The effect of Eye Movement Desensitization and Reprocessing on anxiety of patients undergo cardiac catheterization

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ABSTRACT
Introduction: Cardiac catheterization is a common method in heart diseases that increase the level of anxiety in patients. Present study was conducted to indentify the efficacy of eye movement desensitization and reprocessing on anxiety of patients underwent cardiac catheterization. Method: This study is a clinical trial. Sixty patients that waiting for cardiac catheterization hospitalized at cardiac ward of a Taleghani hospital in Tehran in 2014 were selected using sampling and were divided by random assignment into experimental and control groups. In order to collect data, demographic questionnaire and anxiety questionnaire were used. Interventions were performed in up two sessions for 30 to 45 min. Anxiety level of patients was measured before and after intervention. Data were analyzed using descriptive statistics, paired t-test, t-test, test, test, willcoxon, mann whitney and chi square. Results: Mean anxiety level in experimental group was 46.75 ±4.18 before intervention and it was 9.51 ±2.23 after intervention, so it showed a statistically significant difference (p<0.001). Mean anxiety level in control group was 47.56 ±5.13 before intervention and it was 45.34 ±5.11after intervention, so it did show an statistically significant difference (p<0.001). Conclusion: The eye movement desensitization and reprocessing is a newly effective, useful and non-invasive method for treatment and reducing anxiety in patients undergo cardiac catheterization.

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INTRODUCTION

Coronary artery disease is a condition of atherosclerosis in coronary arteries. In other words, small arteries that are supplying blood and oxygen for heart will be narrow and tight by formation of plaque in arteries. Lipids and other ingredients of plaque will tighten arteries so heart blood flow will gradually decrease and suspended. This disease includes angina pectoris, myocardial infarction, silent ischemia, heart failure and coronary death. According to The American Heart Association reports in 2010, 17.6 million residents of US are suffering from coronary artery disease that 8.5 million of them had myocardial infarction and 10.2 millions had angina pectoris [1]. Death resulting from coronary artery diseases had currently decreased comparing to past 40 years [2]. Modern diagnostic and treatment methods had decreased death resulting from such disease up to 50 percent [3]. Cardiac catheterization is one of the most common invasive diagnostic methods of heart disease which may increase patients’ stress [4]. Previous experience of catheterization is the most important factor in increasing patients’ stress. Pain, unfamiliar environment and fear of catheterization method are the other elements which may increase patients’ street [5]. Stress, as an effective factor on body health before surgery, not only may negatively impact physiologic and neuroendocrine reactions but also will have severe effects after surgery and will result in unsuccessful cardiac catheterization and failure in final diagnosis [4]. Considering negative
impacts of stress on coronary artery patients, doctors and nurses are obliged to accurately diagnose patient’s stress for effective fulfillment of control and treatment procedures [6].

Various drug and non-drug methods are employed to treat stress. It had been approved that some antipsychotic, anti-depression and anti-stress drugs may cause sudden cardiac arrhythmia and death. Moreover, drug treatments will gradually result in drug addiction and drug tolerance and impose considerable costs to national health and treatment systems [7]. Considering side effects of anti-stress drugs and related costs, it is recommended to employ non-drug methods to control and treat stress [8]. These methods which are non-invasive and have no side effects are including praying, massage therapy, exercising, cognitive therapy, relaxation, music therapy, scent therapy and guided imagery [9].

One of the effective methods for treating stress in patients with heart failure is behavioral-cognitive techniques including Eye Movement Desensitization and Reprocessing (EMDR). This is a modern and safe method which lacks any negative side effects and is not depending on language therapy and drug therapy but is only using patient’s eye rapid and regular movements. Comparing drug therapy, Eye Movement Desensitization and Reprocessing is more effective in treating stress [10]. In Eye Movement Desensitization and Reprocessing method, therapist will ask patient to move his eye in accordance with regular plan and remember sad memories. Accordingly, arousal level will decrease and thought will reorganized [11].

