

# Efficacy of illness perception focused intervention on quality of life, anxiety, and depression in patients with myocardial infarction

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**Background:** Myocardial infarction (MI) is one of the major causes of death and disability worldwide, which can reduce quality of life in patients. Some disabilities are depression and anxiety which delay returning to work. The aim of this study was to evaluate the effect of illness perception focused intervention on quality of life, anxiety, and depression in MI patients. **Materials and Methods:** A randomized controlled trial study of 48 recently hospitalized MI patients was conducted (24 in intervention group and 24 in control group). Intervention group was trained to understand the disease by a mental health counselor in three half-an-hour sessions for three consecutive days. Data were collected from three questionnaires: hospital anxiety and depression scale, the World Health Organization Quality of Life Questionnaire (short form), and Illness Perceptions Questionnaire Brief at admission, 1.5, and 3 months postdischarge. Data were analyzed with ANOVA repeated measure. **Results:** The mean duration of returning to work was  $28.7 \pm 8.1$  days in intervention groups and  $46 \pm 7.6$  days in control group which was statistically significant ( $P < 0.001$ ). Moreover, anxiety, depression, and illness perceptions score were significantly decreased in intervention groups which were  $8.3 \pm 3.3$ ,  $6.8 \pm 3.5$ , and  $36.5 \pm 5$  in intervention groups and  $15.8 \pm 2.1$  ( $P < 0.001$ ),  $17.1 \pm 2.3$  ( $P < 0.001$ ), and  $41.9 \pm 4$  ( $P < 0.001$ ) in control group, respectively. Mean of quality of life subscales scores just physical health subscale showed a significant reduction after 3 months in the control group. **Conclusion:** Training MI patients to understand the disease in three half-an-hour sessions for 3 consecutive days can decrease the duration of returning to work, anxiety and depression, and increase illness perceptions which can make a better outcome.

**Key words:** Anxiety, depression, illness perceptions, myocardial infarction, quality of life

**How to cite this article:** Bagherian Sararoudi R, Motmaen M, Maracy MR, Pishghadam E, Kheirabadi GR. Efficacy of illness perception focused intervention on quality of life, anxiety, and depression in patients with myocardial infarction. *J Res Med Sci* 2016;21:125

## INTRODUCTION

Myocardial infarction (MI) is one of the major causes of death and disability worldwide and may be a major catastrophic event leading to sudden death or hemodynamic deterioration.<sup>[1]</sup> A significant proportion of patients with MI is in working age and returning to work after illness is associated with better quality of life.<sup>[2]</sup> A large number of patients with acute MI, despite being physically able to work, do not return to work because of some complications such as

depression and anxiety leading to changing on lifestyle and decreasing the patients' health-related quality of life (HRQOL).<sup>[3]</sup> Myocardial ischemia and the possibility of fatal dysrhythmias increase the level of stress and endangering the adjustment process and future morbidity of discharged patients.<sup>[4]</sup> In some studies on patients with heart attack have shown that their feeling and attitude to heart disease (illness perception) strongly impact on recovery process.<sup>[5]</sup>

Counting empirical evidence from a range of disease groups (e.g., cancer, psoriasis, asthma, diabetes, hemophilia, and chronic fatigue syndrome) suggests

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	DOI: 10.4103/1735-1995.196607

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**Received:** 01-03-2016; **Revised:** 08-08-2016; **Accepted:** 11-09-2016

that illness perception is a key determinant of recovery and may represent a potential target for clinical intervention.<sup>[6]</sup> The association between these personal illness perceptions and recovery is based on a theory of self-regulation that posits individuals as active problem solvers who, in response to illness and other health threats, develop parallel cognitive and emotional representations of the threat.<sup>[7]</sup> One prior study ( $N = 105$ ) investigated the prospective association between illness perception and depression in a group of MI patients and found that changes in beliefs regarding angina and MI over 1 year made near significant contributions ( $P = 0.06$ ) to the variance in depressive symptomatology on the hospital anxiety and depression scale (HADS).<sup>[8]</sup> Illness perception may impact on other outcomes including HRQOL, HRQOL is increasingly recognized as a valued outcome in MI patients<sup>[9]</sup> and is reported to predict cardiac end points.<sup>[10]</sup> In a study by Yan *et al.* on 124 patients admitted with the first acute MI were randomized to receive routine care or routine care plus a telephone follow-up intervention, which consist of a pre-discharge education and three telephone follow-up instructions. At the 6<sup>th</sup> and the 12<sup>th</sup> week after discharge, patients in the intervention group had significantly positive perceptions about symptoms of MI and better lifestyle after.<sup>[11]</sup>

This study was designed to investigate the possible effects of authors developed brief, practical, easily implementable, and bedside illness perception improvement intervention on quality of life, anxiety, and depression in Iranian MI patients.

