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# Comparison of Efficacy of Eye Movement, Desensitization and Reprocessing and Cognitive Behavioral Therapy Therapeutic Methods for Reducing Anxiety and Depression of Iranian Combatant Afflicted by Post Traumatic Stress Disorder

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**Abstract:** This research aims to determine efficacy of two therapeutic methods and compare them; Eye Movement, Desensitization and Reprocessing (EMDR) and Cognitive Behavioral Therapy (CBT) for reduction of anxiety and depression of Iranian combatant afflicted with Post traumatic Stress Disorder (PTSD) after imposed war. Statistical population of current study includes combatants afflicted with PTSD that were hospitalized in Isar Hospital of Ardabil province or were inhabited in Ardabil. These persons were selected through simple random sampling and were randomly located in three groups. The method was extended test method and study design was multi-group test-retest. Used tools include hospital anxiety and depression scale. This survey showed that exercise of EMDR and CBT has caused significant reduction of anxiety and depression.

**Key words:** Anxiety, depression, EMDR, CBT, PTSD

## INTRODUCTION

Revision of research literatures shows that medical therapy hasn't been successful in persons' release from PTSD symptoms especially anxiety and depression (Foa *et al*., 1995; Haghshenas, 1999). In fact medical therapy because of its problem oriented nature, not only hasn't had successfulness in the fundamental and definite treatment but also medical side effects aroused from long-time consumption have been added to present problem. However different non medical methods like ones rooted in cognitive behavioral therapy exist that not only haven't had side effects but also have had considerable share in treatment of above disorder. These techniques because of their problem oriented nature have theoretical and practical support in the treatment of PTSD.

Of presented techniques EMDR and CBT methods have been used in the treatment of PTSD more than others. Eye Movement Desensitization Reprocessing is a new therapeutic method that has elements of exposure therapy and cognitive behavioral therapy that has compound with eye movement technique, hand knock and auditory stimulation. This therapeutic method accelerates access to and reprocessing of traumatic memorabilia in an adaptation style (Shapiro, 2002). This issue has been mentioned in different studies. Sarichello (1996) in a research has evaluated competence of EMDR in treatment of PTSD aroused from war among devotees of imposed war. Findings of this survey speak that exercise of independent variable in the test group causes significant decrease in symptoms of PTSD, subjective distress (SUD), anxiety and depression and has increased validity of cognitive scale (VOC). Van Eaten and Taylor (1998) evaluated efficacy of 14 types of therapeutic study on PTSD in a meta-analysis. Results of this research showed that 13 of these studies has found EMDR as effective as CBT and 4 studies have indicated to EMDR competence in serotonin reabsorbing inhibition. In a study under the title of Using EMDR in treatment of PTSD by Cusack and Spates (1999), 27 persons underwent EMDR or merely Eye Movement Desensitization treatment. Results of two factors ANOVA showed that both methods have significant effect on reduction of anxiety, depression, vexatious memorabilia and subjective distress (SUD). Results of research of Lamprechet *et al*. (2004) narrated by Dolatabadi (2005) are indicative of reduction of subjective distress (SUD) and vexatious memorabilia and increase of validity of cognitive scale (VOC) after treatment with EMDR. Dolatabadi (2005) showed in a research that any two methods Eye Movement, Desensitization and Information Reprocessing (EMDR) and Systematic Desensitization (SD) method had significant effective in reduction subjective distress (SUD) and vexatious memorabilia and increase of validity of cognitive scale (VOC). But, EMDR method has more effective in compression with Systematic Desensitization (SD)

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method. Schneider *et al.* (2005) showed in a research that after treatment with EMDR obtained significant improvement in anxiety, hospital depression and symptoms of PTSD with seizure.