Arabia et al. performed a study by the subject of “Investigating role of Eye Movement Desensitization and Reprocessing method in treating stress after observing stress and depression in 40 survivors of heart attacks. Result of this study revealed that there is a significant decrease between average stress before treatment and after treatment which its impacts were persistent even after six months [12]. Abbasnezhad et al. fulfilled a research by subject of “Efficiency of Eye Movement Desensitization and Reprocessing method in decreasing uncomfortable feelings after Kerman earthquake. 41 survivors of Bam earthquake that were suffering from post traumatic stress disorder, stress, fear, phobia, and annoying thoughts were randomly categorized in two control and intervention groups. Beck depression self-reporting scales and distress scale were employed to analyze stress, depression and negative feelings before and after EMDR treatment. Intervention group were attend in four 90 minutes EMDR sessions. Results revealed that average stress was significantly decreased after fulfillment of these sessions [13].

According to fulfilled studies about increase of stress in cardiac patients specifically in ones who are shall have cardiac catheterization and also considering negative impacts of stress on body organs including cardiovascular system and considerable effects of anti-stress drugs and probable drug tolerance in them, it is recommended to employ EMDR method as an effective, non-drug and non-invasive treatment to decrease stress and improve patients’ condition. This study aimed to recognize impacts of EMDR method on decreasing stress in patients who shall have cardiac catheterization.

Methodology:

This is a clinical trial study by the purpose of recognizing efficiency of EMDR method on stress of patients who shall have cardiac catheterization. Research environment was Heart Ward of Taleghani Hospital (Tehran). The patients were selected through convenience sampling method and were categorized randomly in a manner that samples were replicated on the basis of different variables including age, gender, educations and used drugs and then were categorized in two control and intervention groups on the basis of last right figure in their case file number. Other criteria for entering this study were passing chronic period of disease, having at least one experience of cardiac catheterization, constant homodynamic status, minimum education of primary school, lack of seizure experience, psychiatric disease, addiction, strabismus and vision disorders while intolerance in EMDR treatment and lack of cooperation with therapist were the reasons for leaving research population. We selected 60 patients’ who are in list of catheterization treatment and have entrance conditions and randomly categorized them in two groups (30 patients in intervention group and 30 patients in control group).

Demographical specification questionnaire and Beck Anxiety Inventory were employed for data gathering. Lateral specifications were including age, gender, marital status, education, cigarette usage, underlying disease and job. Beck Anxiety inventory were employed to assess stress. Reliability and validity of this questionnaire had confirmed by Kaviani & Mousavi through investigating psychometric properties of this test in Iranian population with reliability coefficient of 0.75, validity coefficient of 0.83 with one month interval and Alpha Cronbach value of 0.92. This questionnaire had designed on the basis of Likert scaling and includes 21 questions which mostly emphasized physiological aspects. Three questions refer to patient’s mood, three others relate to specific fears and others were evaluating automatic signs of hyperactivity and motive tension. Answers were scaled by four different choice of Never (0), Weak [1], Medium [2] and Severe [3]. Accordingly, score range from 0 to 63. 0 to 21 score indicates very low degree of stress, 22 to 35 indicates medium level of stress and more than 36 indicates severe levels of stress.

Control group had filled demographical specifications questionnaire and Beck Anxiety inventory in first session. Beck questionnaire was again filled one hour before cardiac catheterization by research units without
any intervention. We started intervention procedures in intervention group after introducing ourselves and explaining research goals and details of EMDR method. We aimed to provide necessary information about EMDR treatment and it effective and positive impacts as a non-drug therapy in treating stress, depression, post traumatic stress disorder and also to attract patients to cooperate with researcher in establishment of EMDR method. EMDR was performed in intervention group during two sessions in isolation at consultation room of Heart Ward of Taleghani Hospital (Tehran). Beck Anxiety questionnaire was filled before intervention and after fulfillment of EMDR treatment during 30 to 45 minutes. Same procedures were performed in second session too. It is noteworthy that the researcher had learned mentioned treatment under supervision of two experts during two months.

EMDR includes eight necessary stages that some that one stage may be performed in every session. First stage includes gathering information about patient’s past, designing treatment procedure, preparing the patient and evaluating his/her conditions.

Second stage is evaluating stage which includes accessing EMDR process through primary mind arousals. Third stage is occurring before EMDR treatment in which the patient is recommended to recognize a peaceful and safe place in his mind to imagine it in uncomfortable situations and accordingly tolerate such bad feelings. Fourth stage is desensitization which is targeting bothering feelings and agitations. Fifth stage is focused cognitive reprocessing stage (establishment). Sixth stage will evaluate remaining physical tensions and stresses and is called as physical monitoring. Seventh stage is concluding stage for making sure about patients' constancy at the end of EMDR sessions. And final and eighth stage is reassessment and treatment impacts [14].

