Research Article

JMR 2019; 5(4): 155-158

July- August

ISSN: 2395-7565

© 2019, All rights reserved

www.medicinarticle.com

Received: 16-08-2019

Published: 09-09-2019

Knowledge regarding Heart Failure: A Reflection on Current Disease Knowledge State among Iranian Patients with Heart Failure

Mahin Nomali¹, Kian Alipasandi², Ramin Mohammadrezaei³

¹ Ph.D Student of Epidemiology (MSN), Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

² Resident of Cardiology (MD), Department of Cardiology, Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran

³ Fellowship of Heart Transplantation and Advanced Heart Failure, Heart Failure Clinic, Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran

Abstract

Background: Heart failure (HF) is a serious problem with an increasing prevalence globally. Low level of HF knowledge may cause low compliance and low quality of life and, poor self-care. On the other hand, assessing the level of HF knowledge is necessary in order to apply educational programs. **Aims and objectives:** the aim was to determine knowledge regarding HF among Iranian patients with HF. **Study Design:** This was a cross sectional study. **Setting:** We conducted this study at the HF clinic of Tehran Heart Center (THC) affiliated with Tehran University of Medical Sciences (TUMS, Tehran, Iran). **Materials and Methods:** In this cross-sectional study, 190 patients older than 18 years old, with confirmed 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 gathered in a short form, including demographic and clinical variables. Knowledge regarding HF was measured by the Dutch HF knowledge scale (Cronbach's $\alpha=0.62$) 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. **Statistics:** The SPSS software version 16 was used to describe data. Normality of continuous variables was checked by the Kolmogorov-Smirnoff test. Frequency and partial frequency distribution were used to describe Categorical variables. While, we used mean, median, standard deviation, and IQR for describing continuous variables. **Results:** 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. **Conclusion:** 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.

Keywords: Knowledge, Dutch Heart Failure knowledge scale, Heart failure, Cross-sectional study, Iran.

INTRODUCTION

Heart failure (HF) is a promptly growing cardiovascular condition worldwide with an estimation of more than 37.7 million individuals and with an increased morbidity and mortality ^[1] due to epidemiologic transition and population aging ^[2]. There are the geographic variations in the prevalence, incidence, mortality and morbidity rates due to the different etiologies and clinical characteristics observed among patients with HF ^[3].

In opposite to western countries, there is a limited information on HF epidemiology especially in Asia. However, it has been reported as a general pandemic in Asia ^[2].

In addition, HF is a leading cause of hospital admission among adults and the elderly patients ^[1]. It is a major burden to both populations and health care services in low and middle income countries where it is responsible for an average of 2.2 % of hospitalizations ^[4].

Failure to evidence-based medicine practice and great gap between knowledge and research lead to the gap between suboptimal HF treatment and what is achievable ^[5]. Patients with HF experience various

*Corresponding author:

Mahin Nomali

Ph.D Student of Epidemiology (MSN), Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

Email:

m-nomali@alumnus.tums.ac.ir

clinical outcomes. Some of comorbidities, all-cause hospitalization or emergency department visit through the previous year may be associated with worse clinical outcomes among patients with HF [6]. Younger in age and having better knowledge regarding the disease are associated with higher self-care behaviors and quality of life [7]. In addition, the knowledge of a patient with HF about his/her disease influences compliance with medical prescription and the patients' quality of life (QOL) [8] and low compliance with weight monitoring and exercising has been reported [9].

Major challenges among patients with HF are identifying patients who are at risk for non-compliance and improving patient's compliance by an increase of knowledge and a change of the patient's beliefs [9]. Thus, there is an essential need to assess the level of knowledge in order to improve patient's outcome and compliance and we aimed to evaluate the knowledge regarding HF among Iranian patients with HF.

MATERIAL AND METHODS

We conducted this cross-sectional study at the HF clinic of Tehran Heart Center (THC) affiliated with Tehran University of Medical Sciences (TUMS, Tehran, Iran).

According to the appropriate knowledge proportion of 52.9% reported in the Razazi et. al study [10] and by the following formula, and at significance level of 5 %, $Z_{1-\alpha/2}$ of 1.96, d of 0.08 (i.e. 15 % of the appropriate knowledge proportion [10]), the sample size was calculated and estimated 158 and by considering non- response rate of 20%, the final sample size was 190.

$$n = \frac{(Z_{1-\alpha/2})^2 pq}{d^2}$$

The inclusion criteria were age older than 18 years old, confirmed diagnosis of HF for at least 3 months by an HF specialist, NYHA function class II to IV, an ability of reading and writing Farsi language. Exclusion criteria were patients' avoidance of participation in the study and incomplete questionnaires were excluded from the analysis process. Therefore, we included 190 eligible patients by consecutive sampling during the study period from June 2017 to January 2018.

