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The efficacy of chronic disease self management program and Tele-health on adherence by increasing self efficacy in patients with CABG

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Abstract

Aim Coronary Artery disease as a chronic disease is the single largest killer of people in the worldwide. Despite advances in medical treatment, CAD is still associated with high morbidity, mortality, high hospitalization rates. Patients with CAD require comprehensive rehabilitation to control symptoms, slow the progressive nature of condition, decrease re hospitalization, and improve survival. To achieve these outcomes, patient adherence to prescribed medications is vital whereas Poor adherence to the long-term treatment of chronic diseases has been a growing problem and a major challenge for health care professionals. The purpose of this study was to test the efficacy of The Chronic ◌Disease Self Management Rehabilitation Programs and Tele-health in cardiac patients undergone Coronary Artery Bypass Surgery (CABGS), in order to improve, enhance and maintain their adherence by increasing the efficacy during intervention sessions. Method A total of 300 patients, were recruited through Tehran Heart Center's cardiac rehabilitation clinic. They were randomly assigned to intervention group which received 6 sessions (each session 150 minutes in a week) of psycho-educational intervention (N=150), or to a control group which received no intervention (N=150). The patients in both groups completed pretest measures consisting of General Adherence Scale (GAS), Specific Adherence Scale (SAS) and Cardiac Self Efficacy Questionnaire (CSEQ). Participants were reassessed 2-months and 3- months later. Result Multiple regression analysis of the collected data, revealed that both after 2 and 3 months, by enrolling the CDSMRP and Tele-health in the intervention group, enhanced significantly adherence through enhanced self efficacy.
Conclusion The CDSMRP and Tele-health, improved the self efficacy of cardiac patients which then enhanced and maintained their adherence.

Keywords: CDSP; Telehealth; rehabilitation; aherence; self-efficacy

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1. Introduction

The number of elderly population in Iran is expected to reach to 10 million by the 2020. The aged people are more in exposed to chronic disease. Estimated 38% of the death toll in Iran is from Coronary Artery Disease. CAD is not only a leading cause of death, but also it is the most costly healthcare problem and as a one of the most important chronic diseases has drawn the special attention because of high mortality, morbidity, disability, psychological problems and other sub sequences. By increasing the aged population it is expected the incidence of CAD, social consequences and economic costs of this disease will also increase.

Rehabilitation is an integral component of the care related to chronic disease. There is much evidence showing rehabilitation for chronic conditions is as effective as medical and surgical interventions. To achieve these desired outcomes, patient adherence to the prescribed medications is vital. Estimates of the medication no adherence rate, range from 4% to 90%. Poor adherence is presumed to play a major role in preventable re hospitalizations. In a study that followed-up a cohort of patients for 6 years, the number of hospitalizations reported in no adherent patients was 2.5 times higher than that among adherent patients and was significantly associated with an increased number of cardiovascular-related emergency department visits. Moreover, the mortality rate in no adherent patients was twice as high as that in adherent patients at 72 month follow-up. Available data indicate that as many as one half of hospitalizations for cardiac patients could be prevented by increasing adherence. Thus, the first step in helping patients with cardiovascular disease is the discovery of factors that influence the patient adherence. This study was performed also in this regards and to evaluate the effectiveness of rehabilitation based on Chronic Disease Self-management Program and Tele-Health on increasing the adherence through increasing self efficacy in patients with CABG. Studies suggest that rehabilitation based on CDSP and Tele-health increased adjustment and adherence. There is also a significant amount of literature supporting Tele- health or telephone follow-up intervention continues to be an effective way of supporting people in coronary risk factors reduction, thereby reducing CAD morbidity and mortality. CDSP is a process whereby participants, engage in activities that protect and promote their health, manage their signs and symptoms, monitor behaviours and manage the impact of their condition. CDSP includes the following techniques and strategies: Understanding and managing common symptoms, using mind to manage symptoms, exercising, communicating, sex and intimacy, healthy eating, managing medicines, making treatment decisions, managing heart disease and hypertension.

