

Original Article

# Effectiveness of positive thinking training on anxiety, depression and quality of life of mothers of children with leukemia

Hoda Esmaeili Douki<sup>1</sup>, Forouzan Elyasi<sup>2</sup>, Ramezan Hasanzadeh<sup>1</sup>

<sup>1</sup>Department of Psychology, Faculty of Humanities Sciences, Islamic Azad University Sari Branch, <sup>2</sup>Department of Psychiatry, Sexual and Reproductive Health Research Center, Psychiatry and Behavioral Sciences Research Center, Addiction Institute, School of Medicine, Mazandaran University of Medical Sciences, Sari, Iran

## Abstract

**Context:** Leukemia is the most common pediatric cancer. Diagnosis and treatment of childhood cancer may have adverse psychological effects on children and their families.

**Aim:** We examined the effectiveness of positive thinking education on anxiety, depression, and quality of life of mothers of children with leukemia.

**Settings and Design:** This randomized control trial has been conducted during August-September 2017, on 30 mothers of children with leukemia who randomly allocated into two groups using 30 random numbers produced by computer software and assigned to intervention ( $n = 15$ ) and control ( $n = 15$ ) groups.

**Materials and Methods:** Data collection tools included depression, anxiety, stress scale-21, and MOS 36-Item Short-Form Health Survey quality of life questionnaire.

**Statistical Analysis Used:** The normality of data distribution examined using the Kolmogorov-Smirnov test. Then, data were analyzed using descriptive methods (mean, frequency, and percentage), Chi-square, and independent  $t$ -test.

**Results:** There were no statistically significant differences between the study groups in depression, anxiety, and quality of life variable at baseline ( $P > 0.05$ ). However after the intervention, results showed significant differences between the study groups in all the three variables in posttest compared to the pretest. The mean scores of depression and anxiety respected, in the intervention group were significantly lower than the control group ( $P < 0.001$ ) and ( $P < 0.004$ ). Furthermore, significant differences were found between the study groups in quality of life score ( $P < 0.05$ ).

**Conclusion:** Positive thinking training reduced anxiety and depression and increased the quality of life of mothers of children with leukemia.

**Keywords:** Anxiety, Children, Depression, Leukemia, Mother, Positive thinking, Quality of life

**Address for correspondence:** Dr. Forouzan Elyasi, Consultation-Liaison Psychiatry Ward, Imam Khomeini General Hospital, Razi Ave., Sari, Mazandaran, IR Iran.

E-mail: [forouzan.el@gmail.com](mailto:forouzan.el@gmail.com), [F.elyasi@mazums.ac.ir](mailto:F.elyasi@mazums.ac.ir)

**Received:** 29 October 2018; **Accepted:** 27 January 2019; **Published:** 01 April 2019.

Access this article online	
Quick Response Code:	Website: <a href="http://www.jnmsjournal.org">www.jnmsjournal.org</a>
	DOI: 10.4103/JNMS.JNMS_33_18

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**How to cite this article:** Esmaeili Douki H, Elyasi F, Hasanzadeh R. Effectiveness of positive thinking training on anxiety, depression and quality of life of mothers of children with leukemia. *J Nurs Midwifery Sci* 2019;6:21-6.

## INTRODUCTION

Cancer is the second leading cause of death in children between the age group of 1 and 14 years old<sup>[1]</sup> and its most common type is leukemia.<sup>[2,3]</sup> Leukemia accounts for about 30% of all cancers in children under the age of 15 years old.<sup>[4]</sup> A recent study it was reported the most common cancer among children in Iran are the hematology system, brain and central nervous system, and lymph nodes.<sup>[5]</sup> The childhood leukemia is one of the most prevalent malignancies (30.5%).<sup>[6]</sup>

