Efficacy of Supportive Educational Package on Self Care among Heart Failure Patients

Yasmin Ibrahim Abdelkader[1]*, Karima Fouad Elshamy[1], Heba Abubakr M. salama[1],

[1]Medical-Surgical Nursing Department, Faculty of Nursing, Mansoura University, Egypt

* E-mail of the corresponding author: yasmin_khider@yahoo.com/

yasmin_khider@mans.edu.eg

Abstract: **Heart failure (HF) is increasingly recognized as a major public health problem in industrialized countries. Because of the burden of symptoms, recurrent hospitalizations and use of emergency services numerous methods were proposed to control HF including self-care. The aim of conducting this study was to evaluate the efficacy of supportive educational package on self-care among HF patients. Method: A randomized controlled trial design was utilized to conduct this study. A purposive sample of 80 HF patients from both sexes was randomly divided into study and control groups. Three tools were used to collect data; 1- socio-demographic characteristics 2- Atlanta HF Knowledge Test 3-Self-Care of HF Index. Results: after applying supportive sessions the total mean score of knowledge improved significantly from 4.55 ± 0.64 to 25.73 ± 1.55 among the study group. While there was no change in the total mean scores of knowledge of the patients in the control group through program phases 4.23 ± 1.29. Post-session the total mean score of self-care aspects of HF care among the study group was 79.85 ± 2.55 compared to the control group 33.25 ± 5.86. Conclusion; Based on the findings of this study, there was inadequate knowledge about self care among HF patients before supportive approaches. After implementation, there was a statistically significant improvement in the study group's knowledge compared to the control group. Post education self-care aspects improved significantly among the study group in contrast to the control group. Recommendations, establish of the supportive educational package in cardiovascular department by nurses with necessary comprehensive reference material.**

Keywords: **Heart Failure Patients, Self Care, Supportive Educational.**

I. INTRODUCTION

Despite the considerable advance in treatment to improve outcomes in HF, this condition remains a growing health problem, reflected in high morbidity and mortality [1]. According to The American Heart Association (AHA); there will be about 10 million HF patients in the US by 2037, with total hospitalization costs exceeding $70 billion. In Egypt, around 1.5 million persons have HF in addition to each year clinician diagnosed around 111,937 new HF cases. Additionally, the WHO reported that in Egypt 23% of recorded deaths were due to HF in 2014 [2]. Cardiology described HF as a complex clinical syndrome in which the hearts ejection fraction compromised resulting in failure of the heart to keep up adequate circulation [3].

Heart failure has a major impact on the lives of patients and their families. Severe symptoms, such as dyspnea or edema and increased exercise intolerance affect important aspects of a person's life. Researchers proposed many methods to control HF including self-care (SC). The self-care concept has evolved over the years. It associated with autonomy, independence and personal responsibility for healthy behaviors, as well as for developing activities required to manage and check health conditions [4].

The European Society of Cardiology and AHA recommend that SC be improved by providing an educational package to HF patients [5]. Although the definition for SC varies, healthcare professionals defined SC as a naturalistic decision-making process, which involves selecting behaviors that support physiological stability and respond to symptoms when they occur. As result, SC activities often included in a treatment regimen is include monitoring daily weight, following a

Page | 981

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (981-993), Month: May - August 2019, Available at: **www.noveltyjournals.com**

sodium-restricted diet, implementing exercise into their lifestyle, medications compliance, and daily monitoring of their blood pressure [6].

According to Orem's SC theory, effective SC activities can decrease the need for hospitalization. This theory postulates that nurses interact with patients in three ways according to the patient's ability to take part in their care: total compensation, partial compensation, and supportive educational (SE) systems [7]. For this study, attention focused on the SE nursing system. Patients in the SE system are capable of engaging in SC but need education about the different aspects of therapeutic SC behaviors. Through the SE system nurses provide the knowledge, skills, support, guidance, and positive environment that patients need to make those adjustments. Nursing actions in the SE system support actual care giving and management of care [8].

The identification and implementation of an effective educational package can significantly increase HF patient's satisfaction and leads to continuity of care, independence in daily activities and reduces stress and ultimately reduced disability and patient's readmission. The nurses participated in the practice of educational activities with HF patients is extremely important in developing patients' SC, introducing changes in lifestyle and facilitating their treatment adherence [9]. Therefore, it seems imperative to decide the efficacy of SE package on enhancing SC among HF patients.

Aim of the study

The aim of conducting this study is to evaluate the efficacy of supportive educational package on self-care among HF patients.

Research hypothesis

Heart failure patients who involved in the educational package will develop a significant improvement in SC activities at the end of each month than those in the control group.

II. SUBJECT AND METHOD

Research design

The experimental research design was utilized to conduct this study.

The setting of study:

The study was conducted in cardiovascular department-Specialized Medical hospital, Mansoura University, Egypt.

