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Impact of Health Education Program on Health Status of Heart Failure Patients: A Quasi-Experimental Study

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Abstract

Heart failure, is a major cause of morbidity and mortality, especially in ageing people, it affects and kills a large number of people. Objective: The study aims to evaluate the effectiveness of an education program on the health status of patients suffering heart failure. The study design is quasi-experimental. The patients were allocated into either the experimental group (taking the program, n = 200) or the control group (not taking the program, n= 200). The extent of samples knowledge about the disease was tested at both the pre and post education stages. A structured teaching program for imparting knowledge on various aspects of nutritional status was developed based on an extensive review of the literature and expert opinion. The results of the study were elicited based on two statistical approaches, first, descriptive statistics and the second is an inferential statistical analysis. The shows that health status sub main domains at pre-period in case and control groups was non significant, while the health status sub main domains at post period in both groups were high significant. Regarding the study global main domains in both groups along pre-post period were high significant.

Keywords: *Education, Heart failure, Mortality, Knowledge*

Introduction

Heart failure (HF), is a state in which the cardiac muscle is unable to push enough blood to body. As the heart does not push enough blood to all the body, it cannot meet the metabolic demand which must require. [1] The improper blood supply to the body result in subsequent incompetent supply of oxygen to the body tissues, and symptoms such as fatigue or activity intolerance appear as well as developing shortness of breath. [2] Heart failure lead to a major public health problem in the world with a significant risk of the disease on population and the individual, this burden of disease can be measured in terms of mortality, increase readmission rate, as well as the healthcare costs. Frequent HF hospitalization is a burden on the healthcare system and adversely affect patients and state outcomes. [3,4] The most common causes of heart failure are cardiomyopathy, hypertension, heart valve disease, coronary artery disease, congenital heart disease and alcohol consumption. [5] The usual symptoms are shortness of breathing, frequent cough, swollen extremities, abdominal swelling, fatigue, dizziness and sudden death.[6,7] Risk factors for heart failure patient may be divided into two classifications; compliant and non- compliant risk factors. Compliant risk factors are those that a person can correct it, including high serum cholesterol level, a diet high in saturated fat, obesity, physically inactive, hypertension, cigarette smoking, and alcohol consumption. And non-compliant risk factors are those that an individual can't change, such as age, gender, ethnicity and heredity. [8] Heart failure is usually managed with style of lives changing and medicines, eating habits changes to maintain an ideal weight, diminish salt intake, appropriate exercise, smoking cessation, reducing and alcohol consumption. [9,10] Investigation has shown that approximately half patients who readmitted to the hospital could be stopped if HF patients were compliant to their management regimen, and meet symptom monitoring. [11] Clients, as well as their caretakers, level of knowledge, is significantly related to their level of adherence to recommended care regimens. [12,13] Patients knowledge is an essential component for the treatment of their disease. [14] Studies focus on the education of patients and their families to improve their knowledge of self-care and compliance. [15,16] Also studies checking HF patients' knowledge and the outcomes of patient education recorded that health literacy was associated with higher HF knowledge and

patients' demographics such as younger age and higher educational level. [17]

Methodology

Design and Sample

A quasi-experimental design was applied to achieve the goal of the study. Non-probability, purposive sample, with the use of pre-post test approach for both study and control group. A sample of (400) heart failure patient chosen among patients who attended to three main hospitals; Hawler teaching hospital, Rojhelat emergency hospital, and Rizgary teaching hospital. The samples were divided into two groups; (200) patient as a study group was exposed to the health education program and the other (200) patients are not exposed to the health educational program, considered as the control group with the same demographic characteristic for both groups.

The Educational Program

A structured teaching program for imparting knowledge and nutritional status of heart failure was developed by the authors. The content of the educational program was designed based on an extensive review of the literature and expert opinion. The program composed of a set of modules related to health status, these modules include physical status, psychological status, nutritional status, exercise status, social status, economical status, medication status, as well as smoking status. Models content was created and edited by the researchers. Before the nutritional program is finalized, it has been presented to a group of experts. Those experts were asked to review the education program as well as the instrument for their content, clarity, and adequacy. After the review, some items were excluded and some others are added after face to face discussion with experts and the instrument considered valid after taking all the comments and recommendations in considerations.

Procedure

After ensuring informed consent from the patients, they were given the pre-test questionnaire before the administration of the educational program. Each patient was given a serial number to be followed in the second assessment (post-test). After administration of the pre-test questionnaire, the patients were imparted with a education program by face-to-face interview with the primary author. The face-to-face interview lasted '30-35 minute-sessions' with using booklets and short videotapes. As a reminder, each participant heart failure patient was provided with a copy of the education booklet prepared and designed by the primary author and reviewed by other authors. The content of the booklet was similar to that of the educational program and it summarized the most important points in the program. For preventing bias recall, one month later, patients were asked by telephone to complete the same questionnaire a second time (post-test).

Data Analysis

The statistical data analysis approaches were used in order to analyze and assess the results of the study under the application of the statistical package (SPSS) ver. (22.0):

1- Descriptive data analysis*:* Frequencies, percentages, Mean of the score (MS), Standard Deviation (SD), Relative Sufficiency (RS%), as well as scoring scales of two categories, such that (Yes, and NO)and are responding with integer numbers (1, and 0) respectively.

2- Inferential data analysis*:* Alpha Cronbach, The Independent-Samples t-test, Matched Paired-Samples t-test (MP t-test), Pearson's correlation coefficient.

