

# Effectiveness of discharge-planning on physical quality of life of patients with ischemic heart disease

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## ABSTRACT

**Background and Aim:** One of the goals of health care team is to improve the quality of life of patients during and after hospitalization period. Therefore, this study aimed to examine the effect of performing discharge planning on ischemic heart disease patient's physical quality of life. **Methods:** This quasi-experimental study was performed on 74 ischemic heart disease patients which randomly allocated to discharge-planning group ( $n = 37$ ) and usual care group ( $n = 37$ ). The discharge-planning included the patients' educational needs, self-care instructions for patients, and caregivers. This program was performed through supporting patients during hospitalization and after discharge. The physical aspect of quality of life was assessed by standard questionnaire Short Form 36 and the data were analyzed through Mann-Whitney, independent  $t$ -test, variance analysis, Friedman and Wilcoxon. **Results:** There was no significant difference between intervention and control groups in physical aspects of the quality of life before intervention ( $P = 0.423$ ) while two groups were significantly different after intervention ( $P = 0.000$ ) and quality of life of patients in the case group improved significantly. **Conclusion:** Applying the discharge-planning program as an effective, efficient, cost-effective, and noninvasive intervention on physical aspects of the quality of ischemic heart disease patients' lives is useful and helpful. Hence, it is recommended to use this program to promote and improve the quality of ischemic heart disease patients' lives.

**Key words:** Discharge-planning, ischemic heart disease, quality of life

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## INTRODUCTION

Coronary artery diseases attribute to 35% of the mortality worldwide.<sup>[1]</sup> Ischemic heart disease is the most prevalent chronic, dangerous, and fatal heart disease in modern and developing countries including Iran. It is predicted that it will be the biggest cause of death in 2020.<sup>[2]</sup>

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Statistics show that over "100.000" one hundred thousand ischemic heart disease patients are re-hospitalized in medical centers because of the relapse of the disease.<sup>[3]</sup> Inadequate supportive systems, ineffective planning to follow-up the patients, inability of the patients to follow the treatment activities when relapsing the disease symptoms, lack of nutritional, and medicinal diet follow-up, discharging without planning, lack of knowledge about the illness risks and treatment diets are the main factors and reasons of re-hospitalization.<sup>[4]</sup> Moreover, angina symptoms, heart

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insufficiency, limited activities, and physical disabilities in ischemic heart disease can effect on the patients' quality of life.<sup>[5]</sup>

The results of the clinical trials have shown that quality of life can be a sign of health care quality and a considerable part of the treatment program in ischemic heart disease patients. So increasingly, traditional criteria such as rate of survival, mortality, and illnesses replaced with an assessment of the quality of life to determine the results of health care of the patients.<sup>[6]</sup>

Since the hospitalization period has been reduced in hospitals these days, it is necessary for patients and their families to be informed of essential instructions before and after discharging.<sup>[7]</sup> Huber and McClelland reported that of 7300 nurses working in hospitals, 75% declared that their quality of care toward patients discharge was not perfect, and the patients were discharged without adequate instructions to them and their caregivers.<sup>[8]</sup> Therefore, it is critical to design an appropriate discharge plan. This program with a systematic process prepares the patients for discharging medical and health care centers.<sup>[9]</sup> Discharge-planning program deals with examining the patients and their families and also determining their health care need and instructions, consulting, following up, referring, and evaluating.<sup>[10,11]</sup> Despite all advantages of performing discharge planning, Backer *et al.* stated that rare studies have been conducted to examine the effectiveness of discharge planning performance.<sup>[12]</sup>

In Iran, there is no structured discharge plan program. Considering the mentioned studies and the criterion of quality of life to evaluate the effects of performing discharge-planning program, the researcher aimed to conduct a comprehensive study to determine the effect of discharge-planning program on the physical quality of life in patients with ischemic heart disease.

## METHODS

This study was a quasi-experimental study, which was conducted on 74 ischemic heart disease patients during 2012. The samples were collected from intensive coronary care, internal heart care units and coronary emergency units of the two hospitals according to exclusion and inclusion criteria. Seventy-four patients were selected via purposive sampling methods according to previous studies.<sup>[13]</sup> The samples divided randomly in case ( $n = 37$ ) and control ( $n = 37$ ) groups. Fourteen patients were lost during the study and final sample comprised sixty patients (thirty cases in each group).