Sampling:

A purposive sample of 80 heart failure patients from both sexes was recruited for the purpose of the current study using power analysis. The patients were selected based on the following criteria: patient's age ranged from (20-60 years old), functional class I, II or III, according to the classification of the New York Heart Association class (NYHA) , agreed to participate in the study and accepted to give consent, able to communicate verbally, available by phone after discharge, and free from mental illness, malignancies, infectious diseases with repercussions on the general state, and endocrine-metabolic diseases without treatment (for example, diabetes mellitus or thyroid diseases).
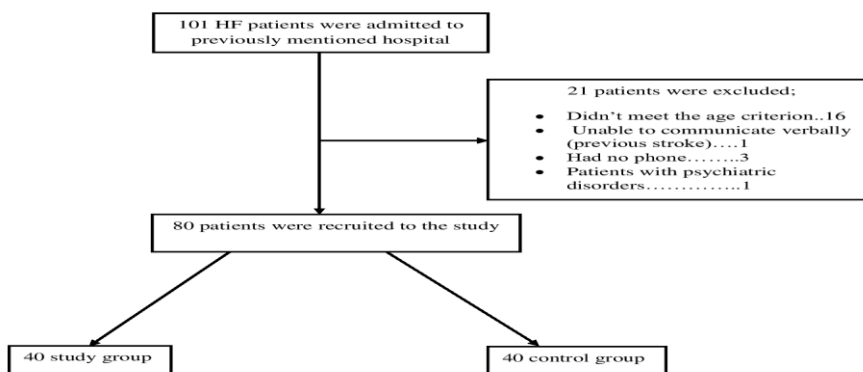

Figure (1): Flowchart illustrating the sampling process in the study

Research Instruments

Data were collected using the following three tools.

Tool I: socio-demographic characteristics

This tool was developed by the researcher, after reviewing the related recent national and international literature to assess sociodemographic characteristics. It consists of 11 questions regarding socio-demographic characteristics. This data was collected by the researcher from each patient individually and according to the medical record. All tool questions were collected before the intervention. It was designed in English and translated into the Arabic language

Tool II: Atlanta Heart Failure Knowledge Test (AHFKT-V3)

This tool was originally developed by Reilly, Smith, Hodgson, and Clark, (2009). Then, the tool was revised and updated to The AHFKT-V3 [10]. This tool was used to assess the knowledge that is prerequisite to adequate and comprehensive SC. It was used before and after implementing the SE package. AHFKT-V3 contains 30 items; 24 multiple-choice and six true and false items, measuring five domains of patient education.

Scoring system: Scoring of the test attributes one point for each correct answer with no additional weighting of items, followed by summing the correct responses. Incorrect or skipped questions were awarded zero points. For purposes of this analysis, total scores ranged from zero to thirty. The answers were evaluated by using the model answer prepared by the tool's author.

Tool III: Self-Care of Heart Failure Index (SCHFI)

This tool was developed by Riegel, Lee, Dickson, and Carlson, (2009). Then the SCHFI was revised and updated as version 6.2 [11]. This tool was used to measure SC behaviors in HF patients. It was used at one, two, and three months following hospital discharge. The SCHFI composed of 22 items allocated into three dimensions of SC behaviors as follow; maintenance (ten items), management (six items), and confidence (six items).

Scoring system: Each item was rated on an ordinal scale; with four responses except item number 11 and 16 in the management dimension had five responses. The response category for item number eight in the maintenance dimension was reversed. Each dimension score is transformed to yield a standardized score from zero to 100. Higher scores indicate better SC. A score of 70 or greater can be used as the cut-point to judge SC adequacy.

Validity and reliability of the instruments:

The developed and the translated tools were tested for content- related validity by a panel of experts in the related fields. Five expert professors; three from the faculty of nursing and two from the cardiovascular department reviewed the tools for clarity, relevance, understanding, and applicability for implementation. According to their critiques, minor modifications were done. Validity and reliability of the standardized tools had been tested in earlier studies shown good construct validity and reliability [10, 11]. In the present study, Cronbach's alpha coefficient for the total of the SCHFI was 0.733.

Pilot study: A pilot study was carried out on 10% of HF patients from specialized medical hospital to assess the clarity and the applicability of the tools, and the necessary modification was done prior to data collection. Those patients were excluded from the main study.

Ethical consideration

To carry out the study, permission to use tools (II and III) was obtained from the tools' author by e-mail as well as the proposal was approved by the research ethical committee, Faculty of Nursing, Mansoura University. Official permission to conduct the study was obtained from the faculty of nursing of Mansoura University to carry out the study. In addition, An Official written permission to conduct the study was obtained from responsible authorities at the specialized medical hospital after explaining the aim of the study.

Prior to the study, oral or written informed consent was obtained from each patient enrolled in the study after clarification of the nature of the study. The researcher emphasized participation is absolutely voluntary and confidential. Anonymity, privacy, safety, and confidentiality were absolutely assured throughout the whole study. Each participant had the right to withdraw from the study at any time.

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (981-993), Month: May - August 2019, Available at: **www.noveltyjournals.com**

Theoretical framework for the study:

Orem's theory was used in this study as the following sequence:

Phase I: Preparatory phase; the researcher reviewed recent scientific literature nationally and internationally. Consequently, the researcher used theses literature and Orem's theory as guidance for structuring frameworks of this thesis. Moreover, it provided direction for developing necessary data and collection tools as showed: the study tool I (socio-demographic characteristics) was developed by the researcher. The study tools II (SCHFI) and tool III (AHFKT-V3) were adopted by the researcher.

