

Effect of A Designed Nursing Teach Back Strategy and Individualized Patient's Self-Care Nutrition on Daily Livings Activity of Heart Failure Patients

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Abstract

Background: - Heart failure consider a major healthcare burden and there is a growing need to develop strategies to maintain health and sustain quality of life in persons with heart failure. **Aim:** - determine the effectiveness of a designed nursing teach back strategy and patient's self-care nutrition on daily livings activity of heart failure patients. **Subject and methods:** - Randomized controlled trial design was utilized. A simple random sample of sixty adult Patients with heart failure seeking treatment at cardiology department at Tanta University were chosen, allocated, and split into two equal groups randomly. **Group I:** control group were given regular nursing care by hospital nurses and under prescribed treatment by physician. Whereas a designed nursing teach back strategy and individualized patient's self-care nutrition as calculated and implemented by researcher and under prescribed nutrition by physician was provided to **group II (study group)**. **Tools:** **Three tools** were used to gather relevant data for the investigation, Tool (I) included Assessment questionnaire, Tool (II) included Nutritional assessment sheet and Tool (III) was clinical outcomes assessment sheet. **Result:** The main result revealed that slightly more than half of the control group I and the minority of the study group II still had moderate functional impairment two one month after implementing individualized teaching nursing strategy about nutrition. **Conclusion:** Individualized patient's self-care nutrition to maintain healthy and safe food intake based on patients' needs had positive effect on improvement of activity of daily livings of study group II. **Recommendations:** It is recommended that teach back strategy and individualized patient's self-care nutrition should be given to patients upon admission and followed after patient discharge by cardiology nurse.

Key words: Daily livings activity– Heart failure- Nursing strategy- Self- Care Nutrition.

Introduction:

Instead of being a single disease, heart failure is a clinical ailment with several etiologies and pathophysiologicals. Therefore, compared to conditions that can be diagnosed using a pathologic gold standard, heart failure diagnosis is more challenging. (Ponikowski et al.,2016; Sutsui et al 2019).

Currently, Heart failure affects 5.7 million individuals in the United States however, predictions indicate that number will climb to over 8 million by 2030. In Egypt cardiovascular diseases accounted for 46.2% of all fatalities in Egypt in 2015. (Mozaffarian et al.,2016; Yusuf et al., 2018).

In the West, the two main causes of heart failure are ischemic heart disease and hypertension. Nutritional and infectious issues continue to be major concerns in the realm of poverty. (Soenarta et al.,2020).

Depending on the heart's functional condition, heart failure with maintained ejection fraction (HFpEF) and heart failure with decreasing ejection fraction (HFrEF) are the two main clinical subtypes of heart failure. (Dassanayaka, & Jones, 2015; Ohtani et al.,2012).

The symptoms of heart failure include right hypochondrial discomfort, exhaustion, edema, dyspnea, orthopnea, and paroxysmal nocturnal dyspnea. (Yancy et al., 2017; Marti et al.,2013; Poole et al., 2012).

Physical exams are performed in the evaluation of heart failure to ascertain whether clinical symptoms and signs are present. Also, further specialized laboratory test for heart failure is brain natriuretic peptide is done. (Pfister et

al.,2004; Simons, & Don-Wauchope, 2016).

The following pharmaceutical medicines may be used to treat heart failure, aldosterone antagonists, beta-adrenergic blockers, digoxin, anticoagulants, inotropic drugs, diuretics, and inhibitors of the angiotensin-converting enzyme or angiotensin receptor (Abraham et al., 2011; Bui, &Fonarow, 2012; Guidi et al.,2015).

The 2020–2025 dietary recommendations for Americans promote the Dietary Approaches to Stop Hypertension diet as a healthy eating pattern by the US Department of Agriculture because research has shown it to be beneficial in lowering the chance of cardiovascular illness. (D'Souza et al., 2020; Salehi-Abargouei et al.,2013).

With precision nutrition, this all-inclusive dietary approach provides additional options for customization, which might be advantageous for effective heart failure therapy. (Colin-Ramirez et al.,2016; Van Horn et al., 2016).

The healthcare system for heart failure is believed to rely heavily on nurses. They play a critical role in helping patients find reliable information sources, developing their health literacy, and in the end, giving them greater power via education. (Francis et al.,2017; Rasmusson et al., 2015; Clark et al.,2010).

Among the simplest ways to bridge the communication gap between the patient and the nurse is to use the "teach-back" methodology strategy, often known as the "show-me" method. A teach-back method is one that a nurse might employ to ensure that the patient has been given the necessary information. Teach-back is a technique the nurse can use to make sure the patient has

received the information they need to know in an approach they can comprehend. (Rasmusson et al.,2015; Peter et al.,2015).

Aim of the study:

The purpose of the research was to determine the effectiveness of a designed nursing teach back strategy and patient's self-care nutrition on daily livings activity of heart failure patients.

Research hypothesis:

Patients with heart failure who were exposed to a designed nursing teach back strategy and individualized patient's self-care nutrition would exhibit improvement of activity of daily livings compared to the control group.

Subjects & Method:

Study design:

Setting of the study:

The study was conducted at the higher education-affiliated Tanta University Educational hospitals and the cardiac department of Tanta University Main Hospital.

Subjects:

60 adult patients with heart failure were included in a basic random sample and seeking medical intervention at cardiology department at Tanta University main hospital and Tanta University Educational Hospitals were chosen, allocated and split into two equal groups of thirty patients each at random. The sample size computation based on hospital admission of patients was discovered to be 60 patients. Based on the research group's anticipated improvement in clinical outcomes at 95% confidence power, the following computation was made using the study IP information software program.

There were two categories of subjects:

Control group: It consisted of 30 patients with heart failure, were received routine nursing care by hospital nursing staff and under prescribed treatment by physician.

