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Effectiveness of Eye Movement Desensitization and Reprocessing on Quality of Life in Parents of Children with Cancer

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ABSTRACT

Background: Parents of children with cancer face numerous physical, social and economic problems during the care process. Their family, marital, occupational and social life is negatively affected by the process of caring children with cancer which in turn leads to reduced quality of life. The present study examines the effectiveness of eye movement desensitization and reprocessing (EMDR) on quality of life in parents of children with cancer.
Methods: This is a quasi-experimental study based on pretest-posttest and follow-up design with a control group. Accordingly, 30 mothers of children with cancer were selected based on targeted sampling method and divided into control and experiment groups. Both groups were pre-tested using the quality of life questionnaire (QoL) (SF=36). Then the experiment group was treated for EMDR for 8 sessions while the control group received no treatment. Following, both groups were post tested and collected data were analyzed using one-way ANOVA on SPSS21.
Results: Findings of the study showed that the scores of mothers in experiment group on quality of life increased compared to the control group and maintained at follow-up. The highest increase was on general health, vitality, emotional health, social function while more reduction was on emotional problems of the experiment group ($P< 0.01$).
Conclusion: Regarding the fact that illness of children affects all aspects of parents' life, and also results of the present study indicating the effectiveness of EMDR on increasing the quality of life in parents of children with cancer, it is suggested to consider psychological training and treatment as the top priority for children with cancer to improve the family function.

Keywords: Eye Movement Desensitization and Reprocessing; Quality of Life; Children; Cancer

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INTRODUCTION

Today, advances in medical science and related technology, cancer as a previously deadly and acute disease has become a chronic disease with increased survival rate [1]. From the very beginning of diagnosis, cancer has significant effects on physical, social, psychological and spiritual life of those with cancer and their caregivers [2]. An acute disease of a child can be a crisis for the entire family and affect the family members [3]. Although the improved treatment methods during the last decades has led to increased survival rate among children with cancer, this increased survival may put the children and their family on risk of other health problem such as growth, cognitive and quality issues [4].

Since the caregivers of patients with cancer play an essential role in caring, monitoring and management of symptoms experience by patients, supporting them and following their treatment [5], it is highly important to pay more attention to the mental and psychological health of the caregivers. The consequences of children disease for parents may lead to disruption in everyday life, anxiety, concerns about the recurrence of childhood cancer, fear of loss and child death[6]. Previous studies have reported high percent of mental disorders for parents of children with cancer[7]. One of the appropriate strategies to improve the mental disorders of patients and their family members is to use psychological interventions [8].

During the last decades, various psychological methods have been implemented to improve and treat the mood disorders among patients with cancer and their caregivers including Cognitive-Behavioral Therapy, Existential Cognitive Group Therapy, Religious-based Cognitive Therapy, and Mindfulness-Based Therapy for stress management, all of which have effectiveness [9-12]. Eye movement desentization and reprocessing (EMDR) is a professional and complicated therapy is a complicated and specialized therapy to overcome the effects of emotional shocks and distressing experiences which was first introduced in 1978 by a psychological called Francine Shapiro [13]. EMDR is a new therapy including elements of cognitive behavioral therapy combined with eye movement, hand blow and hearing stimulation [14]. This therapy facilitates the access to and reprocess of traumatic memories in a compatible mood and helps the brain through natural processing of emotional information to get the nervous system rid of past traumas [15].

Findings are reported based on success of EMDR in reducing anxiety and depression [16]. Mogren and Suneetha in a study entitled as "effectiveness of EMDR on anxiety and quality of life in patients with chronic headache" showed that this therapy was effective on improving the quality of life and reducing anxiety of the experiment group [17]. Ghomashchi in a study showed that using EMDR leads to significant reduction of mental anxiety, anxiety and depression and increases trust to positive emotion [18].

Accordingly, the present study examines the effectiveness of EMDR on quality of life in parents of children with cancer.

MATERIALS AND METHODS

This study was a quasi-experimental with pretest-posttest and long-term follow up. Statistical population includes mothers of the cancerous children who referred to Ghods children's hospital in Ghazvin province from March to June 2016 who were selected purposefully. Considering the fact that the minimum sample size in experimental studies is 15 for each group [19] to measure sample size 15 members were recruited for each group.