Phase II: Self-care agent; Patients who met the previously mentioned sampling criteria were interviewed by the researcher to collect the necessary data. The data were collected via personal interviews. The researcher introduced herself and explained the purpose and nature of the study to the patients. The researcher started with the control group then the study group to avoid data contamination. Each patient of both control and study group was interviewed individually immediately on admission in order to collect the baseline patient's data using the tool I (A socio-demographic characteristics).

Phase III: self-care deficit; the researcher assessed each patient's SC needs by using tool III (AHFKT-V3). The results indicated that HF patients lack knowledge in almost all the spheres of the disease. Collecting data from both groups took about 30 – 40 minute.

Phase IV: Designing a supportive educational package; accordingly based upon these SC deficits the researcher designed an appropriate SE package under the guidance of the supervisors. It was developed with an aim to improve SC activities among patients with HF. Moreover, an instructional booklet of 49 pages named Dear HF patients….How Should You Take Care of Yourself was prepared in the Arabic language (the National Language of Egypt). This booklet was divided into six units. Unit one: the heart which contained an overview of the heart. The second unit: knew HF which covered; what is HF? symptomatology of HF and factor that increase or lead to HF. Unit three: take care of yourself which consisted of: checking your pulse and blood pressure every day, take your medicine as order, modifying your lifestyle, weighing yourself every day, adjusting your diet and being always active. Unite four: when should you go to the doctor?

Phase V: Implementation; the designed SE package was implemented individually for the study group only. The package was conducted in two phases; the first phase was carried out during the patient's residence in the hospital. It consisted of three sessions; two educational sessions for explaining theoretical knowledge and one practical / training session for performing practical part; each session took about 30 to 45 minutes (according to the attention span of the patients). The researcher used simple, brief and clear words during each session.

The first session was about the heart, definition, signs and symptoms and the triggering factors for HF. The second session was about SC measures and warning symptoms that require doctor visiting. The third session was about performing a procedure related to SC behavior like measuring blood pressure, pulse and body weight and reading a food label. Diverse attractive teaching strategies were used during these sessions as an interactive lecture, demonstration, re-demonstration, questions, and discussion. Different media were used including pictures, data show, and videos. By the end of each session, a brief summary was given by the researcher. Each patient in the study group was given a copy of the SC booklet.

The second phase was done following the patient's discharge through regular telephone calls. The researcher communicated with the participant by phone every two weeks for 3 months to verify participant information and emphasize the importance of regular follow up.

The control group was received only usual care provided by the hospital which would customarily be a focus on the symptoms of HF and suggested patient adherence to treatment. After finishing the data collection the control group was instructed about all items of the SE package plus taking colored Arabic booklet.

Phase VI: Evaluation; the researcher evaluated both group knowledge about HF, treatment, and SC by using AHFKT-V3 (tool II) after the SE package implementation. The researcher evaluated baseline SC behavior data using SCHFI (tool III) by telephone at one, two and three months following hospital discharge for both groups. Comparison between control

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (981-993), Month: May - August 2019, Available at: **www.noveltyjournals.com**

and study group's finding were done to evaluate the effect of the SE package on enhancing SC. The SE program was started from the beginning of April 2018 to the end of October 2018.

Statistical design:

Following data collection, it was entered into the personal computer. Then it was revised, coded and fed to Excel program and SPSS version 20 (Statically Package for Social Sciences). The quantitative data were presented as numbers and percentages. The p-value of less than or equal 0.05 Indicates a significant result while p-value of more than 0.05 indicates a non-significant result.

Limitation of the study

The finding of this study is limited to the lack of a suitable place for interviewing patients and performing the program.

Findings are limited in generalizability due to the fact that the sample was selected from one hospital area in Egypt.

III. RESULTS

Table (1): Socio-demographic characteristics of the studied HF patients

Items	Study (n = 40) No.	%	Control (n = 40) No.	%	χ^2	p
Age in years						
20 –	0	0.0	3	7.5		
30 –	2	5.0	2	5.0	3.019	[MC]p= 0.434
40 –	9	22.5	7	17.5		
50 – 60	29	72.5	28	70.0		
Gender						
Male	29	72.5	28	70.0	0.061	0.805
Female	11	27.5	12	30.0		
Level of education						
Illiterate	21	52.5	18	45.0		
Secondary	10	25.0	12	30.0	0.465	0.792
University	9	22.5	10	25.0		
Occupation						
Not working	26	65.0	21	52.5	1.289	0.256
Working	14	35.0	19	47.5		
The work requires	(n = 14)		(n = 19)			
A muscular effort	4	28.6	1	5.3		
Frequent movement	6	42.9	6	31.6	4.930	[MC]p= 0.070
Sitting for long periods	4	28.6	12	63.2		
Marital status						
Married	34	85.0	36	90.0		
Single	1	2.5	2	5.0	2.062	[MC]p= 0.661
Divorced	1	2.5	0	0.0		
Widowed	4	10.0	2	5.0		
Residence						
Rural	24	60.0	27	67.5	0.487	0.485
Urban	16	40.0	13	32.5		

Living situation						
Alone	2	5.0	0	0.0		MCp= 0.269
With family	36	90.0	35	87.5	2.860	
With spouse	2	5.0	5	12.5		
Preferred phone number						
Home	9	22.5	17	42.5	3.647	0.056
Cell phone	31	77.5	23	57.5		

χ^2: Chi-square test   MC: Monte Carlo

p: p-value between the studied groups

 *: $P \leq 0.05$ (significant)

The results from this study showed that before the intervention the patients in the control group, and the study group had a similar distribution, as table (1) clarifies that no statistically significant differences were detected between the two groups regarding their socio-demographic characteristics (p > 0.05).

