Effect of Nursing Teaching Program on Awareness and Adherence among Patients with Chronic Heart Failure Disease.

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Abstract

Chronic heart failure (CHF) is a major health care problem not only for patients but for their family and also for society, as it significantly contributes to the large costs associated with the care of CHF patients **(Ghali,et al. 2016)**. **Aim:** to evaluate the effectiveness of nursing teaching program on awareness and adherence among patients with chronic heart failure. **Setting:** the study was carried out in the internal medicine departments and cardiac outpatient clinics at Assiut University Hospital. **Samples:** Total coverage sample of older adult patient include (100 patients), from both sex their age ranged from (55-75) year. **Tools:** three tools were used for data collection of this study; patient interviewing sheet, Atlanta heart failure knowledge test (Carolyn et al., 2009), and Adherence questionnaire. **Results:** the age range (60-75) year, mean age was (65.5+5.3), 51.0 % were male and more than two third of them (65.0%) from urban areas. Also, more than three-quarter of them (77.0 %) was married and the majority of them (80.0 %) were not worked. There is a highly statistically significant difference between pre & posttest as regarding awareness and adherence for patients. **Conclusion:** the nursing teaching program was effective on awareness and adherence for patients. **Recommendations:** The further studies to improve awareness and adherence for all ages of patients with chronic heart failure to prevent complication.

Key words: Adherence, Awareness, Chronic Heart Failure, Nursing Teaching Program.

Introduction

Chronic heart failure (CHF) is an abnormal clinical syndrome that involves inadequate pumping and/or filling of the heart. It is a major health problem in the United States. CHF causes the heart to be unable to provide sufficient blood to meet the oxygen demands of the tissues. In clinical practice, the terms acute and CHF have replaced the term congestive HF because not all HF involves pulmonary congestion. However, the term CHF is still commonly used. HF is associated with numerous cardiovascular diseases, particularly hypertension, coronary artery disease as angina and myocardial infarction **(Urden & Stacy, 2010).**

Management of the CHF patient includes providing health education and counseling about sodium limitation, regular body daily weights monitoring and another signs & symptoms of body fluid retention, encouraging regular exercise, and fluid intake restriction, smoking, and alcohol. Medications are prescribed based on the

patient's type and severity of CHF **(Yancy et al., 2013).**

Low adherence to sodium diet intake and failure to medications regimen as directed are the two most common reasons for readmissions of CHF patients to the hospital **(Hung et al., 2008).** Therefore it is critical that accurately assess a patient's diet. Diet teaching is essential to the patient's control of CHF. In addition, assess the patient food sociocultural value use this information assist in making appropriate food choices when developing a diet plan **(Indenfeld, 2010).**

Cost-effective awareness, education and support programs to reduce the risk of heart failure should be at the forefront of public health directives. Lifestyle interventions could have substantial power to improve world health because obesity, diabetes, cigarette smoking and high blood pressure all dramatically increase the likelihood of heart failure **(Chocken et al., 2008).** In low-income and middle-income countries, lifestyle-based interventions to prevent heart failure have been calculated to be more cost-effective than pharmaceutical interventions **(Shroufi et al., 2013).**

Nurses' personnel have an important role in educating patients with chronic heart failure to manage their disease process independently. Successful CHF management depends on several important principles: CHF is a progressive heart disease are established a long-term quality of life improvement by the patient controlled sings & symptom and self-care management such as diet control by salt and water must be restricted, drug regimens, daily weights, and exercise plans, the success of the treatment plans are essential to conserve energy and support systems **(Lewis, et al., 2014)**.

The significance of the study:

Chronic heart failure is the most common heart disease among old adult ages, the most common reason for hospital admission and death worldwide. Finally, nurses at HF clinics together with the other medical professionals integrating the multidisciplinary team have an essential role in the follow-up and management of patients. This approach aims at the permanent training, improvement, and evaluation of self-care abilities, which include weight monitoring, sodium and fluid restriction, physical activities, regular use of medications, monitoring of signs and symptoms of worsening and the early seeking of medical help. From the extensive literature review and clinical experience, the researchers observed that the heart failure patients who have more deterioration which in turn negatively affect their life greatly. Those patients are needed for nursing teaching program to improve their condition.