The criteria for taking part in the study included age range of 20-55, conscious desire for participating in the study, ability to take part in the meetings and doing the assignments, cooperation in completing the tools, at least having the certificate of high school and having proper physical and mental stability. Criteria of exiting from the study included lack of desire for taking part in the meetings and being absent for more than three sessions in the instructions and not doing assignments as well as lack of cooperation in the process of training or psychological treatment which was in the plan of this study.

Before implementing the study, in order to comply with ethical considerations, we made sure about the mothers' satisfaction with taking part in the study through making them aware of the goal of the study and the effect of carrying out such studies in improving their psychological state. They were ensured that the information will remain confidential. Mothers were randomly divided into the case and control groups. Then, the case group was taught the skills of stress management with cognitive-behavioral approach in a group for 8 sessions and the witness group didn't receive any intervention. At the end, both groups were given posttest. The protocol of training sessions of stress management has been presented in table 1.

Tools used in this study include sample demographic sheet and the quality of life questionnaire SF-36.

Sample demographic sheet: It included age, education and marital status. This sample sheet was provided and evaluated by the researchers of this study.

Quality of life Questionnaire SF-36: It is a comprehensive questionnaire to measure quality of life in all health-related issues. It examines eight dimensions of quality of life and 36 items that are completed by the patients or through interview. It is implementable in different age groups and diseases [20]. The reliability and validity of the questionnaire was approved by Weir et al. in 1988. This questionnaire shows patients' perception of their quality of life in eight dimensions and the score is between 0 to 100. Score 100 shows ideal situation and score 0 shows the worst situation in each dimension.

Physical functioning, activity limitations due to the physical problems, physical pain, vitality, general health, mental health, activity limitations due to mental problems and social functioning are the dimensions of this questionnaire. This questionnaire has international

Table 1. Protocol of EMDR Training Sessions.

Session	Subject
1st	**Patients' history:** therapist and client review the basic information about distressful experiences. First, it should be ensured that the client has the ability to comply with high rate of distress. Since patient may get highly emotional in this type of therapy and it would lead to his disruption, then it is required to have patients with personal strength and high tolerance. At this stage, a complete evaluation of medical condition of the patient including inefficient behaviour, features and symptoms is done. Therapist evaluates the client and prepares a treatment plan. Therapist and client determine the subjects for EDMR.
2nd	**Preparation:** at second session, therapist makes sure if the client has the ability to control emotional distress and is at a nearly stable condition. If there is need for more stabilization or other skills, therapy focuses on these issues. Then, the client can use stress reduction techniques if necessary. Although the aim is not using these techniques until the end of session, at this stage therapist teaches some methods to face extreme excitement so that they can face the emotions during treatment sessions. For example, the client is asked to imagine a safe place or a memory which makes him comfortable so that he can relax when facing undesirable emotions. It is explained to the clients that there may be some difficulties during the sessions or at intervals and it should be pointed that they should not expect miraculous results. Relaxation is taught (physical relaxation through pamphlets or training).
3rd	**Evaluation:** at third session, using EDMR, an object is set and followed. At this session, the client has to follow three objectives: a) Asking the patient on his belief about the accidents and physical emotion. He is asked to explain the most unpleasant image of an event and determine it as the specific therapy such as the face of a raper. The baseline should be evaluated first and the patient is asked to think about the unpleasant scences and select the most unpleasant one to imagine and think about. b) A negative belief related to this event should be stated, such as "I cannot overcome this problem", the patient is asked to say his feelings. Personal cognitions can also be examined. The patient's sayings are reviewed. The patient may not be able to explain distressing thoughts and conditions. In this case, the therapist has to select some senetences explaining the patient's condition and asks the patient to select those sentences best describing his condition. After selecting the negative thoughts and schemas, the patient is asked to focus on the scene and the sentence describing the scene. Then he is asked to rate his sadness and discomfort from 0 to 10. c) A prositive self-perception can be replaced the negative one such as "that event is over and I can no start a new life". At this stage, the patient is asked to say his wishes. For example, I am valuable and lovely. I have full control of everything. These sentences should be in present tense. After saying positive sentences, the patient is asked to rate them from 0 to 7.
4th	**Desentization:** the client is asked to imagin an anxious scene and state his feeling about the event and also focus on his physical condition at the same time (anxious scene, sentence explaining the feeling and then physicial condition including muscle tension) and do them simultaneously. He has to focus on the pointing finger of the therapist. Therapist says focus on my finger and as your head is fixed, follow mu finger". If there is nausea, eve movement is stopped and another simulation such as hearing simulation with continuous snaps is used. After moving the hand and eye movement for several times, the patient is aksed about his feeling (the patient is first asked to breath deeply without closing his eyes since there may be trance).
5th	**Practice:** at this stage, the negative senetences are replaced by the positive one. One positive sentence is selected and then eye movement is done. The client is asked to think about the event and sentence and focus on the therpaist's finger. Then after 2 or 3 times, the patient is asked to rate the sentence being true about him from 0 to 7. It is simed to induce positive thoughts in patient's mind. The practice is done when complete desentization is achieved and anxiety or discomort is 0 to 1. Then the practice can be started and finished when the score of 6 or 7 is achieved.
6th	**Evaluation of remaining physical distress:** when the positive schema is practice, the patient is asked to close his eyes and review all his body and wherever he feels tension, he has to do eye reprocessing again to remove the tension and distress. Wherever, the patient feels tension or pain, he has to focus on posistive schemas and do hand movement to remove it.
7th	When there is emotional balance and client can take notes at the time of feeling pain or discomfort, he should be told to take notes about the event so that he would not forget the points to be considered for treatment at next session. At this session, it should be ensured that if the clients feel sever discomfort during the sessions or at intervals, he can protect himself otherwise this would led to more mental disorder and even sucicide since the client may be so disappointed that to be highly risky.
8th	Revaluation: at the beginning of the session, the patient is asked to revaluate the reprocessed objectives, that is, he has to revaluate the reprocessed images and anxiety rate of 0 to 1. It is aimed to make sure that therapy has been effective and results are consistent. If the person is anxious again, reprocessing should be done again.

