Effectiveness of educational program on nurse's knowledge about management of patients with heart failure

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Abstract- **Objective:**this study aimed to assess the nurses' knowledge toward management of heart failure and to determine the effect of nursing educational program by comparing the pre-test and post-test score on nurse's knowledge toward management of heart failure.**Methodology**: A quasi-experimental (pre-post test) study had been used through the present study with application of pre-post test approach for both studied and controlled groups during the period fromNovember 1st, 2015 to May 1st, 2016, in Medical city at Al Najaf city.Purposive sample was selected which consist of (40) nurses. The sample is divided in to two groups; (20) nurses as a study group are exposed to the nursing education program, and the other (20) nurses are not exposed to the program considered as the control group. The measurement effectiveness of nursing educational program through the knowledge assessment includes (40) items. Data was analyzed by usingdescriptive data analysis and Inferential data analysis.**Results**: the results show that the educational program was effective among nurses' knowledge about management of patient with heart failure. It also shows that there is good improvement with highly significant differences in study group between pre and post-test, in overall items.**Conclusion:**The study concludes that the educational program is appropriate and effective way to improve the nurses' knowledge concerning management of patient with heart failure. **Recommendation**: The study recommends that nurses need to be joining in special courses in order to improve their knowledge so they can participate in educating patients through information obtained from these courses.

Index Terms- effectiveness, educational program, nurses, knowledge, heart failure.

hospitalization of patients over 65 years old which cost around 2% of entire budget of health care in many developed countries[6].Also the disease has substantial effect on physical ability, quality of life, public health and the cost of healthcare. This can happen to many patients being readmitted to hospital every year, which cause a continuous growing burden of HF on the society[7,8,9]. Patients may have many medical conditions, a long medication list, no social support, and other factors limiting the success of some treatment options. In addition, patients with HF may have low knowledge about their medication, weight and sodium management, and activity modification. For this, they need healthcare and increased knowledge about HF to produce changes in health behavior [10,11].Nurses have an important role in the reassessment of heart failure disease, controlling the hemodynamic function and management of HF[12]. Nursing implications help to minimize patient suffering, the patients who are provided with care acquired from programs shows a significant effect on morbidity and mortality reduction. Hence, the nurse should become adequately prepared as an educator to manage patient with HF[13]. Most heart failure management program's goals are to make patient receive ideal medical care by assessing needs and implementing medical management, device therapy teaching, self-care, follow-up, and psychosocial health care[14]. Training nursing on self-care management can help in behavioral reinforcement and accompanied with effective outcomes, including subjective symptoms, weight observation, low salt diet, improve exercise, medication intake, and a plan for management in case of symptoms agitation. Knowledge, and practice of nurses is important in improving patients' results and to maintain patient condition in the hospital and the outpatient settings[15].

I. INTRODUCTION

Heart failure (HF) considered a worldwide problem in the 21st century with increasing effect on healthcare systems[1].The prevalence of (HF) is rising in both industrialized and developing countries[2].According to the (American Heart Association) AHA, about 1 in 5 over age 40 years suffers from HF, in America about 4.9 million complain from Congestive heart failure. From these, about 2.5 million were males while the females were 2.4 million, while other studies claimed that HF affecting over 5.7 million patients in the same country [3,4].From 1,000 person there are10 older than 65 years have HF, and every year there are 400,000 newly diagnosed[5].HF is one causes of

II. METHODOLOGY

Design of the Study:A quasi-experimental (pre-post test) study had been used through the present study with application of pre-post test approach for both studied and controlled group during the period of 1st November, 2015 to 1st May, 2016.Purposive sample consist of (40) nurses. The sample is divided in two groups; (20) nurses as study group are exposed to the nursing education program, and the other (20) nurses are not exposed to the program considered as the control group. The two groups have proximately the same demographic

characteristics.Those who met the criteria for selection were nurses who were working at the teaching hospitals.

