.87 $\pm$ 10.13
Self-Care Management	0.00-80.00	45.25 $\pm$ 13.98
Self-Confidence in Providing Self-Care	0.00-100.00	30.88 $\pm$ 20.41
Arabic Heart Failure Self-Care Index	7.78-64.09	37.67 $\pm$ 11.35

It is observed that the A-DHFKS score averages of patients are affected only by the method of coping with the problems experienced related to the disease (**Table 3**). The A-DHFKS scores of those who talk to a doctor or nurse to solve their problems are 0.639 points higher ($\beta=0.639$, 95% CI: (0.097, 1.181), $p=0.021$) than those who try to solve their problems themselves or consult a circle of friends and family, and this explains 16.8% of the variation in the A-DHFKS score (Adjusted $R^2=0.168$).

Table 3. Investigation of the Factors Affecting the A-DHFKS Score Averages of Patients with a Linear Regression Model.

Arguments	β	SH(β)	95% G.A. for β .	t	p^a
Age, years	0.003	0.013	-0.022, 0.028	0.255	0.799
Gender					
Woman	reference				
Male	0.487	0.286	-0.077, 1.051	1.704	0.090
Marital status					
Single, Widowed, Divorced	reference				
Married	0.438	0.312	-0.177, 1.052	1.405	0.162
Monthly Income					
Income is less than expense	reference				
Income is equal to and surplus	0.292	0.291	-0.282, 0.865	1.003	0.317
Hospitalization for Heart Failure in the Last Year					
No	reference				
Yes	0.597	0.307	-0.008, 1.203	1.946	0.053

Arguments	β	SH(β)	95% G.A. for β .	t	p ^a
Knowing the Name and Effects of the Drugs Used					
No	reference				
Yes, Partially	0.554	0.316	-0.069, 1.177	1.754	0.081
Influencing Patient (Work, Family)					
It didn't impress, it affected positively	reference				
Negatively affected	1.197	0.614	-0.014, 2.408	1.950	0.053
Method of Dealing with Problems					
I solve it myself, I solve it with family and friends	reference				
I talk to the doctor or nurse	0.639	0.275	0.097, 1.181	2.326	0.021
Knowledge of Disease Treatment and Care					
Insufficient	reference				
Yes, partly enough	0.354	0.318	-0.273, 0.981	1.114	0.267

aH0: $\beta=0$ etc. Ha: t-test for $\beta \neq 0$. Adjusted R²=0.168.

A-SCHFI scores of heart failure patients are affected by educational status, smoking, regular health check-ups for the disease, knowledge of the name and effects of the medications they use, and A-DHFKS status, and these variables explain 28.7% of the variation in A-SCHFI scores (Adjusted R²=0.287). An increase in the A-DHFKS score by one point increases the A-SCHFI score by 2.102 points ($\beta=2.102$, 95% CI: 1.380, 2.824, $p<0.001$). A-SCHFI scores are 5.039 points higher for those who graduated from high school and above than for those who are illiterate and only literate ($\beta=5.039$, 95% CI: 0.259, 9.819, $p=0.039$) and 4.376 points higher for those who undergo regular health check-ups for their disease than for those who do not undergo regular health check-ups ($\beta=4.376$, 95% CI: 1.479, 7.272, $p=0.003$). Knowing the name and effects of the drugs used by the patients also positively affects the A-SCHFI scores ($\beta=3.457$, 95% CI: 0.064, 6.851, $p=0.046$). However, the A-SCHFI scores of smokers are 5.560 points lower than those who do not use ($\beta=-5.560$, 95% CI: -9.149, -1.971, $p=0.003$) (**Table 4**).

Table 4. Investigation of the Factors Affecting the A-SCHF Score Averages of Patients with a Linear Regression Model.