The CBT is one of other therapeutic methods in PTSD. Cognitive Behavioral Therapy deal with cognitions those result in change was significantly among two test evidence groups of emotions, thoughts and behaviors. Ghomashchi (2005) showed that problem solving training was inducing significant reduction of anxiety and depression in experimental group. Foa *et al.* (1991) showed those persons who has afflicted with PTSD revealed significant recuperation in post-test and following period by Stress Inoculation Training (SIT) supportive Counseling and prolonged exposure. Also Tarrier *et al.* (1999) discovered that cognitive therapy and exposure culminated in PTSD symptoms reduction in 32-35%, depression reduction in 27-31% and anxiety reduction in 23-25% of participants. Triffleman *et al.* (1999) in a study under the title of PTSD treatment by trauma specific Cognitive behavioral approach (CBT-TTP) that was comprised of copying skills training, stress inoculation training, exposure therapy and cognitive reconstruction, showed that this therapeutic approach reduces severity of PTSD symptoms. Foa *et al.* (1999) in a study with body relaxation training among 24 soldiers afflicted by PTSD showed that body relaxation has caused significant reduction of event re-experience, anxiety and depression either after treatment and after 6 month follow up however significant reduction hasn't occurred in sleep disorder and social withdrawal. Becker *et al.* (2004) showed that envision exposure method has been as therapeutic pattern and studies insist on its efficacy.

Now according to competence of EMDR and CBT therapeutic methods this question is broached that which of them is more efficient in reduction of anxiety and depression? Results of studies is inconsistent and challenging, as among research literature only two studies; by Grant *et al.* (1999) and Devilly and Spence (1999) that was under the title of Comparison of EMDR and CBT-TTP competence in treatment of PTSD show that CBT-TTP have significantly been more effective in post-test and three-month follow up, in comparison with EMDR. However results of most of studies are demonstrating that EMDR has more efficacy than CBT. Rogers *et al.* (1999) show that groups who has been treated with EMDR has more recuperation than group of exposure (shown through vexatious memorabilia scale and undesirable subjective units' levels). Study of Ironson *et al.* (2002) shows that EMDR has more efficacy than CBT in treatment of PTSD. Shapiro (2002) concluded that treatment of PTSD with EMDR is more competent than other methods.

According to results of performed researches the main question of current study is that with 17 years lapsing time of war and presence of numerous devotees and combatants afflicted by PTSD those haven't cured with medical therapy, whether using Eye Movement Desensitization Reprocessing and Cognitive Behavioral Therapy cause reduction of anxiety and depression or not? According to above questions following hypothesis is broached:

- Anxiety reduction after exercise of EMDR and CBT shows significant difference between test and control groups
- Depression reduction shows significant difference between EMDR, CBT and control groups

## MATERIALS AND METHODS

**Subjects:** Statistical population have been comprised of all devotees of Ardabil province that have been hospitalized at psychological and psychiatric unit of Isar psychiatric hospital of Ardabil (in the summer of 2007) and have been diagnosed as PTSD afflicted cases and were under treatment with medical therapy (N = 93). From mentioned Statistical population 60 combatants afflicted with PTSD were selected through random sampling and were located into three 20-persons groups. However because of sample reduction that is nature of experiment methods, as threatening factor of internal validity of research, 20 persons for each group were selected. Then after cognitive behavioral interview and final screening, numbers of samples were 51 that all were afflicted with PTSD induced by imposed war. Also all patients have chronic disorder and were under medical therapy. Three groups were matched. Participants of current study had mean age of 47.95 years and standard deviation of 5.07.

### A-Data collection apparatus

**Cognitive behavioral interview:** At first session before other stages and after rapport establishment cognitive behavioral interview was used to recognize and classify disorder. Incidentally, traumatic event or events related to war were diagnosed through this tool and were recorded for therapeutic sessions.

**Researcher-edited questionnaire:** This questionnaire was used for assess of demographic characteristics like age, familial and social status of patients and documents for acquaintance from medical history of patients.

**Hospital anxiety and depression questionnaire:** This 14-items scale has edited by Snit and Sigmund (1983 narrated by Abolghasemi and Narimani, 2005) and it evaluates depression and anxiety separately. In this scale 7 items were used for depression diagnosis and 7 used for anxiety diagnosis. Retest reliability and Cronbach's alpha coefficients of this questionnaire were 0.76 and 0.91, respectively. Correlation coefficient of anxiety sub-scale of this questionnaire with depression sub-scale of SCL90R questionnaire was obtained 0.43 ($p<0.01$). Gustafson *et al.* (2005 narrated by Abolghasemi and Narimani, 2005) has got Cronbach's alpha coefficient of depression and anxiety scales of this questionnaire 0.72 and 0.83, respectively.

