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# Efficacy of Eye Movement Desensitization and Reprocessing (EMDR) on depression in patients with Myocardial Infarction (MI) in a 12-month follow up

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**ABSTRACT**

**Aims**: Depression following Myocardial Infarction (MI) is a common disorder with a negative effect on prognosis of cardiac patients. One of the therapeutic methods of depression in cardiac patients is cognitive-behavioral technique. The aim of the present study was to assess the efficacy of Eye Movement Desensitization and Reprocessing (EMDR) on depression in patients with Myocardial Infarction (MI) in a 12-month follow up.
**Methods**: It was a quasi-experimental study, which was performed on patients with MI in Qazvin in year 2013. 60 patients, who were suffering from MI were selected through convenient sampling and based on Beck's depression questionnaire; they were randomly divided into two experimental and control groups. EMDR therapeutic method was performed in three sessions in the experimental group. The control group received no intervention. Data collection on depressive symptoms was done before treatment, after treatment and in a 12-month follow up and they were analyzed by using descriptive statistics, repeated measures ANOVA, chi- square and SPSS 17 software.
**Results:** Depressive symptoms mean in the experimental group before and after intervention and in a 12-month follow up was 27.26±6.41, 11.76±3.71 and 8.5±2.52 respectively; repeated measures ANOVA showed significant statistical difference ($p<0.001$). Depressive symptoms mean in the control group before and after intervention was 24.53±5.81 and 31.66±6.09 respectively, it showed significant difference by using paired t-test ($p<0.001$).
**Conclusions:** The EMDR is an efficient method for treating and reducing depression in patients with MI. Critical care nurses can use this new and effective method for treating depression.

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## 1. Introduction

Coronary artery disease is the main cause of death and disability in the world. More than 17.6 million people in the USA are suffering from coronary artery diseases;, 8.5 million of them are suffering from MI and 10.2 million of them are suffering from angina [1].

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Also in Iran the first and the most common cause of death in all the ages and in both genders is cardiovascular diseases especially coronary artery diseases; so that among 700 to 800 daily deaths, 317 of them are because of cardiovascular diseases [2]. Coronary artery diseases are the cause of forty percent of deaths [3]. Depression is the most common psychiatric disorders and according to the world health organization, it is going to be the second life threatening disease after cardiovascular diseases throughout the world until 2020 [4].

Studies in 2011 showed that depression is a dependent and strong risk factor of death after MI and post-MI depression is a very common psychiatric problem among MI patients and it has a negative effect on the prognosis of cardiac disease in these patients [5]. Clinically the post-MI prominent depressive symptoms have been observed in 40 to 65 percent of the patients.

It is clear that diagnosing depression in patients with MI, specially identifying hospitalized patients with high risk of developing post-MI depression symptoms is very important for prevention or subsequent therapeutic implementations. Preventive implementations and also therapeutic implementations for post-MI depression can decrease risk of death and acceptance of therapeutic methods and rehabilitation, promote and maintain health level and quality of life, prevent development of risky behaviors and finally it can prevent negative outcomes of depression during the procedure of cardiac disease [5]. One of the methods of treating depression in cardiac patients is cognitive-behavioral techniques such as Eye Movement Desensitization and Reprocessing (EMDR).this new method is safe and does not have any negative side effects and does not rely on speech therapy or pharmacotherapy and just the patient's eyes rapid and regular movements are used [6].

EMRD is a method in which the therapist asks the patient to recall the disturbing memories in a regular program while he/she moves his/her eyes; therefore the arousal level decreases and the thoughts are organized once more. This therapeutic method has been used for different populations such as children, couples, victims of sexual assault, anxiety disorders, depression, learning disorders etc. also results of some studies (2013) have shown that EMDR is more effective in treating patients' depression and anxiety than pharmacological therapy [7]. Tavanti et al. (2008) compared two Sertraline and EMDR therapeutic methods in treating Post-Traumatic Stress Disorder (PTSD) such as depression and anxiety. Results of this study indicated that both therapies lead to significant decrease of PTSD ($P<0.001$) and EMDR causes faster improvement of PTSD symptoms in compare with Sertraline drugs [8].

Arbia et al. (2011) had conducted a study about the efficacy of EMDR in treating PTSD and depression and anxiety signs in 40 survivors of MI, heart transplant and heart surgery. Results of this study showed that the average of depression level before treatment was significantly decreased in compare with after treatment and the efficacy of EMDR method in decreasing depression of the above patients was permanent [9]. Considering that most of the studies with EMDR method have mostly focused on the people suffering from PSTD, it seemed helpful to conduct a study about usefulness of this method in other diseases, especially in the patients with MI that experience high level of depression. Therefore this study is done with the aim of assessing the efficacy of EMDR on the level of depression of the patients with MI in a 12-month follow up.