We gathered data in a short form, including demographic variables such as age, sex, marital status, level of education, and employment status, and clinical variables such as HF duration, systolic and diastolic blood pressure, heart rate, ejection fraction, NYHA function class, disease etiology, comorbidities, previous hospitalization, implantable cardiac devices, and medications. We completed this form based on patients' self-report and their clinical records at HF clinic.

In order to measure the knowledge regarding HF, we used Dutch HF knowledge scale (DHFKS) (Cronbach's $\alpha=0.62$) [11] with 15- multiple choice item. This scale was a self-administered questionnaire concerning general knowledge on HF (4 items), knowledge on HF treatment (6 items on diet, fluid restriction, and activity) and symptoms and symptom recognition (5 items). In order to collect data, we asked participants to choose the correct option from the three options. The minimum score for this scale is 0 (no knowledge) and the maximum score is 15 (optimum knowledge) [11]. The Iranian version of this scale was used in Nomali et al. study at first [12]. The face and qualitative content validity were approved by an expert panel including nursing faculty members, nurse practitioners, and cardiologists affiliated with TUMS and patients with HF. It was a reliable scale. The reliability was assessed through a pilot study among 30 patients with HF (Cronbach's $\alpha=0.623$) [12]. This Coefficient alpha was identical to the original one and the internal consistency could not be improved by deletion of any of the 15 items [11]. Thus, all items have been retained. In this study, we reported scores totally and in 3 areas of knowledge. In order to identify patients with lower knowledge in each area, we calculated median and scores less than the median was considered as lower knowledge.

Statistical analysis:

The SPSS software version 16 was used to describe data. Normality of continuous variables was checked by the Kolmogorov-Smirnoff test. Frequency and partial frequency distribution were used to describe Categorical variables. While, we used mean, median, standard deviation, and IQR for describing continuous variables.

RESULTS

From June 2017 to January 2018, 160/190 eligible 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 (42.0%) was at the high school level of education and 58.1% of them were employed.

Clinical characteristics of study patients with HF have been shown in table 1. According to this table, the majority of patients were with NYHA function class II (60.6%), and with an etiology of ischemic heart disease (65.0%). In addition, hypertension was the most prevalent comorbidity among them (40.0%). The most of patients had previous hospitalization (78.7%). Beta blockers (90.0%), diuretics (88.8%), angiotensin- converting enzyme inhibitors (61.8%), and aspirin (55.6%) were the most common medications used to manage the disease among patients with HF.

Figure 1: Frequency distribution of total, general, HF treatment, and symptoms/ symptom recognition knowledge among patients with heart failure

Table 1: Clinical characteristics of study patients with HF

Variables		Frequency (%) n=160
HF duration (month) [Median(IQR*)]		15.5 (29.0)
Systolic Blood Pressure (mmHg)[Median(IQR)]		113.0 (25.0)
Diastolic Blood Pressure (mmHg)[Median(IQR)]		73.0 (15.0)
Heart Rate (bpm) [Median(IQR)]		77.0 (17.7)
Ejection Fraction (%) [Median(IQR)]		25.0 (10)
NYHA function class	II	97.0 (60.6)
	III	57.0 (35.6)
	IV	6.0 (3.8)
Etiology (yes/no)	Ischemic heart disease	104.0 (65.0)
	Cardiomyopathy	25.0 (15.6)
	Hypertensive disease	21.0 (13.1)
	Valve disease	8.0 (5.0)
	Others	2.0 (1.3)
Comorbidities (yes/no)	Hypertension	64.0 (40.0)
	Diabetes	46.0 (28.8)
	Dyslipidemia	20.0 (12.5)
	Chronic Kidney Disease	15.0 (9.4)
	Chronic Obstructive Pulmonary Disease	5.0 (3.1)
	Atrial Fibrillation	22.0 (13.7)
Past medical history (yes/no)	Percutaneous Coronary Intervention	29.0 (18.1)
	Coronary Artery Bypass Graft surgery	43.0 (26.9)
	Valve surgery	4.0 (2.5)
	Transplantation	0.0 (0.0)
Previous hospitalization (yes/no)		126.0 (78.7)
Implantable Cardiac Devices (yes/ no)		19.0 (11.9)
Medication (yes/ no)	Angiotensin- converting enzyme inhibitors	99.0 (61.8)
	Angiotensin receptor blockers	39.0 (24.4)
	Beta blockers	144.0 (90.0)
	Diuretics	142.0 (88.8)
	Aspirin	89.0 (55.6)
	Statins	33.0 (20.6)
	Vitamin K antagonists	51.0 (32.0)
	Digitals	38.0 (23.8)

*Interquartile range

The median and IQR of total, general knowledge, knowledge on HF treatment, and knowledge on symptoms/symptom recognition were 8 (7-10), 12 (9-14), 2 (1.25-3), and 4 (3-5), respectively. The frequency distribution of total, general knowledge, HF treatment, and symptoms and symptom recognition knowledge among patients with HF has been indicated in Fig. 1. According to the Fig.1, the majority of patients with HF had low levels of total knowledge, general knowledge, and knowledge on HF treatment, and symptoms/ symptom recognition.

