



The Effectiveness of Music Therapy on Anxiety Sensitivity and Self-Efficacy in Adolescents with Leukemia in Tehran, Iran

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Quantitative Study

Abstract

Background: Cancer is a chronic disorder due to which patients are faced with various psychological challenges; therefore, they ought to seek solutions to reduce the severity of their emotional problems. The aim of this research was to investigate the effectiveness of music therapy on anxiety sensitivity and self-efficacy in adolescents with leukemia.

Methods: The study participants consisted of 30 individuals who were selected using convenience sampling method. The subjects were randomly assigned to experimental and control groups (15 in each group). A quasi-experimental and pretest-posttest design was utilized with a control group and follow-up period. The data collection instruments used included the Anxiety Sensitivity Index (ASI). First, pretest was conducted in both groups. Then, the experimental group participants received the intervention in 14 sessions lasting 90 minutes, and then, posttest was performed in both groups. Moreover, one month later, the follow-up process was completed. Data analysis was performed using multivariate analysis of covariance (MANCOVA) and one-way analysis of covariance (ANCOVA).

Results: The results showed that music therapy was effective on anxiety sensitivity ($P < 0.001$) and self-efficacy ($P < 0.001$) in adolescents with leukemia.

Conclusion: It can be concluded that music therapy can improve self-efficacy and reduce anxiety sensitivity in adolescents with leukemia and reducing anxiety sensitivity can help patients to better cope with pain, eliminate negative emotions, and become more relaxed.

Keywords: Music therapy, Anxiety sensitivity, Self-efficacy, Adolescents, Leukemia

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Introduction

Leukemia is lymphatic neoplasia that, in

view of the phase of the sickness in the season of diagnosis, and the type of harmful cells, pathologically leads to a patient's incapacity or mortality (because of bone marrow inadequacy or disease) as the short- or long-term outcome. Evidently, if there should be an occurrence of early conclusion

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and suitable treatment, the patient can return to sound life. However, regard for personal satisfaction, the effect of various mental contemplations, and lifestyle changes, if important, can altogether pacify manifestations of wretchedness, stress, and outrage, reduce the adequacy of patients, and increase patients' ability to control the reactions of various medications and resilience (Vizcaino, Lopera, Martinez, De los Reyes, & Linares, 2016).

Researchers have taken strides in conceptualizing and activity emotional vulnerability, a thought that generally results in the suffering of humans, and therefore, the anxiety of the sickness specifically. The vulnerability issue for anxiety and anxiety disorders, which has recently attracted abundant scientific attention, is anxiety sensitivity. Studies have shown that anxiety sensitivity increases the probability of tension development and acts as a risk factor in this regard. Recent theoretical models emphasize the importance of treating individuals with anxious experiences (Schmidt, Norr, Allan, Raines, & Capron, 2017). Anxiety sensitivity could be a structure of individual variations during which someone is terrified of physical symptoms related to anxiety arousal (increased pulse rate, metabolic process dyspnoea, and dizziness), and could be a consequence of this belief. Anxiety sensitivity results in biases within the retrieval and process of knowledge concerning anxiety triggers that provides the grounds for mental disorders. Existing analysis suggests that anxiety sensitivity is also thought of as a risk factor for anxiety issues. This cognition will increase the chance of developing anxiety symptoms, sudden panic attacks, in addition to anxiety disorders (for example, panic disorder) (Baker et al., 2017).

In adolescents, self-efficacy is also affected by cancer. Self-efficacy is a vital factor in the formation of human competency. Self-efficacy permits people to figure laborious by utilizing their skills to alter obstacles. Effective performance needs each skill and

belief within the ability to perform those skills. Managing permanent, uncertain, unpredictable, and nerve-racking activities and circumstances requires multiple skills (Lee, Shin, Wang, Lin, Lee, & Wang, 2016). Self-efficacy is outlined because the belief in individual talents in organizing and death penalty a series of actions required to attain a goal. Self-efficacy plays a major role in most common psychological issues, still as in fortunate interventions in coping with these issues (Sleath et al., 2015). Individuals who have high confidence in their ability to use coping strategies under tough circumstances square measure sedately approaching those positions and do not seem to lose their spirit under these circumstances. Nevertheless, people who have very little confidence in their abilities and skills are overcome by apprehension, which reduces the chance of sensible performance (Hoffman, Brintnall, Given, von, Jones, & Brown, 2017).

