

## ⇒ Research Article



# The Effectiveness of Music Therapy on Anxiety, Self-esteem, and Social Adjustment of Children With Cancer in Kerman

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## Abstract

**Background:** Cancer is the second largest cause of child mortality after accidents worldwide. Childhood cancers have an average incidence in Iran, with 176 cases in one million people. The objective of this study was to examine the efficacy of music therapy on anxiety, self-esteem, and social adjustment of children with cancer in Kerman in 2019.

**Methods:** A quasi-experimental method with a pre-test and post-test design with a control group was used in this study. The statistical population of research included all children with cancer admitted to Afzalipour hospital in Kerman (Iran) in 2019, and thirty children were selected by the convenience sampling method and then randomly divided into experimental (n=15) and control (n=15) groups. Data were collected using the children's Multidimensional Anxiety Scale, the Coopersmith Self-esteem Inventory, and California Social Adjustment Scale. Finally, the data were analyzed using SPSS22 through the multivariate analysis of covariance.

**Results:** The results indicated that music therapy was effective in reducing anxiety ( $P < 0.001$ ,  $F = 179.29$ ) while increasing self-esteem ( $P = 0.001$ ,  $F = 120.60$ ) and social adjustment ( $P = 0.001$ ,  $F = 48.56$ ) in children with cancer.

**Conclusion:** It can be argued that music therapy in children with cancer has been successful for anxiety, self-esteem, and social adjustment and can be applied to alleviate psychological issues in children with cancer.

**Keywords:** Child, Anxiety, Music therapy, Social adjustment, Self-concept

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## Background

Children's cancer refers to cases of cancers that are diagnosed in children under 15 (1). Although the mortality rate of childhood diseases (especially infectious diseases) has decreased in industrial and developing countries, the number of children with a cancer diagnosis has represented an increasing trend. Cancer is the second leading cause of child mortality in the world after accidents, and childhood cancers have an average incidence in Iran, with 176 cases in one million people (2). In Iran, childhood cancers occur in 1-12 years old. Overall, 2% of children and adolescents under 15 years of age are suffering from cancers in Iran. Nonetheless, with the improvement of socioeconomic status and health care in Iran, life expectancy has increased to more than 5 years in 70% of these age groups (3). Children with cancer often experience symptoms and complications that have negative effects on reciprocal relationships with parents and impair the child's adaptation to the disease (4). Medical care and worry about the premature death of the child cause feelings of despair, anger,

resentfulness, and tension of parents, thus the child and family members may need to manage psychological and emotional complications in addition to the need for developing adaptive and effective strategies to maintain their performance and solve physical problems (5).

Anxiety is one of the traumatic psychological components in children with cancer (5). It is the result of persistent stresses that a person has experienced throughout his life. Further, it is an emotional and physiological response to an all-encompassing inner danger that simply goes away (6). Moreover, anxiety is associated with certain physical symptoms and is a warning sign that informs of imminent danger and prepares the person for coping with the outcome (7). Anxiety, guilt, anger, worry, and other psychological and social pressures, as well as the duration of illness and treatment of hospitalization and increased cost of treatment, mental state, and social damage, are among the stresses that affect the affected person (8).

Nowadays, different methods are used to treat and mitigate the psychological problems of children with

cancer; in addition to different treatments, music therapy is one of the relatively new and effective methods in this regard (9). The use of music in cancer treatment not only helps patients cope with negative emotions caused by the patient but also helps alleviate many mental, emotional, social, and physical problems of cancer patients. Music therapy is used through different methods (10). In general, however, music targets many emotional, social, cognitive, and physical needs of the patient. Music, along with creative and sensory non-language capabilities helps improve the patient's ability to communicate with others. Moreover, music contributes to one's self-awareness of the situation. Music therapy is effective in oncology and prevention of an increase in cancer cells, as well as treatment and pain relief. Although, this technique may not have any effect on the treatment of the disease itself, it greatly improves the mood of the individual, allowing the patient to deal with his or her new condition and accept cancer. It is not clear to anyone that when a person with cancer or any other disease accepts his or her condition and hopes to recover with positive imagination, he or she hopes to improve the healing process better and faster (11). conducting research on the effectiveness of music therapy on anxiety, self-esteem and social adjustment of children with cancer is essential(12).