- Nurses should have at least one year of experience or more.
- Male and female nurses.
- Nurses who work in the medical department (CCU, Medical ward, Center for Heart Disease and Surgery).
- Nurses who score less than 60% in pre- test.

The educational program is designed to provide the nurses with information to heart anatomy, physiology of heart and information to heart failure include (causes, risk factors, signs and symptoms, pathophysiology, complication, medical management and finally nursing care [Secondary Prevention] of heart failure).

The study instrument was constructed by the researcherin order to reached aims of the study. It is consists of (2) parts:

I. Self-administered questionnaire sheet related to (demographic characteristic of the nurses).

This part is concerned with the collection of basic socio-demographic data, this part is filled by the nurses (age, Gender, Residency, Marital status, Socio-economic status, Education level, Years of experience, Years of experience in the cardiac units [CCU- medical ward- Al-Najaf Center for Heart Disease and Surgery] and The number of training courses in cardiac Disease).

II. Self-administered questionnaire sheet related to (nurses knowledge about management of patients with heart failure.

It was constructed to assess nurse's knowledge about management of patients with heart failure. The questionnaire sheet is also filled by the nurses, purpose of the study is explained prior to get questionnaire sheet. The participants are requested to answer the questionnaire within (45-60) minutes.

This knowledge test was composed of (40) multiple choice question. The test is covered with the relevant points from the major content area of educational program. For the purpose of this study, the number of correct responses of the knowledge questionnaire is used as the measure of the level of knowledge. Each question is scored as the correct answer get (2) point and the incorrect answer get (1) point.

Statistical Analysis

Data was analyzed through the use of SPSS (Statistical Package for Social Science) version (19) application statistical analysis system and Excel application. Data analyzed through the application of two statisticalapproaches. **Adescriptive data analysis** includes a-Tables (Frequencies, Percentages, and Mean of scores), b- Cutoff point (0.66), c- Statistical figure (Bar Charts) and d- Pearson's Correlation Coefficients (Reliability), and **Inferential Data Analysis includes** a- Chi-Square, b- t-test independent sample between study and control group and finally c- t-test paired t-test between pre and post-test.

Objective of the study:

This study aimed to assess the nurses' knowledge toward management of heart failure and to determine the effect of nursing educational program by comparing the pre-test and post-test score on nurse's knowledge toward management of heart failure.

III. RESULTS

Table (1): Statistical Distribution of the Study and Control Groups Demographic Data with Statistical Difference

Demographic Data	Rating and Intervals	Study Group		Control Group		Sig Difference		
		Freq.	%	Freq.	%	T-Value	D.F.	P-Value
Age / Years	20-24	6	30	8	40	0.458	38	0.65 Ns
	25-29	10	50	9	45			
	30-34	2	10	1	5			
	35-39	1	5	2	10			
	40 And More	1	5	0	0			
Gender	Male	12	60	12	60	0.00	38	1.00 Ns
	Female	8	40	8	40			
Residency	Rural	3	15	5	25	0.777	38	0.442 Ns
	Urban	17	85	15	75			
Marital Status	Single	10	50	13	65	0.946	38	0.35 Ns
	Married	10	50	7	35			
Socio-Economic Status	Satisfied	12	60	14	70	0.65	38	0.52 Ns
	Satisfied to Some Extent	8	40	6	30			
Levels of Education	Nursing School	3	15	6	30	0.395	38	0.695 Ns
	Nursing Institute	9	45	5	25			
	College	8	40	9	45			
Years of	1-3	12	60	9	45	0.13	38	0.897

Experience	4-6	3	15	6	30			Ns
	7-9	2	10	2	10			
	10 And More	3	15	3	15			
Years of Experience in Cardiac Units	1-3	17	85	13	65	0.512	38	0.612 Ns
	4-6	2	10	6	30			
	7-9	1	5	1	5			
Training Sessions	No. of Training Sessions	4	20	6	30	0.972	38	0.337 Ns
	1-2	14	70	12	60			
	3-4	2	10	2	10			

