IMPACT OF SELF-CARE EDUCATIONAL PROGRAM ON KNOWLEDGE AND FUNCTIONAL HEALTH STATUS OF ELDERLY PATIENTS WITH ACUTE HEART FAILURE

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Full Length Research

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ABSTRACT

Background: literature cited that, acute heart failure imposes marked limitation of biopsychosocial functioning and compromising quality of life. Thus, this study aims to evaluate the impact of self-care educational program on knowledge and functional health status of elderly patients with acute heart failure. **Research hypotheses:** Acute heart failure elderly patients who are exposed to self-care educational program will exhibit higher post-test total and subtotal mean knowledge scores (H_1), higher post- test total and subtotal mean practice scores (H_2), higher mean scores of physical functional independence (H_3), lower post total mean psychological distress scores (H_4) and lower post total mean social dysfunction scores (H_5) in the immediate post and one month later after program implementation assessment than pre program mean scores. **Design**: A quasi-experimental one group pre-posttest research design was utilized. **Sample**: A purposive sample of 30 acute heart failure elderly patients were recruited from selected Intensive Care Units affiliated to Cairo University Hospitals. **Tools;** Four tools were used to collect data pertinent to the study; 1- personal characteristics and medical data sheet, 2- knowledge assessment questionnaire about acute heart failure self care management, 3- bio-psychosocial functional health status assessment sheet and 4- Observational checklist for acute heart failure elderly patients' physical exercises. **Results**: findings of the study revealed that, more than half of the studied sample were females, their age ranged from 65 to less than 70 years, married and can read and write. Four out of five research hypotheses can be supported $(H_1, H_2, H_4 \& H_5)$ however, the fifth hypothesis (H_3) can be partially supported at p values of 0.05. Personal characteristics were correlated with total knowledge, total practice, total physical function, total psychological distress and total social dysfunction scores, correlations were found between total social dysfunction scores during immediate post and one month after program implementation and the patients' age at $X^2 = 42.1 \& 50.0$ at p= 0017 and 0,002 respectively. Also, there was a significant correlation between total knowledge and total practice scores immediate post and one month after the program at r = 0.35 and 0.38 at p values= 0.01 and 0.00 respectively. **Conclusion:** It might be concluded that self care educational program might be feasible and beneficial and resulted in significant increase in knowledge and promoting biopsychosocial health functioning among acute heart failure elderly patients admitted to ICUs. **Recommendations:** Replication of this program and evaluation of its effectiveness on a nationwide large scale project to gain more generalization and to improve knowledge and functional health status of elderly with acute heart failure is essential.

Key Words: self-care educational program, knowledge, functional health status, elderly patients, acute heart failure

INTRODUCTION

Acute heart failure (AHF) is defined as the rapid development or change in symptoms and signs of heart failure that requires urgent medical attention and usually hospitalization. Several factors including cardiovascular and noncardiovascular conditions as well as patient-related and iatrogenic factors may precipitate this acute heart failure episode. The primary prevention of acute heart failure mainly concerns prevention, early diagnosis, and treatment of cardiovascular risk factors and heart disease, including coronary artery disease, while the secondary prevention of a new episode of decompensation requires the optimization of heart failure therapy, patient education, and the development of an effective transition and follow-up plan (Farmakis, Parissis, Lekakis & Filippatos, 2015).

AHF is a major cardiovascular syndrome that is expected to increase over the next 25 years as its incidence will be more than double and its prevalence will increase 10 folds from age 60 to age 80. Meanwhile, it is a major public health problem worldwide entailing high morbidity and mortality as well as high health care costs (Roger, Go AS & Lloyd-Jones, 2012 and Go AS, Mozaffarian & Roger 2013). Daniels, et al, (2012) also reported that age is also a major independent determinant of acute heart failure outcomes and may have an impact on the usefulness of clinical investigations. Furthermore, Metra, Cotter& El khorazaty, (2015) and Metra, Mentz&Chiswell (2015) added that, age is associated with an increased risk of cardiovascular events and mortality during short and long term follow up in patients with heart failure.

Common risk factors of heart failure include coronary artery disease including a previous myocardial infarction (heart attack), high blood pressure, excess alcohol use, infection, and cardiomyopathy of an unknown cause. These cause heart failure by changing either the structure or the functioning of the heart. There are two main types of heart failure: heart failure due to left ventricular dysfunction and heart failure with normal ejection fraction depending on whether the ability of the left ventricle to contract is affected, or the heart's ability to relax (Pablo & Fernando, 2016).

The clinical presentation of AHF, especially in patients aged more than 85 years, differs substantially from that in younger patients, with unspecific symptoms, such as fatigue and confusion, often overriding dyspnea. Older patients also have a different risk profile compared with younger patients: often heart failure with preserved ejection fraction, and infection as the most frequent precipitating factor of AHF. Moreover, co-morbidities, disability and frailty are common, and increase morbidity, recovery time, readmission rates and mortality; their presence should be detected during a geriatric assessment (Teixeira, et al, 2016).

Clinically, AHF is manifested by intolerance of physical activities, fluid retention, edema and visceral congestion, which often leads to hospitalization, poor quality of life and reduced life expectancy. Patients who suffer from AHF often experience a decline in health resulting in recurrent hospitalizations and debilitating symptoms including breathing problems, fluid retention, and chronic fatigue (Joynt, Orav& Jha, 2011 and Tung, et al. 2014). Elderly patients with AHF may present with more dramatic clinical signs and symptoms as rales,

tachypnea, lower oxygen saturation, and increased jugular venous pressure as compared to younger acute heart failure patients (Metra, Cotter & El-Khorazaty, 2015).

Despite advances in the overall treatment and management of AHF, survival, quality of life remains poor, and morbidity and mortality remains high. Nurses have a major impact on outcomes for patients with AHF. Nursing programs used for the management of heart failure should include pharmacological and non- pharmacological evidence-based guidelines that provide recommendations in medications, dietary activity and exercise to effectively manage heart failure (Washburn & Hornberger, 2015). Nursing role should focus on effectiveness of therapy and patients' abilities to understand and implement self-care strategies and to alleviate symptoms first and to prevent progression of disease and hospitalization. Maintenance of functional capacity and optimization of co-morbid conditions, home environment, addressing caregivers' issues, and emergency response system are crucial as well. Elderly patients should be assisted to understand that heart failure can be controlled (Azad & Genevieve, 2014).