Aim of the study:

To evaluate the effectiveness of nursing teaching program on awareness and adherence among patients with chronic heart failure disease.

Research hypotheses:

- The nursing teaching program will reduce the severity of disease symptoms.

- The nursing teaching program will improve awareness patients with chronic heart failure.

- The nursing teaching program will improve adherence of patients with chronic heart failure.

Subjects and methods

Technical design:

Design of the research:

Quasi-experimental design was utilized in this research.

Setting:

This study was conducted at the internal medicine departments and cardiac outpatient clinics at University Hospital Assiut, Egypt.

Subjects:

Total coverage of old age patients include (100 patients) from both sexes, their age ranged from (55-75) year, the inclusion criteria were hospitalization due to class I & II of chronic heart failure, diagnostic by cardiologists (based on signs & symptoms, cardiac x-ray, electrocardiograph (ECG), and echocardiography). The patients agreed to participate in the study and ability to communicate and answer the questions. Exclusion criteria are children and young adult, mental or psychiatric disorder patient.

Study tools:

Data pertinent to the study were collected, utilizing the following tools.

Tool I: Patient interviewing sheet: It was designed by researchers it consists of two parts:

Part (1): Demographic characteristics: it includes age, sex, residence, marital condition, educational level, and occupation.

Part (2): Medical data: it includes the duration of disease, risk factors, smoking, family history and chronic disease.

Tool II: Atlanta heart failure knowledge test (pre / post): It developed by **(Carolyn et al., 2009)** it used to assess patients knowledge regarding heart failure includes patients` knowledge about definition of heart failure, causes, signs & symptoms, complications, and treatment. It consists of 30 questions, 6 of them had yes and no answer, to measure people with heart failure can do many things to help themselves. The rest of questions were multiple choice questions to measure knowledge of patient with heart failure about their disease.

Tool III: Adherence questionnaire (pre / post): The questionnaire including three main parts; the first concern with diet, the seconded concern with daily physical activities, and the third concern with drug adherence. Adherence to diet was measured by the eating behavior questionnaire, this consisted of 7 points, with a yes or no answer about of increase salt in diet taken by the patients in the past week, prevented and allowed foods. The second section was for daily physical activities adherence and included 7 items. The third section of the questionnaire medication adherence included 6 items about the reasons non-adherence included taking medication forgetfulness, being careless, worsening subjective health, and improved subjective health. Scoring was done for each item yes=1 and no=0. The reliability test-retest was $p <0.0000*$, (n=100) of the study (**Roger et al., 2011**).

Nursing teaching program:

The nursing teaching program was developed in simple Arabic language by the researcher based on patient's needs assessment, literature review, researcher experience, and opinion of the medical and nursing expertise to evaluate effect of nursing teaching program on awareness

and adherence among patients with chronic heart failure disease. Information about the definition of heart failure, causes, signs & symptoms, complications and treatment, the importance of healthy eating, healthy content and preparation of diet. Instructions about importance of decrease salt in diet. Information about instructions related to taking medication, guidelines for forgetfulness any dose of medication and side effect. And information about instructions related to taking medication, guidelines for forgetfulness any dose of medication and side effect.

Method

Operational design:

Preparatory phase:

- A review of current and past, local and international related literature as textbooks, articles, journals, periodicals, and magazines was done, study tools were formulated, and teaching program was designed based on patients' needs. The content was written in simple Arabic language. The instructional booklet included; definition of heart failure, causes, signs & symptoms, complications, treatment and therapeutic regimen includes diet, physical activity and medication.

- Permission to have out the work was obtained from the responsible hospital authorities of the internal medicine department at Assiut University Hospital, after explaining the aim of the study to obtain their cooperation oral permission from the participating patients were done.

- The ethical approval was obtained from the Scientific Research Ethical Committee of faculty of nursing at Assiut University. The purpose and the nature of the study were explained

to the participants, and were informed that they had the right to withdraw from participation and were assured that the results would be used only for the purpose of the study. The program and tools was developed based on relevant literature and to ensure the validity of this tool, it was checked and revised by a panel of five medical and nursing expertise in this field.

- After development of the tools, pilot study was carried out before starting the data collection on 10% patient from the previous settings, they are excluded from the study sample to measure the feasibility and clarity of the tools, and to estimate the time needed for the completion of study tool.