**Execution method of therapeutic sessions:** Information collection method was individual and was performed at counseling and psychotherapy room of Isar psychiatric hospital of Ardabil. As after matching the groups-that had diagnosis of war induced PTSD in their medical file-according to age and level of education, type of used drug and random sampling as EMDR, CBT and control groups, Cognitive-behavioral Interview executed on two test groups before exercise of independent variables (therapeutic technique). During interview traumatic scenes were identified with cooperation of patient and researcher. Then with cooperation of each patient, the most distressing scene and the most prominent anxious image of the scene was selected for exercise of therapeutic method for desensitization and compromising (for example; scene of invasion of enemy and severe bombing of region, scenes related to disintegration and being martyred of fiends induced by missile or direct impact of tank's ball and cut arm on the earth and etc.). After identifying, each of patients was asked to express their feeling or perception for explaining themselves during reminding the traumatic scene. It is obvious that expressed sentence by the patients, is generally indicating to negative cognition or negative assess of patients about himself. Some of negative cognitions expressed by patients were; I am vulnerable, I am out of control, I should be censured, I am worthlessness. Then curer was specifying a positive cognition that should be used instead of negative cognition like I do the best possible task, This is related to past, I am worthy. Here the curer was assessing validity of positive Cognitions scale on the basis of 7-values scale (VOC) between 0-7, then image and negative cognition were compounded, for assessment of emotion and distress level or its severity, on the basis of 11-levels subjective units of distress or anxiety (SUD) scale between 0-10. Then the patients underwent pre-test with hospital anxiety and depression test. Then A and B curers treated patients of EMDR and CBT groups randomly. Curer A treated 10 patient with EMDR and 10 by CBT, randomly and curer B treated 10 patient with EMDR and 10 by CBT, randomly. It is notable that curers have been trained about above therapeutic methods on the basis of EMDR (Shapiro, 1989, 1995) and CBT (Devilly and Spence, 1999) protocols. In this study, patients of third group (control group) were located in the waiting-list. Then, after finishing the therapeutic sessions (5 sessions every week two sessions for each patient and generally 70 days) each of patients underwent anxiety and depression tests and obtained data were analyzed.

**CBT therapeutic sessions**

**First session:** This session is comprised of diagnostic interview, treatment's reason explanation, training and designing of treatment, setting and recording hierarchy of anxiety producing scenes for exposure event and respiratory practice (necessary time for this session was 90 min).

**Second session:** It is comprised of deep muscle relaxation, respiration training, distinctive and controlled relaxation and training of thought-stopping technique.

**Third session:** In this session the patients were exposed to traumatic scenes for 60 min and then 60 min cognitive reconstruction were executed in Beck/Ellis method (necessary time for this session was 120 min).

**Forth session:** Here the patients were exposed to traumatic scene for 30-45 min and then the traumatic schema (event dependent) was operated. And also in this session previous copying skills were reviewed and new skills were trained. These skills were comprised of following: using supportive systems, Problem solving, Self-relaxation, Internal control preservation, Using risibility imagination, taking exercise, Positive in vivo exposure, Flooding and Explosion, thought-stopping, proceeding to purposeful activities (spirit exploring) and finishing the sessions (necessary time for this session was 120 min).

**Stages of EMDR treatment:** EMDR has comprised of 8 essential stages. In some cases it is probable that several stages were done in one session (Dolatabadi, 2005). In this study, stages of treatment were settled in five sessions. Each session of EMDR can lasts 90 min.

**First stage:** It is comprised of patients' history taking, treatment designing, preparing and assessing of patient. Assessing stage include goal determination and line-base

responses that is assessed on the basis of patient's pronouncements on personal distress scales and validity of cognition scale.

**Second stage:** This is desensitization stage that bears on the vexatious emotions of patient.

**Third stage:** This is installation stage and is focused on reconstruction and cognitive reprocessing.

**Forth stage:** This stage assesses rest of somatic tension. This stage is named Body Scan.

**Fifth stage:** Closure or finishing stage is a stage that includes mutual reporting and mainly designated to maintain balance of patient during therapeutic sessions. And finally reevaluation is performing.

