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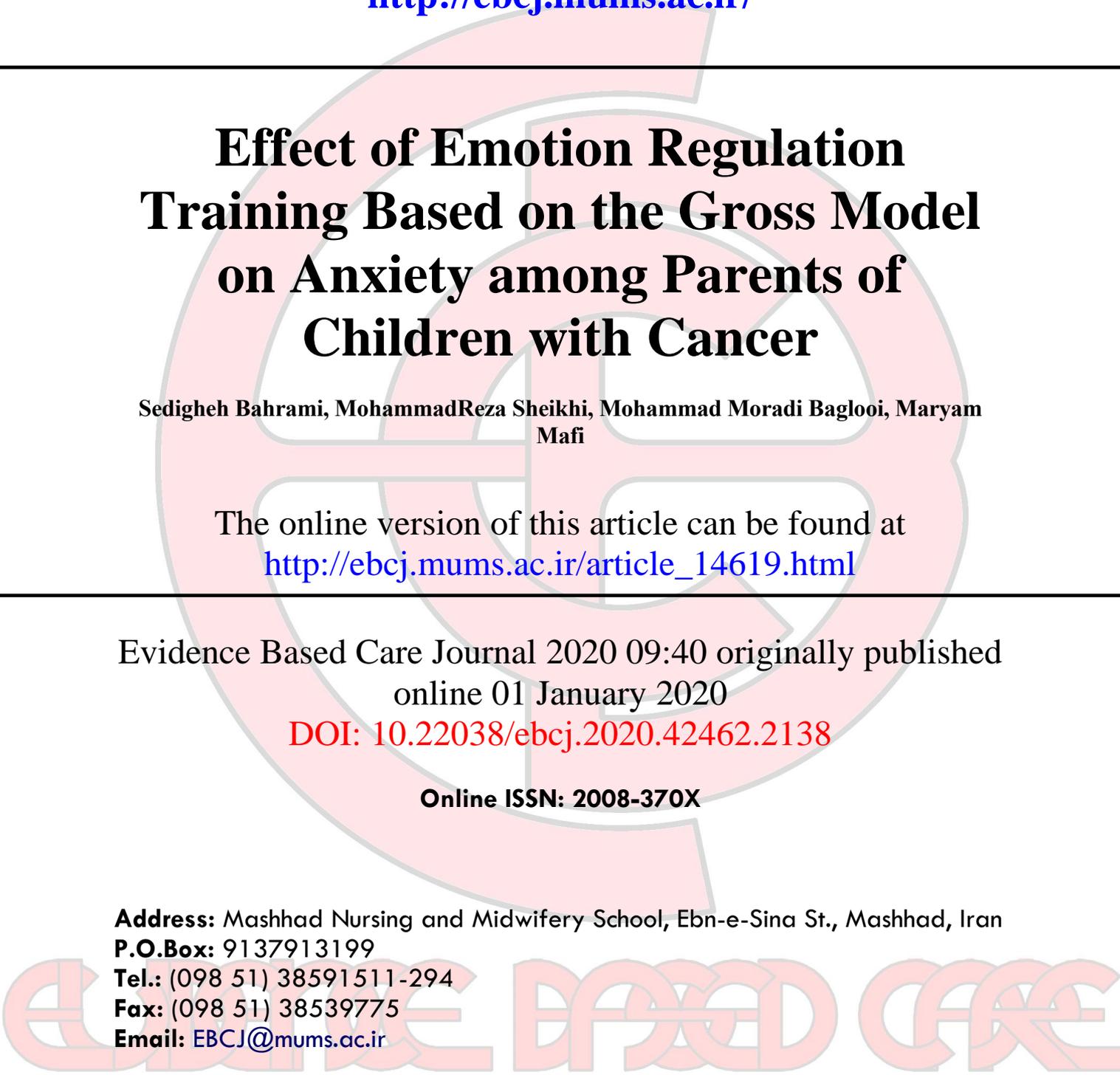
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Effect of Emotion Regulation Training Based on the Gross Model on Anxiety among Parents of Children with Cancer

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Abstract

Background: Parents of children with cancer experience intense anxiety.