Study group: It consisted of 30 patients with heart failure meeting all inclusion criteria, were received a designed nursing teach back strategy and individualized patient's self-care nutrition. as calculated and implemented by researcher and under prescribed treatment and prescribed nutrition by physician.

Inclusion criteria:

The following criteria were used to choose the subject: -

- 1- Patients who are adults, ranging in age from 21 to 60, of both sexes.
- 2-Patients able to communicate and newly admitted within the first 48 hours in the cardiology department.
- 3-Patient with heart failure grade I and II without any associated diseases as well as non-pregnant women.
- 4-Individuals with mid-range ejection fraction (HFmrEF) of 40–50% in heart failure patients.
- 5-Expected to stay not less than 4 days.
- 6-Willing to participate in study.

Data collection tools:

A questionnaire that the researcher created based on expert opinion and a study of the literature was used to gather data. Three tools were employed to gather relevant data for the research:

Tool I) Assessment questionnaire include the following parts: -

Part (1) patient's sociodemographic characteristics of the study sample: -

After examining the literature, researchers designed and employed it. It reported data about the following items: - patient's age,

sex, E-mail if found, marital status, educational level... It was translated into Arabic

Part (2) patient's medical and clinical data:

Following an assessment of the literature, researchers designed and employed it. It included data concerned with duration of hospitalization, diagnosis, past medical history, family history, it was translated into Arabic (Lofters et al., 2010).

Part (3) Classification of Heart Failure by Left Ventricular Ejection Fraction (LVEF): -

Developed by (Yancy et al., 2017) and was adopted by the researcher. According to the patients' Left Ventricular Ejection Fraction (LVEF) from their ECHO, it was utilized to categorize their heart failure.

Definition	LVEF
HFrEF, or heart failure with decreased ejection fraction	<40%
HFpEF, or heart failure with preserved ejection fraction	≥50%
Mid-range ejection fraction heart failure (HFmrEF)	40 to <50%
Heart failure with improved preserved ejection fraction (HFpEF) or heart failure with recovered EF (HFrecEF)	≥40%

Tool II) Nutritional assessment sheet:

Researchers created this tool after reviewing pertinent literature. (Agra et al., 2017; Jensen et al., 2010; Anthony, 2008; Cederholm et al., 2017; Tsai et al., 2010; Freedman et al., 2008; Narumi et al., 2013; Ducas et al., 1983; Aggarwal et al., 2013). It consisted of parameters about

nutrition assessment which was comprised of two parts as the following:

Part (1) Dietary recalls questionnaire: -

This part was included dietary recalls questionnaire which require the patients to recollect the precise quantity of food and drink they have consumed in the last three days in terms of home measurement. It was translated into Arabic.

Part (2) Patient's Anthropometric measurement: - It was included:

1. Body weight. A bathroom scale of the LAICA type was used to measure the subject's current body weight.

2. Height. The patient was measured while standing, and a flat, vertical surface (the wall) was measured using a stretchy tape measure.

3. Mid Upper Arm Circumference (MUAC). It was a helpful malnutrition indication that may be used to sick patients (normal MUAC >22 cm in females, >23 cm in men).

4. Body mass index (BMI). It was employed to assess the level of obesity. The formula for calculating BMI was weight (kg) ÷ height (meters squared) or weight (kg) ÷ height (m²). BMI fits into one of the following categories, and this item was rated for people over the age of 20.

Underweight	was allocated score
Below 18.5	
Normal weight	was allocated score
18.5- 24.9	
Pre obesity	was allocated score
25.0-29.0	
Obesity Class I	was allocated score
30.0- 34.9	
Obesity Class II	was allocated score
35.0- 39.9	
Obesity Class III	allocated score
Above 40	

It was translated into Arabic.

Tool (III) Clinical outcomes assessment sheet: -

This tool was made up of the following two parts:

Part (1) Daily Dietary intake: -

It was developed by the researcher to evaluate patient's clinical outcomes based on literature review. It was used to assess patient's daily intake for four days in hospital and other days using self-report through what's app application and phone call by the researcher. It was translated into Arabic

(Agra et al., 2017; Jensen et al.,2010; Anthony, 2008; Cederholm et al.,2017; Tsai et al.,2010).

Part (2) Katz Activity of Daily Livings Scale: -

This tool was developed by (Arika et al., 2015) and adopted by the researcher. When evaluating the patient's capacity to carry out everyday tasks on their own, it was utilized to determine their functional status. It was translated into Arabic.

Bathing	1 Point: Completely bathes oneself or requires assistance while washing a single body portion, such as the back, the vaginal region, or an impaired extremity. 0 Points: Require assistance getting in and out of the shower or bathtub, as well as washing many body parts. demands complete bathing
Dressing	1 Point: Drawers and closets should be raided for clothing, and outerwear should be put on with all fasteners included. might

	need assistance fastening shoes. 0 Points: Requires assistance getting dressed or has to be clothed entirely
Toileting	1 Point: Uses the restroom, gets on and off, straightens clothing, and cleans the vagina without assistance. 0 Points: Requires assistance using a bedpan or commode, cleansing themselves, or moving to the toilet.
Transferring	1 point: Can get in and out of a chair or bed by themselves. Transfer aids that are mechanical are permissible. 0 Point: Requires a full transfer or assistance getting from bed to chair.
Continence	1 point: Shows total self-control when it comes to urinating and feces. 0 Points: Has partial or complete bowel or bladder incontinence.
Feeding	1 point: Can put food in mouth without assistance from plate. There are other people who can prepare food. 0 Points: Requires parenteral feeding or needs some or all of the assistance with feeding.

The scoring system of this score was interpreting as follow: -

Full function is indicated with a score of six overall.

Moderate impairment is indicated by a total score of 4.

A total score of (2) or less indicates severe functional impairment.