## SUBJECTS AND METHODS

### Procedure

These multicenter, parallel groups randomized controlled trial study was done to compare quality of life, anxiety, and depression in patients with MI who discharged from hospital undergone an illness perception improvement intervention (study group) to the routine discharged patients (control group). Inclusion criteria were patients who have chest pain lasts at least 20 min or presence of pathological changes indicative of ischemia in the electrocardiographic waves or increasing in cardiac enzymes (diagnostic criteria of MI). Those with myocardial infarct secondary to bypass surgery or angioplasty, a history of psychiatric disorders (anxiety or depression), treated depression or anxiety, and substance abuse or dependence were not intended to the study.

Intervention group was educated to better understand of disease process by a resident of psychiatry and a clinical psychologist, who were trained under the supervision of a cardiologist. Intervention was done in three half-an-hour individual and interactive sessions in 3 consecutive days at

the bedside of patients, and the control group do not receive any special educational program (the current method in the hospital). Training sessions started the day after cardiac stabilization and completing the questionnaires. In the first session, the patients requested to explain their beliefs regarding the causes of MI and wrong beliefs were described and modified by trainers. The second session implemented to checking the current lifestyle and education regarding healthy lifestyle of patient with MI, and the last session was about the signs of a recovery period, changing the lifestyle to preventing from recurrence of MI, importance of using prescribed drugs regularly, and the role of the partner in the process of recovery.

Quality of life, anxiety, and depression were measured as the base at the 1<sup>st</sup>–3<sup>rd</sup> days of admission to hospital, and then 1.5 and 3 months after intervention.

### Participants

Participants were recruited between August and December 2014 from Chamran, Alzahra, and Khorshid hospitals in Isfahan and ShahidBeheshti and Milad Hospitals in Kashan and SeyedAlshohada hospital in Aram in Iran. All patients who were hospitalized for a definite MI diagnosed by a cardiologist at this time framework were eligible for participation.

Sixty-five patients were contacted, 17 patients declined to participate and 48 cases included in the study and allocated with a simple random sampling method in two groups of intervention and control (24 cases in each group). The study received ethics approval from the relevant Institutional Review Committees, and all participants gave written informed consent.

### Instruments

#### *Hospital anxiety and depression scale*

This short questionnaire evaluates the anxiety and depression in medically ill patients by removing the physical symptoms and focusing on psychological symptoms. Anxiety and Depression scale consists of 14 items and two subscales of anxiety and depression. Each item is a set of 4-point calibration, and a score of 8 or greater on one or both of the subscales indicates the presence of a depressive or anxiety disorder. Completion of the questionnaire takes only a few minutes. The developers aimed to discard all ambiguous somatic symptoms such as dizziness and lethargy and instead comprised the depression subscale around the psychopathology of anhedonia and the anxiety subscale based on the cognitive symptoms of anxiety. The HADS has been found to perform reliably in psychiatric, nonpsychiatric, and well populations as a screening tool;<sup>[12]</sup> however, its use as a diagnostic instrument for research may be inappropriate.<sup>[13]</sup> In a study in Iranian patients, the

Iranian version of the HADS was found to be acceptable to almost all patients (99%). Cronbach’s alpha coefficient (to test reliability) has been found to be 0.78 for the anxiety subscale and 0.86 for the depression subscale, respectively.<sup>[14]</sup>

**The World Health Organization Quality of Life Questionnaire (short form)**

The questionnaire included 26 questions on a Likert scale of 1–5 different aspects of the person’s quality of life. One question measures the total sense of person to own life and other questions measure the feeling and behavior in the last 2 weeks such as (1) the field of health and physical health (physical activity, substance dependence and complementary medicines, mobility, pain and discomfort, sleep, rest, and ability to work); (2) psychological (feelings toward body appearance, positive and negative emotions, learning, thinking, memory, concentration, confidence, and personality traits spirit); (3) social relationships (personal relationships, social support, and sexual activity); (4) the social environment (financial resources, liberty and physical security, access to health and social care, home environment, opportunities, access to information, and the opportunity to participate in social activities) and physical environment (pollution, and transportation). The psychometric properties of these instruments have been confirmed as acceptable in most of these populations.<sup>[15-17]</sup> The psychometric properties of the Persian version were done by Nejat *et al.* intraclass correlation and Cronbach’s alpha values were achieved more than 0.70 in all areas, but in the sphere of social relations was 0.55.<sup>[18]</sup>