Arguments	β	SH(β)	95% G.A. for β .	t	p ^a
Age, years	0.009	0.063	-0.115, 0.133	0.143	0.886
Gender					
Woman	Reference				
Male	1.158	1.539	-1.878, 4.193	0.752	0.453
A-HKYMS score	2.102	0.366	1.380, 2.824	5.742	<0.001
Marital status					
Single, widowed, divorced	Reference				
Married	-1.140	1.617	-4.330, 2.051	-0.705	0.482
Educational background					
Illiterate and literate	Reference				
Primary Education	2.672	1.764	-0.807, 6.152	1.515	0.131
High school and above	5.039	2.423	0.259, 9.819	2.080	0.039
Monthly Income					
Income is less than expense	Reference		-		
Income is equal to and surplus	-0.992	1.572	4.094, 2.11	-0.631	0.529
Smoking					
Non-user	Reference				
Uses	-5.560	1.819	-9.149, -1.971	-3.056	0.003
Regular Health Check-Ups for Illness					
No When I get sick, I go	Reference				
Yes, I go regularly	4.376	1.468	1.479, 7.272	2.980	0.003

Arguments	β	SH(β)	95% G.A. for β .	t	p ^a
Knowing the Name and Effects of the Drugs Used					
No	Reference				
Yes, Partially	3.457	1.720	0.064, 6.851	2.010	0.046
How to Deal with Your Problems					
I solve it myself, I solve it with family and friends	Reference				
I talk to the doctor or nurse	1.431	1.435	-1.4, 4.263	0.997	0.320
Knowledge of the Treatment and Care of the Disease					
Insufficient	Reference				
Yes, Partially Enough	-2.019	1.708	-5.388, 1.35	-1.182	0.239
Training Status for the Treatment and Care of the Disease					
No	Reference				
Yes	2.531	1.429	-0.287, 5.349	1.772	0.078

aH0: $\beta=0$ etc. Ha: t -test for $\beta \neq 0$. Adjusted R2=0.287.

DISCUSSION

As a result of this study conducted to examine the heart failure information and self-care behaviors of heart failure patients in Iraq, it was found that the patients' knowledge of heart failure was low (4.73 ± 2.01). Hassan and Al-fayyadh (2023) also found the heart failure information score of Iraqi patients to be 4.28 ± 2.94 . On this subject, Tawalbeh et al. (2017) in Jordan, Wagenaar et al. (2018) in the Netherlands, Róin et al. In the studies conducted by (2019) in Adalar, it was also found that the patients' heart failure information was low. However, Zeng et al. (2016) in Singapore, Foster (2018) determined the patients' heart failure information at a good level in their studies conducted in America. It is an expected finding that the information

about heart failure is low due to the fact that the patients who make up the sample of this study have a low level of education. This finding may be due to the insufficient heart failure education programs for patients in Iraq (Kadhem and Muğahes, 2018). This finding supports the low knowledge levels highlighted in heart failure patients in developing countries.

In this study, it was found that the information of heart failure patients was affected only by the method of coping with problems related to the disease, especially those who spoke with a doctor or nurse had higher information scores. It has been found that the recommendations given by the doctor or nurse in support of this finding, as well as their follow-up and counseling, lead to higher knowledge (Takeda et al., 2019). Take

Tawalbeh et al. (2017) emphasized the importance of training programs to be provided by nurses in order to increase the knowledge of heart failure patients. Zeng et al. (2016) reported that there are two important variables that affect self-care knowledge, especially the educational level of the patients and the information given to the patients. Nozawa et al. (2024) found that the level of advanced education was associated with previous hospitalization for heart failure and received heart failure education. Santana de Araújo et al. (2024) found that the risk of insufficient information is 2 times higher in the elderly and illiterate people. In this study, similarly to the literature, the positive influence of patients' heart failure information only from the state of conversation with medical personnel draws attention to the role of medical personnel in eliminating the information gap. In the study, the fact that patients receive low support, especially from nurses, indicates that there is a need for regulations that will allow nurses to make more contributions to heart failure patients.