Despite medical advances, the development of cancer treatments and an increase in the number of cancer survivors, the disease is still unique in terms of helplessness and deep fear in the individual.<sup>[7]</sup> The threat of mental health is one of the most common examples of psychological disorders for parents, especially mothers and children with cancer. Hence that, the family caregivers are described as hidden patients.<sup>[8,9]</sup> Results of the present study showed having a child with cancer greatly affects the mother's social and work lives as well as emotional well-being.<sup>[10,11]</sup> Hence that, in a study it reported, (77%) of mothers and (42%) of fathers have depression symptoms.<sup>[11]</sup> From the psychiatric point of view, pharmacological therapies have been considered as first-line treatments for mental disorders.<sup>[12]</sup> However, antidepressant side effects can counteract the beneficial impact of antidepressants by reducing patient well-being and functioning and can decrease adherence to antidepressant treatment.<sup>[13,14]</sup> In addition, some patients choose nonpharmacological treatments to reduce stress.<sup>[15]</sup> One of the ways to cope with stress, anxiety, and depression is to think positively.<sup>[16]</sup> Positive psychology interventions (PPIs) are "treatment methods or intentional activities aimed at cultivating positive feelings, positive behaviors, or positive cognitions."<sup>[17]</sup> In a study, it reported that positive psychology, focusing on positive emotions, characteristics, and situations, is a good tool for a good life. In addition, this intervention increased psychological well-being<sup>[18]</sup> and later a telephone-based positive think intervention among patients with bipolar depression have shown. Feasibility and potentially effective at improving positive psychological outcomes<sup>[19]</sup> Similarly in a study in Iran, it was reported that positive intervention has been effective in increasing mental well-being, hope, life satisfaction and meaning of life.<sup>[20]</sup> Nonetheless, few randomized controlled trials in positive thinking training have been conducted, and there are conflicting results. In this line, compared with positive psychology, the cognition-focused intervention was associated with

significantly greater improvements in hopelessness at 6 weeks and improvements in depression, suicidal ideation, optimism, and gratitude at 6 and 12 weeks.<sup>[21]</sup> Moreover, there were no significant differences

Between intervention and control groups in the efficacy of an optimism positive thinking skills program on children in regard to anxiety or depression.<sup>[22]</sup> These findings provide support for future research using randomized control trial design to measure the impact of a positive thinking training intervention on caregivers' depression.<sup>[23]</sup> Hence, the purpose of this study was to determine the effectiveness of positive thinking training on anxiety, depression, and quality of life of mothers of children with leukemia

## MATERIAL AND METHODS

The present randomized controlled trial aimed to evaluate the effect of positive thinking training as compared to usual treatment, on mothers of children with leukemia referred to the Oncology Unit of Bou-Ali Sina Hospital in Sari in August 2017. This center is located in Mazandaran in northern Iran. This study was approved by Research Center in Azad University and an ethical consensus was received from the Ethics Committee under the Research Deputy of Azad University (IR.IAU.SARI.REC.1396.78) which is fully compliant with the Helsinki Declaration of 2008. The participants were randomly allocated to two groups using 30 random numbers produced by computer software and assigned to intervention ( $n = 15$ ) and control ( $n = 15$ ) groups. The statistical study population consisted of all mothers hospitalized leukemic children. The sampling method is convenience. To determine the sample size, according to previous studies,<sup>[24]</sup> and considering the  $\alpha = 5\%$ , test power of 80%, and probably 20% sample loss, 30 mother of children with leukemia were selected (15 in each group).

Eligibility criteria included the ability to speak fluency in Farsi, Resident of Mazandaran province, willingness to participate and provide written consent, meeting the depression, anxiety, stress scale (DASS-21) questionnaire for depression and anxiety.<sup>[25]</sup> Mothers were excluded if their child was in medical crisis as determined by the oncologist and a history of psychiatric disorders such as schizophrenia, bipolar disorder, and serious suicidal thoughts confirmed by clinical interviews, performed by a trained nurse based on the Diagnostic and Statistical Manual-IV.

The tools used in this study included as follows: (1) demographic questionnaire (2) DASS questionnaire

and (3) The MOS 36-Item Short-Form Health Survey (SF-36).