Procedure/ Data Collection:

The researchers develop the program through four phases (assessment, planning, implementation and evaluation phase).

A. Assessment phase: At initial interview the researcher introduced herself to elderly to initiate line of communication, explain the nature and purpose of nursing teaching program, then filled out the sheets before implementation the program to assess the awareness of patients and the adherence level.

B. Planning phase: The arrangement of conducting the program was done during this phase. The sessions and time of the program were decided. The chosen facilities were checked and arranged during this phase as teaching place, audiovisual aids and handout.

Teaching time: the time of teaching was decided according to coordination between the researchers and patient individually (30-45 minutes) according to response of each patient.

Teaching place: The study program was conducted at the internal medicine departments and cardiac outpatient clinics at Assiut University Hospital.

Teaching methods and materials: it was important, before implementing the teaching program, to prepare simple teaching instruments and audiovisual aids to be used; as Arabic booklet it was given to each studied patient at first time after filling the pre-assessment tools by the researchers.

C. Implementation phase: The teaching program conducted during the period from May to October 2014, the average number which interviewed was 3-7 patients per week divided into three days weekly. Implement the teaching program for each patient individually at previous mentioned place. Before beginning of the first session, an orientation to the program and its purpose was done and include definition of heart failure, signs and symptoms, risk factors, complications and its preventions. The patient informed about time of session taken. Each session started by summary about what was given during previous session and objectives of the new topics. Finally, the post test for patient's awareness and adherence level was implemented by using the same format of the pretest each session to determine the effect of the implemented program. The total numbers of session were three.

The nursing teaching program sessions:

The first session: Information about the definition of heart failure, causes, signs & symptoms, complications and its preventions.

The second session: Information about the importance of healthy eating, healthy content and preparation of diet and instructions about importance of decrease salt in diet.

The third session: Information about instructions related to taking medication, guidelines for forgetfulness any dose of medication and its side effects.

D. Evaluation phase: After implementing the educational program for patients, reassessment was done by the posttest after 3 months to assess participant's awareness and the adherence level.

Statistical design:

The obtained data were reviewed, prepared for computer processing, coded, analyzed and tabulated. Data entry was done using the Epi-info 6.4 computer software package, while statistical analysis was done using the SPSS 16.0 statistical software package. Data was presented using descriptive statistics in the form of frequencies and percentages, means, standard deviations and using chi-square test. Statistical correlation between awareness and adherence was considered at P- value <0.05.

Results

Table 1: Showed that, the age range (55-75) year, mean age was (65.5+5.3), while about half of them (51.0 %) were male and more than two third of them (65.0%) from urban areas. Also more than three-quarter of them (77.0 %) were married and the majority of them (80.0 %) were not worked.

Table 2: Illustrated that, the duration of heart failure ranged from (3 to 12 years), the mean+ SD was (4.1+3.3) and the highest percentage were smokers, had chronic disease and not had family history.

Figure 1: Mentioned that less than three-quarter of patients' (73.0%) have poor awareness level before application of teaching program, while only 9.0% of them were good awareness. Regarding adherence

level, two third of patients' (63.0%) were good level after application of teaching program, and only 7.0% of them were poor of adherence level post implementation of teaching program.

Table 3: Reported that correlation between patients' awareness and adherence (pre &post) application of nursing teaching program. There was statistically significant difference between awareness and adherence post application of teaching program<0.001**.

Table 4: Represented that there is a statistically significant difference between awareness level about chronic heart failure and their residence and education before

the program (P<0.007**),(P <0.001**) respectively. While after application of nursing teaching program there are no statistical significant differences between awareness level and demographic characteristics in all items except residence.

Table 5: Demonstrated that there is a statistically significant difference between adherence level about chronic heart failure and their residence, education and chronic illness before the nursing teaching program application (P < 0.032**), (P < 0.001**) and (P < 0.050*) respectively. While no statistically significant difference between awareness level and their gender and marital status and occupation in pre & post-test.

Table1: Frequency distribution of demographic characteristics for studied sample n= (100).