Recommended daily self-care activities for people living with AHF include weight monitoring, adherence to a strict medication regimen and low-salt diet, self-monitoring of symptoms, exercise, and regular physician visits (Krumholz, Currie & Riegel, 2006). American Heart Association's (AHA) also recommended behaviors for persons living with heart failure (HF) such as medication adherence, symptom management, dietary adherence, exercise, smoking cessation, and preventative behaviors (Riegel, Moser &Anker 2009). Studies suggest there is an increased need for nurse-guided HF patient education with home-based telephone follow-up after hospital discharge (Ambardeckar, Fonarow & Hernandez, 2009). Importantly, elderly patients themselves should be involved in the clinical decision-making process involved in their management throughout the entire course of the disease (Dtino, Rexach & Vidan, 2014). Therefore, the aim of the current study is to evaluate the impact of self-care educational program on knowledge and functional health status of elderly patients with acute heart failure.

SIGNIFICANCE OF THE STUDY

Acute Heart Failure is the first reason for hospital admission in individuals aged 65 or more. Despite therapeutic advances, it remains a syndrome with particularly ominous prognosis, with an in hospital mortality rate of 4–7%, a 2 to 3 month post discharge mortality of 7–11% and a 2 to 3 month readmission rate of 25–30%. In addition, AHF is the single most important determinant of the huge healthcare expenditure related to heart failure, as it accounts for nearly 70% of the total heart failure- related cost (Ambrosy, Fonarow & Butler, 2014). Over 2.4 million patients who are hospitalized have AHF as a primary or secondary diagnosis, and nearly 300,000 deaths annually are directly attributable to AHF (Lloyd-Jones, Adams & Carnethon, 2010). In developed countries, the prevalence of AHF is approximately 1%-2% of the adult population, with the prevalence rising to ≥10% among persons 70 years of age or older (Al-Shamiri, 2013).

Many people living with AHF are elderly, are symptomatic, lack social and financial support, and have more than one co-morbid condition, making their AHF care and management

complicated (Cameron, Worrall-Carter, Page & Stewart, 2010). Education delivered by nurses is an important part of all AHF management programs. Explaining the condition, early symptom recognition, self-care, medication compliance, and dietary restrictions should be emphasized (Gwadry-Sridhar, etal, 2005). Finally, researches on specific behaviors or characteristics of elderly patients with AHF are scarce. Hopefully, this research results may provide a synthesis of evidence on how AHF elderly patients' self-care educational program may improve elderly patient's functional health status and how to reduce readmissions and offer opportunities to address gaps in knowledge regarding self-care for AHF elderly patients.

Additionally, research studies also confirmed that AHF can be extremely debilitating, with symptomatic exacerbations that often lead to episodes of acute decompensation, frequent hospital admissions, and premature death (Curtis, Greiner & Hammill, 2008 & Ross, Chen & Lin, 2010). AHF places substantial burden on patients, families, communities, and care systems. Thus, nurses are in a crucial position to encourage educating AHF patients to self-manage their illness, such as adhering to medical regimens and monitoring symptoms, to optimize health outcomes and quality of life. McGreal, Hogan, Walsh-Irwin, Maggio & Jurgens (2014) emphasized the importance of education on how to respond to worsening AHF symptoms and that knowledge alone does not improve AHF self-care behaviors or reduce the risk of clinical events and/or symptom burden and added that interventions that augment self-confidence or self-efficacy to perform optimal self-care management and self-care maintenance is useful.

AIM OF THE STUDY

The aim of the study is to evaluate the impact of self-care educational program on knowledge and functional health status of elderly patients with acute heart failure.

RESEARCH HYPOTHESES

H1: Acute heart failure elderly patients who are exposed to self-care educational program will exhibit higher post-test total and subtotal mean knowledge scores immediately and one month later after program implementation as compared to their total and subtotal pretest mean knowledge scores.

H2: Acute heart failure elderly patients who are exposed to self-care educational program will exhibit higher post- test total and subtotal mean practice scores immediately and one month later after program implementation as compared to their total and subtotal pretest mean practice scores.

H3: Acute heart failure elderly patients who are exposed to self-care educational program will exhibit higher mean scores of physical functional independence in the immediate post and one month later after program implementation than their pre program implementation mean physical functional scores.

H4: Acute heart failure elderly patients who are exposed to self-care educational program will exhibit lower post total mean psychological distress scores in the immediate post and one month later after program implementation than their pre program implementation.

H5: Acute heart failure elderly patients who are exposed to self-care educational program will exhibit lower post total mean social dysfunction scores in the immediate post and one month later after program implementation assessment than their pre program mean scores

SUBJECTS AND METHODS

Research Design

Quasi Experimental design (one group pretest post test) was utilized in this study. It is more practical in the implementation, economical in cost, and easy to manage.

Sample

A Purposive sample of 30 elderly patients were selected according to the following inclusion criteria; being male or female of aged 60 years old and above, with an intact vision, hearing, and admitted to critical care units at Cairo university hospitals with acute heart failure and willing to participate in the study. Excluded from the study those who are; unconscious, confused, disoriented, who suffer from dementia or disturbance in mental status or resting oxygen saturation less than 85% on room air, heart rate greater than or equal to 130 beats/min, systolic blood pressure less than 85mmHg and who have ischemic chest pain requiring treatment with nitrates.

Setting

Data was collected from selected intensive care units affiliated to Cairo University Hospitals.

Tools

Tool 1: Personal characteristics and medical data sheet: this tool was developed by researchers; it includes questions such as (age; gender, marital status, telephone number, medical and readmission history, reason of admission (chief complain), general health assessment, risk factors and clinical manifestations of heart failure.

Tool 2: Knowledge assessment questionnaire about acute heart failure self care management: developed by the researchers and composed of 28 questions as definition, etiology, signs and symptoms, complications, disease management such as pharmacological and non pharmacological treatment) of acute heart failure…etc.

Scoring system: each correct answer scored of 1 grade and wrong answer or no answer got zero with a total score of 28 grades. Total level of knowledge was categorized as follows; satisfactory (for values equal to more than 60% (≥17 scores) or unsatisfactory (for values less than 60 % (less than 17 scores).

