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The Effectiveness of Eye Movement Desensitization and Reprocessing Therapy on the Emotion Regulation and Emotion Recognition of Addicted Individuals

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Abstract

***Background*:** The purpose of this study is to assess the effectiveness of eye movement desensitization and reprocessing therapy on the emotion regulation and emotion recognition of addicts with traumatic experience.

***Materials and Methods*:** This research is an experimental study with pre and post-test design and a control group. The subjects of this study were selected using random sampling method on drug addicts of Ardebil Addiction Treatment Camp who have successfully completed the detoxification period and they were evaluated in two different experimental (15 individuals) and control (15 individuals) groups. The experimental group was treated with EMDR therapy for 8 sessions (each one for 60 minutes) and the control group received no special treatment. All participants filled a questionnaire of Emotion Regulation and Emotion Recognition at the onset of the research and 2 months after termination of treatment. For the data analysis, SPSS-17 software and covariance analysis were used.

***Results*:** The results of covariance analysis test indicated that the eye movement desensitization and reprocessing therapy intervention increased the average of positive emotion regulation and emotion recognition scores in the post-test phase and significantly reduced the average of negative emotion regulation scores.

***Conclusion*:** These results suggest that the treatment of eye movement desensitization and reprocessing is effective in improving regulation and recognition of emotions in addicts with traumatic experience.

Introduction

Addiction is a chronic and relapsing disorder which is characterized with changes in cognition, motivation and emotion [1, 2]. Long-term use of drugs, not only has an adverse impact on social and economic situation but also plays a decisive role in people's mentalities and emotions [3, 4]. Coincidence of drug abuse disorder and posttraumatic stress disorder is one of the areas of great importance for the health centers [5]. The prevalence of PTSD among people with drug abuse who refer to health centers for treatment is about %20 to 38% [6] and its prevalence during lifetime has been estimated at %30-%52 [6, 7].

Approximately 90 percent of adverse drug users report a history of traumatic experiences (with or without a diagnosis of PTSD) [8]. These results indicate that PTSD appears as a risk factor for the future drug abusers [5, 9, 10]. The emotion regulation is a strategy applied by individuals when facing a negative situation to temper their excitement. Appropriate skills are associated with the emotion regulation, healthier relationships, employment, better academic performance and physical health. Evidences suggest that people who cannot regulate their emotional responses to daily events experience more turbulence and this turbulence or confusion can lead to drug abuse as a way to reduce the emotions [11-13].

The emotion recognition is an important factor in successful social interactions [14] and is significantly affected and damaged in addicts [15]. False recognition of emotion provides a context for the social malfunctioning [2, 16-18]. Most of the treatments emphasize reducing the negative approaches of emotion regulation and increasing the emotion recognition in adverse drug users [11].

The Eye Movement Desensitization and Reprocessing Treatment (EMDR) is also a way introduced as a more effective treatment for acute stress disorder and PTSD [19]. Evidences indicate that 22-43 percent of people with PTSD turn to drug abuse in their lifetime [20]. So, EMDR is effective in treatment of drug abuse especially in patients turned to drugs due to traumatic experiences and PTSD [21, 22]. This treatment accelerates accessing and reprocessing of traumatic memories in an adapting style and helps the client's brain release the nervous system from the past trauma through normal processing of emotional information. Most of the people with traumatic experiences turn to drug abuse to get rid of these experiences. The EMDR helps people identify traumatic

memories and treat people through reprocessing of traumatic memories and experiences [23, 24]. Marich conducted a study on the effectiveness of EMDR therapy. In this study, 10 opioid-dependent individuals with traumatic experience were treated with the EMDR. The results indicated that this kind of treatment has caused changes in the lifestyle of addicts and had a positive effect on their view of themselves, others and their environment [25].