2. Methods

A total of 300 patients, 73% male, 27% female, 85.3% married, 14.7% single were recruited through Tehran Heart Centre's cardiac rehabilitation clinic, who attended 8 weeks rehabilitation program a month after CABG. They were randomly assigned to intervention group which received 6 sessions (each session 150 minutes in a week) of psycho educational intervention (N=150), or to a control group which received no intervention (N=150).The patients in both groups completed pre-test measures consisting of Cardiac Self Efficacy Questionnaire (CSEQ), Psychosocial Adjustment to Illness Scale (PAIS). Participants were reassessed 2-months (as a post test measurement) and 3- months later (.as a fallow up measurement). In order to increase the motivation of patients for preserving, maintenance and encouraging them to continue the recently learned behaviours, the educational and supportive interventions were conducted by telephone once a week.

3. Measures

Cardiac Self-Efficacy Questionnaire designed to help elucidate the role that self-efficacy plays in the translation of disease into symptoms and disability in the coronary population. CSEQ has two factors (maintain function and control symptoms) with high internal consistency and good convergent and discriminate validity. CSEQ consisted of 16 items. Patients were asked to rate their confidence with knowing or acting on each of the 16 statements on a 5-point likert scale (0-4).

Patient's adherence was measured by General Adherence Scale (GAS) and Special Adherence Scale (SAS). GAS measures the patient's tendency to fallow what has been recommended by physician in general and consisted of 5

items. SAS measures the cardiac patient's adherence to the essential prescribed medications, life style changes and consisted of 10 items. A total of 15 items are completed, with each item being rated on a 6-point likert scale (0-5) of adherence.

4. Analyses

Analyses are provided in two parts, descriptive and inferential. SPSS software (version 11.5) was used for data analysis. For the descriptive part, mean and standard deviation of the related variables are presented in Table (1). Mean and standard deviation of group scores in scales and subscales of pre-test in Table (1) indicate at this stage mean and standard deviation in groups at all subscales almost close together and not much difference is seen between them. Mean and standard deviation of group scores in scales and subscales of post test in Table (1) indicate at this stage changes in the mean and standard deviation in the experimental group compared with the control group has occurred. Mean and standard deviation of group scores in scales and subscales of follow up in Table (1) indicate total changes developed in the experimental group in the previous step have remained unchanged.

Table 1. Mean and standard deviation of groups scores at scales and subscales of pre-test, post-test and follow up

scales	Group	Pretest		Post test		Follow up	
		S^2	$\bar{x}$	S^2	$\bar{x}$	S^2	$\bar{x}$
GAS-SAS	experimental	3.32	36.22	6.20	71.23	6.62	71.37
	control	4.45	36.72	11.95	40.25	10.09	38.95
CSEQ	experimental	3.94	22.77	4.27	43.87	4.58	44.17
	control	4.31	22.29	8.04	24.57	6.90	23.55

In inferential part, multiple regression was used in order to test the hypothesis of the study, in three stages.

Regarding self efficacy as a mediator variable at first stage according to the result of mediator variable regression analysis on (CDSP &Tele-health) independent variable (b = -19.3) and ($p < 0.05$) it can be claimed that the regression of mediator variable on independent variable is significant. At second stage according to the result of dependent variable (adherence) regression analysis on independent variable (b = -30.987) and, ($p < 0.05$) it can be claimed that the regression of dependent variable on independent variable is significant.

Table 2. The result of regression analysis of the dependent variable on mediator and independent variable.

Steps	Model	β	Standard error	Standardized β	T	p
Step 1	constant	4.115	0.895	-	4.596	0.0001
	self efficacy	1.508	0.025	0.962	60.871	0.0001
Step 2	constant	20.803	2.797	-	7.439	0.0001
	self efficacy	1.289	0.042	0.822	30.575	0.0001
group		-6.113	0.977	-0.168	-6.258	0.0001