Aim: This study aimed to evaluate the impact of emotion regulation training based on the Gross model on anxiety among the parents of children with cancer.

Method: This randomized controlled clinical trial was conducted on 60 parents of children with cancer admitted to a 130-bed pediatric hospital in Western Iran in 2018. Anxiety level was assessed pre- and post-intervention using the Beck Anxiety Inventory. The individuals of the test group attended emotion regulation training based on the Gross model, while the participants in the control group received routine training. The data were analyzed by the SPSS software version 23 using the repeated measures analysis of variance (ANOVA) and independent t-test.

Results: Our findings demonstrated that the mean age of participants was 32.5 ± 5.09 and 32.26 ± 4.9 years in the intervention and control groups, respectively. Total anxiety scores of the intervention and control groups pre-intervention were obtained as 33.9 ± 7.1 and 34.3 ± 7.4 , respectively. This score changed to 19.2 ± 1.47 in the test group and 33.73 ± 1.36 in the control group immediately post-intervention. Moreover, three months post-intervention, the scores of 22.17 ± 5.8 and 34.03 ± 6.96 were observed in the control and intervention groups, respectively. The repeated measures ANOVA revealed a significant difference between the two groups in terms of the effect of the intervention ($P < 0.001$).

Implications for Practice: Emotion regulation training based on the Gross model could decrease anxiety levels in the parents of children with cancer. Therefore, it is recommended to be applied by caregivers for this group of people.

Keywords: Anxiety, Cancer, Emotion regulation training

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Introduction

Taking care of a child with cancer can be profoundly distressing and parents of these children experience high levels of anxiety (1, 3). However, very few prospective studies have evaluated parent anxiety in these families (2). Earlier findings showed that anxiety was often even higher in the parents of children with cancer than in children and adult cancer patients themselves (4). Sharp et al. (2015) reported that the prevalence of anxiety and depression among the parents of children with cancer was higher than the parents of healthy children (5). Therefore, cancer seems to be a family disease rather than a disease that only affects patients (6). As noted in the literature, it is important to know the psychological needs of parents, as well as the sick child (7).

According to the findings of the previous studies, parents who suffer emotional problems had serious difficulty in adapting to childhood cancer (8). Emotional problems and its manifestations, such as anxiety and depressive symptoms had adverse effects on the health of parents. As a result, parents less likely could use effective coping strategies to deal with the normal activities of family and may experience a feeling of inadequacy in meeting the disease-related needs of children (9).

Depression, anxiety, and other emotional problems in marital relationships are highly prevalent among the parents of children with cancer. In addition, these issues might affect the performance of these people in diverse features, including individual, familial, occupational, and social aspects. Therefore, some researchers investigated the factors related to these conditions and problems (10).

Gross presented the process model of emotion regulation based on a modal model of the emotion generation process. The ability to cope with emotions enables people to identify emotions in themselves and others, perceive how emotions influence behaviors and show an appropriate response to these behaviors. An improvement in emotion regulation strategies may aid the person to confront stressful situations and anxiety effectively (11).

It is believed in emotion regulation training based on the Gross model that people can solve the main causes of emotional problems on their own, in case they learn positive and effective emotion regulation strategies, use them voluntarily, and practice and review them once in a while (12). This crucial point is the foundation of teaching emotion regulation skills based on the Gross model. It seems that depressed or anxious patients, as well as those who experience intense involuntary arousal of anger, fear, and concern can, at first, deliberately and, at last, automatically control their emotions. This is the purpose that therapists have pursued from the beginning (13).

It is of importance to take into consideration the parents of patients with cancer. Research has reported a high prevalence of mental disorders among these people (5). The findings of previous studies suggested that addressing parental emotion regulation in the interventions may reduce negative emotions, such as depression, anxiety, and stress (3).

There is no considerable research regarding the effect of training on emotion regulation for overcoming anxiety in parents of children with cancer (8). Understanding anxiety and contributing factors among the parents of children with cancer have the potential to enable clinicians to identify the high-risk families and optimize the outcomes. Therefore, the present study aimed to determine the impact of emotion regulation training based on the Gross model on anxiety among the parents of children with cancer.