Other studies conducted on addicts with traumatic experience suggest that EMDR is effective in improving addiction treatment and reducing relapse of addiction [23, 26-28]. Given the limited number of researches conducted on the impact of EMDR on addiction, paying less attention to the role of emotions in traumatic experiences and psychopathology of addicts and also due to the possible role of this treatment in preventing relapse of addiction in drug users, conducting this research is necessary. Therefore, the purpose of this study is to determine the effectiveness of the EMDR therapy on the regulation and recognition of emotion in addicts having traumatic experience.

Materials and Methods

This research is an experimental study conducted with pre-test and post-test design and a control group. The statistical population of this study includes all male drug addicts in treatment camp of Ardebil city in 2011.The study sample was consisted of 30 individuals with drug abuse disorders dispatched to treatment camp to continue serving their sentence after the detox phase.

Initially, all drug users in this study (200 cases) were examined with Trauma Questionnaire and the General Health Questionnaire. The Trauma Questionnaire was used to detect traumatic experiences in the history of addicts. The General Health Questionnaire was also used to identify the mental health of these patients. Then, 50 subjects were selected among the addicts with a traumatic experience, 30 persons who were considered for the treatment intervention after the clinical interview and obtaining an informed consent. In this study, the addicts were selected using convenience sampling, and then were randomly assigned to control and experimental groups. In the pilot study, a sample was considered to be composed of at least 5 patients [28].

The inclusion criteria are as follows: 1- Age range of 20-40 years old. 2- Having a minimum level of education. 3- The participants are male.4- Minimum 1 to 5 years of addiction duration. 5- Non-affection by any important and chronic mental and physical diseases. 6- Number of previous addiction treatments

Short-version Cognitive Emotion Regulation Scale (GERQ): This questionnaire has been prepared by Garnefski and Kraaij to assess thinking [of an addict] after experiencing stressful or threatening life events. This scale contains 18 articles; each one are answered based on a five-point Likert scale (from almost never to almost always). The scale score ranges from 0 to 72. Cronbach's alpha coefficients and retest reliability coefficient (after 5 months) for the subscales were obtained in the range of 0.73-0.80 and 0.41-0.59 respectively.

The correlation coefficient of this questionnaire has been reported with the depression scale of 0.38 and anxiety scale of 0.33 [29]. Yousefi (from Iran) has reported the Cronbach's alpha coefficient for the overall scale score of the questionnaire at 0.82. Also, the correlation between the scores of negative approaches with the depression scale scores and anxiety subscales of Goldberg and Hillary General Health Questionnaire was examined and coefficients were obtained 0.35 and 0.37 respectively [30]

Scale of Emotion Recognition: The recognition test of facial expressions includes 36 black and white photographs of the facial emotional expressions. These are the pictures of faces of two men and women which show six basic emotions including anger, disgust, fear, happiness, sadness and surprise; and participants should be able to recognize the relevant emotion through looking at any of these pictures. Retest reliability coefficient of this test (with a one week interval) was reported at 0.85 by Ekman and Friesen [31]. The reliability of this test was obtained at 0.71 in Iran using Cronbach's alpha [32].

The implementation process of this research was as follows: After identifying the addicts with traumatic experience and getting their consent to voluntarily participate in treatment, the pre-test phase was administered to experimental and control groups. Then, after implementation of the EMDR intervention technique in the experimental group, post-test phase was performed in the experimental and control groups. Treatment was administered to the experimental group in 8 individual sessions, but no treatment was administered to the control group. In this method, the experimental group imagined a situation similar to trauma (like watching a horrible car accident) and followed lateral movements of the therapist's finger by their eyes.

This process continued for one minute or more or until the patient expressed that the annoyance of image has been reduced. When the patient was in a state of deep relaxation, he was able to cognitively restructure the traumatic event and thereby relieves his symptoms.

Then, the therapist asked the patient to tell all the negative thoughts in his mind and again he was encouraged to think about the positive thoughts such as "I can handle this issue", while he followed the movement of therapist's finger; and this thought remains in his mind as long as he was following the finger movement of therapist [33]. Finally, the research data was analyzed using SPSS-17 software as well as covariance analysis.