Inclusion criteria were willing to participate in the study and signing the consent letter, diagnosis of myocardial infarction

and unstable angina in the patients' medical files, aged between 35 and 65-year-old, patients from Mashhad city and ability of reading and writing. The exclusion criteria included having open heart surgery during the intervention, trauma experience in last 6 months such as immigration, accidents, and divorce, suffering immediate family members from an incurable disease and unavailability after discharging.

Questionnaire and other forms were examined and corrected by supervisor professors, professional advisers and II members of faculty of nursing and midwifery of Mashhad and finally were developed for use in research. Quality of life Short Form 36 (SF-36) questionnaire with Persian version was used; the validity was confirmed by using convergent validity test where all the correlation coefficients were over the recommended value (0.4) with change range of (0.95–0.58). Reliability was established by doing a guide study on ten persons of the research community and confirmed by Cronbach alpha which was 0.90–0.77.<sup>[14]</sup>

After ethical permission, patients were sensitized. In the case group (discharge-planning group – [DPG]), in addition to medicinal actions, controlling of medicine side effects and blood pressure, electrocardiography, and unscheduled instruction; the patients' educational needs were specified in the questionnaire of level of knowledge and awareness by interviews, and then the discharge-planning program instruction was provided based on the patients' educational and instructional needs, while the control group received the routine care. Both groups were evaluated before discharge and 3 months after discharge.

The program was performed in 3–6 face-to-face sessions twice a day for 15–20 min using a laptop computer, power point, showing images, and answering the probable questions. The general content of the training program of discharge-planning was - diseases and illnesses, causes, symptoms and probable and possible effects (introduction),

- Treatment: Prescribed treatment, time of treatment, how to treat and notes that patient must inform the doctor during treatment
- Activities: Type and level of activities, allowed exercises and how to do them
- Nutritional diets: Allowed and forbidden foods and weight control. Ways of taking and using drugs, controlling stress and anxiety, diagnostic tests and procedures
- Visiting patients: Follow-up, supportive sources in the communication: Place and time of reference, names of the people taking responsibilities, the right time to get back to work.

At the time of discharge, the patients were given the training booklets of discharge-planning and were asked to follow it.

To follow-up the clients and their families in using trained materials, seven phone calls were made by the researchers, the first one during first 24–48 h after discharge and the other calls once every 2 weeks. Each phone call lasted 5–20 min.

The patients in two groups were hospitalized in separate wards and rooms in order not to get in touch to each other. To consider the ethical principles, after completing research study, necessary instructions were given to the control group through phone and the training booklets was posted to their addresses.

The data were analyzed via ANOVA, *t*-test and Chi-square tests through SPSS20 software (IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, New York). Mann–Whitney and independent *t*-tests were used to compare the level of quality of life in the two groups and the statistical test of Friedman, Wilcoxon, variance analysis with frequent measurement and covariant analyze tests were used for intra-group comparison of quality of life. In all tests, the confidence coefficient was determined 95%, and significance was measured at  $P < 0.05$ .

## RESULTS

Of the sixty patients who participated in the study, 51.7% were females, and the rest were males. The mean age was  $51.1 \pm 7.6$  years and 68.3% of the patients were married, 71.7% were educated only up to elementary level, 50.0% were employed, and 40.7% had monthly income  $<100$  \$.

Two groups were congenial in age ( $P = 0.083$ ), gender ( $P = 0.071$ ), level of education ( $P = 0.453$ ), and duration of suffering from unstable angina ( $P = 0.534$ ) [Table 1]. However, they were not congenial in energy and fatigue ( $P = 0.049$ ) during hospitalization, so the statistical test of covariant analysis was used to omit their effect.

The average score in physical aspect of quality of life during hospitalization in the control group was  $18.5 \pm 13.7$  and  $18.3 \pm 19.7$  in the DPG. The physical aspect score of quality of life were  $18.1 \pm 17.9$  and  $35.7 \pm 20.9$  respectively at the time of discharge. Three months after discharge the results of Friedman test showed that there was a significant difference between two groups ( $P = 0.000$ ) and Wilcoxon statistical test also showed that this difference concerns with hospitalization period and 3 months after discharging ( $P = 0.000$ ) [Table 2].