**Illness Perceptions Questionnaire Brief**

A short form of Illness Perceptions Questionnaire Brief was used to basic evaluate and follow-up of illness perception score. The questionnaire consists of 9 subscales. Five subscales measur cognitive reaction to disease including perceptions of the consequences, disease duration, self-control, controlled by treatment, and cognitive symptoms. Two subscales measure anxiety about illness and emotions. One subscale measures capability to understand the condition and cause direction which is an open question. This questionnaire has been reported as a reliable and valid instrument to measure the illness perception in various conditions.<sup>[19]</sup>

**Data analysis**

Analysis was done using descriptive statistics such as mean and standard deviation and analytical statistics such as ANOVA repeated measure by SPSS 20 software. *P* < 0.05 considered as meaningful

**RESULTS**

The mean age of the patients in the intervention group (17 males, 7 females) was 54.8 ± 7.6 years and in control

group (19 males, 5 females) was 49.9 ± 10.6 years. Table 1 shows a comparison of demographic findings of two groups.

The mean duration of returning to work was 28.7 ± 8.1 days in intervention groups and 46 ± 7.6 days in control group that this difference was statistically significant (*P* < 0.001).

Table 2 shows quality of life subscales scores before and over 3 months follow-up after intervention.

Mean of anxiety and depression score was significantly decreased in intervention groups compared to control group after 1.5 and 3 months [Table 3].

Mean of illness perceptions score was significantly decreased in intervention groups compared to control group after 3 months [Table 4].

**DISCUSSION**

This clinical trial developed and tested an illness perception intervention in MI patients. Forty-eight patients with a recent MI had been included in this trial in two equal groups of intervention and control.

Setting the patients on educating the patients to planning exercise schedules, modifying wrong beliefs, changing lifestyle, and a date to return to work into an action plan, together with reinforcing controllable causal attributions were the main component of the intervention in this study. Emphasizing on the nature of atherosclerosis and muscle damage, modifying wrong beliefs, and explaining that heart disease is a chronic condition and need to change lifestyle were the another components of our intervention.

The intervention significantly improved the speed of return to work, physical health, depression and anxiety, and illness perception after 3 months compared to the control group. In

**Table 1: Comparison of demographic variables in two groups**

Variables	Groups		P
	Intervention	Control	
Age, mean (±SD)	54.8 (±7.6)	49.9 (±10.6)	0.073
Sex, n (%)			
Male	17 (70.8)	19 (79.2)	0.74
Female	7 (29.2)	5 (20.8)	
Marital status, n (%)			
Single	5 (20.8)	3 (12.5)	0.701
Married	19 (79.2)	21 (87.5)	
Education, n (%)			
Elementary and Secondary	19 (79.2)	12 (50)	0.069
Academic	5 (20.8)	12 (50)	

SD = Standard deviation

**Table 2: Comparison of quality of life subscales scores over 3-month follow-up after intervention**

Variables	Group	Mean (±SD, n)		P <sup>‡</sup>
		Intervention	Control	
Physical health	Before	57.8 (±13.6, 24)	58 (±15.45, 24)	0.972
	After 1.5 months	43.4 (±12.4, 24)	42.7 (±13.7, 24)	0.845
	After 3 months	42.1 (±22.8, 24)	23.9 (±11.9, 24)	0.001
Follow-up effect	P <sup>□</sup>	0.008	<0.001	
Main effect	P <sup>£</sup>		0.017	
Psychological	Before	61.6 (±13.7, 24)	53.8 (±23.9, 24)	0.451
	After 1.5 months	37.3 (±13.4, 24)	42.3 (±18.6, 24)	0.29
	After 3 months	9.7 (±3.3, 24)	8.5 (±2.3, 24)	0.144
Follow-up effect	P	<0.001	<0.001	
Main effect	P		0.095	
Social relationships	Before	62.1 (±26.6, 24)	53.8 (±23.9, 24)	0.261
	After 1.5 months	35 (±23.4, 24)	33.3 (±25.8, 24)	0.809
	After 3 months	37.1 (±20.9, 24)	28.1 (±15.1, 24)	0.096
Follow-up effect	P	0.003	<0.001	
Main effect	P		0.047	
Social environment	Before	63.9 (±15.7, 24)	55.2 (±18.7, 24)	0.088
	After 1.5 months	31.7 (±17.1, 24)	36.7 (±20.3, 24)	0.367
	After 3 months	35.6 (±19.7, 24)	27 (±15.7, 24)	0.100
Follow-up effect	P	<0.001	<0.001	
Main effect	P		0.15	