II. Method:

1- Administrative process:

Before beginning this study, official letters outlining the goal of the investigation were obtained from the responsible authority of the head of the cardiology department at Tanta University Main Hospital and Tanta University Educational hospitals affiliated with Tanta University hospital.

2- Ethical consideration: -

This study was approved by Faculty of Nursing at Tanta university ethical committee on 17/11/2021 and approval code was 35073/11/21. After being informed of the purpose of the study, patients and/or their families were asked to provide written informed consent. Confidentiality and privacy were guaranteed by using a code number rather than the patient's name. Patients were free to withdraw from the study at any time without incurring any harm, and the study itself did not cause any pain to the patients being studied.

3-Duration of study: -

Data was gathered during a seven-month period, starting in June 2022 and ending in January 2023.

4- Tools Development:

Three tools were developed and adopted by researcher after review of recent related literature.

Tool (I) “Biosocio-demographic and physical assessment”: - It was used once

immediately upon admission for collection of baseline patient clinical data.

Tool (II): - “Nutritional assessment sheet”

It was used three times once immediately upon admission, then after the two weeks and finally one month after teaching sessions except of part one was used only on admission.

Tool (III) “Clinical outcomes assessment sheet”: - It was used three times once immediately upon admission, then after two weeks and finally one-month post teaching sessions

5- Content Validity:

The tools of the study were tested for content validity by jury of five experts in the academic staff medical-surgical nursing, Cardiology clinic professors and biostatistics at the faculty of medicine. modifications were carried out accordingly.

6-Reliability of the tools:

All tools of the study were tested for reliability, Cronbach alpha was used and found to be 0.804 for Tool I part one, 0.886 for Tool I part two, 0.854 for Tool I part three, 0.821 for Tool II part one, 0.815 for Tool II part two and 0.847 for tool III part one, 0.876 for tool III part two which consider highly reliable tools.

7- A pilot study:

It was conducted before the actual study on six heart failure patient to test the clarity, feasibility and the applicability of different items of the determent tool. Modifications and some additional terms were done by the researcher before conducting the study according to the experience gained from this pilot study. Data that was obtained from those patients was excluded from the subjects in the current study.

7- The subject was selected randomly.

8-The study was conducted on four phases:

Phase I: Assessment Phase: -

- Sixty adult patient who fulfill the inclusion criteria were be selected randomly and divided alternatively into two equal groups, 30 patients in each group.

- Patients of both groups was assessed immediately upon admission for nutrition strategies using tool I, II and tool III.

- Phase II: The planning phase: -

- The researcher reviewed the related literature and a designed nursing teach back strategy and individualized patient's self-care nutrition that was developed under prescribed nutrition by physician.

- The teaching strategies about self-care of nutrition was divided into four session plans for (4 days) and each session was lasted for (30-45) minutes.

- Each session plan was addressed specific measurable learning objectives.

- A colored booklet was developed by the researcher.

Phase III: The Implementation phase: -

For the study group by the researcher: -

- Each patient's daily calorie need was determined separately based on their age, sex, and level of activity, in accordance with the Office of Disease Prevention and Health Promotion, the Dietary Guidelines for Americans 2020–2025, and the local food composition tables. (Reed et al.,2023).

Age (for women)	Calories (Sedentary)	Calories (Moderately Active)	Calories (Active)
21-25	2,000	2,200	2,400
26-30	1,800	2,000	2,400
31-50	1,800	2,000	2,200
51-60	1,600	1,800	2,200
61 &	1,600	1,800	2,000

up			
Age (for men)	Calories (Sedentary)	Calories (Moderately Active)	Calories (Active)
21-25	2,400	2,800	3,000
26-35	2,400	2,600	3,000
36-40	2,400	2,600	2,800
41-45	2,200	2,600	2,800
46-55	2,200	2,400	2,800
56-60	2,200	2,400	2,600
61-65	2,000	2,400	2,600

- Individualized nutrition according to cause of heart failure such as (hypertension, anemia), type of heart failure (right, left or congested heart failure) and presence of other disease such as (diabetes, hypotension, hypoglycemia) or other complains such as (hypernatremia, hyponatremia, hypocholesteremia) was designed to each patient for the study group as following: -

- For patients who suffered from hypertension, anemia, hypernatremia and hypercholesteremic, the prescribed diet was low sodium DASH diet 1500 mg/day, increase food rich in vitamin B12 and folic acid.

- For patients who suffered from hypotension, anemia and hyponatremia or hyponatremia only, the prescribed diet was 2400mg/day sodium, avoid high salt content food and replace with olives, cottage cheese and tuna, increase food rich in vitamin B12 and folic acid.

- For patients who suffered from diabetes mellitus, anemia, hypernatremia and hypercholesteremic, the prescribed diet was low sodium DASH diet 1500 mg/day, increase food rich in vitamin B12, folic acid and decrease sugar and sweets.

- For patients who suffered from anemia, the prescribed diet was standardized DASH diet

2300mg/day, increase food rich in vitamin B12 and folic acid.

- For patients who suffered from hypernatremia and hypercholesteremic, the prescribed diet was low sodium DASH diet 1500 mg/day.

- For patients who suffered from hypoglycemia, anemia and hypernatremia, the prescribed diet was low sodium DASH diet 1500 mg/day, increase food rich in vitamin B12, folic acid and increase sugar and sweets.

- For patients who suffered from heart failure of unknown cause, the prescribed diet was standardized dietary approach to stop hypertension (DASH) diet 2300mg/day.

- The patient received five small frequent meals per day instead of three big meals following:

- A designed nursing teach back strategy and individualized patient's self-care nutrition was taught to each patient individually who was participated in study group in four sessions for four consequently days with strict infection control precautions was committed especially with the presence of COVID- 19 pandemic.