Methods

This randomized controlled clinical trial with the pretest-posttest design was conducted on two groups of control and intervention. The study population consisted of all the caregivers of children with cancer who referred to Qods Children's Hospital in Qazvin, Iran during October-December 2018. In the previous studies (14), the mean values of anxiety were reported as 1.19 ± 0.51 and 0.73 ± 0.35 in the control and intervention groups, respectively.

The sample size was calculated using the G*Power software to detect a difference of at least 0.46 scores in anxiety between the two groups. The minimum sample size based on the mentioned information, 5% type I error, and 90% power was obtained as 23 patients in each group. Moreover, considering a 30% drop out the final sample size was 30 participants in each group.

The inclusion criteria entailed a willingness to participate in the study, being able to take part in the training sessions, collaborating on doing assignments, being in the age range of 20-55 years, having at least a junior high school diploma, and having an appropriate physical and psychological stability and balance. The exclusion criteria encompassed being unwilling to attend the training sessions, being absent

Table 1. Training sessions for emotion regulation training based on Gross model

Session	Title
The first session	<p>Introducing the participants to each other, inviting them to discuss their intentions for taking part in these sessions, and talking about the main causes and prevalence rate of cancer</p> <p>Objectives:</p> <ol style="list-style-type: none"> 1.To get to know other participants and communicate with the leader of the group (the counselor) 2.To explain the major and minor objectives of the group and talk about the personal and collective goals 3.To state the logic and different stages of the intervention 4.To discuss the framework and rules of this group
The second session	<p>Choosing a position</p> <p>Objective: To provide emotional training:</p> <ol style="list-style-type: none"> 1. Identifying arousing emotions and situations by teaching the differences in the function of a variety of emotions 2. Talking about various aspects of emotions and discussing the short- and long-term effects of emotions
The third session	<p>Choosing a position</p> <p>Objective: To assess the level of vulnerability and emotional skills of the subjects:</p> <ol style="list-style-type: none"> 1. Discussing the effect of emotions on the process of human adaptation 2. Talking about the role of emotions in establishing relationships with others and influencing them 3. Explaining the methods of organizing and stimulating human behaviors by giving some real-life examples
The fourth session	<p>Modify the position</p> <p>Objective: To change the arousing position:</p> <ol style="list-style-type: none"> 1. Avoiding social isolation and avoidance 2. Teaching problem-solving strategies 3. Teaching interpersonal skills, such as having a conversation, self-expression, and conflict resolution
The fifth session	<p>Expanding the attention</p> <p>Objective: To change the attention:</p> <ol style="list-style-type: none"> 1. Halting the ruminations and concerns 2. Teaching the methods of paying attention
The sixth session	<p>Carrying out the cognitive assessment</p> <p>Objective: To change the cognitive assessments:</p> <ol style="list-style-type: none"> 1. Identifying misconceptions and their effects on emotional modes 2. Teaching the reassessment strategy
The seventh session	<p>Adjusting responses to the goal</p> <p>Objective: To Modify the behavioral and physiological effects of emotions:</p> <ol style="list-style-type: none"> 1. Identifying the extent and method of using the inhabitation strategy and examining the emotional consequences 2. Talking about exposure 3. Teaching the methods of expressing emotions 4. Modifying behaviors by changing the environmental reinforcements 5. Teaching catharsis, relaxation, and inverse action
The eighth Session	<p>Evaluating and applying the purpose</p> <p>Objective: To reevaluate and remove the barriers</p> <ol style="list-style-type: none"> 1. Assessing whether the subjects achieved their individual and collective goals 2. Using the skills learned in natural real-life environments 3. Examining and removing the barriers for completing homework

in more than three sessions, not being able to attend the training sessions, not completing the assignments and receiving any kind of psychological training or treatment that was not a part of this study.

Among the statistical population, a list of children with cancer who had been admitted to Qods Children's Hospital in Qazvin since May 2018 was prepared and a code was assigned to each medical record. Accordingly, number 1 was assigned to the caregiver of the first child with cancer who had been admitted to the hospital in 2018. Next, the numbers were written on papers of the same shape and size and were placed in a box.