Table (2): Effect of supportive educational sessions on HF knowledge between the two studied groups

	Study (n = 40)		Control (n = 40)		$t(p_1)$	$t(p_2)$
	Before	After	Before	After		
Pathophysiology						
Min. – Max.	0.0 – 1.0	2.0 – 2.0	0.0 – 2.0	0.0 – 2.0	2.516[*]	20.382[*]
Mean ± SD.	0.03 ± 0.16	2.0 ± 0.0	0.25 ± 0.54	0.25 ± 0.54	(0.015[*])	(<0.001[*])
p_0	<0.001[*]		–			
Nutrition						
Min. – Max.	0.0 – 1.0	8.0 – 10.0	0.0 – 2.0	0.0 – 2.0	6.396[*]	49.068[*]
Mean ± SD.	0.98 ± 0.16	9.25 ± 0.95	0.30 ± 0.65	0.30 ± 0.65	(<0.001[*])	(<0.001[*])
p_0	<0.001[*]		–			
Behaviors						
Min. – Max.	1.0 – 2.0	6.0 – 6.0	1.0 – 2.0	1.0 – 2.0	0.739	77.893[*]
Mean ± SD.	1.93 ± 0.27	6.0 ± 0.0	1.88 ± 0.33	1.88 ± 0.33	(0.462)	(<0.001[*])
p_0	<0.001[*]		–			
Medication						
Min. – Max.	0.0 – 1.0	3.0 – 7.0	0.0 – 1.0	0.0 – 1.0	0.451	22.774[*]
Mean ± SD.	0.63 ± 0.49	4.48 ± 0.96	0.58 ± 0.50	0.58 ± 0.50	(0.653)	(<0.001[*])
p_0	<0.001[*]		–			
Symptom management						
Min. – Max.	1.0 – 1.0	4.0 – 4.0	1.0 – 3.0	1.0 – 3.0	2.966[*]	36.585[*]
Mean ± SD.	1.0 ± 0.0	4.0 ± 0.0	1.23 ± 0.48	1.23 ± 0.48	(0.005[*])	(<0.001[*])
p_0	–		–			
Total overall						
Min. – Max.	3.0 – 6.0	23.0 – 29.0	3.0 – 9.0	3.0 – 9.0	1.427	67.355[*]
Mean ± SD.	4.55 ± 0.64	25.73 ± 1.55	4.23 ± 1.29	4.23 ± 1.29	(0.159)	(<0.001[*])
p_0	<0.001[*]		–			

t: Student t-test   *: $P \leq 0.05$ (significant)

p_1: Student t-test (before intervention) between the studied groups

p_2: Student t-test (after intervention) between the studied groups

p_0: Paired t-test Before and After in each group

Table 2 reveals that after applying supportive sessions based on Orem SC model there was a statistically significant difference on all knowledge domains and the total score of knowledge among the study group in comparison to the control group with p-value <0.001. After the implementation of the supportive package, the total mean score of knowledge improved significantly from 4.55 ± 0.64 to 25.73 ± 1.55 (p<0.001) among the study group. While there was no change in the total mean scores of knowledge of the patients in the control group through program phases. Before

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (981-993), Month: May - August 2019, Available at: www.noveltyjournals.com

applying sessions there was no statistically significant difference on the total score between the two studied groups, however, a statistically significant difference was detected among the control group in comparison to the study group regarding pathophysiology, and symptom management domains (p1=0.015 and 0.005 respectively). On the other hand, there was a statistically significant difference among the study group in comparison to the control group regarding the nutrition domain (p1<0.001).

Table (3): Comparison between the two studied groups according to SC domains following supportive educational package

	Study (n = 40)				Control (n = 40)				$t(p_1)$	$t(p_2)$	$t(p_3)$
	1 Month	2 Months	3 Months	Fp_0	1 Month	2 Months	3 Months	Fp_0			
Maintenance											
Min. – Max.	34.0 – 40.0	34.0 – 40.0	34.0 – 40.0	–	12.0 – 25.0	12.0 – 25.0	12.0 – 25.0	–	42.987*	42.987*	42.987*
Mean ± SD.	37.85 ± 0.92	37.85 ± 0.92	37.85 ± 0.92		15.58 ± 3.15	15.58 ± 3.15	15.58 ± 3.15		(<0.001*)	(<0.001*)	(<0.001*)
Management											
Min. – Max.	17.0 – 21.0	17.0 – 21.0	17.0 – 21.0	–	6.0 – 14.0	6.0 – 14.0	6.0 – 14.0	–	28.084*	28.084*	28.084*
Mean ± SD.	19.85 ± 1.05	19.85 ± 1.05	19.85 ± 1.05		8.95 ± 2.22	8.95 ± 2.22	8.95 ± 2.22		(<0.001*)	(<0.001*)	(<0.001*)
Confidence											
Min. – Max.	16.0 – 24.0	16.0 – 24.0	16.0 – 24.0	–	6.0 – 13.0	6.0 – 13.0	6.0 – 13.0	–	39.847*	39.847*	39.847*
Mean ± SD.	22.15 ± 1.51	22.15 ± 1.51	22.15 ± 1.51		8.73 ± 1.50	8.73 ± 1.50	8.73 ± 1.50		(<0.001*)	(<0.001*)	(<0.001*)
Total overall											
Min. – Max.	70.0 – 83.0	70.0 – 83.0	70.0 – 83.0	–	26.0 – 46.0	26.0 – 46.0	26.0 – 46.0	–	46.121*	46.121*	46.121*
Mean ± SD.	79.85 ± 2.55	79.85 ± 2.55	79.85 ± 2.55		33.25 ± 5.86	33.25 ± 5.86	33.25 ± 5.86		(<0.001*)	(<0.001*)	(<0.001*)