validity and reliability. It is translated by Institute of Health Sciences in Iran and its international validity and reliability was examined and proved. Chronbach's alpha coefficient of 0.77 to 0.95 was obtained for all aspects of questionnaire except vitality and 0.65 for vitality dimension [21].

Internal similarity of the questionnaire in this study was reported in table 2.

SPSS-21 software is used for data analysis. The analysis was done at both descriptive level including mean, standard deviation, frequency and frequency percent, and inferential level of one-way ANOVA.

RESULTS

As it is shown in table 3, since the chi-square indices for all three dempgraphic variables were smaller than the critical chi-square regarding 5 percent error and 2 degree of freedom (5.991), then the null hypothesis of no significant difference between the observed and expected frequency was approved. Two groups are demographically homogenous.

Table 4 shows the mean and standard deviation of research variables (quality of life) of control and experiment group (desentization with quick eye movement

Table 2. Validity coefficients of the tool of the study [n=30].

Tools	subscale	Number of questions	Internal similarity
Quality of life Questionnaire SF-36	Physical function	10	0.709
	Limitation due to physical condition	4	0.640
	Limitations due to emotional problems	3	0.618
	Fatigue or vitality	4	0.639
	Emotional health	5	0.629
	Social performance	2	0.575
	Pain	2	0.545
	general health	5	0.668
	Total score	36	0.771

Table 3. Comparing demographical variables in the two study groups.

Variable	Classes	Group		df	X^2	Level of Significance
		(EMDR)	control			
Education	Diploma and lower	10	6	2	5.294	0.071
	Academic education	9	5	2	2.143	0.343
Marital status	Divorced	1	2			
	Married	14	13			
Income	Low	2	2	2	0.450	0.799
	Average/ high	13	13			

Table 4. Mean and Standard deviation.

Variable	Component	Take turns	(EMDR)		Control	
			Average	The standard deviation	Average	The standard deviation
Quality of Life	Physical function	Pre test	78.00	10.49	81.67	6.73
		Post test	90.00	8.24	80.33	6.67
		Follow up	87.33	9.98		
	Limitations on the role of health status	Pre test	40.00	24.64	38.33	31.15
		Post test	56.67	14.84	43.33	30.57
		Follow up	50.00	26.73		
	Limitations on the role played by emotional problems	Pre test	20.07	0.70	20.09	09.26
		Post test	31.60	10.41	20.09	09.62
		Follow up	30.40	9.88		
	Fatigue or vitality	Pre test	25.00	10.35	31.33	14.08
		Post test	55.00	10.00	33.00	03.07
		Follow up	47.00	12.65		
	Emotional health	Pre test	33.07	11.06	32.27	10.08
		Post test	54.47	9.85	32.27	10.08
		Follow up	49.20	9.73	38.13	11.20
	Social performance	Pre test	41.67	13.91	43.33	17.59
		Post test	59.17	17.34	45.83	16.14
		Follow up	50.83	19.17		
	the pain	Pre test	46.33	13.75	58.83	23.66
		Post test	80.83	16.28	60.33	22.85
		Follow up	75.00	16.74		
	general health	Pre test	31.33	7.43	37.00	
		Post test	58.00	10.99	42.33	
		Follow up	47.00	10.49		
	Total score	Pre test	39.43	4.91	42.86	8.39
		Post test	60.72	4.64	45.41	10.55
		Follow up	54.60	4.44		

Table 5. Equivalence of variance and covariance (quality of life).