<sup>‡</sup>t-test; <sup>□</sup>Repeated measure test stratified by group; <sup>£</sup>ANCOVA repeated measure test

**Table 3: Comparison of anxiety and depression scores over 3-month follow-up after intervention**

Variables	Group	Mean (±SD, n)		P <sup>‡</sup>
		Intervention	Control	
Anxiety	Before	14.9 (±3.9, 24)	14.7 (±2.9, 24)	0.901
	After 1.5 months	8.3 (±3.3, 24)	15.8 (±2.3, 24)	0.000
	After 3 months	6.8 (±3.5, 24)	17.1 (±2.1, 24)	0.000
Follow-up effect	P <sup>□</sup>	<0.001	0.034	
Main effect	P <sup>£</sup>		<0.001	
Depression	Before	15.7 (±2.8, 24)	15.2 (±2.5, 24)	0.457
	After 1.5 months	8.2 (±3.6, 24)	15.8 (±2.3, 24)	0.000
	After 3 months	6.2 (±3.5, 24)	16.6 (±2.3, 24)	0.000
Follow-up effect	P	<0.001	0.202	
Main effect	P		<0.001	

<sup>‡</sup>t-test; <sup>□</sup>Repeated measure test stratified by group; <sup>£</sup>ANCOVA repeated measure test. SD = Standard deviation

**Table 4: Illness Perceptions Questionnaire Brief score over 3-month follow-up after intervention**

Variables	Group	Mean (±SD, n)		P <sup>‡</sup>
		Intervention	Control	
IPQ-B	Before	42.2 (±6.6, 24)	41 (±4.4, 24)	0.465
	After 1.5 months	38.6 (±5, 24)	39.6 (±3.6, 24)	0.456
	After 3 months	36.5 (±5, 24)	41.9 (±4, 24)	0.000
Follow-up effect	P <sup>□</sup>	<0.001	0.040	
Main effect	P <sup>£</sup>		0.356	

<sup>‡</sup>t-test; <sup>□</sup>Repeated measure test stratified by group; <sup>£</sup>ANCOVA repeated measure test. SD = Standard deviation; IPQ-B = Illness Perceptions Questionnaire Brief

other studies, it was found that increasing illness perception can lower patient anxiety and depression and improved patients' information regarding MI. In these studies, it was indicated that patients who received the intervention felt

more prepared to leave the hospital and reported higher intentions to attend rehabilitation classes than the control group. They reported greater increases in exercise and fewer calls to the general practitioner or hospital relating to

their heart condition which could obtain by the following patients in our study.<sup>[20-22]</sup>

In terms of illness perceptions, the intervention increased patients' feeling of coherence about their condition, and this remained over the course of the 3-month follow-up. The intervention also significantly strengthened patients' causal attributions for the heart attack to high cholesterol and lack of exercise in comparison to the control group. These changes in coherence and causal attributions gave the patients a coherent illness model on which to base their recovery and modifiable causal attributions and made them to have more physical health score and lowered anxiety and depression.

Regarding quality of life as shown in Table 2, if the physical health score in intervention group is better on follow-up, the quality of life scores decreased in both intervention and control groups in all domains during 3 month follow-up in comparison to the base scores. This finding shows that MI as a catastrophic accident has a serious side effect on all aspects of the life of affected patients and returning to pre-MI situation needs more time and rehabilitations.