t: Student t-test   F: F for ANOVA test
p_1: p-value (between the studied groups in 1Month) p_2: p-value (between the studied groups in 2Month)
p_3: p-value (between the studied groups in 3Month)   *: P ≤ 0.05 (significant)

Table 3 represents that post the intervention there was a statistically significant difference in the total mean score of all SC aspects of HF care among the study group compared to the control group in the first, second and third months (p1<0.001, p2 <0.001 and p3 <0.001). It documented that, after the intervention, patients in the study group had better SC practice as reflected by increasing their mean score than those in the control group in the first, second and third months (79.85 ± 2.55 and 33.25 ± 5.86) respectively

Table (4): Relation between total HF knowledge score post program and socio-demographic categories

Socio-demographic	Total HF knowledge	
	Study (n = 40)	Control (n = 40)
Age in years		
20 –	–	11.11 ± 1.92
30 –	88.33 ± 2.36	13.33 ± 0.0
40 –	87.78 ± 3.73	13.81 ± 4.05
50 – 60	84.94 ± 5.54	14.52 ± 4.64
F (p)	1.314 (0.281)	0.585 (0.628)
Gender		
Male	87.24 ± 4.80	14.17 ± 4.50
Female	81.82 ± 4.05	13.89 ± 3.98
t (p)	3.318* (0.002*)	0.185 (0.854)
Level of education		
Illiterate	82.54 ± 3.79	12.96 ± 3.21
Secondary	87.33 ± 1.41	14.17 ± 4.29
University	91.48 ± 5.03	16.0 ± 5.62
F (p)	19.599* (<0.001*)	1.659 (0.204)
Occupation		
Not working	84.62 ± 5.08	13.49 ± 4.88
Working	87.86 ± 4.82	14.74 ± 3.57
t (p)	1.957 (0.058)	0.912 (0.368)
Work		
Muscular effort	85.0 ± 3.33	13.33#
Frequent movement	89.44 ± 3.90	15.0 ± 3.50
Sitting for long periods	88.33 ± 6.94	14.72 ± 3.88
Test of Sig. (p)	F=1.055 (0.381)	t=0.149 (0.884)

Marital status			
Married		86.27 ± 5.17	14.26 ± 4.48
Single		$86.67^{\#}$	11.67 ± 2.36
Divorced		$86.67^{\#}$	–
Widowed		80.83 ± 4.19	13.33 ± 0.0
	Test of Sig. (p)	t=2.020 (0.051)	F=0.364 (0.698)
Residence			
Rural		84.44 ± 4.78	13.46 ± 3.39
Urban		87.71 ± 5.27	15.38 ± 5.70
	t (p)	2.031^{*} (0.049^{*})	1.341 (0.188)
Living situation			
Alone		83.33 ± 4.71	–
With family		85.65 ± 5.03	14.19 ± 4.38
With spouse		90.0 ± 9.43	13.33 ± 4.08
	Test of Sig. (p)	F=0.895 (0.417)	t=0.414 (0.682)

T: Student t-test F: F for ANOVA test   *: $P \leq 0.05$ (significant)

p: p-value (the studied categories)

\#: Excluded from the comparison due to a small number of case (n = 1)

In reference to table 4, a statistically significant association in the total score of HF knowledge and socio-demographic categories between two groups was not detected except for the study group between gender, level of education and residence items and total knowledge score (0.002, <0.001 and 0.049) respectively.

Table (5): Association of socio-demographic features and the overall score of SC

Socio-demographic features		Overall score SC	
		Study (n = 40)	Control (n = 40)
Age in years			
20 –		–	37.88 ± 6.56
30 –		92.05 ± 0.0	34.09 ± 0.0
40 –		91.29 ± 1.14	35.55 ± 4.90
50 – 60		90.48 ± 3.32	38.60 ± 7.25
	F (p)	0.470 (0.629)	0.587 (0.628)
Gender			
Male		91.61 ± 1.44	37.13 ± 6.22
Female		88.43 ± 4.34	39.30 ± 7.65
	T (p)	2.386^{*} (0.036^{*})	0.941 (0.353)
Level of education			
Illiterate		89.66 ± 3.46	37.18 ± 6.99
Secondary		92.05 ± 1.07	36.17 ± 4.05
University		91.79 ± 1.78	40.80 ± 8.10
	F (p)	3.445^{*} (0.042^{*})	1.482 (0.240)
Occupation			
Not working		90.25 ± 3.42	37.74 ± 6.57
Working		91.64 ± 1.15	37.82 ± 6.90
	T (p)	1.880 (0.069)	0.040 (0.968)
Work			
Muscular effort		91.48 ± 0.66	$45.45^{\#}$
Frequent movement		92.05 ± 1.61	37.31 ± 7.65
Sitting for long periods		91.19 ± 0.57	37.31 ± 6.18
	Test of Sig. (p)	F=0.685 (0.524)	T=0.000 (1.000)
Marital status			
Married		90.51 ± 3.04	37.47 ± 6.41
Single		$92.05^{\#}$	39.77 ± 8.04
Divorced		$94.32^{\#}$	–
Widowed		91.48 ± 1.14	41.48 ± 13.66
	Test of Sig. (p)	T=0.626 (0.535)	F=0.424 (0.657)
Residence			
Rural		90.29 ± 3.48	36.24 ± 5.55