Sig: Significant**; No.:** Number **%:** percentage**; Freq.:** Frequency**; Ns:** Non-significant**P Value:** probabilityvalue**; Df:** degreeoffreedom**;T value:** t-test

This table reveals that the highest percentage of both groups participant were within age group (25-29) years, (50%) in the study group and (45%) in the control group. Also the table shows that the highest percentage of participant in both group were males (60%). Concerning residency, (85%) of the study group and (75%) of the control group were urban residency. Regarding the marital status, half of the sample (50%) in study group, and (65%) of control group were single. The above table shows that the socio-economic status in terms of (Satisfied, Satisfied to Some Extent, Unsatisfied), the greatest percentage in both groups (60%) in study group and (70%) in control group were satisfied. Relative to subjects level of education the highest percentage was (45%) in study groups were graduated from institute and (45%) of the control group were college graduated. In regards to years of experience, the table shows that (60%) of the sample in study group and (45%) of the sample in control were between (1-3) years of experience. Furthermore, this table indicated that both study and control groups were between (1-3) years of experience in cardiac units (85%) and (65%) respectively, while (70%) of the sample in the study group and (60%) of them in control group have (1-2) training session regarding heart failure. Finally in this table, the study results indicate that there is a non-significant difference between the study and control group demographic data at p-value more than 0.05.

Table (2): Distribution of the Study group by their Responses to Pre-Test and Post-Test Items

List	Items	Pre-Test		Post - Test	
		M.s.	Assess	M.s.	Assess
1	Heart is a muscular organ with four cavities which located in the central area between the lungs	1.2	Fail	1.85	Pass
2	Muscular wall of the heart has three layers. And the inner layer of the heart called endocardium	1.3	Fail	1.9	Pass
3	The heart consists of four chambers and the left ventricle is the strongest chamber in the heart	1.3	Fail	2	Pass
4	The heart receive blood through the coronary arteries, which in turn get the blood throughaortic artery	1.45	Fail	1.75	Pass
5	The real size of heart stroke could be measured by which of the following formula (the difference between the End Diastolic Volume and the remaining amount of blood in the ventricle size)	1.1	Fail	1.85	Pass
6	Heart beat generated by SA node	1.4	Fail	2	Pass
7	Multiplying heart rate in stroke volume representscardiac Output	1.7	Pass	1.9	Pass
8	The bicuspid and tricuspid valve areatrioventricular valve	1.25	Fail	1.5	Pass
9	Aortic artery arch sent blood directly tothe main left coronary artery	1.5	Pass	2	Pass
10	The sac membrane that surround the heart is called pericardium membrane	1.65	Pass	2	Pass
11	Pericardial sac membrane composed of two layers	1.4	Fail	1.9	Pass
12	Consideredintoatrial node, a group of cells in the upper part of the right atrium, natural origin normal electrical impulse	1.7	Pass	2	Pass
13	The normal rate of heart beating is 70 times / minute	1.85	Pass	2	Pass
14	The preparing the discharge plan by the nurse considerappropriate	1.95	Pass	2	Pass
15	The normal rate of sinoatrial node in adult is 60-100beat / minute	1.2	Fail	1.95	Pass
16	The rate of beats in the atrioventricular node is 40-60beat / minute	1.2	Fail	1.95	Pass
17	Intellectual or mental stress, tobacco, coffee and alcohol lead toacceleration HR	1.3	Fail	1.8	Pass
18	One of the causes of heart failure is myocardial infarction	1.65	Pass	1.95	Pass