## RESULTS

Results showed that age range of samples were 43-55. Eighty percent were married and 20% were single. Sixty five percent of devotees had educational level under than high school and 25% had diploma of high school and rest had scholar level higher than high school.

Results of Table 1 through one way ANOVA show that there is significant difference between three groups; EMDR, CBT and control groups, from the view point of pre-test post-test difference of scores' mean of anxiety and depression test and obtained F is significant at the level of 0.001. Then hypothesis number 1 to 3 is approved. For comparison between two groups and comparison of therapeutic effect of EMDR and CBT Tukey's follow up test has been used that its results is shown in the Table 2.

Results of Table 2 through Tukey's follow up test show that for the anxiety variable scores mean of anxiety post test were significantly lower in the EMDR group than control group. It means that exercise of EMDR independent variable cause reduction of anxiety among combatants afflicted with PTSD. Also scores mean of anxiety post-test in CBT test group was lower than control group and this is significant. It means that exercise of CBT independent variable causes anxiety reduction in the post-test. Results of this tables show that there isn't significant difference between EMDR and CBT therapeutic methods from the view point of anxiety reduction among persons afflicted with PTSD.

In the depression variable difference's mean of pre-test post-test scores were significantly higher in the EMDR and CBT groups in comparison with control group. However results of this table show that there isn't significant difference between EMDR and CBT therapeutic methods from the viewpoint of depression reduction among PTSD afflicted persons.

Table 1: Results of one way ANOVA according to pre-test post-test difference of scores of EMDR, CBT and control groups

| Variables | Sum of squares | Mean squares | F | ρ |
|---|---|---|---|---|
| **Anxiety pre-test post-test difference** | | | | |
| Between groups | 34.16 | 17.08 | | |
| Within groups | 47.87 | 0.99 | 17.12 | 0.001 |
| Total | 82.03 | | | |
| **Depression pre-test post-test difference** | | | | |
| Between groups | 203.71 | 101.85 | | |
| Within groups | 239.93 | 4.99 | 20.37 | 0.001 |
| Total | 443.64 | | | |

Table 2: Results of Tukey's follow up test for comparison of groups' mean in following variables

| Dependent variables | EMDR group | CBT group | Control group |
|---|---|---|---|
| **Anxiety pre-test post-test difference** | | | |
| EMDR group | - | | 2.81 |
| CBT group | -0.750 | - | 2.05 |
| | 0.087 | | |
| Control group | -1.970 | -1.220 | 0.83 |
| | 0.001 | 0.002 | |
| **Depression pre-test post-test difference** | | | |
| EMDR group | - | | 4.18 |
| CBT group | 1.160 | - | 5.35 |
| | 0.300 | | |
| Control group | -3.460 | -4.360 | 0.83 |
| | 0.001 | 0.001 | 0.72 |

## DISCUSSION

Present study showed that EMDR therapeutic method is effective in anxiety and depression reduction. Obtained results about efficacy of EMDR method is similar to the collective of Sarichello (1996), Wilson *et al.* (1997), Van Etten and Taylor (1998), Carlson *et al.* (1998), Cusack and Spates (1999), Michael *et al.* (2000). Lamprechet *et al.* (2004 narrated by Dolatabadi (2005) and Schneider *et al.* (2005), that have shown in their researches that exercise of Eye Movement, Desensitization and Reprocessing (EMDR) method causes significant reduction of anxiety and depression.

Cognitive Behavioral Therapy (CBT) is another therapeutic methods used for treatment of PTSD in current study that showed its efficacy in the study. This finding is similar with results of Foa *et al.* (1991), Triffleman *et al.* (1999), Tarrier *et al.* (1999) and Becker *et al.* (2004) that have insisted on efficacy of this method.