Data gathered during first and second session of intervention and control groups were employed through SPSS19 software and other descriptive-inferential statistical tests such as independent T-test which employed for comparing average stress in each group, paired T-test for comparing average stress before and after intervention in each group, chi-square test for investigating demographical specifications of samples and Wilcoxon and Mann Whitney test for comparing average values in cases that number of sample is insufficient.

Required permit with registration number of IRCT2014062118171N1 was acquired from committee of ethics of Shahid Beheshti Medical Sciences University and fixed in clinical trial center by while patients had declared their agreement for performance of this research in written form. There was no compulsion for attendance of samples and they were assured that their information will be considered as confidential information and will not be stated in research results.

Results:

Average of studied patients’ age is 54.8±45.8. Youngest and oldest patients were respectively 32 and 77 years old. Patients were categorized in three different groups on the basis of their age which were 32 to 44 year olds (less than 45), 45 to 59 year olds, and 60 to 77 (more than 60) year olds. Most of patients who were expecting catheterization treatment were in 45 to 59 range of age that 18 patients were categorized in intervention group and 15 patients were categorized in control group (totally 33 patients). Table 1 is indicating frequency distribution of age of patients who are in list of cardiac catheterization (intervention and control groups).

83.3 percent (50 persons) of patients were male and 16.7 percent (10 persons) were female that five of them were categorized in intervention group and five others were categorized in control group. Moreover, 71.7 percent of patients (43 persons) were married and 16.7 percent (10 persons) were single and 11.7 percent (7 persons) had missed their spouses. 43.33 percent of research population (26 persons) had high school education, 31.7 percent (19 persons) had high school diploma, 13.3 percent (8 persons) had associate’s degree and 11.7 percent (7 persons) had bachelor’s and higher degrees. According to chi square, there was no significant relation between demographic variables and EMDR treatment (P>0.05).

55 percent of patients (33 persons) were smoking cigarettes and 45 percent (27 persons) were not. 88.66 percent (26 persons) of intervention group were smoking and 13.34 percent (4 persons) were not. This statistics in control group were respectively equal to 23.3 percent (7 persons) and 76.7 percent (23 persons). Table 2 indicates that there is a significant relation between smoking and EMDR method in accordance with chi square results (P=0.001). Table 1 is also indicating frequency distribution of smoking in patients who are in list of cardiac catheterization (intervention and control groups). 76.67 percent (23 persons) of intervention group had positively answered EMDR treatment in first session and 23.33 percent (7 persons) had positive answer in second session of EMDR treatment. Table 3 contains average value of patients’ stress in intervention group who had positive reaction to treatment in one to two sessions but their reaction were significantly decreased before intervention (P<0.001). Stress was measured in control group one hour before catheterization and revealed that had insignificant decrease comparing to conditions before intervention. Accordingly, table 3 indicates that there is a significant relation between stress of control group's patients before and after intervention (P<0.001). (Table 3 and Diagram 1).
Table 1: Absolute and relative frequency distribution of age of patients who are in list of cardiac catheterization (intervention and control groups)

<table>
<thead>
<tr>
<th>Frequency/ Group</th>
<th>Intervention</th>
<th>Control</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Chi Square Test</td>
</tr>
<tr>
<td>32-44</td>
<td>6 (20%)</td>
<td>10 (33.3%)</td>
<td>P=0.05, Df=2</td>
</tr>
<tr>
<td>45-59</td>
<td>18 (60%)</td>
<td>15 (50%)</td>
<td></td>
</tr>
<tr>
<td>60-77</td>
<td>6 (20%)</td>
<td>5 (16.6%)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>30 (100%)</td>
<td>30 (100%)</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Absolute and relative frequency distribution of smoking rate in patients who are in list of cardiac catheterization (intervention and control groups)

<table>
<thead>
<tr>
<th>Groups variable</th>
<th>Intervention</th>
<th>Control</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking</td>
<td>Number (%)</td>
<td>Number (%)</td>
<td>Chi Square Test</td>
</tr>
<tr>
<td>Yes</td>
<td>26 (86.66%)</td>
<td>7 (23.3%)</td>
<td>0.001, Df=1</td>
</tr>
<tr>
<td>No</td>
<td>4 (13.34%)</td>
<td>23 (76.7%)</td>
<td></td>
</tr>
</tbody>
</table>

Above table indicates that as per chi square test results, there is a significant relation between smoking and EMDR treatment (P=0.001).