Fernandes and D'silva (13) reported that music therapy was effective in reducing depression, anxiety, and stress in hemodialysis cases. Egenti et al (14) also found that social adjustment improved over time in the experimental group, while there was no significant change in the control group, implying that music therapy and cognitive behavioral therapy are significantly useful in improving social adjustment. In this regard, this study focused on music therapy to open the path to eliminating the vacuum of scientific and applied knowledge about effective treatments for children with cancer.

### Objectives

The aim of this research was to study the effectiveness of music therapy on anxiety, self-esteem, and social adjustment of children with cancer in Kerman in 2019.

### Methods

The quasi-experimental method was used in this study, along with a pre-test and post-test design with a control group. The statistical population of research included all children with cancer admitted to Dr. Afzalipour hospital in Kerman (Iran) in 2019. Among children with cancer, 30 cases were selected by the convenience sampling method based on the inclusion and exclusion criteria, and then they were randomly assigned to experimental and control groups (n=15). The required sample size was calculated at 0.40, 0.95, and 0.80 test powers and 10% loss for each group. The inclusion criteria were age range of 8-12 years, hospitalization in blood and anthology wards of Dr. Afzalipour hospital in Kerman, diagnosis of leukemia,

and anxiety symptoms according to clinical interview criteria. On the other hand, a history of psychotherapy and absence for more than two sessions were considered as the exclusion criteria.

Music therapy was performed in the experimental group, while the control group received no intervention. First, the patient's records were reviewed and children with the inclusion criteria were selected accordingly. The researcher became familiar with the parents and the child himself by the hospital psychologist. The purpose of the research was explained, and they were invited to participate in the study. A self-report questionnaire was filled by the participant; in cases where the test was unable to read or fill out the questionnaire, the researcher read the questions one by one and marked the option chosen by the tester. Then, music therapy sessions (18 one-hour sessions) were held for the intervention group. The ethical considerations were as follows:

All children's parents received written information about the research and participated in the research if they wished to. The assurance was given to children's parents that all information is confidential and will be used for research. Furthermore, the participants' names and surnames were not registered to respect their privacy.

### *Multidimensional Anxiety Scale*

It is a self-report tool with 39 items, which was first designed by March et al in 1997, and is used to assess the symptoms of anxiety in the age groups of 8-19 (16). Each case is scored on a four-degree Likert-type scale from zero to three (never, rarely, sometimes, and always). This scale measures four categories, including social anxiety (questions 3, 10, 14, 16, 22, 29, 33, 37, and 39), separation anxiety (questions 4, 7, 11, 17, 19, 23, 26, 30, and 34), avoidance of the injury (questions 2, 6, 9, 13, 25, 21, 28, 32, and 36), and physical symptoms (questions 1, 5, 8, 12, 15, 18, 20, 24, 27, 31, 35, and 38). The validity and reliability of this questionnaire were estimated by Mashhadi et al (17); the test-re-test validity and internal consistency of the whole scale were 0.48 and 0.79, respectively. Using Cronbach's alpha method, the internal consistency coefficient of this questionnaire was 0.83.

### *The Coopersmith Self-esteem Inventory (1976)*

It was developed by Cooper Smith based on his self-esteem scale according to a revision made on the Rogers and Dymond scale (18). This questionnaire consists of 58 items. This questionnaire was widely used, and its sufficient reliability and validity were confirmed in various studies. For instance, Johnson et al (19) reported a reliability coefficient of 0.9 using the double-halving method, and Cooper Smith obtained a reliability coefficient of 0.88 and 0.7 after five weeks and three years, respectively. Using the Cronbach's alpha method, the inner consistency coefficient of this questionnaire was 0.83. Moreover, the correlation between Cooper Smith scale scores and

the Eysenck test was calculated, and the correlation coefficient was 0.80. The results of the questionnaire, which was performed on adults, demonstrated that the internal consistency validity coefficient was 0.90, and the correlation between each question and the rest of the questions on that scale was acceptable (20). For the entire questionnaire, Cronbach's alpha coefficient was 0.86.