DISCUSSION

In this cross-sectional study, we evaluated the knowledge regarding HF among Iranian patients with HF. According to our findings, the majority of study patients (55%) had low level of total knowledge regarding HF disease. In the Chen Aleda study in 2014, less than 55% of HF knowledge questions were answered correctly by participants, which was consistent with our findings [13]. While, in Razazi et al. study in 2018 in Iran, only 47.1% of patients with HF had inadequate

knowledge. This difference may be due to the different study population. They studied patients with ejection fraction (EF) of less than equal to 35 % and patients with recurrent readmission [10] and we studied outpatients with a definite diagnosis of HF regardless of EF. In contrast to our study, 69.5 % of rural patients in California, Kentucky or Nevada had correct scores on the DHFKS and they evaluated patient with HF hospitalized for HF within the last 6 months which was different from ours [5]. Previous studies reported different levels of knowledge among patients with HF that may be because of the different study population and setting. Thus, further researches are needed to approve our study results.

One of the areas of knowledge evaluated in this study was general knowledge on HF. It is necessary for patients to understand the meaning of the disease, the function of heart, the etiology of the disease, and the factors worsening the disease in order to manage their disease, appropriately. Patients need to be educated well about the nature of HF and the importance of changes in lifestyle [8]. In this

study, participants had low level of general knowledge regarding HF. Delavar *et al* study in 2010 indicated the low level of awareness (82.6%) among Iranian patients with HF regarding exacerbating factors of their disease, as well ^[14]. Inconsistent with low level of general knowledge in our study and low level of awareness regarding exacerbating factors of HF in the previous study ^[14], general public awareness of HF was poor with the several misbeliefs in spite of hearing more about HF and HF was perceived as less important than several other chronic diseases ^[15]. Therefore, this area of knowledge should be improved among both patients and public population.

Another area of knowledge was knowledge on HF treatment. Knowledge of HF and its management is necessary for patients with HF ^[16]. Patients need to know information on fluid and salt intake, exercising, and prescribed medications. According to Clark *et al.* study in 2009, non-compliance was common in elderly patients with HF and there were shortcomings in patients' knowledge of prescribed medications, despite of giving adequate information ^[16]. In Verena *et al.* study in 2010, knowledge of urban South African patients with HF regarding their treatments were poor and 56 % of patients could not name their medications and their side effects ^[17]. Poor knowledge about medication was one of the factors contributing to medication non-adherence ^[18]. Thus, this area of knowledge should be improved among patients with HF in order to improve treatment adherence.

The last area of knowledge was knowledge of HF symptoms/ symptom recognition. Patients need to know about the symptoms such as weight increase, shortness of breath, and swollen leg and their regular monitoring, and actions should be done in case of disease exacerbation in the early stage of the disease. In our study, the majority of patients had low level of knowledge regarding symptom/ symptom recognition. Mohammed Assen *et al* (2019) reported that patients' adherence to self-care recommendations were poor and good level of HF knowledge was one of the factors that positively associated with adherence to self-care recommendations ^[19]. In addition, according to an integrative review, elderly patients and newly diagnosed patients with HF were more likely to delay in order to seek for appropriate treatment following onset of symptoms ^[20]. Thus, patients' empowerment on this area of knowledge is necessary in order to improve patients' self-care and self-management.

CONCLUSION

As a conclusion, study patients with HF had low levels of total knowledge, general knowledge, knowledge on HF treatment, and symptoms/symptom recognition. Thus, knowledge of patients with HF regarding all areas of HF knowledge, especially on knowledge of symptoms/ symptom recognition need to be improved by appropriate interventions in order to improve clinical outcomes.

Acknowledgment:

We would like to thank patients with HF participating in the study at the heart failure clinic of THC affiliated with TUMS for their participation and completion of the study.

Conflict of interest:

The authors declare that there is no conflict of interest.