Following mixing well, 60 numbers were selected randomly out of the caregivers of patients and were divided into two groups of 30 participants as intervention and control using randomized quadripartite blocks. Afterwards, basic information about the study was provided on the phone and people entered the study based on willingness and eligibility.

The data collection instrument composed of two parts, the first of which was for collecting the demographic characteristics of parents, including age, gender, education, and occupation. In addition, the second part was the Beck Anxiety Inventory (BAI), which consisted of 21 items covering common anxiety symptoms. Participants responded by rating their condition as 0, 1, 2, and 3 for not at all, mild, moderate, and severe. Therefore, the final score laid in the range of 0-63 (15).

The validity and reliability of this scale were studied in a previous investigation. The results of this study showed that the Persian version of BAI the final version of the questionnaires was tested for reliability in a pilot study involving twenty parents of children with cancer. Cronbach's alpha coefficient values for anxiety subscale were 0.76 respectively.

Salehi et al. (2012) performed a study on 30 parents and the intervention group received eight 90-min sessions weekly, which included a lecture and group discussion in a training room with the researcher and a psychiatric nurse as a collaborator. At the end of each session, parents were given assignments to perform at home and bring in the next meeting to be discussed. The training content was based on the Gross Model-Based Emotion Regulation Strategies Training (17) and the training sessions were held by a psychiatric nurse and co-researcher (Table1).

Prior to data collection, the study proposal was approved by the Regional Ethics Committee of Qazvin University of Medical Sciences. Next, researchers referred to the hospitalization ward of the pediatric cancer center, identified parents who met the inclusion criteria, and invited all eligible subjects to participate in the study. After presenting with the basic information, willing parents were asked to fill the questionnaires or participate in a private interview for data collection. In order to follow the ethical consideration, all samples who participated in the study signed informed consent.

The normal distribution of quantitative variables was first assessed using the Kolmogorov-Smirnov test. In order to test the research hypotheses, the independent t-test was utilized for the intergroup comparison of quantitative variables with normal distribution and the Chi-square test was applied for qualitative variables. Moreover, the repeated measures analysis of variance (ANOVA) was used to compare the changes between groups. All the data were analyzed by the SPSS software version 23 and $P < 0.05$ was considered statistically significant.

Results

Our findings indicated that the mean age of the participating parents was 32.5 ± 5.9 and 32.2 ± 4.9 years in the intervention and control groups, respectively. In addition, the mean age of children in this study was reported as 7.7 ± 3.4 years in the test group and 7.8 ± 3.8 years in the control group. There were no statistically significant differences between the intervention and control groups regarding demographic variables, namely age, gender, education level, and marital status. It should be noted that the two groups were homogeneous in this regard (Table 2).

Mean anxiety score before the intervention was found as 33.9 ± 7.15 and 34.3 ± 7.47 in the test and control groups, respectively. In this regard, the results of the independent t-test showed no significant difference ($P=0.83$). Moreover, the mean of anxiety score post-intervention was 19.2 ± 5.48 and 33.73 ± 6.84 in the case and control groups, respectively. On one, two, and three months follow-ups after the intervention, the mean values of anxiety were reported as 21.57 ± 5.74 , 19.13 ± 5.92 , and 22.17 ± 5.8 for the intervention group. The corresponding scores were observed to be 33.07 ± 6.43 , 33.5 ± 6.95 , and 34.03 ± 6.96 in the control group.