Demographic information questionnaire included 12 questions (age, marital status, occupation, educational level, social support status, place of residence, number of children, history of psychiatric disorders, and history of using psychiatric drugs) for the mother and (other underlying diseases, cancer in other organs or other physical diseases, and history of another surgery) for the child.

DASS questionnaire includes 21 items that were designed by Lovibond in 1995 to measure psychological constructs of depression, anxiety, and stress. In this study, anxiety and depression subscale of (DASS) were used. Acceptable estimates of reliability were obtained for the scale as a whole via internal consistency and test re-test reliability. Cranach's Alpha for depression and anxiety were 0.85 and 0.85, respectively. As well, test-retest reliability coefficients were 0.77 and 0.89 for depression and anxiety, respectively.<sup>[25]</sup>

In the study on the Iranian population, the reliability and validity coefficients obtained. The reliability of this scale was investigated through internal consistency, validity using statistical analysis, and criterion validity were determined by concurrently using the Beck depression inventory (BDI), Zung self-rating anxiety scale (SAS). The correlation between the subscale of depression of the DASS-21 and BDI was 0.70, subscale of the anxiety of DASS-21 and SAS was 0.67.<sup>[26]</sup> Each of the subscales of depression and anxiety consists of 7 questions, which gives the final score of each one through the total score of the questions related to it. Scoring was based on a 4-point Likert scale. Each question is scored from zero (it does not apply to me at all) to 3 (totally is applied to me). The range of answers varies from "never" to "always," so that individuals can define their answers as one of the options in front of the question. Scoring is from "zero" to "three" as "never," "often," "sometimes," and "always," and the score 0 for "never" option, 1 for "often," 2 for "sometimes," and 3 for "always."<sup>[25]</sup>

The MOS SF-36 consists of 36 items that are mainly used to study quality of life and health made by Ware and Sherbourne. It has 36 expressions and eight fields of physical function, physical role, emotional role, vitality, mental health, social performance, physical pain, and general health.

The subject's score in each of these fields varies from 0 to 100, and higher scores show a better quality of life.

The validity and reliability of this questionnaire have been confirmed in the Iranian population and internal consistency coefficients of eight subscales are between 0.70 and 0.85, and their test-retest coefficients with a 1-week interval are between 0.43% and 0.79%.<sup>[27]</sup>

First, the pretest was conducted for both groups, and then the researcher provided intervention in the form of eight sessions for the experimental group. Both control and experimental groups were tested before and after the training intervention

Positive thinking therapeutic package provided some cognitive and behavioral skills according to positive thinking and applied positivism by Susan Quilliam translated by BaratiSadeh and Sadeghi and was used in studies in Iran.<sup>[28]</sup>

All eight training sessions were held in the hospital's classroom on 1-h weekly sessions.

#### Description of training sessions

- Session 1: An explanation of how to do a task, the reason for choosing these mothers, getting acquainted with the concept of positive thinking, familiarity with the group, and rules of sessions
- Session 2: Understanding how to shape thinking and attitudes
- Session 3: Familiarity with negative thought and ways to adjust it, positive thinking and its effect on individuals' health and life
- Session 4: Training being positive by challenging negative thoughts, changing mental images, using constructive language, and revising beliefs
- Session 5: Training being positive by institutionalizing positive thinking strategies in life, continuing to practice positive thoughts, and positive thinking opportunities through coping with problems
- Session 6: Being positive in life through a positive relationship, teaching mothers about health as a prerequisite for positivism, establishing good relationships with others, and loving oneself with heart
- Session 7: Being positive by teaching how to stop thinking, relaxing, and changing attitudes, including commitment, suppression, and struggle
- Session 8: Talking about the ways to bring more laughter into our life, creating confidence, and a healthy fitness habit.