## 2. Methods

The present study was a before and after semi-experimental study with a 12-month follow up (it included two experimental and control groups). It was done on 60 MI patients hospitalized in CCU of Bou-Ali Sina in Qazvin in 2012. Sampling was done based on the purposive sampling. Patients were randomly divided into two experimental and control groups (30 patients in each group). Samples were assigned through randomized allocation. Inclusion criteria included; diagnosing MI by a

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specialist physician, stable hemodynamic status of the patient, literacy, age range between 30 to 70 years old, no history of seizures, mental stress, addiction, strabismus and vision problems and the exclusion criteria included not tolerating EMDR method and not cooperating with therapist.

The researcher started data collection after achieving approval of medical ethics committee of Qazvin Medical Sciences University with 28.206190 registration number and also participants' written consent and official permits from the related authorities. There was no compulsion for the participants to be present in the study and they were sure that all of their information will be confidential. Three tools including; demographic features questionnaire, Beck's depression standard questionnaire and mental stress scale were used for data collection. Underlying features included: age, gender, marital status, literacy and the history of smoking.

Beck's depression standard questionnaire was used for measuring depression. This questionnaire was designed in the form of Likert and includes 21 questions and consists of some sentences that explain symptoms and emotions of depressed people. Responses are categorized in a four-point scale (from zero to three) according to the intensity of the symptoms. Therefore a person's score range can differ from zero to 63. Zero to 9 indicates lack of depression or the least of depression, 10 to 16 is weak depression, 17 to 29 is moderated depression and 30 to 63 is severe depression. Beck et al. (1988) achieved the reliability of the questionnaire through retest (0.75) and alpha coefficient (0.92) methods [10].

The scale related to anxiety or mental stress is one of the self-report scales. This scale can be used in all the four stages of treatment (before treatment, during treatment, after treatment and the follow up). The basis of working with the above sale depends on the participant or the patient's report; the person evaluates or reports his/her mental anxiety or stress in every stage according to the therapist or researcher's wish. It is clear that here zero means lack of mental stress and 10 means the maximum level of mental stress [7].

Demographic features questionnaire, Beck's depression questionnaire and mental stress scale were filled in the control group in the first session. Then after one week and in the second and third sessions, the above questionnaires were completed again by the samples of the study without any kind of intervention. Also in experimental group, the intervention was started after introducing the researcher and explaining the aims of the study and providing required explanations regarding EMDR method. The aim of this phase was familiarizing patient with EMDR therapeutic method and its positive and useful effects as a non-pharmacological therapy in treating PTSD, anxiety and stress disorders and attracting active participation of the patients for cooperating with the researcher for performing EMDR therapeutic method.

The above method was done in the experimental group every other day during three sessions; it was done for the patients individually in the consulting room of CCU of Bou-Ali Sina hospital in Qazvin; every session, Beck's depression questionnaire and mental illness scale was filled out before intervention. After performing EMDR therapeutic method during 45 to 90 minutes, the above questionnaire was filled out by the patients again. Also the efficacy of this therapeutic method was assessed in a 12-month follow up in the experimental group; after twelve months of patients' discharge, they referred to heart and vascular specialized clinic of Bou-Ali Sina hospital in Qazvin and filled out Beck's depression questionnaire and mental stress scale again. Collected data was analyzed by descriptive statistic, ANOVA of repeated measures, Chi-square and SPSS 17 software.

## 3. Results

The average age of the participants was 50.97±8.25 years old and the age range was between 35 to 70 years old. Data analysis



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related to the patients' age was done by using chi-square test and there was no significant statistical difference between the two groups ($p>0.05$). Results of this study showed that there was no significant statistical difference between the two groups in terms of demographic features such as; gender, education level, marital status and occupation by using chi-square test and they were homogeneous. The only significant difference between the two groups was smoking.

## 4. Discussion

Comparing the average of depression level before and after intervention in two experimental and control groups indicated the effectiveness of EMDR therapeutic method in decreasing depression of the patients in experimental group. One of the other findings of this study was that there was significant difference between the average of mental stress scores of the patients suffering from MI in the two groups ($p<0.001$). Results of this study showed that EMDR method decreases depression level of the patients suffering from MI and the efficacy of this therapeutic method was permanent and MI patients did not suffer from recurrence of depression symptoms. Iroson et al. (2002) compared the efficacy of two EMRD and long-term encountering methods in treatment of 22 patients suffering from PTSD. Results of their study showed that both therapeutic methods decrease PTSD and depression significantly and the results of the two methods were permanent in a three-month follow-up. But EMDR method was more successful and was better tolerated by the patients. Results of this study are in consistent with the present study [xi], the difference is that the study population of Iroson et al. was PTSD patients and the population of the present study was the patients with MI.

Results of the study of Ishnaider et al. (1995) showed that EMDR method causes significant improvement in hospital anxiety and depression variables, PTSD symptoms and seizures. Results of their study are in consistent with the present study and confirm it [11]. One of the differences of their study with the present study is the number of EMDR sessions, which was done in five intervention sessions in the study of Ishnaider et al., while there were three EMDR sessions in the present study.