-After explaining, the researcher paused and invited the patient to give in his own words and terms a feedback of what was understood, encouragement was being given when the answers were correct to reinforce learning.

-On the other hand, any misinformation and gaps of knowledge were being immediately corrected before preceding the next point and the researcher explained the information again by modifying the explanation to make it clear.

-Feedback was be used to evaluate the session immediately after session such as aske open or closed ended oral question to assess the information acquired by the patients.

-Teaching methods & aids that were used during the sessions were discussions, individualized teaching hand out, illustrative pictures through a colored booklet, power point presentation, using mobile phone, smart phone or lap top and “what's group” was created as a method of follow up and remembered the patients and most patients or their relatives were highly active in online communication during follow up.

For control group: - the patient was exposed to routine hospital diet as prescribed by resident physician, as prepared by hospital kitchen.

(Breakfast: - A loaf of local bread+ one jam packet+ one yogurt packet+ one egg and one nesto cheese piece only on Sunday and Thursday+ 65g white cheese the rest of days of week + 100g salad).

(Lunch: - 75g Turmeric rice or boiled pasta before cooking and added 0.5g turmeric for each patient+ A quarter of a chicken+ 300g boiled vegetables+ 200g salad+ 15g oil+ 160g fruits)

(Dinner: - Two loaves of fino bread+ one nesto cheese piece+ one honey packet+ one yogurt packet).

- Dietary analysis of ingested food was calculated according to the local food composition tables

Phase IV: The Evaluation phase: -

- Evaluation was being done for patients of both groups (the control and the study group) by using tool II part 2 and tool III.

- Comparisons was done between the control and study groups in relation to the effect of a designed nursing teach back

strategy and individualized patient's self-care nutrition on daily livings activity of heart failure patients in comparison with hospital routine nutrition care was given to control group by using tool II part two and tool III three times.

Results:

Table (1): Distribution of the studied heart failure patients according to sociodemographic data both (control and study groups) (n=60).

This table shows that slightly more than two thirds (76.7%) of the control group I and about two third (70%) of the study group II ranged from 51-60 years old. Also, it shows that more than half (63.3%) of the control group I were female while slightly more than half (53.3%) of the study group II were male with no statistical significance difference.

Table (2): Distribution of the studied heart failure patients according to medical history both (control and study groups) (n=60).

This table illustrates that reveals that two third (70%) of the control group I had no family history of cardiovascular diseases while more than half (63.3%) of the study group II were positive family history to CVD with very high statistical significance difference at p level= 0.010. And less than quarter (20%) of the control group I had positive family history of hypertension while near quarter (23.3%) of the study group II had positive family history of coronary heart diseases with very high statistical significance difference at p level= 0.013.

Table (3): Distribution of the studied heart failure patients according to current medical history both (control and study groups) (n=60).

This table reveals that upon admission about one third (33.3%) and near half (43.3%) of the control group I and the study group II had right sided heart failure while equal percentage (53.3%) of them had left sided heart failure and the minority (13.3%), (3.3%) had congestive heart failure respectively with no statistical significance difference. Also, it was found that all patients (100%) of the study were had class II heart failure with mid-range ejection fraction (HFmrEF) 40 to <50% with no statistical significance difference.

Table (4): Mean scores of daily dietary intake of food among the studied heart failure patients both (control and study groups) upon admission, two weeks and one month after receiving individualized teaching nursing strategy about self-care of nutrition (n=60).

This table reveals that the grains mean score of control group I and study group II were (32.43± 3.07), (33.93± 4.21) with no statistical significance difference upon admission compared to (164.80± 13.02) (105± 17.17), (166.37± 14.70) (105± 17.7) two weeks and one month after implementing individualized teaching nursing strategy about nutrition with very high statistical significance difference at p level= 0.001, 0.001 respectively.

Table (5): Distribution of the studied heart failure patient according to mean scores and its change of anthropometrics measurement both (control and study groups) upon admission, two weeks and one month after receiving individualized teaching nursing strategy about self-care of nutrition (n=60).

This table shows that the body mass index mean score of control group I and study group II were (31.86± 10.07), (29.09± 3.19)

with no statistical significance difference upon admission compared to (31.54± 10.01) (27.52± 2.92), (31.76± 10.07) (27.18± 2.55) two weeks and one month after implementing individualized teaching nursing strategy about nutrition with very high statistical significance difference at p level= 0.039, 0.019 respectively.

Table (6): Distribution of the studied heart failure patients according to daily dietary intake of sodium both (control and study groups) upon admission, two weeks and one month after receiving individualized teaching nursing strategy about self-care of nutrition (n=60).

This table illustrates that the minority (6.7%) of the control group I and slightly more than two third (76.7%) of the study group II consumed 1500 mg of sodium per day one month after receiving individualized teaching nursing strategy about self-care of nutrition with very high statistical significance difference at p level= 0.001.

Table (7): Distribution of the studied heart failure according total score of Katz Activity of Daily Livings Scale patients both (control and study groups) upon admission, two weeks and one month after receiving individualized teaching nursing strategy about self-care of nutrition (n=60).

This table shows that the majority (86.7%) of control group I and more than half (66.7%) of the study group II had sever functional impairment upon

admission with no statistical significance difference compared to the same percentage (33.3%) of the control group I and the study group II had moderate functional impairment compared to slightly more than half (53.3%) of the control group I and the minority (16.7%) of the study group II still had moderate functional impairment two weeks and one month after implementing individualized teaching nursing strategy about nutrition with very high statistical significance difference at p level= 0.001, 0.001 respectively.

Figure (1): Distribution of the studied heart failure according to Katz Activity of Daily Livings Scale patients both (control and study groups) one month after receiving individualized teaching nursing strategy about self-care of nutrition (n=60).