Demographic characteristics	N.=(100)	%
1. **Age (yrs.):** • Range • Mean +SD	55 – 75 65.5+5.3	
2. **Gender**: • Male • Female	51 49	51.0 49.0
3. **Residence**: • Urban • Rural	65 35	65.0 35.0
4. **Marital status**: • Married • Widowed	77 23	77.0 23.0
5. **Education**: • Illiterate • Read and write • Basic education • Secondary/University	20 35 35 10	20.0 35.0 35.0 10.0
6. **Occupation**: • Worked • Not worked	20 80	20.0 80.0

Table 2: Distribution of patients according to medical data for studied sample n= (100).

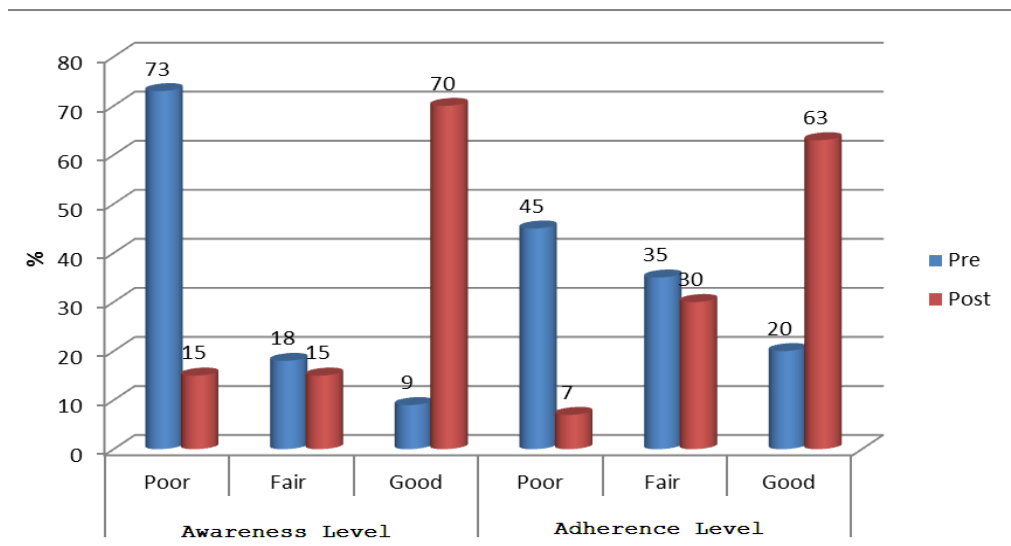| Medical data	N.=(100)	%
1. Duration of heart failure (years):		
• Range	3 – 12	
• Mean +SD	4.1+3.3	
2. Smoking:		
• Yes	57	57.0
• No	43	43.0
3. Family history:		
• Yes	37	37.0
• No	63	63.0
4. Chronic diseases:		
• Yes	75	75.0
• No	25	25.0

Figure (1): Frequency distribution of awareness and adherence level for studied sample in pre & post nursing teaching program.

Table (3): Correlation between awareness and adherence for studied sample (pre & post -test)

Adherence level	Pre-test n=(100)						P. value	Adherence level	Post- test (after 3 months) n=(100)						P. value
	Awareness level								Awareness level						
	Poor N.73		Fair N.18		Good N.9				Poor N.15		Fair N.15		Good N.70		
	N.	%	N.	%	N.	%			N.	%	N.	%	N.	%	
Poor 45	31	42.5	9	50.0	5	55.6	0.245	Poor 7	3	20.0	3	20.0	1	1.4	<0.001**
Fair 35	30	41.1	3	16.7	2	22.2		Fair 30	11	73.3	8	53.3	11	15.7	
Good 20	12	16.4	6	33.3	2	22.2		Good 63	1	6.7	4	26.7	58	82.9	

Table (4): Relation between awareness level about chronic heart failure and their demographic characteristics.

