

Review Article

Nurses' knowledge of heart failure self-management education principles

Mohammad A. Abu Sa'aleek^{1*}, Bader T. Alzawahra²

¹Ministry of health, New Zarqa governmental hospital, Zarqa, Jordan

²King Hussein cancer centre, Amman, Jordan

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*Correspondence:

Dr. Mohammad A. Abu Sa'aleek,

E-mail: mohammadabusaaleek@gmail.com

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ABSTRACT

Heart failure is considered as a chronic disease and the management of such condition is complex and challenging. Nurses play a significant role in managing heart failure by enhancing self-care practices among patients. This paper aims to evaluate evidence from the literature regarding nurses level of knowledge about the educational principles in heart failure. The nine selected studies included a total number of 1181 patients. These studies were conducted in the USA and Europe from 2002 until 2019. The uniqueness of those selected studies that all the authors use the same instrument titled "nurses knowledge of heart failure education principles". The results revealed that there was an inconsistency in the level of knowledge among nurses in hospital-based, ambulatory, primary care or home care settings. More randomized studies are needed to solve this discrepancy. The level of knowledge ranged from (60.4-79.85%). Six topics have been identified as areas of weakness in which education is needed. Educating nurses in different settings is the gold standard to raise their level of knowledge which in turn will be in a better position to provide a high level of education for patients in order to alleviate their suffering, improve the quality of life and reduce the frequent hospitalization.

Keywords: Heart failure, Nurses, Knowledge, Education, Self-management

INTRODUCTION

Heart failure (HF) is a chronic disease and is considered as a main health issue worldwide. HF affects the quality of life of patients diagnosed with HF due to frequent readmission, which in turn affecting health care systems.¹⁻³ HF is considering as illness of the elderly population over sixty years, 2-3% of people in the united states reported to be affected.⁴ The management of heart failure has improved considerably over the last 30 years.⁵ As the life expectancy increased due to medical improvement in terms of treatment and management, the number of patients diagnosed with HF will remain high.^{1,4} Moreover, the management of heart failure as a complex condition is a challenging process.²

Patients with HF usually presented with fatigue, shortness of breath and edema. The aims of treatments are reducing frequent hospitalization, minimizing symptoms and improve the quality of life.¹ Patients often experience exacerbation of those symptoms which may result in hospitalization. So, certain measures to reduce readmission are needed among such patients.⁶

The American college of cardiology and American heart association (ACC/AHA) identify that education for both patients and their family is a crucial and complicated process. Moreover, the patients' failure to understand and comply with health care provider' instructions' leads to symptoms worsening and hospitalization. In addition, evidence-based topics that are important for managing heart failure include 1) symptoms identification, 2) diet,

3) weight monitoring, 4) medications, 5) level of activity and 6) follow-up appointments.⁷

Education in such topics is vital which allows for earlier intervention resulting in lowering the degree of deterioration, readmission, and poor quality of life.^{1,8} Patients' education along with motivation for developing self-care and self-management skills is essential element in the management of heart failure.² Furthermore, patients are expected to change their behaviors as a result of self-management programs.⁹

It is suggested that nurses care of patients with heart failure expand their knowledge.¹⁰ Nurse play vital roles in terms of education and consider as the main providers for education in a variety of health care setting.¹ Both American and European guidelines recommend that health care providers deliver both education and counseling to patients on many heart failure aspects such as signs and symptoms, medication, risk factors, diet modification, activity and exercise and adherence to treatment.² In order to educate and implement successful educational programs, nurses must understand and comprehend the principles of heart failure management.⁸

The effective education requires a solid body of knowledge regarding heart failure educational topics.¹ However, patients lack of sufficient knowledge and understanding of their disease and poor education may lead to inadequate self-care skills.¹¹⁻¹² The improvement in self-management will improve the quality of life, enhance compliance, minimize the rate of hospitalization and will reduce hospitalization costs. Moreover, effective self-care can be promoted by educators (mainly nurses) ensuring that patients have sufficient knowledge and skills.¹³ Even simple educational intervention has a positive effect on self-care behaviors.¹⁴ The focus of this paper is level of knowledge among nurses, this study evaluated the recent evidence from the literature regarding the level of knowledge about heart failure educational principles among nurses.

An extensive search was conducted in different databases such as Cinahl, Science direct, EBSCO, and PubMed in order to extract the most updated and relevant studies that discussed the nurses' knowledge about heart failure self-management. The key words for the search, include nurses, heart failure, education, knowledge, self-care and self-management. Several studies were selected for this paper and the uniqueness of those studies that all used the same tool to measure nurses' level of knowledge. Those studies included a total number of 1181 participants. These studies were conducted in the USA and Europe between 2002 to 2019.

Instruments

The original tool titled "nurses knowledge of heart failure education principles" developed by Albert et al includes 20 statements followed by true-false items for each

statement in order to measure nurses' knowledge on 5 significant educational areas of HF self-management.

The self-administered questionnaire measures the following five topics: 1) Diet (measured by three statements), 2) Fluids or weight (measured by seven statements), 3) Signs or symptoms of worsening condition (measured by six statements), 4) Medications (measured by two statements) and 5) Exercise (measured by two statements).

Instrument validity and reliability were evaluated. Experienced nurses who care for heart failure population assessed content and face validity. Nurses who frequently care for patients with HF were anticipated to correctly answer a minimum of 17 to 18 questions (85-90%). Scoring criteria of the instrument were determined by three post-graduate (masters-prepared) and one bachelors holder nurse (RN) who worked with the HF patient. 15 items are false and the remaining 5 items are correct, the potential result expected from zero to 20, higher score means higher knowledge. Permission from the authors is needed to use the tool in future studies.