Tool 3: Biopsychosocial functional health status assessment sheet was adopted from Duke Activity Status Index (Hlatky, et al, 1989) and functional status assessment sheet (Jette, et al, 1986). It is composed of 3 parts; the 1st part included 14 questions about physical health status such as patient ability or limitations to function daily living activities such as (bathing, dressing, personal grooming, eating, transferring, toileting, continence, ambulation)…etc. 2nd part included 7 questions about psychological health status such as experiencing signs or symptoms of psychological health distress secondary to disease process such as feeling of

anxiety, frustration, tension, and uncontrolled of life issues…etc. 3rd part included 7 questions about social health status functioning such as ability or inability to maintain social role, relations, visits and social activities…ect.

Scoring system: it was divided into three parts; part 1 was related to physical functional status which included 14 items with total score of 42. For statistical purposes, scores ranged from 28 to 42 were considered independent; scores from 14 to less than 28 were considered partially dependent and score less than 14 were considered dependent. Regarding part 2 which was related to psychological functional status included 7 questions with total score of 7 was classified into mild psychological distress (0 to less than 3) moderate psychological distress (3 to less than 5) and severe psychological distress (from 5 to 7 scores). Finally, part 3 which was related to social functional status was categorized as follows; mild social dysfunction (0 to less than 3) moderate social dysfunction (3 to less than 5) and severe social dysfunction (from 5 to 7 scores).

Tool 4: Observational checklist for acute heart failure elderly patients' physical exercises: this tool was developed by researchers to assess ability of acute heart failure elderly patients to perform breathing exercises (containing 7 items) and range of motion exercises for all body parts (including 20 items).

Scoring system: it was scored by giving 1score if the step of the procedure was done and zero if the step was not done o done incorrect with total score of 27, then it was categorized as satisfactory equal to or more than 60% (≥16 marks) or unsatisfactory less than 60% (<16 score).

Validity of Study Tools

Study tools were submitted to a panel of three experts in the field of gerontological nursing, critical care nursing and critical care medicine to test content validity. Modifications were carried out according to panel judgment on clarity of sentences and appropriateness of content. Content validity index (CVI) of .89 was computed. Convergent Validity of knowledge assessment data sheet was t = 3.41, P <0.01. The test-retest reliability analysis found an interclass correlation coefficient of 0.83 (P < 0.001). Concurrent validity of the translated functional assessment tool was excellent (r = 0.90). Reliability of checklist has been proved by the use of "test and retest" (r > 0.5).

Pilot Study

A pilot study was carried out to test feasibility, objectivity, and applicability of the study tools on 3 (10%) patients who were admitted to Intensive Care Units in Cairo University Hospitals and diagnosed with acute heart failure and fulfilled the inclusion criteria. In addition, the pilot study gave the researchers experience to deal with acute heart failure elderly patients, the research methodology, and the data collection tools, and to estimate the needed time to fill the data collection sheets. Based on the results of the pilot study, needed modifications were done in the data collection tools and the educational booklet. Modifications were minor that did not affect the main data; so that the three patients who participated in the pilot study were included in the actual study sample.

Description of the self-Care Educational Program

The aim of this program was to enrich acute heart failure elderly patients with knowledge and practices regarding orientation of their disease, self care activities and activities related to promotion of the biopsychosocial functional status. This program was developed and translated into Arabic by researchers based on related literature. Contents of the program and the educational booklet were revised by a panel of the three experts in the field of gerontological nursing, critical care nursing and critical care medicine. The educational booklet contents included theoretical as well as practical part. Theoretical part covered disease orientation in the form of; definition of acute heart failure, risk factors, signs and symptoms, early recognition of deterioration symptoms and signs, how to respond to worsening AHF symptoms, therapeutic diet, fluid intake, weight monitoring and adherence to medications and follow up. Contents also included key elements regarding AHF self-care, such as acknowledging sleep adequacy and its positive impact, the importance of being immunized against influenza and pneumococcus, adherence to permitted exercises, self care activities, their therapeutic regimen, in addition to life style modifications that could promote biopsychosocial functional status. Each patient was supplied with an Arabic simple language illustrated booklet including the major and specific program items to be utilized for reinforcement of the program content.

Ethical Consideration

An official permission was obtained from Cairo University Hospital administrators to carry out the study. Written informed consent was obtained from all acute heart failure elderly patients after explanation of study purpose. Voluntary participation and right to withdraw at any time were assured. Anonymity and confidentiality were assured through coding of all data. Patients were assured that data will not be reused in another research without their permission and data collected will be used for the purpose of this research only.

Procedure

The current study was carried out on three phases; preparatory, implementation & evaluation phase.

Preparatory Phase: This phase was concerned with the managerial arrangements to carry out the study in addition to the construction, preparation of the different data collection tools, program outlines and content as well as the educational booklet. This phase ended by conducting pilot study.

Implementation Phase: Data of the current study were collected from January 2018 to June 2018. Daily, the researchers approached the nursing supervisors and the responsible physician of the critical care units to identify the newly admitted patients with acute heart failure. Then, a total number of 30 patients who fulfilled the criteria of inclusion were recruited into the present study. Patients were interviewed individually to establish rapport, explain the purpose and nature of the study, obtaining the written consent, their needs/expectations, discuss the outlines of the program, regulate the next visit and the best way for contact. Then, the personal characteristics and medical data sheet (tool 1), knowledge

assessment questionnaire about acute heart failure self care management (tool 2), biopsychosocial functional health status assessment sheet (tool 3), observational checklist for acute heart failure elderly patients' physical exercises (tool 4) were filled out before starting implementation of the program as baseline assessment. Then, the program was carried out on daily basis during the morning shift in the selected intensive care units both theoretical and practical content were taught on ten to twelve sessions for each patient. Each session ranged between 30 to 45 minutes according to patient's tolerance. A copy of the educational booklet was given to each patient from starting of the educational sessions. Teaching methods used included discussion and the teaching aids used were illustrative pictures and handouts. Demonstration and return demonstration was also utilized to teach range of motion exercises and breathing exercises using a checklist. Each session started with a summary of the previous one, feedback, answer any questions, clarify any misunderstanding in the previous session and the objectives of the new one using simple language and taking into consideration patient's level of education and tolerance. Most of patients were co-operative, perceptive, and have desire to learn. Patients were allowed to contact researchers at any time throughout the study, for any clarifications as well as to maintain an open channel of communication with patients.