REFERENCE

1. Ziaeian B, Fonarow GC. Epidemiology and aetiology of heart failure. *Nature Reviews Cardiology*. 2016;13:368.
2. Shimokawa H, Miura M, Nochioka K, Sakata Y. Heart failure as a general pandemic in Asia. *European journal of heart failure*. 2015;17(9):884-92.
3. Savarese G, Lund LH. Global public health burden of heart failure. *Card Fail Rev*. 2017;3(1):7.

4. Callender T, Woodward M, Roth G, Farzadfar F, Lemarie J-C, Gicquel S, et al. Heart Failure Care in Low- and Middle-Income Countries: A Systematic Review and Meta-Analysis. *PLOS Medicine*. 2014;11(8):e1001699.
5. Burch D. Heart failure: gaps in knowledge and failures in treatment. *PLoS medicine*. 2014;11(8):e1001702.
6. Farré N, Vela E, Cléries M, Bustins M, Cainzos-Achirica M, Enjuanes C, et al. Real world heart failure epidemiology and outcome: A population-based analysis of 88,195 patients. *PLoS one*. 2017;12(2):e0172745.
7. Liu M-H, Wang C-H, Huang Y-Y, Cheng W-J, Wang K-WK. A Correlational Study of Illness Knowledge, Self-Care Behaviors, and Quality of Life in Elderly Patients With Heart Failure. *Journal of Nursing Research*. 2014;22(2):136-45.
8. Płotka A, Prokop E, Migaj J, Straburzyńska-Migaj E, Grajek S. Patients' knowledge of heart failure and their perception of the disease. *Patient preference and adherence*. 2017;11:1459.
9. van der Wal MHL, Jaarsma T, Moser DK, Veeger NJGM, van Gilst WH, van Veldhuisen DJ. Compliance in heart failure patients: the importance of knowledge and beliefs. *European Heart Journal*. 2005;27(4):434-40.
10. Razazi R, Aliha J, Amin A, Taghavi S, Ghadrdoost B, Naderi N. The relationship between health literacy and knowledge about heart failure with recurrent admission of heart failure patients. *Research in Cardiovascular Medicine*. 2018;7(3):123-9.
11. van der Wal MH, Jaarsma T, Moser DK, van Veldhuisen DJ. Development and testing of the Dutch heart failure knowledge scale. *European Journal of Cardiovascular Nursing*. 2005;4(4):273-7.
12. Nomali M, Mohammadrezaei R, Keshtkar AA, Roshandel G, Ghiyasvandian S, Alipasandi K, et al. Self-Monitoring by Traffic Light Color Coding Versus Usual Care on Outcomes of Patients With Heart Failure Reduced Ejection Fraction: Protocol for a Randomized Controlled Trial. *JMIR research protocols*. 2018;7(11):e184.
13. Chen AM, Yehle KS, Albert NM, Ferraro KF, Mason HL, Murawski MM, et al. Relationships between health literacy and heart failure knowledge, self-efficacy, and self-care adherence. *Research in Social and Administrative Pharmacy*. 2014;10(2):378-86.
14. Safa Delavar F, Tadayyonfar M. Evaluation of the awareness of chronic heart failure patients in Sabzevar Vasei Hospital regarding the exacerbating factors of their disease in 2009-2010. *The J Research Committee of Students at Sabzevar University Of Medical Sciences*. 2010;15:16-9.
15. Lainscak M, Letonja M, Kovacic D, Hodosecek LM, Marolt A, Bartolic CM, et al. General public awareness of heart failure: results of questionnaire survey during Heart Failure Awareness Day 2011. *Archives of medical science: AMS*. 2014;10(2):355.
16. Clark AM, Freyberg CN, McAlister FA, Tsuyuki RT, Armstrong PW, Strain LA. Patient and informal caregivers' knowledge of heart failure: necessary but insufficient for effective self-care. *European journal of heart failure*. 2009;11(6):617-21.
17. Verena R, Stewart S, Pretorius S, KUBhEKA M, Sliwa K, Lautenschläger C, et al. Medication adherence, self-care behaviour and knowledge on heart failure in urban South Africa: the Heart of Soweto study. *Cardiovascular journal of Africa*. 2010;21(2):86.
18. Shah D, Simms K, Barksdale DJ, Jia-Rong W. Improving medication adherence of patients with chronic heart failure: challenges and solutions. *Research Reports in Clinical Cardiology*. 2015;6:87.
19. Seid MA, Abdela OA, Zeleke EG. Adherence to self-care recommendations and associated factors among adult heart failure patients. From the patients' point of view. *PLOS ONE*. 2019;14(2):e0211768.
20. Lam C, Smeltzer SC. Patterns of Symptom Recognition, Interpretation, and Response in Heart Failure Patients: An Integrative Review. *Journal of Cardiovascular Nursing*. 2013;28(4):348-59.