19	The one of the risk factors that leading to heart failure issmoking and alcohol	1.7	Pass	1.95	Pass
20	Nausea and cough is considered from the common signs and symptoms of HF	1.6	Pass	2	Pass
21	Reduction of renal perfusion due to HF leads to the release of renin hormone by kidneys	1.4	Fail	2	Pass
22	Kidney failure is considered as one of the complications of heart failure	1.75	Pass	2	Pass
23	Patient with HF will be advised withperform exercise for short intervals	1.15	Fail	1.95	Pass
24	The right Position for the patient with HF israise the head side of the bed	1.3	Fail	1.9	Pass
25	Patient with HF is advised tosimple exercises gradually increased over several weeks	1.3	Fail	1.95	Pass
26	Dietary restrictions for patients with HF do not add salt and fat to foods	1.9	Pass	1.95	Pass
27	In case of weight gain more than one kg during one day, this mean HF become more worse	1.2	Fail	2	Pass
28	When the patient feels the start of deterioration and weakness in the leg or the lack of daily activity, then he /she must report to the doctor	1.45	Fail	2	Pass
29	There is a correlation between practicing strong physical exercise with an increased risk of myocardial infarction and sudden death	1.2	Fail	1.9	Pass
30	It will be better to perform moderate-intensity activity at least 30 min in most days of week	1.25	Fail	1.95	Pass
31	It will be preferred to perform exercise 3 times a week	1.4	Fail	1.95	Pass
32	Physical training in rehabilitation sessions must be completed withinone hour, with the inclusion of the warm-up and cool down sessions	1.6	Pass	1.95	Pass
33	Static Isometric exercises such as weightlifting and hand loads is with less benefit than aerobic exercise such as jogging, swimming for HF patients	1.05	Fail	2	Pass
34	To prevent low blood pressure immediately after strong exercise, patient is advised walking for a short time	1.05	Fail	1.9	Pass
35	Eating large amounts of fruits and vegetables, whole grains and low-fat dairy products isadvised for patient with heart failure from	1.6	Pass	2	Pass
36	Patients with heart failure controlled can eat 7-8 grams of sodium per day	1	Fail	1.9	Pass
37	Obesity leads to HF	1.35	Fail	1.8	Pass
38	HF patients are advised toback to work or main activity after the disease completely	1.05	Fail	1.6	Pass
39	HF patient should beallows for limited degree to use of oral medications and injections to help local erection	1.3	Fail	1.9	Pass
40	Patients with HF are advised to take the diuretic medicationat morning	1.55	Pass	2	Pass

Ms: Mean of score (1.5)

This table shows that most the study group have been failed in (65%) of the items in pre-test, while they pass (100%) of the items in post-test after exposed to educational sessions. Furthermore the residual (35%) of items which was passed in pre-test shows progress in their mean of score in post-test.

Table (3): Statistical distribution of the study group by their overall responses with Significant Difference between Pre-Test and Post-Test Scores

Overall assessment for study group	Pre-test				Post-test			
	Freq.	%	M.s.	Assessment	Freq.	%	M.s.	Assessment
Pass	3	15	1.40	Fail	19	95	1.92	Pass
Fail	17	85			1	5		
t-value (8.718), d.f.(19), p-value (0.001)HS								

%: percentage**; Freq.:** Frequency **HS:** Highsignificant**; P Value:** probabilityvalue**; Df:** degreeoffreedom**T value:** t-test