Evaluation Phase: tool (2), tool (3) and tool (4) were filled out for the second time immediately after introduction of the program (in the ICU) and the third assessment was carried out one month later (in the outpatient clinic during follow up visits).

Statistical Data Analysis

Upon completion of data collection, data were scored, tabulated, and analyzed by computer using the "Statistical Package for the Social Sciences" (SPSS) program version 20. Descriptive as well as inferential statistics were utilized to analyze data pertinent to the study while the threshold of significance is fixed at p-value ≤ 0.05.

RESULTS AND DATA ANALYSIS

Personal Characteristics and Medical Data of Acute Heart Failure Elderly Patients

Table 1: Frequency distribution of personal characteristics among acute heart failure elderly patients n=30

Variable	Percentage	No	%
Age :			
60 - < 65		7	23.3 %
65 - < 70		16	53.3%
70 - < 75		2	6.7%
75 - < 80		4	13.3%
> 80		1	3.3%
Gender:			
Male		13	43.3%
Female		16	53.3%
Marital status:			
Married		23	76.7%
Divorced		1	3.3%

Widow	6	20%
Level of education:		
Can read and write	21	70%
Primary	1	3.3%
Preparatory	3	10%
Secondary	1	3.3%
University	4	13.3%

Table 1 shows that, (53.3%) of patients' age ranged between 65 to less than 70 years while only (3.3%) were over 80 years old. It is also shown that (53.3%) of them were females, can read and write (70%) and only (13.3%) of them have completed their university education, also (76.7%) were married.
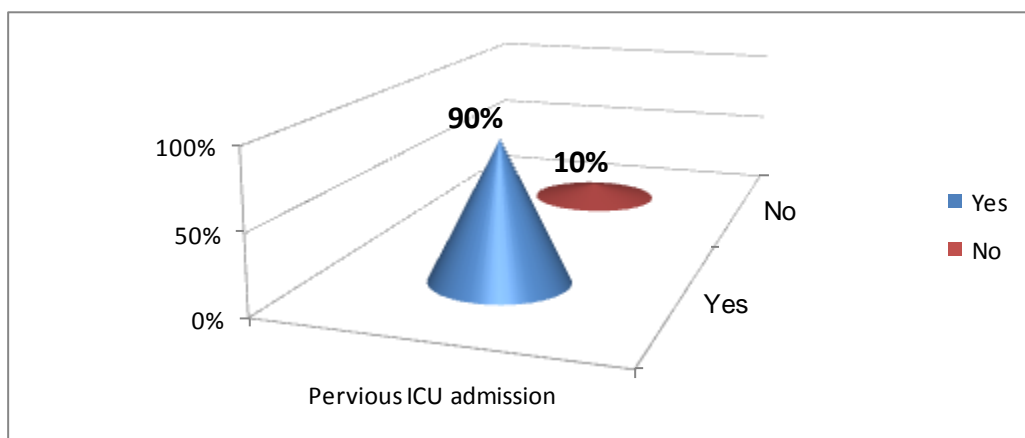

Figure 1: Frequency distribution of acute heart failure elderly patients according to pervious ICU admissions
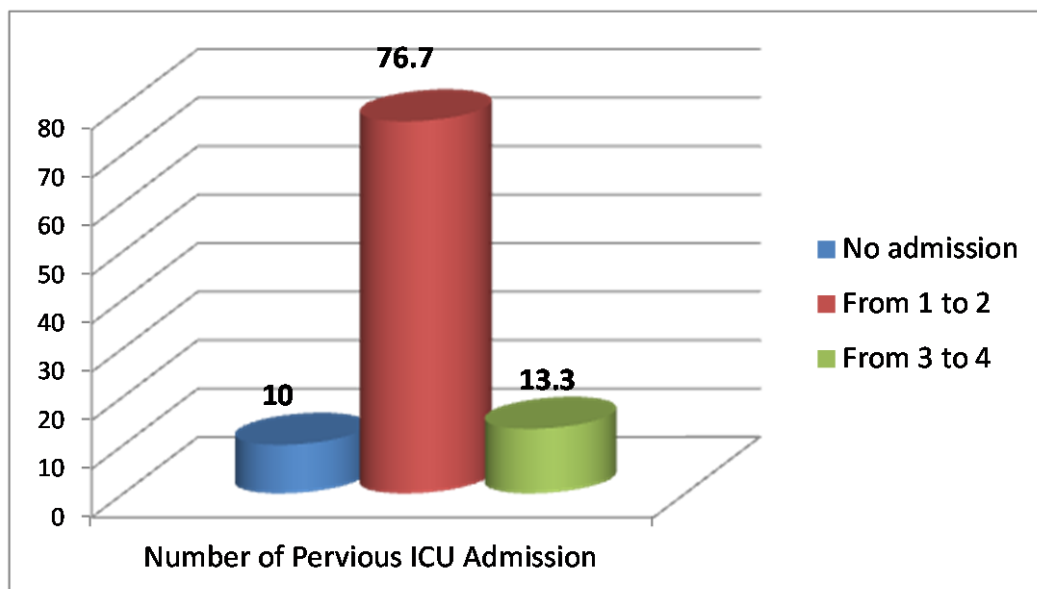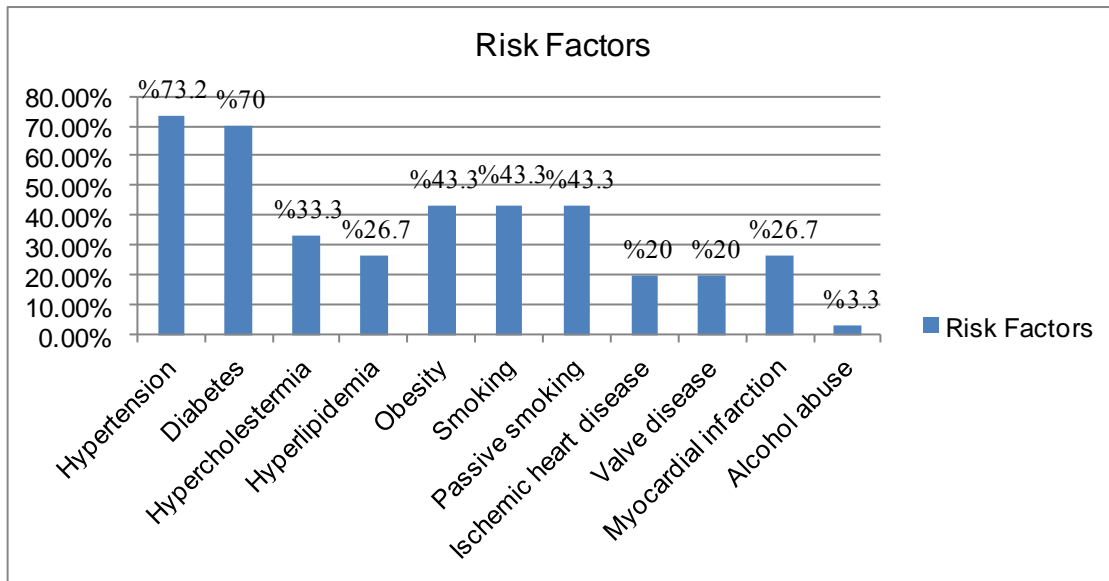