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (981-993), Month: May - August 2019, Available at: **www.noveltyjournals.com**

Urban		91.41 ± 1.55	41.00 ± 7.80
	T (p)	1.198 (0.239)	$2.221^* (0.032^*)$
Living situation			
Alone		93.18 ± 1.61	–
With family		90.56 ± 2.97	37.63 ± 6.64
With spouse		91.48 ± 0.80	38.86 ± 7.47
	Test of Sig. (p)	F=0.837 (0.441)	T=0.382 (0.705)
Preferred phone number			
Home		89.77 ± 4.21	37.37 ± 6.69
Call phone		91.02 ± 2.41	38.09 ± 6.77
	T (p)	1.141 (0.261)	0.337 (0.738)

T: Student t-test   F: F for ANOVA test   *: $P \leq 0.05$ (significant)
P: p-value for comparing the studied categories
#: Excluded from the comparison due to the small number of case (n = 1)

Table 5 displays that for the study group; all items of socio-demographic didn't significantly affect total SC score post supportive sessions except for gender and level of education.

Table (6): The correlation of HF knowledge of the study group and the total score SC

Total score HF knowledge		Total score self–care			
		Maintenance	Management	Confidence	Overall
Pathophysiology	r	–	–	–	–
	p	–	–	–	–
Nutrition	r	0.335^*	0.320^*	0.400^*	0.491^*
	p	0.034^*	0.044^*	0.011^*	0.001^*
Behaviors	r	–	–	–	–
	p	–	–	–	–
Medication	r	0.083	-0.207	0.038	-0.033
	p	0.612	0.200	0.816	0.840
Symptom management	r	–	–	–	–
	p	–	–	–	–
Overall	r	0.257	0.068	0.269	0.281
	p	0.109	0.675	0.093	0.079

r: Pearson coefficient
*: $P \leq 0.05$ (significant)

It appears from table 6 that after applying supportive educational package there was no correlation between total score of HF knowledge of the study group and all domain of SC however, there was a statistical correlation between nutrition dimension and all SC domain.

IV. DISCUSSION

Heart failure (HF) is a growing healthcare burden and one of the leading causes of hospitalizations and readmission. International guidelines reiterate the benefit of education and support for HF self-care to enable patients to check and manage the syndrome at home, maximize wellbeing, reduce mortality and minimize avoidable hospital readmission [3, 9]. The results from this study showed that before the intervention the patients in the control group and study group were homogeneous in terms of the underlying variables such as age, gender, level of education, marital status, residence, and living situation.

According to the present study applying the supportive educational intervention developed based on the Orem's SC theory had linked with improvements in patients' knowledge and SC ability. Post the intervention there was a statistically significant difference in the total mean score of all knowledge domains and SC aspects of HF care among the study group compared to the control group. After the intervention, patients in the study group had better knowledge and SC practice as reflected by increasing their mean score than those in the control group.

Likewise, the result displayed by Mohammadpour et al. (2015) confirmed the benefit of the SE nursing program on adults with HF. Based on their work; the mean scores of knowledge of the patients with HF were definitely higher than before the intervention. HF education was found to be a key intervention for adults with HF [7]. Moreover, this result is in the line with the finding of Kasem et al. (2017) who concluded that after carrying out medical and nursing teaching program there was a significant improvement in their patient's awareness of the disease [12].

Similar to a recent systematic review of effective strategies of HF disease management which summarized that planned interventions designed to enhance understanding of the nature of HF, its symptoms, and SC are effective for improving SC [13]. In this regard, the results of Kaveh, Khoramaki, Kojouri, and Keshavarzi (2017) was in the line with the current study, as they concluded that the SC behaviors of patients with HF were positively influenced after implementation the health belief model based educational intervention [6].

Taken together, the results correspond with the findings of the study conducted by Liou et al. (2015) who confirmed that using a SC program produces noticeable improvements in knowledge and SC among HF patients [5]. On the other hand, this result is in contrast with a randomized controlled study done by Boyde and colleagues in 2018 which examined the effect of SC educational intervention to decrease hospitalizations among HF patients. They stated that although both groups in their study improved their knowledge and SC scores, there were no significant differences between the intervention and control groups [14].

In this study based on Orem's SC theory, the first steps for HF patients must watch their symptoms, adapt to treatment, and learn to recognize symptoms (SC maintenance). After this step, HF patients must have the skills that allow them to check the symptoms they are experiencing, carry out the proper intervention, and assess the impact of the intervention on their symptoms (SC management). Finally, when HF patients can do the above two steps successfully, their self-confidence heightened so. This is because when patients can make the early identification of their symptoms and make the proper intervention, they realize that they experience fewer symptoms. Moreover, because they then believe they can manage their illness, their self-confidence also improves [15].