Results

Table 1 : Health status sub main domains at pre-period in case and control groups

Grand Main Domains	Group	No.	GMS	SD	SE	t-test	P-value
Physical Status of Heart Failure Patient	Case	200	0.526	0.131	0.009	-0.222	0.824 NS
	Control	200	0.529	0.109	0.008		
Psychological Status of Heart Failure Patient	Case	200	0.453	0.228	0.016	0.209	0.834 NS
	Control	200	0.449	0.226	0.016		

Cont... **Table 1 : Health status sub main domains at pre-period in case and control groups**

Nutritional Status of Heart Failure Patient	Case	200	0.502	0.101	0.007	-1.208	0.228 NS
	Control	200	0.514	0.109	0.008		
Exercise Status of Heart Failure Patient	Case	200	0.516	0.121	0.009	-0.641	0.522 NS
	Control	200	0.524	0.117	0.008		
Social Status of Heart Failure Patient	Case	200	0.319	0.152	0.011	0.877	0.381 NS
	Control	200	0.307	0.132	0.009		
Economical Status of Heart Failure Patient	Case	200	0.435	0.171	0.012	0.155	0.877 NS
	Control	200	0.433	0.187	0.013		
Medication Status of Heart Failure Patient	Case	200	0.207	0.204	0.014	2.276	0.023 S
	Control	200	0.164	0.171	0.012		
Smoking Status of Heart Failure Patient	Case	35	0.100	0.163	0.028	-8.835	0.000 HS
	Control	44	0.520	0.257	0.039		
Health Status related to Heart Failure	Case	200	0.489	0.069	0.005	-0.616	0.538 NS
	Control	200	0.493	0.061	0.004		

(*) HS: Highly Sig. at P<0.01; S: Sig. at P<0.05; NS: Non-Sig. at P>0.05; Testing based on two independent t-test.

Table 2: Health status sub main domains at post period in case and control groups

Grand Main Domains	Group	No.	GMS	SD	SE	t-test	P-value
Physical Status of Heart Failure Patient	Case	200	0.438	0.126	0.009	-6.16	0.000 HS
	Control	200	0.511	0.111	0.008		
Psychological Status of Heart Failure Patient	Case	200	0.429	0.209	0.015	-1.190	0.237 NS
	Control	200	0.455	0.221	0.016		
Nutritional Status of Heart Failure Patient	Case	200	0.385	0.104	0.007	-10.83	0.000 HS
	Control	200	0.500	0.109	0.008		
Exercise Status of Heart Failure Patient	Case	200	0.399	0.117	0.008	-8.92	0.000 HS
	Control	200	0.504	0.120	0.008		
Social Status of Heart Failure Patient	Case	200	0.281	0.144	0.010	-1.37	0.171 NS
	Control	200	0.300	0.133	0.009		
Economical Status of Heart Failure Patient	Case	200	0.435	0.174	0.012	0.090	0.926 NS
	Control	200	0.434	0.186	0.013		
Medication Status of Heart Failure Patient	Case	200	0.127	0.131	0.009	-3.06	0.002 HS
	Control	200	0.169	0.145	0.010		
Smoking Status of Heart Failure Patient	Case	36	0.462	0.219	0.037	-3.19	0.002 HS
	Control	44	0.622	0.228	0.034		
Health Status related to Heart Failure	Case	200	0.419	0.060	0.004	-10.85	0.000 HS
	Control	200	0.487	0.064	0.005		

(*) HS: Highly Sig. at P<0.01; NS: Non-Sig. at P>0.05; Testing based on two independent t-test.

Table 3: Global main domains along pre-post periods in case-control groups

Groups	Global Main Domains	Period	No.	GMS	SD	SE	MP t-test	P-value	C.S.
Case	Health Status related to Heart Failure	Pre	200	0.489	0.069	0.005	22.39	0.000	HS
		Post	200	0.420	0.060	0.004			
Control	Health Status related to Heart Failure	Pre	200	0.493	0.061	0.004	3.42	0.001	HS
		Post	200	0.487	0.064	0.005			

(*) HS: Highly Sig. at P<0.01; Testing based on Matched Paired t-test.

Discussions

Respect to subjects of studied socio-demographic variables in table (1), results shows that socio-demographic variables in studied groups had recorded no significant differences at P>0.05, except in age groups, and levels of education, which represented significant different in at least at P<0.05, rather than most of studied group's individuals distribution concerning age, and levels of education are very similar. For summarizing preceding results in table (2), and due to an overall assessments, it could be conclude that suggested educational program could be applicable for case group, since the absence of significant differences between the two groups regarding health status of people with heart failure. Regarding the descriptive statistics of case and control groups in light of post period in table (3) , the result shows that the two groups in the light of sub main domains are recorded highly significant differences at P<0.01, with exception of no significant differences between the two groups concerning "Psychological Status of Heart Failure Patients, Social Status of Heart Failure Patients, and Economical Status of Heart Failure Patients" at P>0.05. For summarizing preceding results, and due to an overall assessments, it could be conclude that the suggested educational program has had a significant impact in improvement their health status.

Conclusions

According to the results, it could be concluded that patients health status improved due to applying for the suggested educational program, and the educational program could be generalized.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Adult Nursing, College of Nursing, Hawler Medical University, Erbil, Iraq and all experiments were carried out in accordance with approved guidelines.

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