This figure illustrates that (20%), (70%), (26.7%), (53.3%), (96.7%) and (76.7%) of the control group I compared to all patients (100%) of the study group II return to perform daily activity of daily livings including bathing, dressing, transferring, toileting, continence and feeding without help one month after implementing individualized teaching nursing strategy about nutrition with very high statistical significance difference at p level= 0.001, 0.001, 0.001, 0.313 and 0.005 respectively

Table (1): Distribution of the studied heart failure patients according to sociodemographic data both (control and study groups) (n=60).

Variables			Control	Study	χ^2	P-value
Age	31 – 40	N	4	3	1.234	0.540
		%	13.3%	10.0%		
	41 – 50	N	3	6		
		%	10.0%	20.0%		
	51 – 60	N	23	21		
		%	76.7%	70.0%		
Sex	Male	N	11	16	1.684	0.194
		%	36.7%	53.3%		
	Female	N	19	14		
		%	63.3%	46.7%		
Marital status	Married	N	22	26	1.667	0.435
		%	73.3%	86.7%		
	Widowed	N	6	3		
		%	20.0%	10.0%		
	Single	N	2	1		
		%	6.7%	3.3%		
Residence	Urban	N	7	19	9.774	0.002*
		%	23.3%	63.3%		
	Rural	N	23	11		
		%	76.7%	36.7%		
Education	Illiterate	N	10	5	6.807	0.235
		%	33.3%	16.7%		
	Reads and writes	N	5	10		
		%	16.7%	33.3%		
	Preparatory	N	4	4		
		%	13.3%	13.3%		
	Secondary	N	8	11		
		%	26.7%	36.7%		
	Bachelor's	N	1	0		
		%	3.3%	0.0%		
	Master's	N	2	0		
		%	6.7%	0.0%		
Nature of work	Professional	N	4	1	7.309	0.117
		%	13.3%	3.3%		
	Employee	N	0	5		
		%	0.0%	16.7%		
	Free work	N	1	2		
		%	3.3%	6.7%		
	Housewife	N	15	14		
		%	50.0%	46.7%		
What's up application	Yes	N	10	7	0.739	0.390
		%	33.3%	23.3%		
	No	N	20	23		
		%	66.7%	76.7%		

*Significant (P<0.05)

Table (2): Distribution of the studied heart failure patients according to medical history both (control and study groups) (n=60).

Past Medical History			Control	Study	χ^2	P-value
Hospitalized before	No	N	18	22	1.200	0.273
		%	60.0%	73.3%		
	Yes	N	12	8		
		%	40.0%	26.7%		
Times of previous hospital admission	1 – 3	N	9	4	4.523	0.210
		%	30.0%	13.3%		
	4 – 6	N	0	2		
		%	0.0%	6.7%		
	> = 7	N	3	2		
		%	10.0%	6.7%		
Last hospital admission	1 – 6 m.	N	5	2	3.019	0.389
		%	16.7%	6.7%		
	7 – 12 m.	N	0	1		
		%	0.0%	3.3%		
	> 12 m.	N	7	5		
		%	23.3%	16.7%		
Family history of any cardiovascular disease	No	N	21	11	6.696	0.010*
		%	70.0%	36.7%		
	Yes	N	9	19		
		%	30.0%	63.3%		
Type of cardiovascular disease	HTN	N	6	4	12.636	0.013*
		%	20.0%	13.3%		
	CHD	N	2	7		
		%	6.7%	23.3%		
	CHF	N	0	6		
		%	0.0%	20.0%		
	Valvular diseases	N	1	2		
		%	3.3%	6.7%		
Any disease other than heart failure	Yes	N	20	13	3.300	0.069
		%	66.7%	43.3%		
	No	N	10	17		
		%	33.3%	56.7%		
Blood pressure	No	N	12	20	1.176	0.555
		%	40.0%	66.7%		
	Hyper	N	14	8		
		%	46.7%	26.7%		
	Hypo	N	4	2		
		%	13.3%	6.7%		
Diabetes mellitus	No	N	13	19	2.425	0.297
		%	43.3%	63.3%		
	Hyper	N	12	8		
		%	40.0%	26.7%		
	Hypo	N	5	3		
		%	16.7%	10.0%		
Liver disease	No	N	30	29	1.017	0.313
		%	100.0%	96.7%		
	HCV	N	0	1		
		%	0.0%	3.3%		
Any previous surgery	No	N	13	8	1.832	0.176
		%	43.3%	26.7%		
	Yes	N	17	22		
		%	56.7%	73.3%		

*Significant (P<0.05)

Table (3): Distribution of the studied heart failure patients according to current medical history both (control and study groups) (n=60).

Current medical history			Control	Study	χ^2	P-value
Diagnosis	Right sided Heart Failure	N	10	13	0.632	0.426
		%	33.3%	43.3%		
	Left sided heart failure	N	16	16	0.0	1.0
		%	53.3%	53.3%		
	Congestive heart failure	N	4	1	1.962	0.161
		%	13.3%	3.3%		
Class of heart failure	Class I	N	0	0	-	-
		%	0.0%	0.0%		
	Class II	N	30	30		
		%	100.0%	100.0%		
Left Ventricular Ejection Fraction	HFmrEF 40 to <50%	N	30	30	-	-
		%	100%	100%		
Medications	ACEIs, diuretics, oral hypoglycemic medications and statins	N	8	3	6.968	0.0223
		%	26.67%	10.00%		
	ARBs, diuretics and statins	N	6	5		
		%	20.0%	16.67%		
	Midodrine and calcium channel blockers	N	4	2		
		%	13.33%	6.67%		
	Digoxin	N	5	8		
		%	16.67%	26.67%		
	Diuretics, calcium channel blockers and statins	N	7	9		
		%	23.33%	30.00%		
	Diuretics and oral hypoglycemic medications	N	0	3		
		%	0.00%	10.00%		

Table (4): Mean scores of daily dietary intake of food among the studied heart failure patients both (control and study groups) upon admission, two weeks and one month after receiving individualized teaching nursing strategy about self-care of nutrition (n=60).