The results of this table shows that high Significant Difference between pre-test and post-test scores of study group members at p-value (0.001).
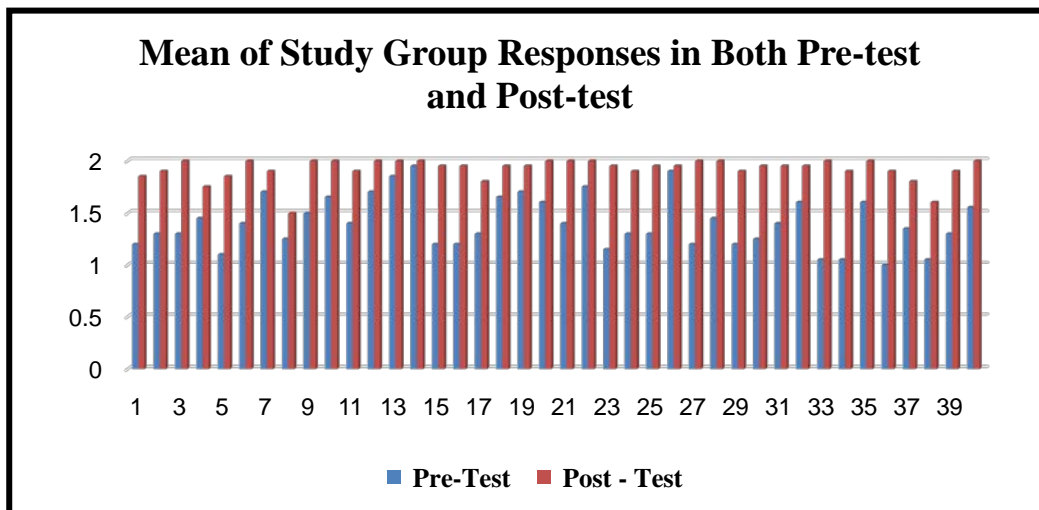
Figure (1): Assessment of study group knowledge in pre-test and post-test.

Table (4):Distribution of the Control Group by their Responses to the Pre-Test and Post-Test Items

List	Items	Pre-test		Post-test	
		M.s.	Assess	M.s.	Assess
1	Heart is a muscular organ with four cavities which located in the central area between the lungs	1.35	Fail	1.35	Fail
2	Muscular wall of the heart has three layers. And the inner layer of the heart called endocardium	1.6	Pass	1.7	Pass
3	The heart consists of four chambers and the left ventricle is the strongest chamber in the heart	1.3	Fail	1.35	Fail
4	The heart receive blood through the coronary arteries, which inturn get the blood through aortic artery	1.5	Pass	1.55	Pass
5	The real size of heart stroke could be measured by which of the following formula (the difference between the End Diastolic Volume and the remaining amount of blood in the ventricle size)	1.15	Fail	1.25	Fail
6	Heart beat generated by SA node	1.35	Fail	1.55	Pass
7	Multiplying heart rate in stroke volume represents cardiac Output	1.4	Fail	1.45	Fail
8	The bicuspid and tricuspid valve are atrioventricular valve	1.25	Fail	1.35	Fail
9	Aortic artery arch sent blood directly to the main left coronary artery	1.5	Pass	1.6	Pass
10	The sac membrane that surround the heart is called pericardium membrane	1.65	Pass	1.75	Pass
11	Pericardial sac membrane composed of two layers	1.05	Fail	1.15	Fail
12	Considered sinoatrial node, a group of cells in the upper part of the right atrium, natural origin normal electrical impulse	1.45	Fail	1.6	Pass
13	The normal rate of heart beating is 70 times / minute	1.65	Pass	1.55	Pass
14	The preparing the discharge plan by the nurse consider appropriate	1.65	Pass	1.75	Pass
15	The normal rate of sinoatrial node in adult is 60-100beat / minute	1.45	Fail	1.45	Fail
16	The rate of beats in the atrioventricular node is 40-60beat / minute	1.2	Fail	1.35	Fail
17	Intellectual or mental stress, tobacco, coffee and alcohol lead to acceleration heart rate	1.45	Fail	1.45	Fail
18	One of the causes of heart failure is myocardial infarction	1.6	Pass	1.75	Pass
19	The one of the risk factors that leading to heart failure is smoking and alcohol	1.8	Pass	1.75	Pass
20	Nausea and cough is considered from the common signs and symptoms of heart failure	1.65	Pass	1.75	Pass
21	Reduction of renal perfusion due to heart failure leads to the release of renin hormone by the kidneys	1.15	Fail	1.4	Fail