The average scores in limitation in playing physical roles due to bodily disability during hospitalization in the control group were  $18.3 \pm 28.3$  and  $32.7 \pm 38.7$  in DPG. Three months after discharge (after intervention) the average scores were

$28.3 \pm 32.7$  in control group and  $61.8 \pm 34.8$  in DPG, which was significantly higher than control group ( $P = 0.001$ ). The comparison after discharging in DPG by Friedman test showed that there was a significant different in three stages mentioned above ( $P = 0.000$ ). The statistical test of Wilcoxon showed that

**Table 1: Demographic specification of the research units**

Variable	Results (P)	Variable	Results (P)
Marital status	0.990	LDL level	0.073
Occupation	0.230	FBS	0.964
Average monthly income	0.365	Disease diagnosis	0.080
Mass body index	0.511	Duration of MI	0.480
Systolic blood pressure	0.087	Duration of unstable angina	0.534
Diastolic blood pressure	0.878	Duration of hospitalization	0.733
Cholesterol level	0.805	Times of previous hospitalization	0.113
Triglycerides level	0.875	History of heart disease	0.573
HDL level	0.676	History of heart disease in relatives	0.196
Insurance type	0.548	Social support	0.198

HDL: High-density lipoprotein; LDL: Low-density lipoprotein; FBS: Fasting blood sugar; MI: Mass index

**Table 2: The comparison of the average scores of physical aspects of quality of life**

Stage	Group						Test result
	Control group		Test group		Total		
	Mean±SD	n	Mean±SD	n	Mean±SD	n	
Hospitalization time	18.5±13.7	30	18.3±19.7	30	18.4±16.8	60	Mann–Whitney Z=0.8 P=0.423
Discharge time	33.1±17.9	30	35.7±20.9	30	34.4±19.4	60	t-test depended P=0.611
3 months after discharging	53.0±22.4	30	79.0±16.1	30	66.0±23.3	60	t-test depended P=0.000
Test results Friedman	$\chi^2=40.5$ df=2 P=0.000		$\chi^2=50.4$ df=2 P=0.000				

SD: Standard deviation

**Table 3: The comparison of the average scores of role limitation due to physical disabilities of quality of life**

Stage	Group						Mann–Whitney results
	Control group		Test group		Totally		
	Mean±SD	n	Mean±SD	n	Mean±SD	n	
Hospitalization time	18.3±28.3	30	32.7±38.7	30	25.5±34.4	60	Z=1.4 P=0.161
Discharge time	18.3±28.3	30	32.7±38.7	30	25.5±34.4	60	Z=1.4 P=0.152
3 months after	28.3±32.7	30	61.8±34.8	30	45.1±37.5	60	Z=3.3 P=0.001
Test results Friedman	$\chi^2=3.2$ df=2 P=0.000		$\chi^2=19.3$ df=2 P=0.192				

SD: Standard deviation

this difference concerns with the period of hospitalization and the stage 3 months after discharging ( $P = 0.030$ ) [Table 3].

The average scores of energy and fatigue of quality of life during hospitalization were  $26.0 \pm 29.5$  in the control group and  $41.8 \pm 31.2$  in DPG. This aspect during discharging were  $27.7 \pm 29.4$  in control group and  $41.7 \pm 31.2$  in the DPG, while 3 months after discharging the scores were  $37.0 \pm 28.4$  in control group and  $77.0 \pm 23.8$  in the DPG ( $P = 0.000$ ).

Considering, the average scores energy and fatigue during hospitalization and discharging in both groups were not congenial; therefore, preintervention was considered as covariance. The results showed that after omission of this variable, the average score of energy and fatigue 3 months after intervention were significantly higher in the case group ( $df = 2$ ) ( $P = 0.0001$ ) ( $F = 30.8$ ) [Table 4]. The average scores in the aspect of physical pain of quality of life during hospitalization were ( $20.8 \pm 21.3$ ) in control group and ( $18.3 \pm 27.9$ ) in the DPG. Three months after discharging (intervention) the average scores of this aspect in two groups were ( $43.3 \pm 30.7$ ) and ( $68.3 \pm 28.7$ ), respectively. DPG average score was significantly higher than control group ( $P = 0.002$ ). The comparison of average scores during hospitalization, discharging and 3 months after discharging in DPG by Friedman test showed that there was a significant difference in three stages ( $P = 0.0001$ ). The Wilcoxon statistical test showed that this difference concerns with the hospitalization period and 3 months after discharging stage ( $P = 0.0001$ ) [Table 5].

## DISCUSSION

Lack of statistical differences in the variables examined in this study especially the physical aspect of the quality of life before the intervention showed that the two groups were not well congenial. The level of each physical aspect of the quality of life 3 months after discharging in the patients with ischemic heart disease under discharge-planning program was significantly higher than control group, thereby proving that discharge-planning program causes to improve and promote the physical aspects of the quality of life in ischemic heart disease patients.