Posttest was conducted immediately after eight session's intervention. Written informed consent was obtained from

each participant. Participants were voluntary and were informed that they can withdraw their consent to participate at any time. The positive thinking training therapists had passed the relevant courses, had the experience in this regard. All the procedures were approved by the Ethics Committee under the Research Deputy of Azad University. The obtained scores were analyzed by software SPSS version 20 using descriptive statistics (mean, frequency, and percentage), Kolmogorov–Smirnov test, Chi-square, and independent *t*-test. Kolmogorov–Smirnov test to assess the normal distribution of quantitative variables, Chi-square test was used to match the demographic characteristics of study groups and *t*-tests are used to compare groups.

## RESULTS

Demographic characteristics of participants are given in Table 1. There were no significant differences between the groups in terms of demographic features.

The results showed that there was no significant difference between positive thinking training group and control group before the intervention in anxiety and depression mean scores ( $P = 0.58$ ) and ( $P = 0.87$ ), respectively. However after intervention, there was a statistically significant difference between the two groups in anxiety and depression mean scores ( $P = 0.041$ ) and ( $P = 0.008$ ), respectively [Table 2].

The results showed that there was no significant difference between the two groups before the intervention in all domain of quality of life except physical role (0.01). After intervention, there were significant improvements ( $P = 0.001$ ) in global quality of life and in the other domains of quality of life included physical function (0.0001), physical role (0.01), emotional role (0.002), vitality (0.04), mental health (0.001), social function (0.03), and physical pain (0.005) were found in the intervention group compared to control group [Table 3].

## DISCUSSION

This study showed that positive thinking training reduced the level of anxiety and depression in mothers of children with leukemia and increased quality of life. In line with the present study, a recent brief report of Prospective and retrospective studies on mothers of children with cancer revealed depression, stress, anxiety, emotional well-being, and hope are impacted by task-oriented positive psychology interventions.<sup>[20]</sup> In addition to, the results of a meta-analysis show positive psychology interventions as an intentional activity aimed

**Table 1: Comparison of demographic variables in mothers of children with leukemia between positive thinking training and control groups**

Variable	Intervention group, n (%)	Control group, n (%)	P
Age			
18-30	3 (24.8)	4 (26.7)	0.819
31-45	6 (40)	6 (40)	
46-60	6 (35.2)	5 (33.3)	
Marital status			
Single	4 (26.7)	2 (13.3)	0.88
Married	11 (73.3)	13 (86.7)	
Job			
Housewife	14 (93.3)	13 (86.7)	0.237
Employee	1 (6.7)	2 (13.3)	
Level of education			
Reading and writing	3 (20)	2 (13.3)	0.640
Middle and high school	10 (66.7)	9 (60)	
Associate degree	1 (6.7)	3 (20)	
Higher	1 (6.7)	1 (6.7)	
Housing			
Personal home	11 (73.3)	10 (66.7)	0.448
Rental	4 (26.7)	5 (33.3)	
Number of children			
1-2	12 (80)	9 (60)	0.292
3-4	2 (13.3)	5 (33.3)	
5 and more	1 (6.7)	1 (6.7)	

**Table 2: Comparison of anxiety and depression in positive thinking training and control groups**

	Mean±SD		P
	Intervention group	Control group	
Anxiety			
Before	15.73±9.03	14±8.88	0.580
After	7.33±3.84	14.13±7.46	0.041
P	0.001	0.426	
Depression			
Before	16.26±8.68	15.06±8.64	0.875
After	7.46±4.42	14.93±9.19	0.008
P	0.033	0.711	

SD: Standard deviation

to cultivate positive feelings, behavior, or cognition.<sup>[17]</sup> In another meta-analysis, it was showed that this type of intervention increased the subjective and psychological well-being, and was helpful in reducing the symptoms of depression in people with certain psychosocial problems who was referred from healthcare professional center or hospital.<sup>[29]</sup> Furthermore, our findings are consistent with prior research testing positive psychology interventions compared to the control group. In this study, greater improvements in positive affect and optimism on patients with bipolar depression at follow-up were observed. The above-randomized pilot trial, intervention were focused on increasing participants “vocabularies for positive emotions, reinforcing the positive emotions experienced while performing the exercise, and promoting the integration of the exercises into daily life.<sup>[19]</sup> In recent studies on the effectiveness of positive psychology