The changes between groups were compared using the repeated measures ANOVA and the interaction

Table 2. Demographic characteristics of participants in the intervention and control groups

		Group		P-value*
		Intervention	Control	
Age of parents (mean±SD)		32.5±5.9	32.2±4.9	0.59
Age of child (mean±SD)		7.7±3.4	7.8±3.8	0.93
Age of the child at the time of diagnosis (year) (mean±SD)		5.5±3.2	6.01±3.5	0.57
Duration of being diagnosed with the disease and the initiation of treatment (year) (mean±SD)		1.8±1.05	1.7±1.1	0.9
Duration of being diagnosed with the disease and the initiation of treatment (year) (mean±SD)		2.2±1.9	2.3±2.6	0.78
		n (%)	n (%)	P#
Level of education	Elementary school	5 (50)	5 (50)	0.947
	Middle school	11 (55)	9 (42.9)	
	High school	4 (57.1)	3 (42.9)	
	Diploma	6 (50)	6 (50)	
	Associate degree	2 (66.7)	2 (66.7)	
	Bachelor's degree	2 (66.7)	5 (62.5)	
Family	Spouse and children	28 (50.9)	27 (49.1)	0.99
	Only children	0	1 (100)	
	Living with relatives	2 (50)	2 (50)	
Marital status	Married	29 (49.2)	30 (50.8)	0.313
	Divorced	1 (100)	0	
Gender of the child	Girl	8 (47.1)	9 (52.9)	0.774
	Boy	22 (51.2)	21 (48.8)	
Type of cancer	ALL	15 (54.5)	18 (54.5)	0.978
	AML	3 (50)	3 (50)	
	Lymphoma	1 (50)	1 (50)	
	Brain tumor	2 (50)	2 (50)	
	Sarcoma	2 (66.7)	1 (33.3)	
	Wilms tumor	3 (50)	3 (50)	
	Neuroblastoma	3 (75)	1 (25)	
	Hodgkin lymphoma	1 (50)	1 (50)	
Type of treatment	Chemotherapy	20 (51.3)	19 (48.7)	0.959
	Chemotherapy and surgery	8 (47.1)	9 (52.9)	
	Chemotherapy, surgery, and radiology	2 (50)	2 (50)	

Chi-square test # Independent t-test*

Table 3. Means of anxiety score in the two groups pre- and post-intervention in the intervention and control groups

Anxiety	Group		P-value#
	Intervention mean±SD	Control mean±SD	
pre-intervention	33.9±7.15	34.3±7.47	0.83
post-intervention	19.2±5.48	33.73±6.84	<0.001
One month post-intervention	21.57±5.74	33.07±6.43	<0.001
Two months post-intervention	19.13±5.92	33.5±6.95	<0.001
Three months post-intervention	22.17±5.8	34.03±6.96	<0.001
P-value*	0.001	0.098	

Independent t-test = # Repeated measure ANOVA = *

between time and group was revealed as significant. Consequently, the groups were compared in each time point. Furthermore, the trend of changes in each group was evaluated separately (Figure 1). Results of the repeated measures ANOVA showed significant changes in the mean anxiety scores of the intervention group pre-intervention, post-intervention, and in follow-up (P=0.001). On the other hand, no significant change was observed in the mean scores of the control group (P=0.098) (Table 3 , figure 1).