When comparing the SC maintenance in this study, SC management and SC confidence of the intervention and control groups, it was found that there were statistically significant differences between both the groups. The package implemented in this study had an impact on improving HF patient maintenance, SC management, and SC confidence. In this regard, the results of Sezgin, Mert, Özpelit, and Akdeniz in 2017 correspond with the findings of the current study [16].

In the current study, it observed that SC behavior of the patients in the control and the study groups as tested by SC of HF index had the same result through the first, second, and the third months. For the study group, these findings interpreted in my point of view due to frequent supportive telephone call (every two weeks) as the researcher in each phone call stressed the importance of SC behavior and remembered the patients in the study group about items of SC. However for the patients in the control group, they only received routine care from hospital staff which focused on symptoms relives (through using medication for example; using diuretic and oxygen therapy) regardless of their frequent readmission.

In the current study, after implementation of the supportive package, there was a statistically significant association between the total score of HF knowledge and gender, level of education, and residence items only for the study group. High knowledge score observed in the study group between 40 and 49 years old while the high score was found between the age group 50 and 60 years old for the control group. For both groups, increasing knowledge level had associated with being male, working patients, a university graduate, and living in an urban region. This explained by medication feasibility and high educational level, more healthy lifestyle, different demographics, and health behaviors in urban than rural areas. Additionally, rural patients have less access to cardiologists.

In the same line come the previous study of Kasem et al. (2017) who reported a statistically significant association between awareness level about HF and their residence and education. Similar to the present result, their score of knowledge was high in younger elderly than those with advanced age; they clarified that as this age group might have the ability for learning than older ones. Likewise, urban patients had a higher level of awareness and adherence than rural patients in their study. Also, they found that no statistically significant association was found between awareness level, marital status, and occupation in pretest and post-test [12].

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (981-993), Month: May - August 2019, Available at: www.noveltyjournals.com

In this regard, the findings of a previous cluster analysis conducted by Vellone and colleague in 2017 on HF patients to assess and compare the profile of each HF patient cluster with their socio-demographics, clinical variables, quality of life and hospitalizations. They explored that high consistent adherence characterized by younger patients, with higher formal education and higher income, less clinically compromised, with the best physical and mental quality of life (QOL) and lowest hospitalization rates [17].

On the other hand, a study conducted by Seraji and Rakhshani (2017) presented results against the results obtained in this study so that their ANOVA test revealed that there was not a statistically significant difference between their patients' awareness scores and their educational level. Although, they are consistent with this study on the association between patients age and their level of knowledge as they reported a reverse statistical correlation between patients' age and their awareness level and their attitude; that is, by an increase in age factor, the rate of patients' awareness and attitude would decrease [18].

For the study group in this study; there was a significant relation between items of socio-demographic and total SC score post supportive sessions except for gender and level of education. As documented, increased in SC scores observed with age group 40-49 years old, being male, non-working, married patients, living alone in a rural region, and patients with university education. On the other hand, for the control group, there was no important relationship between the socio-demographic characteristic and SC activities except for residence.

Likewise, the results of Gheiasi, Roohani, Hanifi, and Kamali (2017) suggested that level of education had no effect on SC in the dimensions of self-maintenance and self-management which were consistent with the findings of the present study [19]. Moreover, the results of this study were found consistent with the findings of Seraji and Rakhshani (2017) who mentioned that there was no statistically significant difference between HF patients' behavior scores and their educational level [18]. This result in disagrees with the statistical analysis of a previous study which showed a significant positive correlation between health literacy scale and SC subscales [20].

Moreover, after applying supportive educational package there was no correlation between total score of HF knowledge of the study group and all domain of SC, however, there was a statistical correlation between nutrition dimension and all SC domain. A statistical correlation detected in the control group between the total score and all dimension of HF knowledge and their SC score through program phase. It noticed that there was a moderate positive correlation between the total score of knowledge and total SC score, this mean as the HF patients' knowledge increase their SC also increase.

In the same line comes the study of Lee, Moser, and Dracup (2017) which found a positive associated between patient's levels of understandings of HF disease and SC [21]. These findings come in disagree with the result of Seraji and Rakhshani (2017) who observed a statistical direct correlation between patients' awareness and their attitude and SC behavior [18]. Based on the previous discussion of the present study; the findings accepted the research hypothesis that HF patients who involved in the educational package will develop a significant improvement in SC at the end of each month than those in control group.

V. CONCLUSION

Based on the findings of the present study the following can be concluded:

- There was inadequate knowledge about SC among HF patients before supportive education.

- There was a significant improvement in the study group's knowledge about HF in post educational package compared to the control group.

- Practicing SC was improving significantly after SE among the study groups compared to the control groups.

VI. RECOMMENDATION

The current study recommended the following:

1. Establish a supportive educational package in cardiovascular department by nurses with necessary comprehensive reference material as training manual and visual materials.

2. Designing a discharge unit in specialized medical hospital with their responsibility to provide adequate education to HF patients before discharge and keep frequent follow up through telephone, home visit, and outpatients' clinic.