Also in the evaluation of accordance of general results of this research (EMDR preference) with previous studies can say that previous results about higher efficacy of EMDR and CBT methods have ended the

challenging and inconsistency of these researches. Only two studies (Grant *et al*., 1999; Devilly and Spence, 1999 for a review) that was under the title of Comparison of EMDR and CBT-TTP competence in treatment of PTSD show that CBT-TTP have had significantly more efficacy in post-test and three-month follow up, in comparison with EMDR. However, results of most of studies (Rogers *et al*., 1999; Ironson *et al*., 2002; Shapiro, 2002) is indicating that EMDR has more competence than CBT.

In analysis of results and efficacy of therapeutic methods some points are noteworthy. In evaluation of theories related to EMDR can say that this effect may has an extensive effect on facilitation of information related to vexatious memorabilia processing that is through activation of nervous system, memory and emotional networks that is occurred through eye stimulation in a structure of a precise and definite process. This question hasn't been responded that what sub-structural basis is governed on this change in the situation of information processing? Do EMDR act on a behavioral cognitive level on the basis of breaking the formulaic responses? Does a type of deviation of senses' attention occurs that consequently reduces severity of stimulators' vexatious effect? Is the neuro-chemical changes interfere here? Does merely the focus of attention and two hemispheres stimulation transfer general function of right hemisphere to step by? Does self-concentration and two hemisphere stimulation has the response? We know that optic nerve of each eye is attached both hemispheres and maybe this mandatory concentration on special point at visual span of each eye and its movement facilitates processing of different layers of brain. It seems that Amygdale and Hippocampus systems both are activated through stimulation of visual pathways in a way like REM. It means that emotional memory (Amygdale memory) and memory that is alleged declarative cold memory, mixed with each other through information's fast processing. It means that non declarative memory transform to expressible declarative memory. In current research observation of speed of conceptual images' traverse that was reflected in the expression of patients was explaining that a speed occur faster than the fact's image to image traverse. Shapiro apart the eye movements that can explains speed of access to ineffective data and speed of effect on it through its physiologic and neuropsychological demonstration, emphasizes on this point that course of EMDR comprises inseparable part of this effect. To explain effectiveness of EMDR in current study can indicate to two territories; one is exposure and another is the transportation and emotional weigh that Shapiro has noted it as bioelectricity of negative and positive beliefs. How exposure affect? Can be said that in the EDMR, after establishing safe therapeutic emotional space and with using cognitive, cognitive-pictorial and emotional aspects and within short courses (equal to 20 movements of eye), exposure to most severe concept is occurred, also while in the CBT with all stratagems pass over the least vexatious stimulators. Maybe short exposure to most severe condition is the reason of facilitated habitués in the EMDR and causes accelerated habitués that need less time than CBT. On the other hand analysis of Shapiro about transportation of bioelectric charge of negative beliefs that reduces with traverse over the moderate goals-that patient get it during treatment-indicates to flexibility that helps acceleration with more discretion and more emotional freedom in comparison with hierarchy of stimuli in CBT that is set from the beginning. It seems that a habit that is accelerated by emotional information traverse and through Limbic-Amygdale system stimulation and with deliberate stimulation of eyes movement (Shapiro, 1989, 2002) is explaining higher speed and effectiveness of EMDR.

It was noted in the results part that two presented therapeutic methods haven't had significant difference in the anxiety and depression reduction. Whereas, in the previous studies (Rogers *et al*., 1999; Ironson *et al*., 2002; Shapiro, 2002) has noted that EMDR has more competence than CBT.

To explain this discrepancy can indicate to this issue that in the majority of previous studies one of techniques of CBT (Exposure, Relaxation, Flooding and Desensitization) or compound of two of them were used, while in current study all effective factors in CBT-TTP form (that has designated and tested by Devilly and Spence (1999) for treatment of stressor traumas), were used. Then it isn't unlikely that result of this research differ from previous studies and is similar to findings of Grant *et al*. (1999) and Devilly and Spence (1999). These researchers in a study under the title of Comparison of EMDR and CBT-TTP competence in treatment of PTSD show that CBT-TTP has more significant efficacy in post-test and three-month follow up, in comparison with EMDR. Furthermore to explain obtained results can say that increase of sessions from 3 to 5 and consequently undergoing logical course of cognitive behavioral therapy sessions is another reason for this results.

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