### California Social Adjustment Scale

This scale includes two major scales of self-adjustment and social adjustment and measures the individual and social adjustment profile of the individual. The social adjustment of this scale was employed in this study. This part of the test has three subscales, including social skills, antisocial tendencies, and school relationships. It is a scale of social adjustment in the form of yes and no (45 questions). The factor analysis approach was used to determine the efficiency of this test. The results represented three factors that explained 0.68 of the total variances of the test. The reliability of this test was reported to be 0.95 (21).

Mean and standard deviation (SD) and multivariate analysis of covariance (Pillai's effect, Wilks' lambda, Hotelling effect, and Roy's largest root) were applied for data analysis. Levene's (to investigate the homogeneity of variances), Kolmogorov-Smirnov (for normality of data distribution), Box's M test, and Mauchly's sphericity tests were used to investigate the assumptions of inferential statistics. All statistical analyses were performed by SPSS software (version 22), and the significance level in this research was 0.05.

### Results

Overall, patients were placed in the music therapy ( $n=15$ ) and control ( $n=15$ ) groups. The mean age of subjects was 10.4 (0.63) and 10.6 (0.71) in the music therapy and control groups, respectively. In terms of age, there was no significant difference between the two groups ( $P>0.05$ ). There were 7 (46.7%) girls and 8 (53.3%) boys, as well as 9 (60%) girls and 6 (40%) boys in the intervention and control groups, respectively. Regarding gender, there was no substantial difference between the two groups ( $P>0.05$ ). The mean (SD) scores of research variables in the pre-test and post-test are presented in Table 1.

To measure the equality of variances, data were

evaluated with Levene's test of homogeneity of variance. The results showed that the variances of the experimental and control groups for anxiety ( $P=0.39$ ), self-esteem ( $P=0.48$ ), and social adjustment ( $P=0.74$ ) were equal. Multivariate covariance analysis was used to research the differences between the two groups on anxiety, self-esteem, and social adjustment ratings. The evaluation of data properties demonstrated that the statistical assumption of similarity of variance-covariance matrices was established for research components (Box's  $M=9.66$ ,  $P>0.05$ ), and therefore, the Wilks' lambda index was employed to significantly evaluate the multivariate effect.

The Wilks' lambda index represented that the effect of the group on the linear composition of dependent variables was significant ( $F=54.11$ ,  $\eta=0.81$ ,  $P<0.001$ ). In other words, there was a statistically significant difference between the three groups within at least one of the research components (Table 2).

The statistics of univariate analysis of covariance for each dependent variable were separately performed to determine the significant source of the multivariate effect. Based on data in Table 3, the group significantly affected self-esteem ( $P<0.001$ ,  $F=120.60$ ), anxiety score ( $P<0.001$ ,  $F=179.29$ ), and social adjustment ( $P<0.001$ ,  $F=110.03$ ).

### Discussion

The main objective of this research was to investigate the efficacy of music therapy on anxiety, self-esteem, and social adjustment of children with cancer in Kerman in 2019. The results revealed that music therapy is effective on anxiety, self-esteem, and social adjustment in children with cancer. The results of this study are consistent with those of Fernandes and D'silva (13) regarding the effect of music therapy on depression, anxiety, and stress in hemodialysis patients, as well as the findings of Egenti et al (14) based on a randomized controlled assessment of the effect of music therapy and cognitive-behavioral therapy on social adjustment symptoms.

As regards music therapy effectiveness, it can be mentioned that music has long been used in different forms to treat different types of anxiety and diseases. Plato, the Greek philosopher, believed that sound in the form of music from the background of the song could

Table 1. Mean (SD) for the Scores of Research Variables

Variable	Group	Pre-test		Post-test		P-value
		Mean	SD	Mean	SD	
Anxiety	Music therapy	59.86	7.02	56.93	7.05	0.001
	Control	62.80	7.75	62.60	7.60	0.425
Self-esteem	Music therapy	16.73	1.66	19.40	1.84	0.001
	Control	17	1.81	17.33	1.67	0.682
Social adjustment	Music therapy	15.80	2.51	18.33	2.49	0.001
	Control	16.13	2.26	16.46	2.35	0.780

Note. SD: Standard deviation.