22	Kidney failure is considered as one of the complications of heart failure	1.35	Fail	1.4	Fail
23	Patient with HF will be advised with perform exercise for short intervals	1.45	Fail	1.55	Pass
24	The right Position for the patient with HF is raise the head side of the bed	1.5	Pass	1.5	Pass
25	Patient with HF is advised to simple exercises gradually increased over several weeks	1.35	Fail	1.5	Pass
26	Dietary restrictions for patients with HF are do not add salt and fat to foods	1.95	Pass	1.8	Pass
27	In case of weight gain of more than one kilogram during one day, this mean heart failure become more worse	1.15	Fail	1.35	Fail
28	When the patient feels the start of deterioration and weakness in the leg or the lack of daily activity, then he /she must report to the doctor	1.65	Pass	1.5	Pass
29	There is a correlation between practicing strong physical exercise with an increased risk of myocardial infarction and sudden death	1.1	Fail	1.2	Fail
30	It will be better to perform moderate-intensity activity at least 30 minutes in most days of the week	1.65	Pass	1.65	Pass
31	It will be preferred to perform exercise 3 times a week	1.4	Fail	1.35	Fail
32	Physical training in rehabilitation sessions must be completed within one hour, with the inclusion of the warm-up and cool down sessions	1.45	Fail	1.65	Pass
33	Static Isometric exercises such as weightlifting and hand loads is with less benefit than aerobic exercise such as jogging, swimming for HF patients	1.1	Fail	1.25	Fail
34	To prevent low blood pressure immediately after strong exercise, patient is advised walking for a short time	1.15	Fail	1.2	Fail
35	Eating large amounts of fruits and vegetables, whole grains and low-fat dairy products is advised for patient with heart failure from	1.4	Fail	1.55	Pass
36	Patients with heart failure controlled can eat 7-8 grams of sodium per day	1.25	Fail	1.35	Fail
37	Obesity leads to HF	1.55	Pass	1.6	Pass
38	Heart failure patients are advised to back to work or main activity after the disease completely	1.5	Pass	1.5	Pass
39	Heart failure patient should be allows for limited degree to use of oral medications and injections to help local erection	1.15	Fail	1.6	Pass
40	Patients with HF are advised to take the diuretic medication at morning	1.75	Pass	1.75	Pass

Ms: Mean of score (1.5)

This table shows that the control group have been failed in (60%) of the items in pre-test, While in the post-test the same group pass only (58%) of the items, and there were unobservable progress in passing items among control group post-test because they did not exposed to any intervention related knowledge.

Table (5):Statistical distribution of the Control group by their overall responses with Significant Difference between Pre-Test and Post-Test Scores

Overall assessment for control group	Pre-test				Post-test			
	Freq.	%	M.s.	Assessment	Freq.	%	M.s.	Assessment
Pass	2	10	1.42	Fail	3	15	1.50	Fail
Fail	18	90			17	85		
t-value (0.567) ;d.f.(19) ;p-value (0.577) ;significance:NS								

%: percentage**; Freq.:** Frequency**; NS:** non-significant**; P Value:** probabilityvalue**;Df:** degreeoffreedom
T value: t-test**; Ms:** Meanofscore

The results of above table shows that no Significant Difference between Pre-Test and Post-Test Scores of control group members at p-value (0.577).
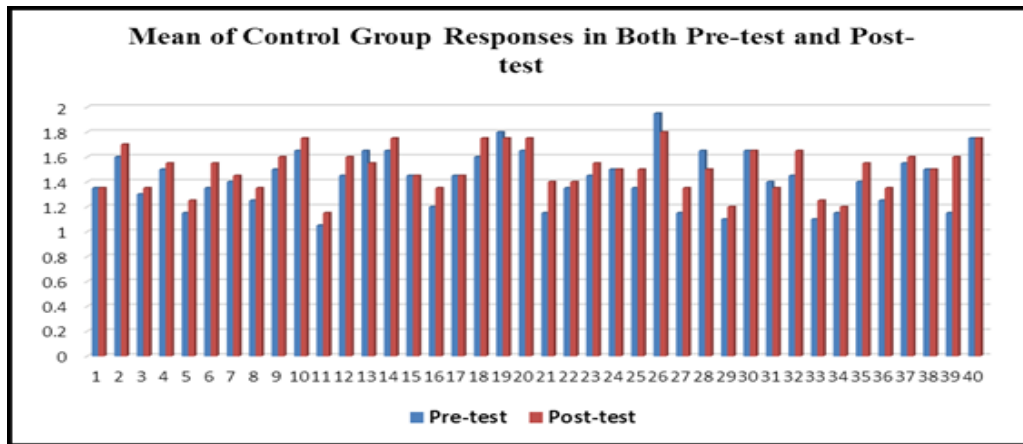
Figure (2): Assessment of control group knowledge in pre and post-test .

