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## The efficacy of chronic disease self management programs and Tele-health on psychosocial adjustment by increasing self-efficacy in patients with CABG

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### Abstract

**Aim:** Coronary Artery Disease is a chronic and debilitating condition that seriously affects the lives of patients and their families. Despite advances in medical treatment, CAD is still associated with high morbidity and mortality, high hospitalization rates. It is well known that rehabilitation is an integral component of the care of people with chronic disease. Despite the expense associated with rehabilitation following chronic disease, dissatisfaction with psychosocial outcomes is common. The purpose of this study was to test the efficacy of The Chronic Disease Self Management Rehabilitation Program and Telehealth in cardiac patients undergone Coronary Artery Bypass Surgery (CABGS), in order to improve, enhance and maintain their psychosocial adjustment to illness through increasing self efficacy. **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 Psychosocial Adjustment to Illness Scale (PAIS) and Cardiac Self Efficacy Questionnaire (CSEQ). Participants were reassessed 2-months and 3- months later. **Results:** 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 Psychosocial Adjustment to Illness through enhanced self efficacy. **Conclusion:** The Chronic Disease Self management Rehabilitation Program and Tele-health improved the self efficacy of cardiac patients which then enhanced and maintained their Psychosocial Adjustment to Illness.

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**Keywords:** CDSP; telehealth; rehabilitation; adjustment; self-efficacy

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## 1. Introduction

The beginning of this new century we have seen many more people living into their seventies, eighties and beyond. The greater longevity has brought with it an increased burden of chronic diseases. Coronary Artery Disease as one of the most important chronic diseases threatens the human life and kills more people than any other disease. Studies indicate that chronic disease has a progressive condition and its several complications depend on how the patient and his family adjust psychosocially with the condition. Adjustment is defined as a process, in which the patient maintains a positive attitude towards himself and the world despite physical problems. The prevention of subsequent coronary events and the maintenance of physical functioning in such patients are major challenges in preventive care. Although it is well known that rehabilitation is an integral component of the care of people with chronic disease but using this services has not been very common and only small groups start these courses while a large number of them are deterred in the middle of courses and do not continue to complete course. The reason for lack of consistency and adjustment to prescribed treatments has been mentioned as psychosocial factors. Given the inability of our present major health systems to deal with our biggest health problem. the importance of adjustment and rehabilitation in health care to those with chronic conditions providing effective and new means of delivering rehabilitation programs to increase positive and lasting changes in psychosocial adjustment of these patients, is considered as a necessity. It seems the Chronic Disease Self-management Programs and Tele-health is a part of this solution. The purpose of this study was at this direction and done for evaluating the effectiveness of rehabilitation based on CDSP and Tele-health in order to enhancement and maintenance the psychosocial adjustment by increasing self efficacy in patients with Coronary Artery Bypass Grafting.

Studies suggest that rehabilitation based on self management programs and Tele-health increase adjustment and adherence to the prescribed treatments. 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 follow 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 Psychosocial Adjustment was measured by the Psychosocial Adjustment to Illness Scale (PAIS). PAIS reflects the psychological adjustment to illness via 7 primary domains of adjustment and includes Health Care Orientation, Vocational Environment, Domestic Environment, Sexual Relationships, Extended Family Relationships, Social Environment and Psychological Distress. The interview questions are designed to

assess the quality of adjustment in each of these primary adjustment areas. A total of 46 items are completed concerning the respondent in a PAIS interview, with each item being rated on a 4-point (0-3) scale of adjustment. Higher ratings indicate poorer adjustment on PAIS.

#### 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 <sup>2</sup>	$\bar{x}$	S <sup>2</sup>	$\bar{x}$	S <sup>2</sup>	$\bar{x}$
PAIS	experimental	17.60	122.11	9.23	73.22	9.21	70.50
	control	17.52	121.41	21.28	115.08	19.61	116.11
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 (adjustment) regression analysis on independent variable ( $b = 41.86$ ) 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	$\beta$	Standard error	Standardized $\beta$	T	p
Step 1	constant	160.824	2.526	-	63.662	0.0001
	self efficacy	-1.948	0.07	-0.850	-27.865	0.0001
Step 2	constant	122.873	8.071	-	15.225	0.0001
	self efficacy	-1.449	0.122	-0.632	-11.909	0.0001
	group	13.902	2.819	0.262	4.932	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<sup>2</sup>

steps	R <sup>2</sup>	Square Changes	f change	df(1)	df(2)	Sig.f change
Step 1	0.722	0.722	776.442	1	298	0.0001
Step 2	0.744	0.021	24.322	1	297	0.003

## 5. Discussion

This study investigated the efficacy of the rehabilitation based on chronic disease self management programs and Tele-health in CABGS in order to improve, enhance and maintain their adjustment to illness by increasing the self-efficacy for the first time in Iran. The results of study are consistent with literature which demonstrate self-management programs and Tele health, increase adjustment. These studies indicate that one of the mechanisms for effectiveness of self-management on the patients with chronic diseases, is obtained via increasing the self-efficacy as a mediator variable. The results of this study are also consistent with the above mentioned evidence. Enhanced adherence to medication and treatments by performing the self-management programs may cause behaviours which lead directly to healthy outcome and health consequences in turn, affects the adherence to the prescribed treatments again. With developing a systemic and feedback cycling, 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 adherence over the time. Performing and following self-management programs more as a result of increased adherence to the treatments, the necessary behavioural and psychological mechanisms are provided in order to develop more adjustment which in turn makes possible more psychosocial adjustment itself.

## 6. Conclusion

Recently the structure of illness especially chronic disease has changed dramatically. With greater longevity and increasing in incidence of chronic disease, the structure of the rehabilitation services has also changed greatly. As the chronic disease impact the self-management in the patients and disables them, the importance of the life management is highlighted more. So, the healthcare providers should change the old training structure to the new one in which there is more emphasize on individual's problems, needs and concerns. Rehabilitation programs should be scheduled according to the individual's conditions and using the Tele-health in order to follow up interventions and increasing the patient's motivation to continue the recently learned behaviours after attending in health service centres. This will help the patients to improve their self-efficacy and adherence to the treatments and increase their psychosocial adjustment and start the positive feedback cycle. 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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