Food groups	Control			Study			t. test	p. value
Grains upon admission	32.43	±	3.07	33.93	±	4.21	1.577	0.120
Two weeks after admission	164.80	±	13.02	105.00	±	17.17	15.198	0.001*
One month after admission	166.37	±	14.70	105.00	±	17.17	14.872	0.001*
Vegetables upon admission	7.10	±	2.14	8.87	±	3.25	2.089	0.066
Two weeks after admission	37.37	±	7.83	60.00	±	0.00	15.837	0.001*
One month after admission	37.23	±	7.87	60.00	±	0.00	15.848	0.001*
Fruits upon before admission	3.73	±	1.08	3.47	±	0.94	1.021	0.311
Two weeks after admission	19.20	±	3.81	60.00	±	0.00	58.665	0.001*
One month after admission	19.10	±	3.83	60.00	±	0.00	58.539	0.001*
Fat free or low fat milk product upon admission	2.57	±	0.77	3.17	±	0.99	2.623	0.011
Two weeks after admission	13.90	±	3.38	30.60	±	0.93	26.110	0.001*
One month after admission	13.97	±	3.25	30.60	±	0.93	26.919	0.001*
Lean, meat, poultry and fish upon admission	18.50	±	6.69	15.63	±	6.90	1.634	0.108
Two weeks after admission	87.77	±	18.53	73.20	±	22.46	2.740	0.008*
One month after admission	88.43	±	18.73	73.20	±	22.46	2.853	0.006*
Nuts, seeds and legume upon admission	0.10	±	0.31	0.23	±	0.43	1.385	0.171
Two weeks after admission	0.80	±	0.96	10.93	±	0.37	53.973	0.001*
One month after admission	0.87	±	1.01	7.67	±	0.96	26.771	0.001*
Fat and oils upon before admission	13.10	±	2.06	13.33	±	1.83	0.465	0.644
Two weeks after admission	65.13	±	6.75	27.70	±	3.91	26.290	0.001*
One month after admission	65.13	±	6.75	27.70	±	3.91	26.290	0.001*
Sweets and sugars upon admission	20.67	±	6.88	19.63	±	6.93	0.580	0.564
Two weeks after admission	100.67	±	29.81	25.83	±	5.88	13.487	0.001*
One month after admission	104.20	±	27.61	25.83	±	5.88	15.204	0.001*
Fluid intake upon admission	32.30	±	4.32	33.03	±	2.08	0.839	0.405
Two weeks after admission	155.10	±	14.75	98.80	±	6.76	19.002	0.001*
One month after admission	154.47	±	14.63	98.83	±	6.75	18.916	0.001*

*Significant (P<0.05)

Table (5): Distribution of the studied heart failure patient according to mean scores and its change of anthropometrics measurement both (control and study groups) upon admission, two weeks and one month after receiving individualized teaching nursing strategy about self-care of nutrition (n=60).

Patients Anthropometric Measurement		Range			Mean	±	S. D	t. test	p. value
Body weight: Upon admission	Control	59	–	132	84.63	±	19.38	0.250	0.804
	Study	70	–	96	83.67	±	8.62		
Two weeks after admission	Control	59	–	130	83.78	±	19.34	2.083	0.042*
	Study	62	–	91	76.00	±	6.70		
one month after admission	Control	56	–	130	84.31	±	19.61	2.643	0.011*
	Study	60	–	93.5	74.08	±	8.05		
Height:	Control	140	–	180	164.63	±	9.77	1.684	0.098
	Study	152	–	187	168.37	±	7.21		
Body Mass Index: Upon admission	Control	20.7	–	67.3	31.86	±	10.07	1.438	0.156
	Study	23.1	–	34	29.09	±	3.19		
Two weeks after admission	Control	20.7	–	66.3	31.54	±	10.01	2.111	0.039*
	Study	22.3	–	32.2	27.52	±	2.92		
one month after admission	Control	20.1	–	66.3	31.76	±	10.07	2.414	0.019*
	Study	22.8	–	31.3	27.18	±	2.55		
Mid Upper Arm Circumference: Upon admission	Control	23	–	44	34.55	±	4.97	0.445	0.658
	Study	32	–	40	35.00	±	2.44		
Two weeks after admission	Control	23	–	42	34.00	±	5.48	0.991	0.326
	Study	28	–	38	32.92	±	2.41		
one month after admission	Control	24	–	42	34.81	±	4.27	2.694	0.009*
	Study	29	–	37	32.45	±	2.18		

*Significant (P<0.05)

Table (6): Distribution of the studied heart failure patients according to daily dietary intake of sodium both (control and study groups) upon admission, two weeks and one month after receiving individualized teaching nursing strategy about self-care of nutrition (n=60).

Daily dietary intake of sodium		Control		Study		χ^2	P-value
		N	%	N	%		
Upon admission	1500 mg/day	2	6.7	3	10	1.148	0.887
	2300 mg/day	5	16.7	3	10		
	2400 mg/day	8	26.7	8	26.7		
	1500-2600 mg/day	11	36.7	10	33.3		
	More than 2600 mg/day	4	13.3	6	20		
Two weeks after admission	1500 mg/day	3	10	23	76.7	31.057	0.001*
	2300 mg/day	6	20	4	13.3		
	2400 mg/day	8	26.7	3	10		
	1500-2600 mg/day	9	30	0	0		
	More than 2600 mg/day	4	13.3	0	0		
One month after admission	1500 mg/day	2	6.7	23	76.7	35.024	0.001*
	2300 mg/day	5	16.7	4	13.3		
	2400 mg/day	8	26.7	3	10		
	1500-2600 mg/day	9	30	0	0		
	More than 2600 mg/day	6	20	0	0		

***Significant (P<0.05)**

Table (7): Distribution of the studied heart failure according total score of Katz Activity of Daily Livings Scale patients both (control and study groups) upon admission, two weeks and one month after receiving individualized teaching nursing strategy about self-care of nutrition (n=60).