Table (6):Significant Difference between Study and Control Groups regarding Pre-Test Scores

Pre-test	Study group				Control group			
	Freq.	%	M.s.	Assessment	Freq.	%	M.s.	Assessment
Pass	3	15	1.40	Fail	2	10	1.42	Fail
Fail	17	85			18	90		
t-value (0.467); d.f.(38); p-value (0.643); significant: NS								

%: percentage   **; Freq.:** Frequency**; NS:** non-significant**; P Value:** probabilityvalue**; Df:** degreeoffreedom   **T value:** t-test**; Ms:** Meanofscore

    Table (6) shows that there is no significant differences between study and control groups in pre-test at p-value (0.643) which clearly indicated poor knowledge of both groups in pre-test.

Table (7):Significant Difference between Study and Control Groups regarding Post-Test Scores

Post-test	Study group				Control group			
	Freq.	%	M.s.	Assessment	Freq.	%	M.s.	Assessment
Pass	19	95	1.92	Pass	3	15	1.49	Fail
Fail	1	5			17	85		
t-value (8.33); d.f.(38); p-value (0.001); significant: HS								

%: percentage**; Freq.:** Frequency**; HS:** Highsignificant**; P Value:** probabilityvalue**;Df:** degreeoffreedom
T value:t-test**;Ms:** Meanofscore

    The results of table (7) shows that a highly significant difference found between the post-test of the study group members at p-value (0.001) who were participated in the educational sessions and the control group who did not exposed to any intervention related to knowledge.

IV.   DISCUSSION

    According to (Table 1) in the results, The study shows no significant difference between both study and control groups regarding all demographic data.In regards to age, the majority of study and control groups were at age group of (25-29) years. This result comes along withstudy which was done by Azer, (2011) who indicated that the majority of the study subjects age between (18-29) years old[16]. Also another studywas done by Aziz and Lafi, (2011) found that the majority of the study sample study and control groups, age between (25-29) years old[17].

About gender, the highest percentage were accumulated around male in both study and control groups, this was in agreement with another studywhich mentioned that the males were dominant gender in both their studyin both (study and control groups)also he confirms that work in cardiac units' opportunity to male job needs heavy work[18]. Relative to the residency, the present study shows that the majority of study sample are living in urban residential area. This may be due to the nurses who works in the cardiac units prefer to live near their working place especially when they work in critical care units.

    Regarding to marital status, the present study shows that half of the sample in the study groups were married and the rest were single, while in control group the single nurses were more than married nurses, in a previous study was done by Gázquez, *et al*., (2012) they pointed in their study that the highest percent

were married in intervention group (53.1%) while in control group the highest percent (66.7%) were single[19].

Relative to the socio-economic status, the highest percentage of both study and control groups were satisfied. This result was due to nurses were single and do not need more expenses like for the married nurses who shows they were satisfied for some extend. About educational level, the present study indicates that the highest percentage of the study sample were graduated from nursing institute in the study group, while in control group the highest percentage of sample were graduated from nursing college. Many previous studies were in agreement with this result they found that the majority of study subjects in cardiac units were graduate from university and institute[12,18, 20].