Causal attributions to internal and controllable factors have been linked to faster return to work and improving depression and anxiety about the disease and changed lifestyle.<sup>[20]</sup> In a previous research, attributions to fate and luck predicted poor prognosis and lowered functioning in 12 years following of a group of MI patients.<sup>[21]</sup>

Previous studies showed illness perceptions are well recognized as a target for treatment,<sup>[22]</sup> and illness perception interventions have shown promising results for patients with acute<sup>[23]</sup> and chronic conditions.<sup>[24]</sup>

It is useful to consider why, in contrast to the previous trials, control perceptions were not changed. One possible reason is that the patient education about their disease is not performed routinely in hospitals which were studied and this fact is due to the high patient load in these centers and not having a systematized program of education after MI. Moreover, heart disease has been believed as disaster event in Iran, which can influence patient's lifestyle more than the other diseases.

The causal attributions have been explained much more than hereditary factors which may reflect a greater understanding of the cause of the patient's condition that could reduce anxiety associated with not knowing what caused the event. Having a solid causal framework could also increase the match between illness perceptions and the need for treatment and lifestyle modification. While a

positive family history cannot be changed, recognizing a high genetic risk may make the patient more motivated to reduce other risk factors that are modifiable, such as high cholesterol, through exercise, diet, and medication.<sup>[25]</sup>

In this study, the intervention was very brief, but it had some positive outcomes. This demonstrates that a brief education regarding illness perception for the MI patient can improve their understanding of the MI and lessen their anxiety and depression about the condition and improves them to return to work faster. Moreover, our study was based on bedside intervention which can have more influence on the patient's illness perception, also the length of intervention classes in our study was half-an-hour for 3 consecutive days. However, in other studies, the method of intervention was different that lead to have a less positive influence on the illness perceptions. Yan *et al.* used telephone follow-up intervention,<sup>[11]</sup> Broadbent *et al.* used one half-hour patient-and-spouse session,<sup>[24]</sup> and Williams *et al.* studied on type D personality.<sup>[25]</sup> Moreover, increasing illness perception could be more cost benefits due to decreasing the rehospitalization, mortality, and increase objective health outcomes by preparing them to return to work faster.<sup>[26]</sup>

Recent studies in primary care highlight the importance of patients' beliefs and emotional responses to their illness as being important in influencing their satisfaction with the consultation, reassurance following negative medical testing, and future health-care use. Recent research shows illness perceptions to have associations with a number of outcomes in chronic illness including self-management behaviors and quality of life. As yet, however, few interventions have been developed designed to change illness perceptions and improve illness outcomes.<sup>[27]</sup>

Illness perceptions influence the way, in which patients cope and their self-management of the illness. Illness perceptions can be assessed quite easily and directly, they inform health-care providers about the psychosocial responses of patients toward their illness, they are responsive to change in the clinical encounter or through self-management intervention training. Exploring patient's illness perceptions, therefore, is a crucial component of good clinical care.<sup>[28]</sup>

### Limitation

First, patients were selected from different hospitals in Isfahan and Kashan cities, so the results of the study may have limited generalizability. Second, further research should extend the follow-up period to assess the long-term outcomes of the intervention.

## CONCLUSION

Training MI patients to understand the disease in three half-an-hour sessions for 3 consecutive days can decrease the duration of returning to work, anxiety and depression, and increase illness perceptions which can make a better outcome. However, our results showed that the quality of life of patients has not been affected as much as other studied variable which needs long-term follow-up. In other words, decreasing the rate of anxiety and depression in MI patients may lead to increase the quality of life which needs to be followed up for several months or years.

## Acknowledgments

We gratefully acknowledge the dedicated efforts of the investigators, coordinators, and volunteer patients, who participated in this study.

## Financial support and sponsorship

The study was supported by Isfahan University of Medical Science, Isfahan, Iran.

## Conflicts of interest

There are no conflicts of interest.

## AUTHORS' CONTRIBUTION

- RBS: contributed in the conception of the work, design of the work ,conducting the study and agreed for all aspects of the work.
- MM: contributed in the data collection, drafting and revising the draft, approval of the final version of the manuscript, and agreed for all aspects of the work.
- GhRKh: Contributed in the conception of the work, study design, conducting the study, revising the draft, approval of the final version of the manuscript, and agreed for all aspects of the work.
- MRM: Contributed in the study design, Data analysis, revising the draft, approval of the final version of the manuscript, and agreed for all aspects of the work.
- EP: Contributed in the data collection, drafting and revising the draft, approval of the final version of the manuscript, and agreed for all aspects of the work.

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