Figure 2: Frequency distribution of acute heart failure elderly patients according to number of pervious ICU admissions

Figures 1 and 2 illustrate that, (90%) of acute heart failure elderly patients were previously admitted to ICU, (76.7%) of them were admitted to the ICU from 1 to 2 times.

*responses are not mutually exclusive

Figure 3: Distribution of acute heart failure elderly patients according to the risk factors for acute heart failure n=30

Figure 3 displays that, (73.2%) of acute heart failure elderly patients had hypertension as a main risk factor followed by diabetes (70%).
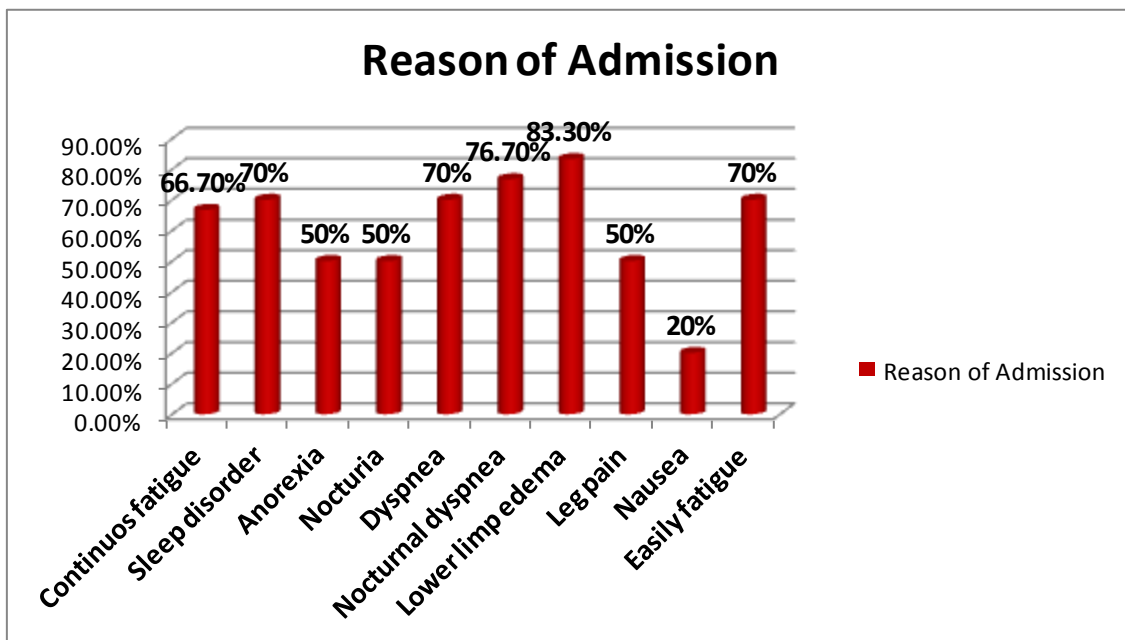

Figure 4: Distribution of acute heart failure elderly patients according to the reason(s) of ICU admission n=30

Figure (4) illustrates that, reasons of admission were lower limp edema among (83.3%) of patients, nocturnal dyspnea among (76.7%) , followed by sleep disorder (70%), dyspnea and easily getting fatigue while (66.7%) of acute heart failure elderly patients were admitted due to continuous fatigue.

Testing of Research Hypotheses

H_1 states; Acute heart failure elderly patients who are exposed to self-care educational program will exhibit higher post-test total and subtotal mean knowledge scores immediately and one month later after program implementation as compared to their total and subtotal pretest mean knowledge scores. Tables 2 and 3 are related to this hypothesis

Table 2: Total and subtoatal mean knowledge scores of acute heart failure elderly patients about disease, risk factors, symptoms, and treatment throughout the study period n=30

Variables	Mean $\pm$ SD Pre program	Immediate post	Mean $\pm$ SD After one month	f/p value
Total knowledge about acute heart failure (28)	13.03$\pm$ 4.3	22.23$\pm$3.97	22.66$\pm$2.44	134.7/0.00*
Knowledge about risk factors (11)	4.83$\pm$ 1.76	8.26$\pm$ 1.61	8.63$\pm$ 1.27	80.8/0.00*
Knowledge about symptoms (13)	6.1$\pm$ 2.52	9.96$\pm$ 2.91	10.03$\pm$ 154	76.7/0.000*
Knowledge about treatment (4)	2.1 $\pm$ 1.09	4 $\pm$0.0	4 $\pm$0.0	90.5/0.000*

Table 2 reveals, higher total & subtotal post mean knowledge scores regarding risk factors, symptoms and treatment of heart failure among acute heart failure elderly patients with a significant statistical difference between pre, immediate post and one month after the program with f- ratios equal 134.7, 80.8, 76.7 & 90.5 at p values of 0.00, 0.00, 0.000 &0.000 respectively.