At third stage according to the result of the table (2) self efficacy as a mediator variable at first stage has entered into the equation and the result is significant ($p < 0.05$). Then at the next stage independent variable has entered into the equation. Results indicate with entrance of the independent variable, mediator variable has maintained its significance ($p < 0.05$) and the regression coefficient of the dependent variable on the independent variable is significant too($p < 0.05$). According to the above mentioned hypothesis, when the effect of mediator variable (self efficacy) is controlled, the effect of independent variable has to be reduced or at the best condition it is insignificant. The mentioned results indicate after omitting the effect of the mediator variable, in spite of remaining the effect of independent variable, its rate has been reduced. So in this case, we can say self efficacy plays a mediating role between the independent variable and dependent variable. Therefore, the above hypothesis; the relationship between independent variable, dependent variable and mediator variable is confirmed. However, the role of mediator variable is not complete and it shows that independent variable affects the dependant variable through other routes too. Table (3) shows the variations of the R square based on the data in the table.

Table 3. The changes in R^2

steps	R^2	R^2 Changes	f change	df(1)	df(2)	Sig.f change
Step 1	0.926	0.926	3705.32	1	298	0.0001
Step 2	0.934	0.009	39.166	1	297	0.0001

5. Discussion

Increasing evidences indicate no adherence to the prescribed treatments, has always been an important and multi dimensional problem in the health field. Despite the patient spend a lot of time and costs for meetings with physicians, attending in health centres and receiving medical diagnosis and recommendations, many of them do not succeed to follow them specially recommendations related to changes in lifestyle. This study investigated the effectiveness of rehabilitation based on chronic diseases self management programs and Tele-health, on improving enhancing and maintaining the adherence in the patients with Coronary Artery Bypass Grafting for the first time in Iran. In this study also the role of as a mediator variable has been studied which is considered important and influencing the relationship between independent and dependent variable or increases with intervention according to the different findings. The results of this study is consistent with literature which demonstrate self-management programs and Tele health, increase adherence and self-efficacy acts as a mediator. There is also evidence suggesting that self-efficacy acts as a mediator between self management programs and adherence and increased by self management programs.

6. Conclusion

Being unexpected and changeable the chronic illness path, the self-efficacy of patients in dealing with the illness and its consequences may be reduced and impacted. This leads to depression, anxiety and consequently increases the perceived pain and the illness perception severity which decrease in turn the efforts for dealing with the complications and consequences of illness or reduce the performing daily activities. As a result, their health becomes worse than before. So, to deal with challenges related to chronic diseases, not only special skills and knowledge is necessary, but also the patient's judgments of their capabilities to organize and execute courses of action is required to attain designated types of performances. Therefore, by increasing self-efficacy in patients with chronic diseases, the risk of developing vicious cycle caused by chronic disease can be reversed. In other words perceived self control of patients increases, anxiety, depression and pain is reduced. So, enhancement of self-efficacy must be considered a key program component and the teaching processes must be structured to include the four ingredients of efficacy enhancement (performance mastery, modelling, interpretation of symptoms, and social persuasion).

The perceived self-efficacy affects the health in two ways. First, biological systems are affected through the beliefs about the ability to deal with stress. It has been reported that the patients who believe, they can do something which improve their physical condition, are less depressed and less stressed. Secondly, self-efficacy beliefs affect the selection and acting of healthy behaviours and thus affects the condition and function of health. While being aware of the health risks and benefits of healthy behaviour is prerequisite, the self efficacy is essential for the occurrence of behavioural changes. Increased self-efficacy improves the behaviours, motivation, beliefs, thought patterns and emotional well-being. Improving and increasing self-efficacy by utilizing self- management programs and Tele-health leads acting behaviours which is associated directly whit healthy consequents. Health outcome in turn affects the more adherences in patients. With developing a systemic and feedback cycle, tracking the healthy habits and behaviours are facilitated. In other words, the obtained health improvement can increase the self-esteem for conducting healthy behaviours raising the individual and social motivation which leads to increased self efficacy. Consequently this positive feedback reinforces efforts to perform healthy behaviours and more adherences over the time. As in this study the role of mediator variable is not complete and it shows that independent variable affects the dependant variable through other routes too, therefore conducting more studies in future for discovering other routes is recommended.

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