Table 3: Average and standard deviation of stress in patients who are in list of cardiac catheterization (intervention and control groups) before and after intervention

<table>
<thead>
<tr>
<th>Groups Treatment</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>SD</td>
<td>Results</td>
</tr>
<tr>
<td>Before Treatment</td>
<td>46.75</td>
<td>4.18</td>
</tr>
<tr>
<td>After Treatment</td>
<td>9.51</td>
<td>2.23</td>
</tr>
</tbody>
</table>

Diagram 1: Impacts of EMDR in decreasing stress in patients who are in list of cardiac catheterization (control and intervention groups)

Discussion and Conclusion:

Results of current study revealed that Eye Movement Desensitization and Reprocessing intervention may decrease patient's stress before cardiac catheterization. This is a recommending non-drug treatments for controlling stress including EMDR method. These non-drug and safe methods may be employed under agreement of patients I stressful conditions such as conditions before invasive cognitive surgeries.

As stated in under results heading, average patients' stress in intervention and control groups were respectively equal to 46.75 with standard deviation of 4.18 and 47.56 with standard deviation of 5.13 which is revealing high degrees of stress in mentioned patients.

One of the main results of this study was that stress signs after Beck depression inventory had significantly decreased in intervention group comparing to its pre-test conditions and comparing to control group (P=0.001) while patients of intervention group had experienced less degrees of stress after treatment session and had located in natural stress range. One of the unexpected results of current study was that average stress value of control group was significantly decrease after intervention (P<0.001) but the patients had experienced high levels of stress which was intolerable for them. Difference of stress value before and after intervention in control group was insignificant in comparison with intervention group. Insignificant decrease of stress average in control group may probably result from usage of anti-stress drugs, conversations between treatment stuff with
patients and patients' beliefs. Positive impacts of EMDR treatment in decreasing stress of intervention group can be investigated by comparing average stress value before and after intervention in both intervention and control groups.

Considerable studies had fulfilled in Iran and other countries. Arbaia et al. (2011) revealed that there is a significant decrease between average stress before EMDR treatment and after EMDR treatment in survivors of heart attacks which impacts were persistent even after six months. As these study revealed effectiveness of EMDR method in treating stress disorders and are in agreement with results of current study, this may be employed as observation plan for stressful patients and accordingly decrease negative impacts of stress in patients who are in list of cardiac catheterization which will improve quality of nursing treatments, decrease treatment costs and period.

Ashayeri et al. (2009) were compared impacts of EMDR method, drug therapy and cognitive therapy in decreasing stress signs. Covariance analysis revealed that all three methods are decreasing stress but EMDR and cognitive therapy are more effective. This study is confirming effectiveness of EMDR treatment in decreasing stress and is in accordance with current results. Considering results of current study, it can be concluded that non-drug methods may appropriately employed in treating stress while they have most rapid and constant impacts comparing to drug therapy methods (15).

Abbasnezhad et al. (2007) introduced the value of 33.8±5.69 for stress average in patients with post traumatic disorder which had been decreased to 16.19±6.54 by fulfillment of EMDR method. These results are statistically significant (P<0.01) and decreased to 13.57±6.27 after one month. Results of current study are in accordance with mentioned results. One of the main advantages of EMDR treatment is its constant results, so nurses are recommended to employ this method for treating stress disorders.

To explain results of current study is can be noted that EMDR method will improve and organize data processing system, preserve its activity and remove lateral information. This Q learning had happened after connection between traumatic memories with neurophysiological networks and had memorized more appropriate information. Traumatic events will be desensitized by occurrence of reprocessing condition and through EMDR intervention; so cognitive restoration will be occurred about traumatic events and in adaptive form. Accordingly, that annoying memory will change after successful EMDR treatment in a manner that won't have required power to distress the patient. Fast and positive impacts of EMDR are approving the theory of information reformation in comparative form through this method (16).

On the basis of results of current study and by referring to other similar researches it can be concluded that considering lack of non-drug and complementary interventions in control group, these patients will experience high levels of stress and depression despite suing anti-stress drugs. Accordingly, a standard, new and safe method such as Eye Movement Desensitization and Reprocessing intervention will have positive impacts in decreasing stress of patients specially the ones who are in list of cardiac catheterization treatment.

We hope that this study being employed along with other stress controlling methods to decrease and control stress in patients.

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