Table 3: Frequency distribution of acute heart failure elderly patients according to level of total knowledge n=30

level of total knowledge	Unsatisfactory No.	%	Satisfactory No.	%	X^2/p value
Pre program	25	83.3	5	16.7	
Immediate post program	1	3.3	29	96.7	41.5/0.000
One month after program	2	6.7	28	93.3	

Table 3 shows that, 83.3% of acute heart failure elderly patients had unsatisfactory level of total knowledge before implementation of the program reclined to, 96.7 % satisfactory total knowledge level after implementation of the program with a significant statistical difference between pre, immediate post and one month later after program implementation with X^2 = 41.5 at p = 0.000; thus, hypothesis 1 can be supported.

H_2 states; Acute heart failure elderly patients who are exposed to self-care educational program will exhibit higher post- test total and subtotal mean practice scores immediately and one month later after program implementation as compared to their total and subtotal pretest mean practice scores. Table 4 and 5 are related to this hypothesis.

Table 4: Total and subtoatal mean exercise practice scores of acute heart failure elderly patients throughout the study period n=30

Variables	Mean ± SD Pre program	Mean ± SD Immediate post	After one month	f/p value
Total mean practice scores (27)	11.83± 3.4	20.23±3.87	19.26± 2.14	120.7/0.000*
Mean practice scores of breathing exercises (7)	3.03± 0.70	5.16± 0.61	5.13± 1.27	120.7/0.000*
Mean practice scores of range of motion exercises (20)	8.8 ± 2.02	15.07± 3.71	14.13± 1.34	86.6/0.000*

Table 4 reveals that, higher total & subtotal post mean practice scores regarding breathing exercises and range of motion exercises among acute heart failure elderly patients with a significant statistical difference between pre, immediate post and one month after the program implementation with f-ratios = 120.7, 120.7 & 86.6 at p value = 0.000

Table 5: Frequency distribution of acute heart failure elderly patients according to level of total practice during exercises n=30

level of total practice	Unsatisfactory No.	%	Satisfactory No.	%	X^2/p value
Pre program	24	80	6	20	
Immediate post program	3	10	27	90	30.5/0.000
One month after program	5	16.7	25	83.3	

Table 5 shows that, 80 % of acute heart failure elderly had unsatisfactory level of total practice before implementation of the program while, 90 % of them had satisfactory level of total practice after implementation of the program with a significant statistical difference between pre, immediate post and one month later after implementation with X2 = 30.5 at p value= 0.000. Thus hypothesis 2 can be supported

H_3 states: Acute heart failure elderly patients who are exposed to self-care educational program will exhibit higher mean scores of physical functional independence in the immediate post and one month later after program implementation than their pre program implementation mean physical functional scores. Table 6 is related to this hypothesis.

Table 6: Frequency distribution of acute heart failure elderly patients according to physical functional status n=30

Variables	Independent		Partially dependent		Dependent		X^2/p value
	No.	%	No.	%	No.	%	
Pre program	7	22.6	11	35.5	12	38.7	
Immediate post program	9	29	16	51.6	5	16.1	51.8/0.008
One month after program	8	25.8	16	51.6	6	19.4	

Table 6 illustrates that, 38.7% of elderly were dependent before introduction of the program while 51.6% of them were partially dependent during immediate post and one month after program implementation with a significant statistical difference between pre, immediate post and one month after program implementation with X2 = 51.8 at p value 0.008 . Thus hypothesis 3 can be partially supported.

H_4 states: Acute heart failure elderly patients who are exposed to self-care educational program will exhibit lower post total mean psychological distress scores in the immediate post and one month later after program implementation than their pre program implementation. Table 7 is related to this hypothesis.

Table 7: Frequency distribution of acute heart failure elderly patients according to psychological distress scores n=30

Variables	Mild psychological distress		Moderate psychological distress		Severe psychological distress		X^2/p value
	No.	%	No.	%	No.	%	
Pre program	1	3.2	11	35.5	18	58.1	
Immediate post program	10	32.3	9	29	11	35.5	60.0/0.000
One month after program	5	16.1	21	67.7	4	12.9	

Table 7 shows that, 58.1% of elderly had severe psychological distress before implementing the program while this percent decreased to 12.9% one month later after the program with a significant statistical difference between pre, immediate post and one month after the program with X^2= 60.0 at p value= 0.000. So hypothesis 4 can be supported.

H_5 states: Acute heart failure elderly patients who are exposed to self-care educational program will exhibit lower post total mean social dysfunction scores in the immediate post and one month later after program implementation assessment than their pre program mean scores. Table 8 is related to this hypothesis.

Table 8: Frequency distribution of acute heart failure elderly patients according to social dysfunction scores n=30

Variables	Mild social dysfunction		Moderate social dysfunction		Severe social dysfunction		X^2/p value
	No.	%	No.	%	No.	%	
Pre program	2	6.5	6	19.4	22	71	
Immediate post program	9	29	13	41.9	8	25.8	65.0/0.000
One month after program	18	58.1	11	35.5	1	3.2	

Table 8 reveals that, 71% of elderly had severe social dysfunction before program implementation while this percent was decreased to 3.2% one month after program implementation with a significant statistical difference between pre, immediate post and one month after the program with X^2= 65.0 at p value = 0.000. So hypotheis 5 can be supported.

Table 9: Means scores and standard deviations of physical, psychological and social functional status among acute heart failure elderly patients throughout the assessment periods n=30

Variables	Pre program	Immediate post program	One month after the program	f/p value
Physical functional status (42)	18.13 $\pm$ 8.12	25.86 $\pm$ 9.05	25.13 $\pm$ 9.14	13.7/0.030
Psychological distress (7)	5.00 $\pm$ 1.50	3.66 $\pm$1.53	2.96 $\pm$ 1.40	32.2/0.000
Social dysfunction (7)	5.36 $\pm$ 2.02	3.40 $\pm$ 1.47	2.20 $\pm$1.09	47.2/0.000

Table 9 shows that, there is a highly significant statistical difference among the acute heart failure elderly patients in relation to physical, psychological and social functional status throughout the different assessment periods with f ratios= 13.7, 32.2 & 47.2 at p = 0.030, 0.000 & 0.000 respectively.