An important finding revealed by this study is that heart failure patients exhibit inadequate self-care (37.67 ± 11.35) behavior, including self-care maintenance (36.87 ± 10.13), self-confidence in providing self-care (30.88 ± 20.41) and self-care management (45.25 ± 13.98). Similar to the results of this study, a previous study conducted in Turkey found that the self-care behaviors of patients were low (33.14 ± 9.41) (Kökcu and Tiryaki, 2020). Kadhém and Muhabes (2018) found that heart failure patients in Iraq have a moderate level of self-care management. Similarly, in Iraq (Hassan and Al-Fayyadh 2023) and China (Zhang et al. 2023) in the studies conducted, attention has been drawn to the prevalence of inadequate self-care behaviors of patients. However, Zeng et al. (2016) found that heart failure patients in Singapore had a high self-care score

(57.5 ± 22.2). The findings of the study support that, as in developing countries, heart failure patients are inadequate in maintaining their self-care, managing their self-care, and self-care confidence, and may be due to patients' low knowledge of heart failure. In addition, it may also be related to the insufficient educational programs provided to heart failure patients in Iraq (Kadhém and Muhabes, 2018) and the low educational levels of the patients in the sample.

In this study, it was found that the patients' educational status, smoking, regular health check-ups for the disease, heart failure information, and knowing the name and effects of the medications they use affect their self-care behaviors and explain more than 1/4 of the change in their self-care behaviors. Information about heart failure (2.102 points), high school education and higher education (5.039 points), regular health check-ups for the disease (4.376 points), knowledge of the name and effects of the drugs he uses (3.457 points) increases the self-care points, while smoking (5.560 points) decreases. Although there are studies in the literature that report that these factors are effective other than smoking, it is also observed that different variables are effective. In southern Iran (Siabani et al. 2016) and in Brazil (Silva et al. 2023) it has been shown that different variables are effective at each level of self-care of heart failure patients. Alkouri et al. (2022) found that insomnia and marital status are significant predictors of low self-care scores. A study conducted in Iran found that social factors directly or indirectly affect self-care through age-related factors, and previous experiences also affect it (Kamrani et al., 2018). Again, Graven et al. (2015) found that heart failure neighborhoods, social support and social problem solving are effective factors. In contrast, Pobrotyn et al. (2021) of the male gender and Liljeroos et al. (2020) found that perceived control is important in

developing self-care in a positive way. Kim and Son (2023) also found that only 1/5 of the patients discharged from the hospital maintained a high level of self-care behaviors, and adequate health literacy and positive social support were effective in this. As in this study, Koirala et al. (2020) found that higher education affects self-care and management. Niriayo et al. (2024), identified living in rural areas, illiteracy, previous hospitalization and using five or more medications as risk factors for poor self-care behavior. Zhang et al. (2023) reported that individual (female gender, high monthly income and education level), disease (NYHA class, better daily living activities) and environmental (better social support and living in more developed areas) factors are effective in the self-care of heart failure patients in China. Bagheri--Saweh et al. (2018) found that the self-care behaviors of heart failure patients are related to factors such as educational level, location and educational level related to the disease. Sedlar et al. (2017), age, health-related quality of life, gender, education, NYHA class, depressive symptoms and EF value in self-care behaviors, Hailu Gebru et al. (2021) also reported that age, education level, additional disease, information about heart failure and social support are important. Oct. Tawalbeh et al. (2017) Low knowledge level of heart failure in Jordan, income and education level, shorter duration of illness, living at home with few people, advanced age and unemployment status, Moaddab et al. (2020) also determined monthly income, information retrieval history and cognitive function as predictors of general self-care. As can be seen in the literature, the fact that different factors are effective in self-care behaviors makes it necessary to examine the factors affecting self-care culturally and individually. However, the increased educational level of the patients in the study, their knowledge about heart failure and their positive influence on regular follow-ups, Hwang et al. as stated by (2024), it shows that

heart failure education is important for the development of self-care behaviors. In the study, unlike the literature, it is significant to identify smoking as a factor affecting self-care. Therefore, it will be important for medical personnel to strengthen patient education to improve the self-care behavior of at-risk heart failure patients.

CONCLUSION

The patients' knowledge and self-care about heart failure are insufficient, and they are affected by various factors. In order to increase the knowledge of heart failure and the self-care of patients, it is recommended that health personnel, especially nurses should organize and maintain planned cardiac education programs that include the affecting factors.

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