Lin et al., in a study by the name of the effect of performing discharge planning on the quality of life of the patients suggested that 3 months after performing discharge-planning program the scores of the aspects of energy and fatigue ( $P = 0.004$ ), physical pain ( $P = 0.009$ ) with the questionnaire of life quality SF-36 in DPG were significantly higher than those of group control.<sup>[15]</sup> Their study result was the same as the results of this study and it seems that the average scores in all physical aspects of

**Table 4: The comparison of the average scores of energy and fatigue of quality of life**

Stage	Group						The result
	Control group		Test group		Totally patients		
	Mean±SD	n	Mean±SD	n	Mean±SD	n	
Hospitalization time	26.0±29.5	30	41.8±31.2	30	33.9±31.1	60	t-test dependent $P=0.049$
Discharge time	27.7±29.4	30	41.7±31.2	30	34.7±30.9	60	t-test dependent $P=0.077$
3 months after	37.0±28.4	30	77.0±23.8	30	57.0±32.9	60	Mann-Whitney $Z=4.7$ $P=0.000$
Test results Friedman	$\chi^2=3.3$ df=2 $P=0.191$		$\chi^2=38.4$ df=2 $P=0.000$				

SD: Standard deviation

**Table 5: The comparison of the average scores of physical pain of quality of life**

Stage	Group						The result
	Control group		Test group		Totally patients		
	Mean±SD	n	Mean±SD	n	Mean±SD	n	
Hospitalization time	20.8±21.3	30	18.3±27.9	30	19.5±24.7	60	Mann-Whitney $Z=1.2$ $P=0.201$
Discharge time	23.6±21.3	30	18.3±28.9	30	20.9±24.7	60	Mann-Whitney $Z=1.7$ $P=0.081$
3 months after discharging	43.3±30.7	30	68.3±28.7	30	55.8±32.0	60	T-test dependent $P=0.002$
Test results Friedman	$\chi^2=12.0$ df=2 $P=0.002$		$\chi^2=45.7$ df=2 $P=0.000$				

SD: Standard deviation

the quality of life increased considerably because in this study there were more telephone conversations and care givers and the patients' families had effective roles in taking care of them.

However, the main difference of between this study and Lin's study is that in his study, there were only two visits to patients' homes and no consultation with the patients. In addition, in Lin's training sessions the patients' families did not participate and the researcher had only two visits with the patients during 3 months after discharging. In Lin's study, discharge-planning had little effect on the different aspects of quality of life and had no effect on the aspect of limited activities due to physical disabilities and mental problems probably because of lack of consultation by phone conversation and no close emotional touch with the patients and their families. In this study, after training sessions with the caregivers there was a telephone call every 15 days by the researcher to the patients, and their

questions were answered and also there was mental, emotional and religious support, and if possible the patients were referred to special centers. In this program, the clients were under control and supervision of the researcher. Therefore, in our study, each one of the physical aspects of the quality of life has significantly during 3 months after performing discharge-planning program ( $P = 0.0001$ ). This program can be considered in care planning to promote and improve patients' quality of life.

The results of Azadi and Mohammadi study were consistent with the results of the present study.<sup>[16]</sup> The results of Spiraki study in control group are the same as our study results. He stated that 1 month after discharging; all aspects of quality of life in the patients with coronary artery disease were improved and promoted without any intervention.<sup>[6]</sup> The significant improvement in all physical aspects of quality of life in control group shows the positive effects of the routine care in cardiac units, drug effects, doctors' prescriptions and orders and relieving the stress of hospitalization in hospitals after 3 months.

The present study results conclude that discharge-planning program was significantly effective on the quality of life, so it is emphasized on the necessity of performing discharge-planning program in patients with ischemic heart diseases.

## CONCLUSION

Generally, findings of this study showed that planned package including treatments related awareness, activities schedule, nutritional diets advices, stress management and visiting patients can improve dimensions of quality of life in patients with ischemic heart disease. The results also indicates that the program influenced all dimensions of quality of life including fatigue, bodily pain, general health, social function, physical function, physical role and mental health. In addition, the follow up revealed resistance of difference between intervention and control group, which implies the effectiveness of designed plan in long time after intervention.

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## Conflicts of interest

There are no conflicts of interest.

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