DISCUSSION

Among the nine selected studies, the level of knowledge ranged from (60.4-79.85%). This discrepancy reflects that the level of knowledge is variable and still present among nurses despite the difference in the clinical setting or health care systems (Table 1). Moreover, one notable feature that emerged that nurses scored higher in different items and scored lower in others. This helps to identify the area of weakness among nurses' knowledge which helps to direct the educational interventions to fulfill and solve those weaknesses. Table 2 below summarizes those weaknesses.

Table 1:

Studies	Year	Score (%)
Albert et al	2002	76
Dalfo-Pibernat et al	2019	73
Polanska et al	2017	60.4
Sundel et al	2018	73.5
Delaney et al	2011	78.9
Washburn et al	2005	73
Fowler	2012	80
Kalogirou et al	2012	67.85
Willette et al	2007	79.85

In a study by Kalogirou et al in Cyprus, nurses from five public hospitals scored higher in items such as new onset of fatigue, if the patient can drink a plenty of fluids and abdominal swelling (reflects fluid retention). While items with low score are weight monitoring compared to previous or dry weight, activity level and asymptomatic hypotension.² Similarly, Willette et al, the participants scored higher in items such as new onset of fatigue and notifying doctors of leg weakness (low level of exercise).

Lowest score were items of the asymptomatic hypotension, daily weight monitoring and transient dizziness.⁸

Fowler investigated the level of knowledge among 61 nurses working in community health, nurses scored highest in items such as notifying doctors with new onset of or worsening fatigue, need for daily weight even the patient is asymptomatic and decreased ability to exercise. On the other hand, nurses scored lowest in items such as the use of salt substitutes, weight monitoring and asymptomatic hypotension.⁹ Also, Washburn et al assessed level of knowledge among 51 nurses in small Midwestern community hospital. The highest score were items concerning daily weight when asymptomatic, new onset of fatigue and new onset of decreased ability to exercise. The lowest score was dry or ideal weight in daily weight monitoring and asymptomatic hypotension.¹⁵

In a study in the United States Delaney et al evaluated the level of knowledge among 94 home care nurses in four home care settings. The items with the highest score were daily weight monitoring when signs and symptoms are gone, new onset or worsening fatigue and diet restriction for heart failure patients. The items with the lowest scores were dry or ideal weight in daily weight monitoring, asymptomatic hypotension and transient dizziness when rising. In ambulatory care setting.⁷ Sundel et al investigated the level of knowledge in 40 staff nurses. Items with the highest score were fluid intake, activity level and daily weighting. While the lowest score for asymptomatic hypotension and the use of salt substitutes.¹²

In Poland, Polanska et al assessed 227 nurses level of knowledge, highest scores were among items such as new onset or worsening fatigue and exercise tolerance. While lowest item was notifying physician for low blood pressure (asymptomatic hypotension).¹⁶ In multicenter study Dalfo-Pibernat et al studied 216 primary care nurses. Highest score was dyspnea, fluid intake and medications and lifestyle modification. On the other hand, the lowest scores were weight monitoring and asymptomatic hypotension.¹⁷

Albert et al 2002 assessed 300 nurses working in a Midwestern health care system that consisted of university and community hospital as well as home care. The items with the highest score were new onset or worsening fatigue, need for daily weight when no symptom and fluid intake when thirsty. The items with lowest score were transient dizziness, asymptomatic hypotension and dry or ideal weight in daily weight monitoring.¹

The previously mentioned studies had some limitations which can be summarized in the next table as shown in the Table 3.

Table 2:

S no.	The most frequently reported items with lowest score across the nine studies
1.	Weight monitoring should be compared to yesterdays' weight not to patients' ideal or dry weight
2.	Patient with HF should decrease activity and active exercise should be avoided
3.	Blood pressure of 80/56 without any HF symptoms (asymptomatic hypotension).
4.	Daily weight monitoring when symptoms are gone
5.	Dizziness or lightheadedness when rising
6.	The use of salt substitutes

Table 3:

Study	Limitations
Albert et al	Subjects and survey sites conditions were not controlled
Dalfo-Pibernat et al	Lack of external validity and limited generalizability
Polanska et al	Small sample size
Sundel et al	The authors were unsure whether the subjects completed the tool on their own or use referenced materials
Delaney et al	Small sample size
Washburn et al	Small sample size
Fowler	Small sample size
Kalogirou et al	limited generalizability
Willette et al	Small sample size and limited generalizability

CONCLUSION

Nurses play a vital role in a variety of clinical settings, nurses now are educators, supervisors and researcher. The growing responsibility of education for patients diagnosed with chronic diseases such as heart failure can be enhanced and facilitated by a greater level of knowledge regarding heart failure educational principles. Nurse's level of knowledge varies through the literature. This review exposed some areas or gap in knowledge that need to be improved. Six areas were the most frequently mentioned in the reviewed literature (Table 2). Certain measures have to be taken in order to improve the weaknesses in those areas. Nurse education is the gold stander method to solve this issue. Moreover, nurses' managers and units' educators should plan and facilitate certain educational programs for nurses in order to increase their level of knowledge. Furthermore, the education for nurses students must focus on management of chronic disease such as heart failure. Randomized control studies are needed in order to assess the effectiveness of the educational programs in enhancing nurses level of knowledge as well as it is the effect on patients' level of self-care.

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