Additional Findings

Table 10: Correlation between total mean knowledge, total practice, total physical function, psychological distress and social dysfunction scores among acute heart failure elderly patients (n= 30)

Variables	Pre program r/p value	Immediate post program r/p value	One month after program r/p value
Total knowledge and total practice scores	0.058/0.68 NS	0.35/ 0.01*	0.38/0.00*
Total knowledge and total physical functional scores	0.096/0.61 NS	0.03/0.84 NS	0.11/0.549 NS
Total knowledge and total Psychological distress scores	0.28/0.13 NS	0.24/0.98 NS	0.057/0.764 NS
Total knowledge and total social	0.36/0.046 *	0.33/0.10 NS	0.060/0.752 NS

dysfunction scores			
Total practice scores and total physical functional scores	0.24/0.22 NS	0.20/0.27 NS	0.23/039 NS
Total practice scores and total social dysfunction scores	0.19/0.27 NS	0.14/0.29 NS	0.15/0.42 NS
Total practice scores and total Psychological distress scores	0.35/0.61 NS	0.09/0.64 NS	0.10/0.51 NS
Total physical functional scores and total social dysfunction status scores	0.52/ 0.75NS	0.38/0.85 NS	0.51/0.78NS
Total physical functional scores and total Psychological distress status scores	0.96/0.63 NS	0.25/0.91 NS	0.24/0.94 NS
Total social dysfunction scores and total Psychological distress scores	0.12/0.88 NS	0.55/0.64 NS	0.15/0.76 NS

Table 10 shows a significant statistical correlation between total knowledge with total practice immediate post and one month after program implementation and total social dysfunction scores pre program at r= 0.35, 0.38 and 0.36 at p values = 0.01, 0.00 and 0.046 respectively.

Table 11: Correlation between total knowledge, total practice, total physical, psychological distress, and social dysfunction scores and selected personal characteristics of acute heart failure elderly patients (n=30)

Variables	Age group X^2/p value	Educational level X^2/p value
Total pre knowledge scores	67.5/0.235 NS	50.7/0.797 NS
Total immediate post knowledge scores	63.6/ 0.359 NS	60.6/0.453 NS
Total one month after knowledge scores	47.5/0.370 NS	44.7/0.485 NS
Total pre practice scores	44.5/0.633 NS	42.7/0.642 NS
Total immediate post practice scores	50.6/ 0.453 NS	51.6/0.551 NS
Total one month after practice scores	43.5/0.570 NS	40.7/0.625 NS
Total pre physical functional status scores	67.2/0.570 NS	86.6/0.168 NS
Total immediate post physical functional status scores	67.3/ 0.566 NS	81.5/ 0.283NS
Total one month after physical functional status scores	60.2/0.791 NS	68.2/0.537 NS
Total pre psychological distress scores	26.5/0.380 NS	17.7/0.853 NS
Total immediate post psychological distress scores	25.5/ 0.428 NS	21.1/0.682 NS
Total one month after psychological distress scores	21.1/0.685 NS	17.2/0.872 NS
Total pre social dysfunction scores	48.4/ 0.065 NS	16.3/0.997 NS
Total immediate post social dysfunction scores	42.1/0.017 *	15.6/ 0.926 NS
Total one month after social dysfunction scores	50.0/0.002*	14.3/0.955 NS

NS: Not significant   *: Significant at p≤ 0.05

Table 11shows that, there is significant statistical correlation between age group and social dysfunction scores immediate post and one month after program implementation at $X^{2} = 42.1$ and 50.0 at p= 0.017 and 0.002 respectively.

DISCUSSION

Current research findings revealed that more than half of acute heart failure elderly age ranged between 65 to less than 70 years and females, also majority of them were married. In relation to the educational level, more than two thirds of them could read and write. From the researchers' point of view, this may be because of improved cardiovascular disease survival and progressive ageing of the population. This finding is congruent with Go AS, Mozaffarian & Roger (2013) who reported in a similar study that most patients with Heart Failure (HF) were elderly, constituting up to 80% of patients suffering from this disease with both incidence and prevalence of the condition increasing with age.

Additionally, these results were in agreement with Ahmed & Abd El-Aziz (2017) who reported in a similar study in Egypt that, age of participants ranged from sixty to seventy five, with mean age of 65.5±5.3 years. Similarly, more than three-quarters of them were married, and most of them (80.0%) were not working. In the same context, Navidian, Yaghoubinia, Ganjali & Khoshsimaee (2015) in a study entitled as "the effect of self-care education on the awareness, attitude, and adherence to self- care behaviors in hospitalized patients due to heart failure with and without depression" founded that, women comprised more than 60% of the participants in each group. Most of the participants had low level of education in both groups. More than 90% of subjects were married in the both group. These results were inconsistent with Tung, et al (2014) who stated in a study entitled as "Health literacy impact on elderly patients with heart failure in Taiwan" the majority of the patients were males (75.5%) and 33% of participants had an elementary school.

The current study also revealed that, majority of patients were previously admitted to the ICU and admitted from one to two times. The research investigators suggest that, recurrent hospitalization among elderly patients with acute heart failure may be caused by lack of compliance to lifestyle modifications, self care behaviors as well as lack of adherence to medical regimen. In the same line with this result, Jencks, Williams &Coleman (2009) mentioned that AHF is considered to be the number one reason for readmission in both medical and surgical groups. This also goes with Azad and Genevieve (2014) who stated that heart failure is the leading cause of hospitalization for those over the age of 65 and represents a significant clinical and economic burden. This result was consistent with Ogbemudia & Asekhame (2016) in a research article entitled as "Rehospitalization for heart failure in the elderly" that found seventy-three out of one hundred of patients were admitted twice for heart failure.

The current research finding revealed that, more than two thirds of acute heart failure elderly patients had risk factors such as hypertension and diabetes. This can be clearly explained because Hypertension (HTN) and diabetes mellitus (DM) both are rapidly emerging as public health problems among geriatric population in developing countries including Egypt as the prevalence of hypertension was 39.7% among Egyptians as reported by WHO, 2012. The

International Diabetes Federation (IDF) listed Egypt among the world top 10 countries in the number of patients with diabetes with a prevalence rate around 15.56% among persons between 20 and 79 years of age (IDF, 2015). HTN and DM increase the risk of coronary heart disease. In the same context, González-Chica, et al. (2016) found in their research article entitled as" effect of health literacy on quality of life amongst patients with ischemic heart disease in Australian general practice" that, atrial fibrillation/arrhythmia was the most common cardiovascular disease co-morbidity (55.4%). The median number of clinical risk factors for cardiovascular disease was two, with hypertension as the most frequent factor.