Demographic characteristics	Awareness level about chronic heart failure													
	Pre						P. value	Post (after 3 months)						P. value
	Poor N.73		Fair N.18		Good N.9			Poor N.15		Fair N.15		Good N.70		
	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
1. Gender														
• Male	34	66.7	12	23.5	5	9.8	0.299	9	17.0	6	11.3	38	71.7	0.507
• Female	39	79.6	6	12.2	4	8.2		6	12.8	9	19.1	32	68.1	
2. Residence														
• Urban	41	63.1	15	23.1	9	13.8	0.007**	4	6.3	8	12.7	51	81.0	0.002**
• Rural	32	91.4	3	8.6	0	0.0		11	29.7	7	18.9	19	51.4	
3. Marital status														
• Married	59	76.6	11	14.3	7	9.1	0.205	13	16.5	12	15.2	54	68.4	0.710
• Widowed	14	60.9	7	30.4	2	8.7		2	9.5	3	14.3	16	76.2	
4. Education														
• Illiterate	18	90.0	1	5.0	1	5.0	<0.001**	4	20.0	2	10.0	14	70.0	0.603
• Read and write	25	75.8	8	24.2	2	6.1		6	18.2	7	21.2	20	60.6	
• Basic education	27	73.0	7	18.9	1	2.7		5	13.5	5	13.5	27	73.0	
• Secondary/University	3	30.0	2	20.0	5	50.0		0	0.0	1	10.0	9	90.0	
5. Occupation														
• Work	16	80.0	3	15.0	1	5.0	0.692	3	15.0	3	15.0	14	70.0	1.000
• Not work	57	71.3	15	18.8	8	10.0		12	15.0	12	15.0	56	70.0	

* Statistically significant difference (p<0.05)

** Statistically significant difference (p<0.01)

Table (5): Relation between adherence level about chronic heart failure and their demographic characteristics.

Demographic characteristics	Adherence level about chronic heart failure													
	Pre						P. value	Post (after 3 months)						P. value
	Poor N.45		Fair N.35		Good N.20			Poor N.7		Fair N. 30		Good N.63		
	No.	%	No.	%	No.	%		No.	%	No.	%	No.	%	
Gender														
Male	22	43.1	16	31.4	13	25.5	0.361	1	1.9	16	30.2	36	67.9	0.098
Female	23	46.9	19	38.8	7	14.3		6	12.8	14	29.8	27	57.4	
Residence														
Urban	26	40.0	21	32.3	18	27.7	0.032*	4	6.3	14	22.2	45	71.4	0.065
Rural	19	54.3	14	40.0	2	5.7		3	8.1	16	43.2	18	48.6	
Marital status														
Married	33	42.9	30	39.0	14	18.2	0.302	4	5.1	27	34.2	48	60.8	0.105
Widowed	12	52.2	5	21.7	6	26.1		3	14.3	3	14.3	15	71.4	
Education														
Illiterate	10	50.0	6	30.0	4	20.0	<0.001**	2	10.0	6	30.0	12	60.0	0.777
Read and write	16	45.7	16	45.7	3	8.6		3	9.1	12	36.4	18	54.5	
Basic education	19	54.3	11	31.4	5	14.3		1	2.7	10	27.0	26	70.3	
Secondary/University	0	0.0	2	20.0	8	80.0		1	10.0	2	20.0	7	70.0	
Occupation														
Work	8	40.0	8	40.0	4	20.0	0.853	0	0.0	6	30.0	14	70.0	0.378
Not work	37	46.3	27	33.8	16	20.0		7	8.8	24	30.0	49	61.3	
Smoking														
Yes	20	46.5	12	27.9	11	25.6	0.317	1	2.2	12	26.7	32	71.1	0.148
No	25	43.9	23	40.4	9	15.8		6	10.9	18	32.7	31	56.4	
Family history														
Yes	10	40.0	9	36.0	6	24.0	0.794	0	0.0	5	21.7	18	78.3	0.144
No	35	46.7	26	34.7	14	18.7		7	9.1	25	32.5	45	58.4	
Chronic diseases														
Yes	6	24.0	12	48.0	7	28.0	0.050*	0	0.0	11	40.7	16	59.3	0.129
No	39	52.0	23	30.7	13	17.3		7	9.6	19	26.0	47	64.4	

* Statistically significant difference (p<0.05)
** Statistically significant difference (p<0.01)

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Discussion

The current study shows that mean age was (65.5+5.3), from the opinion of the researchers, this advanced age might have decrease the ability for learning than younger due to some age-related change in cognitive function. The highest percentage was male and married. Also, there was a predominance of urban and not work. Those mostly related to the read & write and basic educational level patients, it was mentioned in many literatures that educated old age can properly identify and help be aware of the important role of need for increasing contacts with mates, family members, and friends in order to achieve a highly level of awareness and adherence. On the other hand this was in agreement with **(Young et al., 2015)** who found that high level of education of heart failure patients was a very significant parameter in awareness and adherence of our patients to their treatment. The current study reported that, the highest percentage were smokers had chronic disease and mean duration of heart failure disease was (4.1+3.3).