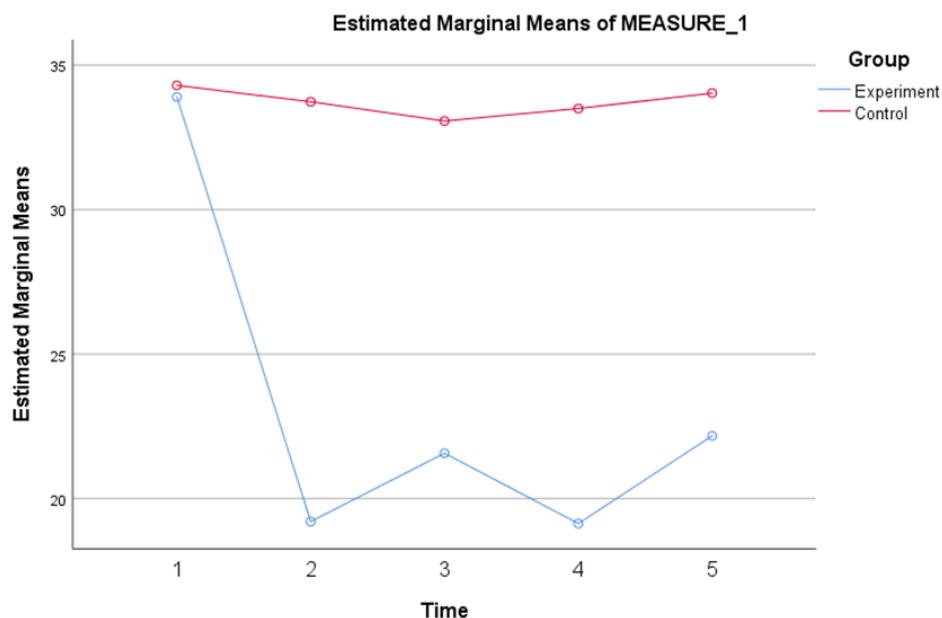


Figure 1. Trend of changes in the anxiety scores obtained in the five stages of measurement, including the pretest, posttest, and follow-ups

Discussion

Results of the present study demonstrated that emotion regulation training based on the Gross model can reduce anxiety among the caregivers of children with cancer. According to our findings, the levels of anxiety in the intervention group were significantly lower than the control group in the follow-up stages regarded as a posttest.

The latter findings are consistent with the results of a study conducted by Garnefski et al. (2009). These authors examined the effects of emotion regulation training based on the Gross model on the caregivers of cancer patients and Japanese AIDS patients. The mentioned training significantly improved emotional disorders, such as anxiety, hospital depression, trauma-associated psychological symptoms, and the quality of life (QOL) in the patients (18). Reyhani et al. (2016) recommended implementing emotion regulation training as a part of the prenatal care program in healthcare centers (19).

Kedde et al. (2013) carried out a study concerning the influence of training emotion regulation strategies on the mental status and QOL of patients with metastatic breast cancer. They reported this psychological intervention to be effective in enhancing the status of disorders associated with disease and contributed to QOL improvement among the patients with metastatic breast cancer (20).

Similar results were found in another investigation performed by Salehi et al. Mentioned authors compared the efficacy of training emotion regulation strategies based on the Gross model with dialectical behavior therapy in diminishing the symptoms of emotional problems among the students of Isfahan University. Their results demonstrated that emotion regulation training based on the Gross model had a significant impact on reducing the symptoms of emotional problems in students (14).

The experience of stressful events in life, such as having a child suffering from a disease, leads to negative emotions, including anger, anxiety, and depression. Concerning the effect of stress on the immune system (according to the stress-vulnerability hypothesis), these parents are prone to diseases with psychological origins and physiological effects. Furthermore, they are more likely to apply improper strategies for expressing emotions (21). Another explanation is that the inability to regulate emotions leads to the emotions overcoming logic, which can have negative consequences, including depression and anxiety.

Dealing with several factors, such as extreme irritability to external events, enduring cures for cancer patients (i.e., chemotherapy and radiotherapy), and vague future result in depression and anxiety among these parents (22). Emotion regulation strategies moderate interpersonal relationships and psychological disorders, such as anxiety, depression, and concerns. These strategies act as mediating agents between the two (23). These practices promote interpersonal relationships, while reducing

mental and physical disorders.

On the other hand, emotion regulation (cognitive variable) as a process of emotional change affects cognitive variables. As a result, it is said that receiving emotion regulation training can influence the attitude and behaviors of people toward their body and environment. Parents of children with cancer experience ineffective emotion regulation strategies and are less aware of their emotions, compared to the parents of healthy children. Therefore, the use of these ineffective strategies, in the long run, has the irreparable risks of developing and worsening mental diseases (24).

Individual differences regarding the ability to learn emotion regulation based on the Gross model, mental status, culture, and education level could be noted as limitations for the parents and the researcher.

Implications for Practice

The results of this study revealed that emotion regulation training based on the Gross model could have a positive impact on the caregivers of children with cancer. We observed that the implementation of emotion regulation training can reduce anxiety in these parents. This outcome is of value in the care plans for parents at hospital or home. It can be concluded from these results that emotion regulation training based on the Gross model in the parents of children with cancer who suffer from the high levels of anxiety can improve their condition and reduce their anxiety.

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Conflicts of Interest

No conflicts of interest were declared for the present investigation.

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