Total score of Katz Activity of Daily Livings			Control	Study	χ^2	P-value
Upon admission	Full function	N	0	0	3.354	0.067
		%	0.0%	0.0%		
	Moderate impairment	N	4	10		
		%	13.3%	33.3%		
	Severe functional impairment	N	26	20		
		%	86.7%	66.7%		
Two weeks after admission	Full function	N	1	20	36.190	0.001*
		%	3.3%	66.7%		
	Moderate impairment	N	10	10		
		%	33.3%	33.3%		
	Severe functional impairment	N	19	0		
		%	63.3%	0.0%		
One month after admission	Full function	N	2	25	37.354	0.001*
		%	6.7%	83.3%		
	Moderate impairment	N	16	5		
		%	53.3%	16.7%		
	Severe functional impairment	N	12	0		
		%	40.0%	0.0%		

*Significant (P<0.05)

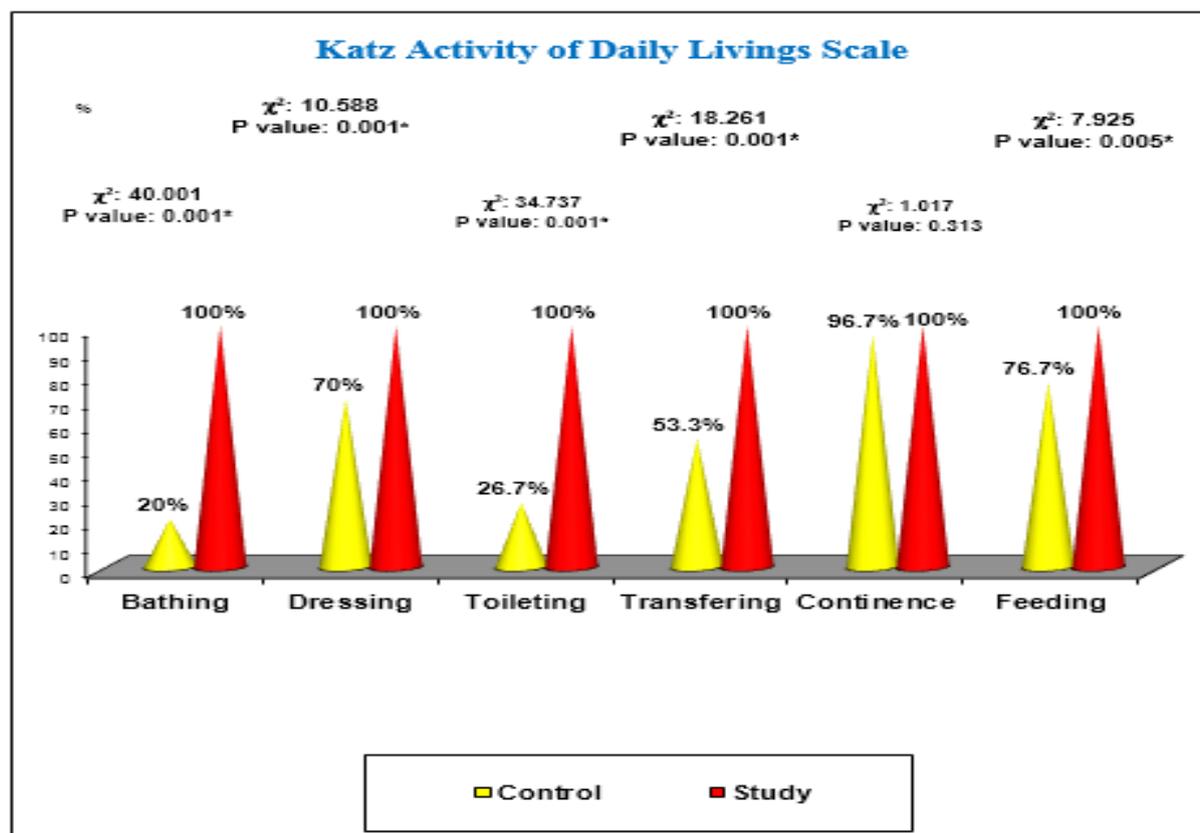


Figure (1): Distribution of the studied heart failure according to Katz Activity of Daily Livings Scale patients both (control and study groups) one month after receiving individualized teaching nursing

Discussion:

Nutritionally, comprehensive diet strategies with individualized flexibility may better address the needs of heart failure patients than fluid and sodium limitations. If adopted by heart failure outpatients, the promising combination diet known as the Dietary Approaches to Stop Hypertension diet could have a significant impact on the management of heart failure. (Dalfó-Pibernat, & Pelegrina, 2014; Riegel et al., 2012; Lee et al., 2018; Riegel et al., 2009).

Nurses play an important role in educating heart failure patients and must

have sufficient knowledge to prepare these patients for self-care behaviors. The teach-back method is one of the new education methods to increase self-care skills. (Sun et al., 2019; Moon et al., 2018; Yu et al., 2019; Reid et al., 2019); Khachian et al., 2016; Tamura-Lis, 2013).

The current study reveals that the highest incidence of heart failure patients of the study were among the mean age group of fifty- one to sixty years old. This is the same line with (Redfield et al., 2003), results indicated that Heart failure is seldom detected before the age of fifty, but as people age past that age, it becomes

more common and more frequent. This finding is in congruent with a study result done by (*Mozaffarian et al., 2016*), mentioned that Heart failure is more prevalent and happens more often among the elderly. A little over five million Americans have been diagnosed with heart failure. The frequency is around ten per thousand adults over 65. Undoubtedly, exposure to hazardous stimuli like hypertension, metabolic stress, and ischemia damage increases with age, and this is part of the primary rationale for the rise in heart failure.