Residence as showed in our study had significant impact on both patient awareness and hence adherence to therapy ,as urban patients had higher level of awareness and adherence than rural patients, but with application of teaching program had significant effect on both rural and urban as regard awareness and adherence but still urban population had the higher level of awareness and adherence and this may be due to feasible life as regards medications and also education and more healthy life style, different demographics, health behaviors in urban than rural areas and additionally, rural patients have less access to University hospitals. This was in agreement with **(Young et al., 2015)** who found that heart failure patients discharged from rural hospitals had a

higher thirty days hospital readmission and mortality than an urban hospital which may indicate poor awareness and adherence of rural patients.

This study finding is in the line with **Roger et al., (2011)** who stated that, there is less than one-third of developing CHF risk lifetime after 40 years of age, more than three-quarter of all CHF patients is having a history of hypertension. A heart attack is the second most common risk factor, followed closely by diabetes. In addition **(Kiernan, 2012)** stated that about half of CHF patients will die within five years of diagnosis.

The current study shows that the highest percentages of patients' awareness were poor in pre application of teaching program. While in post application of teaching program the highest percentage were good. There was significant statistical difference between pre and post-test as regarding awareness of the studied sample. In this regard, **(Abd El-hameed et al., 2013)** supported these results when reporting that, a higher statistically significant difference between patients knowledge score pre and post exposure to the nursing teaching designed protocol.

In agreement with this **(Hussain and Mohamed, 2014)** reported that there was significant improvement patients' knowledge after the implementation of the nursing and medical teaching program for hypertensive patients. The current study results agree with **(Heydari et al., 2015)** who found that awareness of disease and adherence to physical activity was low in the majority of patients. Others studies should be conducted to explore effective educational programs and strategies to improve adherence to therapeutic regimen among cardiac patients.

The current study shows that the highest percentage of patients' adherence was poor in pre application of teaching program. While in post application of teaching program the highest percentage were good. There was significant statistical difference between pre and posttest as regarding adherence for the studied sample. It was in the same line with **(Smeltzer, 2014)** who emphasized that the nursing and medical care plan involves provides patient education and the patient in implementing the therapeutic regimen to promote understanding and adherence. When the patient understands that the diagnosis of CHF can be successfully managed with changes in lifestyle and medications regimen, less of recurrences HF attack, a decrease in hospitalizations, and an increase of life expectancy. Patients and their families need to be taught to follow the medication regimen as prescribed, maintain a low-sodium diet, taken routine body weights, engage in physical activity, and recognize symptoms that indicate worsening CHF interventions that may promote adherence include teaching to ensure accurate understanding.

The current study shows that statistical significant difference between awareness and adherence after application of teaching program. This finding was consistent with **(Heydari et al., 2014)** who revealed that awareness about HF disease may play an important role in patient adherence and adherence is very important for self-care element in CHF patients. A significant correlation was found between knowledge and adherence. Awareness about the HF disease is a key factor for patient's drug adherence. In contrast with other studies, **(Nieuwenhuis et al., 2012)** found no significant relationship between knowledge and adherence to the treatment regimen. **(Lennie et al., 2008)** added that only a few patients who had knowledge about the HF disease followed their adherence to therapeutic regimen.

Conclusion

After application of nursing teaching program shows a significant improvement in patient's awareness and adherence among heart failure older adult patients. This indicated that nursing teaching program was effective on awareness and adherence for patients.

Recommendations

- Reapply this study for another sample acquired from different age & areas for generalization at Egypt.

- Further studies to improve awareness and treatment adherence for heart failure older adult patients to prevent complication.

- Providing an in-service training program for nurses to increase knowledge and adherence about chronic heart failure disease.

- Prints and brochure should be designed and disseminated in patient waiting area.

- Hospital teaching programmed should be designed and taught to patient pre and follow-up.

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