In the same vein, Azad & Genevieve (2014) reported that diabetes and hypertension are among the strongest risk factors as a predictor of AHF particularly among women with coronary heart disease. Added to that, about half of hospital re-admissions are related to co-morbidities, poly-pharmacy and disabilities associated with AHF. In this same respect, Metra, Cotter & El-Khorazaty (2015) also found that elderly patients with AHF often present with complex co-morbidities such as hypertension, atrial fibrillation, peripheral vascular disease, coronary artery disease, valvular disease, kidney failure or anemia and poly-pharmacy.

Regarding reason of admission, current study findings revealed that, majority of patients had lower limp edema, nocturnal dyspnea; more than two thirds of them had sleep disorder, dyspnea and easily fatigue as reasons of admission. This result is in congruent with Albert, Trochelman, Li, & Lin (2010) who found that, The top 5 reported symptoms were shortness of breath, decreased ability to exercise, orthopnea, profound fatigue, and dizziness/lightheadedness. The 5 most frequently reported signs were edema (no site specified), ankle or leg edema, palpitations, irregular pulse, and abdominal edema.

The current study also revealed higher total &subtotal post mean knowledge scores immediate and one month after introducing the self care educational program specifically in relation to causes, symptoms and treatment of acute heart failure among elderly patients. From researchers' point of view, this finding may be due to implementation of the educational program and providing acute heart failure elderly patients with knowledge about the disease. Moreover, findings revealed a significant statistical difference between pre, immediate post and one month after the program. There is a significant statistical correlation between total knowledge scores and total social dysfunction pre scores.

These results were in agreement with Ahmed& Abd El-Aziz (2017) who reported that application of medical and nursing teaching program showed a significantly improvement in patients' awareness of disease and adherence among older adult patients with HF. Ignatavicius & Workman (2012) also reported that nurses should educate elderly patients with AHF that arranging for regular medical follow up, maintaining correct weight, restricting sodium intake, preventing infection, avoiding noxious agents such as coffee and tobacco and avoiding unregulated or excessive exercise all aid in preventing the onset of cardiac failure. Patients should also be helped to identify emotional distress and to explore ways to resolve them.

In relation to level of total practice scores among acute heart failure elderly patients, it was observed that majority of patients had unsatisfactory level of total exercise practice before

implementation of the program while, majority of them had satisfactory level of total exercise practice after implementation of the program with a significant statistical difference between pre, immediate post and one month later after implementation. These results can be related to implementation of the program and training of patients on this exercises and simplicity of these exercises. This is in accordance with Hunt, (2005) who recognizes exercise training in HF patients as a beneficial intervention. Morris and Chen, (2019) also confirmed that exercise and cardiac rehabilitation have been underused therapy options for patients with heart failure despite being recommended in international evidence- based guidelines.

In relation to functional health status, current study showed that more than one third of acute heart failure elderly patients were dependent before introduction of the program while around half of them were partially dependent during immediate post and one month after program implementation with a significant statistical difference between pre, immediate post and one month after program implementation. From the research investigators' point of view, this may result from patients' adherence to instructions that were given by researchers throughout the self care educational program period.

In this respect Albert (2008) mentioned that self-care is one of the important modalities to control heart diseases. So in these patients, adherence to self-care behaviors is of great importance (Shojaee, Asemi, Najaf yarand & Hosseini, 2009). Improper self-care behaviors may results in poor health outcomes (Cameron, Worral- Carter, Page & Stewerat, 2010) and cause frequent hospitalizations (Heo, Moser, Lennie, Riegel & Chung, 2008). Proper self-care behaviors are an important factor to promote positive health outcomes and prevent frequent hospitalizations (Mast, 2008).

The current study revealed that, more than half of acute heart failure elderly patients had severe psychological distress before implementing the program while this percent decreased significantly after program implementation. More than two thirds of acute heart failure elderly had severe social dysfunction before program implementation while this percent was decreased markedly one month after program implementation. This can be due to implementation of the self care educational program. This is congruent with Wang, Dong, Jian &Tang (2017) who stated that, PRECEDE model of health education promotion is effective in relieving depression symptoms, enhancing self-monitoring, and improving the quality of life of elderly patients with CHF.

Congruent with the current study results, Lyn Baptiste, Mark, Groff-Paris & Taylor (2014) indicated in their structured review of PubMed, CINAHL, and MEDLINE of 42 articles (included 13 randomized control trials, six systematic reviews, and 23 studies using quasi-experimental, retrospective or descriptive designs) that assessing patient's self-care ability and deploying standardized patient education programs focused on self-care management significantly lower exacerbations of symptoms, emergency department visits, and readmission for AHF patients. Adding telephone follow-up for continued assessment and support of the patient's self-care ability can reduce readmissions by 80% and prove to be a cost effective intervention.

CONCLUSION

Based on the study findings, it can be concluded that, the acute heart failure elderly patients had inadequate/ unsatisfactory knowledge and practices regarding disease orientation, self care activities and psychosocial problems pre program implementation. The results showed significant increment in knowledge, practices and physical function scores. There was a significant decrement in psychological distress and social dysfunction scores. As well, there was a significant statistical correlation between age group and social dysfunction scores in the immediate post and one month after implementation of the program and there was a significant statistical correlation between total knowledge and total practices scores during the immediate and one month after the program implementation. So, self care educational program is feasible and beneficial as it resulted in promoting a significant increase in knowledge, exercises practice and self-care actions among elderly with AHF.

RECOMMENDATIONS

1. Multidisciplinary team initiatives should be encouraged to manage post-discharge period among AHF elderly patients.
2. Replication of the study on a larger probability sample selected from different geographical areas in Egypt and with longer follow-up period to obtain more generalizable data.
3. Cohort and qualitative studies is needed to study in-depth insights about psychosocial aspect of elderly patients with acute heart failure.
4. Further researches to explore potential barriers to self-care and reasons for lack of AHF patient adherence.

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