3. Establishment of the web site, including all information pertaining to heart failure SC and all aspect of health education such as different educational materials; media, and audio-visual aids.

4. Heart failure support groups should be initiated as a more formal means of facilitating the flow of experience and encouragement from one patient to the next.

5. National strategies are highly required to support HF patients and their family.

6. Long-term follow-up of HF patients is necessary to determine the durability and long-term outcomes of the supportive educational package.

7. Further researches are required to be applied to nurse's knowledge and practice regarding SC measure of HF patients.

8. Further researches should be applied to a support group of HF patients regarding their knowledge about heart failure SC measure.

9. Future studies should also include the benefit of using technology like what's up or imo or email reminder text on improving SC behavior among HF patients.

REFERENCES

[1] Virani, S. A. et al. The Need for Heart Failure Advocacy in Canada. Can. J. Cardiol. 33, 1450–1454 (2017).

[2] Mohamed, M. G., Alaaeldeen, S. M., Ali, G. A. & Ibrahim, M. H. Effect of applying a clinical pathway for patients with Congestive Heart Failure on their health status outcomes. Nurs. Palliat. Care Int. J. 2, 12–19 (2019).

[3] Inamdar, A. A. & Inamdar, A. C. Heart Failure: Diagnosis, Management and Utilization. J. Clin. Med. 5, 62 (2016).

[4] Ziaeian, B. & Fonarow, G. C. The Prevention of Hospital Readmissions in Heart Failure. Prog. Cardiovasc. Dis. 58, 379–385 (2016).

[5] Liou, H. et al. The effects of a self-care program on patients with heart failure. J. Chinese Med. Assoc. 78, 648–656 (2015).

[6] Kaveh, M. H., Khoramaki, Z., Kojouri, J. & Keshavarzi, S. The Impact of a Hospital-Based Educational Program Based on the Health Belief Model on Self-Care Behaviors of Heart Failure Patients. Iran. Red Crescent Med. J. 19, e36676 (2017).

[7] Mohammadpour, A., Sharghi, N. R., Khosravan, S., Alami, A. & Akhond, M. The effect of a supportive educational intervention developed based on the Orem ' s self-care theory on the self-care ability of patients with myocardial infarction : a randomised controlled trial. J. Clin. Nurs. 24, 1686–1692 (2015).

[8] Nugent, P. M. & Vitale, B. A. Fundamentals Davis Essential Nursing Content + Practice Questions. (F.A. Davis Company, 2017).

[9] Bailey, E. Promoting Heart Failure Self Management Using Teach Back Strategies. (University of Portland, 2016).

[10] Butts, B., Higgins, M., Dunbar, S. & Reilly, C. The Third Time's a Charm: Psychometric Testing and Update of the Atlanta Heart Failure Knowledge Test. J. Cardiovasc. Nurs. 33, 13–21 (2018).

[11] Vellone, E. et al. Psychometric Testing of the Self-Care of Heart Failure Index Version 6.2. Res. Nurs. Health 36, 500–511 (2013).

[12] Kasem, S. M., Mahmoud, N. & El-aziz, A. Effect of medical and nursing teaching program on awareness and adherence among elderly patients with chronic heart failure in Assiut , Egypt. Egypt. J. Intern. Med. 29, 47–53 (2017).

[13] Clark, A. M. et al. A systematic review of the main mechanisms of heart failure disease management interventions. Heart 102, 707–711 (2016).

[14] Boyde, M. et al. Self-care educational intervention to reduce hospitalisations in heart failure : A randomised controlled trial. Eur. J. Cardiovasc. Nurs. 17, 178–185 (2018).

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 6, Issue 2, pp: (981-993), Month: May - August 2019, Available at: **www.noveltyjournals.com**

[15] Riegel, B., Dickson, V. V. & Faulkner, K. M. The Situation-Specific Theory of Heart Failure Self-Care: Revised and Updated. J. Cardiovasc. Nurs. 31, 226–235 (2016).

[16] Sezgin, D., Mert, H., Özpelit, E. & Akdeniz, B. The effect on patient outcomes of a nursing care and follow-up program for patients with heart failure : A randomized controlled trial. Int. J. Nurs. Stud. 70, 17–26 (2017).

[17] E, V. et al. Patterns of self-care in adults with heart failure and their associations with socio-demographic and clinical characteristics, quality of life and hospitalizations: A cluster analysis. J. Cardiovasc. Nurs. . 32, 180–189 (2017).

[18] Seraji, M. & Rakhshani, F. On the consideration of self-care behaviors in patients affected by congestive heart failure and factors related to it. Iran. J. Heal. Sci. 5, 25–31 (2017).

[19] Gheiasi, S. F., Roohani, M., Hanifi, N. & Kamali, K. The Impact of a Training Program Based on Learning Needs on Self- Care Behaviors among Patients with Heart Failure. Evid. Based Care J. 7, 15–24 (2017).

[20] SheikhSharafi, H. & Seyedamini, B. Assessment of health literacy and self-care in heart failure patients. J. Heal. Lit. 1, 203–219 (2016).

[21] Lee, K. S., Moser, D. K. & Dracup, K. Relationship between self-care and comprehensive understanding of heart failure and its signs and symptoms. Eur. J. Cardiovasc. Nurs. 17, 496–504 (2018).