Default	Test	Degree of freedom 1	Degree of freedom 2	F	Significance level
The same covariance	Box	72	4915.074	1.401	0.210
The same variance					
Physical function	Levene	2	42	3.174	0.51
Limitation physical condition	Levene	2	42	2.699	0.105
Limitations emotional problems	Levene	2	42	2.337	0.133
Fatigue or vitality	Levene	2	42	1.128	0.336
Emotional health	Levene	2	42	1.496	0.613
Social performance	Levene	2	42	1.989	0.150
Pain	Levene	2	42	2.081	0.138
General health	Levene	2	42	2.793	0.073

and control) and three tests (pre-test, posttest and follow-up). Since the significance level of komologroph-Smirnov index of three research variables were measured at three tests and were more than 0.05 at both groups and so the research variable distribution was normal with 95 percent confidence level.

In order to test the hypothesis of "effectiveness of EMDR on quality of life in parents of children with cancer" one-way ANOVA was used for differential socres (pre-test and posttest score) of quality of life and multi-variate variance was used for differential socres of eight components. Given the rejection of equivalence of the slope of regressions in the analysis of covariance for total quality of life score ($P < 0.01$, $F = 896/7$) and also for the components of the constraints of playing the role due to physical condition ($F = 258.6$, $P < 0.01$), fatigue or vitality ($F = 7.006$, $P < 0.01$), pain ($P > 0.01$, $F = 14/193$), and general health ($P < 0.05$, $F = 6.501$); as well as the absence of linear relationship between pre-test and post-test scores in covariance analysis for physical function components ($F = 496 / 0.05$, $P < 0.05$), limitations of role playing due to emotional problems ($F = 0.028$, $P > 0.05$), and general health ($P < 0.05$, $F = 0.874$) differential scores have been used instead of analyzing covariance. Since the calculated F (73.34) was bigger than 0.01 with degree of freedom of 2 and 42 (5.15), the null hypothesis of equivalence of variance is rejected with 99 percent confidence ($\eta^2 = 0.777$). In other words, about 78 percent of changes in quality of life are determined by training/therapy.

CONCLUSION

Regarding the aim of the study to examine the effectiveness of EMDR on quality of life in parents of children with cancer, results of one-way ANOVA shoed that EMDR was significantly effective on quality of life in parents of children with cancer. Results of the study showed that the quality of life in parents of children with cancer was low at mental aspect compared to other aspects [22].

Improving the mental health is defined using various terms such as balance between positive and negative emotions and quality of life [23]. Quality of life is a multi-dimensioanl concept which is defined as perceprion of every person about life, values, objectives, standards and personal interests by WHO. Sense of security, emotional conflicts, personal beliefs, goals, and failure of tolerance affects coordinated perception (pleasant or unpleasant feeling[24]. Regarding cognitive-behavioral treatment and improving the quality of life, the results of the study are in line with the study of Carlson et al [25]. Desentization with quick eye movement through self-regulation affects the emotional and sensual factors.

According to the findings, reducing activities, specifically those reinforced socially are valuable for children with cancer and their parents. Cancer can lead to more social isolation, reduced self-efficiacy, increased anxiety and depression and feeling disable and also reduced quality of life. Quality of life is significantly related to stress and depression and so it is expected to create positive changes in some psychological functions such as reduced stress, inproved well-being and mental health and so quality of life among parents of children with cancer. Some positive results of the study were higher quality of life, reduced stress and increased body strenghth against diseases [26].

It is suggested that the future studies implement placebo treatment to control the effect of expectation on control group. Further, it is suggested to use bigger sample to measure the exact effect of therapy. Present study was done on patients of one center, so it is suggested to examine the same therapy on patients of other hospitals.

DECLARATION

The present article is based on a Ph.D. thesis of Health Psychology.

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