Concerning years of experience, the present study has revealed the majority of nurses in study and control groups were between (1-3) years of experience. This result was supported by a study done byHassan, (2012) as his results indicated that the higher percentage of study and control groups have (less than 5 years) of experience as a nurses [18]. Regarding to the years of experience in cardiac units, the present study shows that both study and control groups have between (1-3) years. This result agree with another study done byYounis, (2014), who pointed that most of the nurses in both study and control groups had (1-4) years of experience in medical and cardiac care unit[12]. About training sessions toward heart disease, the majority of the sample in both study and control groups had (1-2) training sessions. This result come along with Hussein, and Al-Ganmi, (2013) (21) in their study was done in Baghdad they reveals that (8.0%) only were always participating in training courses[21].

According to the results shows in tables 2; 3; 4 and 5. The present study indicated that the study sample knowledge was poor that less than third of study group had passed the pre-test, and half of control group had almost passed the pre-test. Many studies found that there is a non-significant difference between study and control groups for pre-test related to nurses' knowledge at $P>0.05$[18,20].Mahramus,*et al.,* (2014) concluded in their study they that there is a deficit knowledge of nurses' about self-management for heart failure prior to participation in the educational intervention[22]. Also Garris, (2014), in her study she mentioned that there were varying difference between pretest and posttest as the study sample nurses answering her questions showing that the mean percent in pretest was 72.8% and it became 89.5% in posttest which shows an increase about 16.7% in most questions in posttest[6].

In regards to the result in tables 3; 5; 6 and 7, these tables shows that nurse's knowledge regarding nursing management for patients with heart failure in the study group has been improved after exposure to educational program. This was indicated by the significant difference between pre-test and post-test results, which was supported by another studywhich reveals that there is a high significant difference between pre-posttest [18]. In addition another study, found that there is recognized improvement in nurses' knowledge regarding heart failure after subjecting the study sample to educational program. Moreover the study claimed that a significant increase in posttest score was recognized [22]. In the present study the researcher confirms that nurses' knowledge deficit in pretest in both study and control groups regarding nursing management of patients with heart failure might be due to improper preparation of nurses in cardiac units with less emphasize on participation in educational courses. The educational program for management of patient with heart failure associated with a significant increasing knowledge of study group. This result was in agreement with Garris, (2014)(6), who indicated that providing heart failure education classes to nurses can be successful in increasing nurses' knowledge[6]. Therefore, the implemented educational program was effective and has an impact on nurse's knowledge about management of patients with heart failure. Present study was supported by many studies which mentioned that there are highly significant difference about nurses' knowledge in post-test between study and control groups[23, 6].

V.   ETHICAL CONSIDERATION

This is one of most essential principles before collecting the data, to protect the patient's values and dignity. The researcher obtained this permission from the Ethical committee at the Faculty of nursing / UOK. The researcher promised to keep the patient's information confidential, and use these data for this study only then he explained the purpose of this study to each participant without affecting the routine visiting and care. In addition to above the researcher told each participant that this is an involuntary work, and they can leave any time even the interview process is not completed.

VI.   CONCLUSIONS

The study concluded that most of study sample had few years of experience in nursing field with few educational sessions in cardiac disease, whichmakes most of the nurses in cardiac units had knowledge deficit concerning management of patient with heart failure.

Educational program was found to be an appropriate and effective way to improve the nurses' knowledge concerning management of patient with heart failure.

VII.   RECOMMENDATIONS

Based on the study results discussion and conclusions the study recommended that:

1. Encouraging nurses to be enrolled in educational sessions and conferences to improve their knowledge and keep them up to date in knowledge toward heart failure. These will be able to participate in educating patients through information obtained from these courses.
2. Reassessment and follow-up for nurses should be applied after educational sessions to evaluate and to promote their knowledge.
3. Health directorate should be applied a continuous education activities to improve nurses' knowledge toward chronic disease.

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