Results

The mean age of subjects in the experimental group was 30.20 and in the control group was 29.93 years old. They were included in the age range of 20-40 years old. In terms of educational level, 33.3% of subjects in the experimental group were studying at secondary school, 26.7% at high school and 40% were studying at university. In the control group, 26.7% of subjects were studying at secondary school, 40% at high school and

Table 1. Stages and processes of EMDR therapy

Session	Topics discussed in each session
1st session	Getting the personal history of the patient- Introducing the therapy-Establishing a therapeutic relationship
2nd session	Patient preparation- Training the process of eye movement desensitization and reprocessing - Visual eye movement desensitization and reprocessing
3rd session	Evaluation- Identifying the purpose- Rating the confoundedness of each memory Desensitization
4th session	Desensitization
5th session	Performing and focusing on cognitive restructuring
6th session	Evaluating and paying attention to the health issues
7th session	Final phase
8th session	Re-evaluation: re-evaluation of measures taken in previous meetings and progress evaluation

Table 2. Average and variance regulation and recognize groups test and control emotion in per and post test

Group	Control group		Test group	
	Per test	Post test	Per test	Post test
Statistics variable	Mean±SD	Mean±SD	Mean±SD	Mean±SD
Positive emotion Regulation	21.86±3.11	24.53±3.5	23.93±4.28	38.93±2.15
negative Emotion regulation	32.4±2.22	32.4±2.09	31.26±2.05	15.93±1.83
Emotion Recognition	13.80±3.o5	15.13±2.55	11.20±3.29	29.80±2.70

33.3% of the subjects were studying at university. In terms of employment, 80% of the subjects in the experimental group were employed and 20% were unemployed. In the control group, 73.3% of subjects was employed and 26.7% of them was unemployed. Table 2 represents the mean and standard deviation scores for the emotion regulation and emotion recognition in pre-test and post-test phases, separately for both experimental and control groups.

The results of Table 3 indicate that the Levine test is not significant. Based on these results, the default homogeneity of variances in the above-mentioned variables in the study groups was confirmed. This test was not significant for any of the variables, therefore, the use of parametric tests are permitted.

Table 4 indicates that the linear combination of variables is significantly different in terms of the group to which they belong. The analysis of univariate covariance was performed to specify a variable based on which there is a difference between two groups and the results are shown in Table 5. Based on Table 5, the results of the univariate covariance analysis indicated that there is a difference between addicts in both control and experimental groups as far as positive approaches of emotion regulation are concerned (p=0.001)

In other words, the EMDR therapy increases the positive approaches of emotion regulation among subjects in the experimental group compared with the control group in the post-test phase. The influence of this treatment intervention on increasing the positive approaches of emotion regulation is 87%. It means that 87% of the remaining total scores of univariate covariance is related to the impact of treatment intervention. Based on Table 5, the results of the univariate variable covariance analysis indicated that there is a significant difference between addicts in both control and experimental groups in terms of negative approaches of emotion regulation (p=0.001).

In other words, the EMDR treatment reduces the negative approaches of emotion regulation among the subjects in experimental group compared with the control group in post-test phase.

The effectiveness of this treatment intervention on reducing the negative approaches of emotion regulation is 94%. It means that 94% of the remaining total scores of one variable variance are related to the impact of the treatment intervention. Based on Table 5, the results of univariate covariance analysis indicated that there is a significant difference between addicts in both control and experimental groups in terms of emotion recognition (p=0.001). In other words, the EMDR therapy increases the emotion recognition among the subjects in experimental group compared with the control group in post-test phase. The influence of this treatment intervention on increasing emotion recognition is 92%. It means that 92% of the remaining total scores of univariable variance are related to the impact of treatment intervention.