**Table 3: Comparison of quality of life in positive thinking training and control groups**

Variables	Mean±SD		P
	Intervention group	Control group	
Physical function			
Before	67±28.01	60.66±24.84	0.254
After	94±6.86	71.66±23.27	0.000
P	0.000	0.547	
Physical role			
Before	32.66±14.74	45.33±32.37	0.015
After	96±6.86	49.66±29.90	0.014
P	0.002	0.472	
Emotional role			
Before	48.33±30.13	54.55±36.76	0.270
After	91.33±13.77	46.88±35.30	0.002
P	0.014	0.765	
Vitality			
Before	46.75±11.70	49.58±21.20	0.087
After	76.50±17.99	45.66±15.19	0.048
P	0.004	0.176	
Mental health			
Before	19.26±12.26	49.93±15.30	0.246
After	98±5.27	49.13±13.70	0.001
P	0.001	0.497	
Social function			
Before	51±22.25	55.83±20.56	0.696
After	88.66±12.49	56.33±17.77	0.039
P	0.004	0.439	
Physical pain			
Before	60.66±25.43	60.83±34.63	0.154
After	94.50±12.54	59.83±33.40	0.005
P	0.002	0.593	-
General health			
Before	21.66±15.19	45±15.92	0.901
After	96.33±7.89	46.66±18.77	0.001
P	0.048	0.291	-

SD: Standard deviation

has been much emphasis. The positive psychology as a new field of psychology studies on the proficiencies and happiness in human scientifically. The happiness or satisfaction as positive excitements can lead to art and science production or creative problem-solving in daily life.” The psychological phenomena such as happiness, optimism, hope, and creativity which resulted from the positive experiences of mind, are focused by positive psychological studies.<sup>[30]</sup> In other studies, it was reported positive interventions focused on people’s talents, rather than their disorders and abnormalities.<sup>[31]</sup> Nevertheless, in a recent study, the cognition-focused control intervention was superior to telephone-based positive psychology in improving hopelessness and positive psychological constructs during a key postdischarge period among suicidal patients with depression.<sup>[21]</sup> Nevertheless, it should be noted that our positive thinking training was in person; its effect may be different from telephone-based positive psychology. Meanwhile, we compared the intervention group with the control group, not the other intervention group

The study results clarified that positive thinking training led to an increase in overall quality of life in the intervention group compared to the control group. This result is agreement with the previous study.<sup>[32]</sup> In this study, researchers founded that; psycho-educational training program has a significant effect on all domains of quality of life of parent’s having child with leukemia. In addition to, in recent research the authors presented, that couple therapy with a positive attitude is effective in increasing the happiness of mothers of children with special needs which has a direct relationship with mental health and quality of life.<sup>[33]</sup> Furthermore, it should be noted that in our country (Iran), mothers are more responsible than fathers for taking care of the physical, emotional, and social needs of their children. Therefore, the provision of special counseling programs for mothers is essential.<sup>[34]</sup> This approach may seem practical in different phases of treatment in cancer patients and could be utilized to help children and their mothers to cope with the stress of their illnesses.<sup>[20]</sup>

The current study has several limitations that the results may not be generalized. The first, small sample size limited the power of the study to detect significant differences between the two groups. The second limitation is to compare the intervention group with control group not with another intervention group. The third, lack of follow-up steps to check the stability of the results.

## CONCLUSION

The results of this randomized controlled trial study indicated that positive thinking training has a great impact on depression, anxiety, and several areas of quality of life in this group of mothers of children with leukemia compared to control group. Hence, using positive thinking intervention can be a helpful and supportive therapy to traditional training. Further research is needed to replicate and extend these findings.

## Conflicts of interest

There are no conflicts of interest.

## Author contribution

All authors contributed to this research.

## Financial support and sponsorship

Nil.

## Acknowledgments

This paper is the result of a student dissertation and approved by Islamic Azad University of Sari Branch with

the code of thesis 32456. Hereby, we sincerely appreciate of women that participated this research.

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