In the study of Van Derkoulk et al. (2007) regarding the comparison of the efficacy of EMDR, Sertraline and placebo therapeutic method in 88 patients suffering from PTSD, results of this study showed that EMDR therapeutic method decreased PTSD symptoms and depression symptoms of the patients significantly in compare with Sertraline drugs and these patients did not have depression symptoms in the six-month follow-up; these results are in consistent

Table1: Demographic features of the patients suffering from MI

| Parameters \ Groups | | Experimental | | Control | | Chi-square test results |
|---|---|---|---|---|---|---|
| | | No | Per. | No | Per. | |
| Gender | Male | 25 | 83.3 | 25 | 83.3 | 0.635 |
| | Female | 5 | 16.7 | 5 | 16.7 | |
| Marital status | Single | 2 | 6.7 | 3 | 10 | 0.5 |
| | Married | 28 | 93.8 | 27 | 90 | |
| Education level | Elementary | 15 | 50 | 15 | 50 | 0.931 |
| | High school | 9 | 30 | 10 | 33.3 | |
| | University | 6 | 20 | 5 | 16.7 | |
| Smoking | Yes | 20 | 66.7 | 7 | 23.3 | 0.001 |
| | No | 10 | 33.3 | 23 | 76.7 | |

Table 2: The average and standard deviation of depression before treatment, after treatment and in a 12-month follow up.

| Groups / Treatment | Control (paired t-test) | | | Experimental (repeated measures ANOVA) | | |
|---|---|---|---|---|---|---|
| | Mean | Sd | p value | Mean | Sd | p value |
| Pre treatment | 24.53 | 5.81 | p<0.001 | 27.26 | 6.41 | p<0.001 |
| Post treatment | 31.66 | 6.09 | | 11.76 | 3.71 | |
| 12 month follow up | | | | 8.5 | 2.52 | |



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with the results of the present study and confirm it [13]. One of the remarkable points in the study of Van Derkolk et al. is that EMDR therapy is more effective than pharmacological therapy in treating depression. Therefore this method can be used as an effective method in treating depressed patients.

In a study done by Hug Berg et al. (2008) about the results of EMDR method in treating PTSD, it was shown the results were permanent after a 35-month follow-up. They achieved that EMDR method decreases PTSD significantly and its results were permanent in 8 and 35-month follow-up, which is in consistent with the results of the present study [14]. Therefore, considering that therapeutic effects of this method are permanent in a long time too, it is recommended to use this method for controlling and treating depression of other patients too.

Results of the study of Arbia et al. (2011) showed that the level of depression before treatment in compare with after treatment was significantly decreased in the survivors of the patients suffering from cardiac events and were undergoing EMDR method; results of EMDR method was permanent in a six-month follow-up [9]. Results of their study achieved that EMDR therapeutic method is effective in treating depression after life threatening cardiac problems; their results are in consistent with the results of the present study. In the study of Arbia et al., the study population included patients suffering from cardiac MI, cardiac transplant and cardiac surgery, it is while in the present study only patients, who were suffering from cardiac arrest were studied.

Therefore, this therapeutic method can be used as a health care plan for depressed patients and it can prevent negative effects of depression on patients suffering from MI and finally it improves nursing care quality, decreases health care costs and cases faster discharge of the patients.

Abbas-Nejad et al. (2006) had done a study about the efficacy of EMDR in decreasing depression, the anxiety of earthquake and negative feelings due to experiencing earthquake in Bam. Results of their study showed that EMDR method is effective in decreasing depression, anxiety of earthquake and its other negative feelings and its results were still effective in a one-month follow-up. Another result of their study was that the level of patients' mental stress in intervention group was significantly decreased and they still did not have mental stress symptoms in a one-month follow-up [15]. Results of their study are in consistent with the present study; the difference is that in the study of Abbas-Nejad et al., the efficacy of EMDR was permanent in a one-month follow-up, while in the present study the efficacy of this method was permanent in a 12-month follow-up.

Narimani et al. (2009) compared the two EMDR and behavioral-cognitive methods in treating stress disorders symptoms in the warriors suffering from PTSD. Results of their study showed that both methods decreased hospital level depression significantly. Results of their study are in consistent with the results of the present study [16]. Considering results of their study and the present study, it can be said that non-pharmacological methods can be used for treating depression and they do not have any side effects for the patients and achieving therapeutic results is faster and more permanent in treating with non-pharmacological methods in compare with pharmacological method.

Khosro-pour et al. (2012) compared the efficacy of psychological debriefing, EMDR and imaginal encountering in treatment of 54 patients suffering from PTSD. Results of their study showed that imaginal encountering and EMDR methods were more effective in treating chronic PTSD and the therapeutic results were permanent in a three-month follow-up, which is in consistent with the present study [17].

## 5. Conclusions

Considering results of this study regarding durability of EMDR efficacy in depression of the patients suffering from MI in a 12-month follow-up, this method can be used as an affordable, non-invasive and useful intervention

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in decreasing and treating depression of the patients suffering from MI and their psychiatric problems can be decreased to a high extent. Therefore, it can be recommended to the treatment team to use EMDR method as a standard care plan in the clinics and hospitals for the depressed patients. It is recommended to conduct some studies with the aim of comparing the effect of EMDR and pharmacotherapy on the depression level of the patients with MI. One of the limitations of this study was that there was a little number of the female samples.

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