Table 3. Result of lovin test for study changale in test and control test

Variable	*F*	*df1*	*df2*	*p*-Value
Positive emotion regulation	1.56	1	28	0.222
Negative emotion regulation	0.415	1	28	0.525
Emotion Recognition	3.127	1	28	0.088

Table 4 . Result of multi variable covariance up to mark's variable

Variable	quantity	*F*	*p*-Value
Pilay's test	0.965	23.642	0.001
Lambeda vilks's test	0.035	23.642	0.001
Hetling's test	27.272	23.642	0.001
The biggest root of the Worng test	27.272	23.642	0.001

Table 5 . Result of different 1 covariance analysis for appointment cure's effective EMDR in regulation and recognize addict's emotion

Indicator/source	*SS*	*df*	*F*	*p*-Value
Positive emotion regulation	1296.50	1	186.03	0.001
Negative emotion regulation	1873.922	1	468.820	0.001
Emotion Recognition	1607.550	1	332.241	0.001

Discussion

This study is conducted with the aim of examining the influence of systematic desensitization therapy and eye movement reprocessing (EMDR) on the emotion recognition and regulation of addicts with a traumatic experience.

The results indicated that the EMDR therapy is effective in increasing the positive approaches of emotion regulation and reducing negative approaches of emotion regulation. In other words, positive approaches of emotion regulation in the experimental group participated in EMDR therapy sessions have significantly increased compared with the control group. This illustrates the effectiveness of this treatment in increasing the emotion regulation in addicts. This result is in line with other researches [23, 27, 34, 35].

It can be stated that people with traumatic experiences turn to drugs to get rid of the emotions associated with these experiences; and the required condition for maintaining the sobriety and preventing the relapse in these patients is provided through the treatment of unresolved traumas that have an essential role in maintaining drug abuse or dependence. The EMDR therapy is realized through replacing the dysfunctional and negative beliefs related to the traumatic experiences with the healthy and positive beliefs.

The aim is quick change of unhealthy patterns of thinking and excessive fear. Also, outflow of emotions and excitements instead of suppressing the emotions and facing with and reconstructing of traumatic events can be effective in improving the relevant disorder [23]. It can be also expressed that the emotion regulation is effective at the onset, continuation and relapse of drug addiction.

In other words, lack of adaptive ways for emotion regulation to cope with the stressful events causes addiction. The results of this research are in line with other research findings [12, 36, 37]. These results suggest that low levels of positive approaches for emotion regulation in adverse drug users is due to inability to effectively cope with and manage the emotions, particularly at the onset of drug abuse [12]. These findings also support the Golman's hypothesis which indicates low level of intelligence and emotion regulation in adverse drug users [37].

Also, another part of the results indicated that the EMDR therapy is effective in increasing the emotion recognition of addicts. In other words, the emotion recognition rates in experimental group participated in the sessions had a significant increase compared with the control group. This result is in line with the research conducted by Marich [25]. It can be expressed that difficulty in recognizing emotions and failure in establishing emotional relationships with others may lead to drug abuse [2]. Also, in most cases, the difficulty in recognizing emotions and failure in establishing emotional relationships with others, that are the main characteristic of emotional disorders, can be lead to drug abuse in people [12].

In a study, it was concluded that adverse drug users have difficulty in identifying emotions in others. They cannot identify positive and negative emotions of others and these people have difficulty in decoding the emotions of others [17]. The emotional processing in people addicted to alcohol and drugs is damaged and these people are in trouble in diagnosis of facial emotional expressions [12]. The results of other research also indicate that addicts are less capable of recognizing the emotion or excitement in others. Based on the results of this study, it can be stated that the problems and shortcomings in the area of excitement can lead individuals to drug abuse.

The main limitation of this study was related to the time which was led to stoppage in doing necessary follow-ups and the evaluation of the stability of results in a standard 6-month follow-up period was not possible. Only one person was engaged as therapist and assessor and this may have affected the results of measurement instruments. In addition, the findings apply only to patients who meet inclusion criteria and cannot be generalized to those different from the subjects of this study as far as the demographic characteristics, patterns and intensity of drug abuse are concerned.

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Authors' Contributions

All authors had equal role in design, work, statistical analysis and manuscript writing.

Conflict of Interest

The authors declare no conflict of interest.

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