**Table 2.** Results of Multivariate Analysis of Covariance of Experimental and Control Groups

Test	Value	df Hypothesis	df Error	F	P Value	Eta
Pillai's effect	1.10	6	76	15.54	0.001	0.55
Wilks' Lambda	0.03	6	74	54.11	0.001	0.81
Hotelling effect	24.06	6	72	144.38	0.001	0.92
Roy's largest root	23.89	3	38	302.70	0.001	0.96

**Table 3.** Results of Covariance Analysis of Anxiety, Self-esteem, and Social Adjustment Scores in Experimental and Control Groups

Variable	SS	df	MS	F	P Value	Eta
Anxiety	123.83	2	61.91	179.29	0.001	0.90
Self-esteem	178.68	2	89.34	120.60	0.001	0.86
Social adjustment	97.12	2	48.56	110.03	0.001	0.84

Note. SS: Sums of squares; MS: Mean squares.

have a healing effect. He further indicated that music reduced the heart rate number and deepened breathing, and had positive effects on anxiety and pain relief (22). According to different theories, scientists claim that appropriate music can change the state of the brain and evoke the activity areas of the brain. The auditory center on the limbic cortex causes resurrection and an effect on the back of the hearing, thus it causes alertness, accuracy, and concentration. Accordingly, it should be noted that the use of music relaxes, improves the mental calculation of mental effect reduction, and reduces the mental effects of stress. Music makes human beings capable of communicating, uniting, and adapting. Music therapy, like the other treatments of the artistic origin due to gravity and sedatives, can have considerable effects on the treatment of chronic diseases, thus music therapists, with the help of music, insure or calm their patients (23). Considering that children with cancer suffer from emotional stress, the use of music reduces the heart rate and deepens breathing, resulting in a decrease in anxiety in these children.

Finally, with regard to the efficacy of music therapy in the social adjustment of children with cancer, it can be indicated that music therapy is one of the non-pharmacological methods used to increase the social adjustment of children with cancer. This method is a supportive profession, and patients with different types of physical and mental and emotional-social problems and disorders can benefit from music therapy services (24, 25). There is no age requirement for the use of music therapy services, and infants and elderly patients can be treated with this technique (26). Music therapy is used to treat many different people's physical, emotional, and psychological problems. The most important problems include pain, anxiety, sadness, and communication problems (27).

Among the limitations, it can be noted that the limited results of this study to cancer patients, this study was performed only on the population of cancer patients

in Kerman, and caution should be observed in the generalization of the results to other regions and cities. A large number of questionnaire questions resulted in the prolongation of its implementation time, which has not affected the accuracy of participants' responses. It is suggested that this study be conducted in a sample group of patients, and the results will be evaluated and compared with the results of this study. The research will be followed up after group training in the form of individual counseling.

## Conclusion

It can be argued that music therapy in children with cancer has been successful for anxiety, self-esteem, and social adjustment and can be used to alleviate psychological issues in children with cancer.

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## Authors' Contribution

Conceptualization: EMG; Methodology: AH; Investigation: FM; Writing – Original Draft: EMG; Writing – Review and Editing: All authors; Resources: All author; Supervision: AH.

## Conflict of Interests

The authors declare that they have no conflict of interests.

## Ethical Approval

The present study has been registered with IR.IAU.AHVAZ.REC.1398.016 in the Ethics Organization in the Islamic Azad University of Ahvaz Branch. All ethical principles were considered in this research. The participants were informed about the purpose of the research and its stages. Informed consent was obtained from the subjects. They were also assured of the confidentiality of their information. Moreover, the subjects were free to withdraw from the study if desired and were informed that they would be provided with the results of the research.

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