Concerning gender of the control and study group, the result of the current the majority of the study were female. This finding is contradict with a study result done by (*Lakdzaji et al., 2013*), who recorded that age-related heart failure prevalence was found to be 123 in thousand males and 122 in thousand women in a research that looked at general practice data from two million individuals. When it comes to women vs males, hypertension and diabetes are more significant risk factors for coronary artery disease. They so play a part, either directly or indirectly, in the onset of heart failure in women.

Concerning family history of hypertension and coronary heart diseases of the control and study group, the result of the current study indicates that near quarter of the control group I had positive family history of hypertension while near quarter of the study group II had positive family history of coronary heart diseases. This finding is similar to result findings of study was done by (*McMurray et al., 2014*), who pointed out family Up to

seventy percentage of participants in the PARADIGM-HF trial also reported a history of hypertension and coronary artery disease.

Regarding suffering from any disease other than heart failure of the control and study group, the result of the current study indicates that near half of the control group I and near quarter of the study group II had hypertension. Also, less than half of the control group I and near quarter of the study group II had diabetes mellitus. This finding is similar to result findings of study was done by (*Christopher et al., 2011*), who pointed out that only twenty-one individuals with serious heart failure expressed complaints about diabetes and high blood pressure. Also, this finding is in the same line with a study result was done by (*Benjamin et al., 2019*), mentioned that about one-fourth of all heart failure causes are caused by hypertensive heart disease.

Also, the result of the current study indicates that one third and near half of the control group I and the study group II had right sided heart failure while equal percentage of the them II had left sided heart failure and the minority had congestive heart failure and all patients of the study were had class II heart failure immediately on admission with mid-range ejection fraction (HFmrEF) forty to less than fifty percentages. This finding is in disagreement with (*Bhambhani, 2018*), who stated that in Western nations, the prevalence of HFmrEF is one hundred thirty-three in thousand people per year in the total population of patients with heart failure.

As regard mean scores and its change of anthropometrics measurement of the control group and study group, the result of the current study indicates that there was significant modification in anthropometric parameters two weeks and one month after food orientation and implementing individualized teaching nursing strategy about nutrition comparing control and study groups. This finding is in disagreement with **(Ramírez et al., 2004)**, who stated that there were improvements in quality of life and urinary sodium excretion but no differences between the anthropometric and biochemical parameters comparing the dietary intervention and control groups. **Furthermore,** the result of the current study indicates that the minority of the control group I and slightly more than two third of the study group II consumed 1500 mg of sodium per day one month after receiving individualized teaching nursing strategy about self-care of nutrition with very high statistical significance difference. This finding is consistent with **(Colin-Ramirez et al., 2016)**, who study finding pointed out that patients with heart failure who were instructed to adhere to the Dietary Approaches to Stopping Hypertension diet plan for six months were successful in maintaining minimal sodium intake. Therefore, sodium restriction is advised in all HF care guidelines.

Concerning ability to perform activity of daily livings without help of the control and study group, the result of the current study indicates that slightly more than two third of the control group

I and all patient of the study group II abled to eat themselves without help compared to about two third of the control group I and all patient of the study group II abled to dress themselves compared to less than quarter of the control group I and all patient the study group II abled to perform bathing without help one month after implementing individualized teaching nursing strategy about nutrition. This finding is in accordance with **(Rifai et al., 2015)**, who concluded positive effects of DASH were seen in randomized interventions in chronic symptomatic heart failure patients comparing DASH to usual treatment, with significantly better exercise capacity and quality of life scores, as well as a trend towards enhanced endothelial function.

Also, the result of the current study indicates that the majority of control group I and more than half of the study group II had severe functional impairment immediately on hospital admission compared to the same percentage (one third) of the control group I and the study group II had moderate functional impairment compared to slightly more than half of the control group I and the minority of the study group II still had moderate functional impairment two weeks and one month after implementing individualized teaching nursing strategy about nutrition with very high statistical difference respectively. This finding is in congruent with a study result done by **(Yen, & Leasure, 2019)**, reported that the improvement of quality of life (apart from physical function) in heart failure patients receiving education about self-care using the teach-back method.

Finally, the current study shows that Individualized patient's self-care nutrition to maintain healthy and safe food intake based on patients' needs and requirements through providing sound knowledge about nutrition for heart failure patients had positive effect on improvement of activity of daily livings of study group II. Consequently, the hypothesis of the current study accepted and approved.

Conclusion and recommendations:

Conclusion

Based on the findings from the present study, it can be concluded that activity of daily livings was improved in study group II than control group I with very high statistical significance difference. So a designed nursing teach back strategy and individualized patient's self-care nutrition had a positive effect on improvement of activity of daily livings in heart failure patients.

Recommendations

Based on the findings of the current study, the following recommendations are geared toward the following:

1- Recommendation for patients:

- Heart failure patients should practice a designed nursing teach back strategy and individualized patient's self-care during period of hospitalization and after discharge according to cause, predisposing and type of heart failure.

2- Recommendation for nurses:

- Cardiology health team involving cardiologist, nutritionist and nurse should work together to provide interdisciplinary heart failure care and endorsed a multifaceted lifestyle approach.

3- Recommendation for educators: -

- Evidence based results of the present study must be practiced by educating nurses to teach self-care.

- This evidence must be included of curriculum of nursing education.

4- For future research studies:

- Assessing the obstacles facing the nurse regarding individualized teaching nursing strategy about self-care of nutrition on heart failure and their effect on nurse's performance and patient's outcome.

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