In order to improve the anxiety and self-efficacy of adolescents with leukemia various strategies have been proposed, one of these therapeutic strategies is music therapy. Music therapy, like other therapies that have an artistic origin, can be useful in treating chronic diseases due to its attractiveness and ability to promote tranquility. Music therapists stimulate or calm their patients with music (Thornley, Hirjee, & Vasudev, 2016). Adolescents who have leukemia suffer from emotional stress, and the use of music reduces their heart rate and deepens their respiration, resulting in anxiety and decreased self-efficacy (Gallagher, Lagman, & Rybicki, 2018). Music can be associated with sadness, failures of sadness, and depression, and with the association of these memories, tragic emotions are more easily discharged (Liu, & Petrini, 2015). Clarke (2010) concluded in his research that music was explicitly responsible for the decline in aggressive behavior and anxiety. Elliott, Worrall-Carter, and Page (2013) concluded in their research that music therapy had a direct and significant effect on reducing pain and

aggression in cancer patients. Therefore, due to the increasing incidence rate of leukemia and the observed effect of psychological interventions on the reduction of symptoms of chronic diseases, the main aim of the present research was to determine the effectiveness of music therapy on anxiety sensitivity and self-efficacy in adolescents with leukemia.

Methods

This semi-experimental research was conducted with two groups (test group and control group) and in three stages, pre-test, post-test, and follow-up. The statistical population of this study included people with leukemia referring to health centers in Tehran, Iran, in 2018. The sample consisted of 30 people who were selected through convenience sampling method and were divided into two groups (15 subjects in each group).

Anxiety Sensitivity Index: The Anxiety Sensitivity Index (ASI) is a self-report questionnaire with 16 items. This questionnaire was developed by Reiss, Peterson, Gursky, and McNally (1986). The items are scored based on a five-point Likert scale ranging from 0-4 (very low = 0 to very much = 4). It reflects any belief that anxiety emotions are unpleasant experiences and can lead to harmful consequences. The degree of fear of anxiety symptoms is determined with higher scores. The total score ranges between 0 and 64. This questionnaire consists of the three subscales of fear of physical anxiety (8 items), fear of lack of cognitive control (4 items), and fear of observation of anxiety by others (4 items). The internal stability of the ASI has been determined through examining its psychometric properties (alpha ranging from 0.80 to 0.90). The test-retest validity of the ASI was 0.75 after 2 weeks and

0.71 after 3 years; this shows that anxiety sensitivity is a persistent personality construct. Its validity was calculated in an Iranian sample based on the three methods of internal consistency, test-retest, and spin-breaker. For the whole scale, the coefficients of validity were 0.93, 0.95, and 0.97, respectively. Concurrent validity was determined (correlation coefficient: 0.56) through the implementation of the Symptom Checklist-90 (SCL-90). The correlation coefficients with the total score were satisfactory and varied from 0.41 to 0.88. The correlation between subscales varied from 0.41 to 0.68 (Floyd, Garfield, & LaSota, 2005).

General Self-Efficacy Scale: This 17-item questionnaire was developed by Sherer et al. in 1982. The reliability of the General Self-Efficacy Scale was determined using Cronbach's alpha ($\alpha = 0.86$) (Maleki Pirbazari, Nouri, & Sarami, 2012). Each item is scored on a scale ranging from 1 to 5. Items number 3, 8, 9, 13, and 15 are reverse-scored items. In this study, the Cronbach's alpha of this scale was 0.79.

Results

Table 1 shows the mean (SD) of anxiety sensitivity and general self-efficacy in the experimental and control group. The null assumption for the equation of variance of the two groups was confirmed in the research variables. The null assumption was confirmed for the normal distribution of the scores of the two groups in the research variables, that is, the assumption of the normal distribution of scores in the pretest was confirmed in both test and control groups. The F value of the interaction for the same slope of the regression line for all of the variables in the research was not significant. In other words, the homogeneity of the slope of the regression line was confirmed.

Table 1. Mean \pm SD of the research variables in the pre-test and post-test

Variables	Group	Pretest	Posttest
		Mean \pm SD	Mean \pm SD
Anxiety sensitivity	Experimental	43.1 \pm 8.4	38.6 \pm 5.9
	Control	43.6 \pm 7.1	42.5 \pm 6.7
General Self-Efficacy	Experimental	10.8 \pm 0.67	13.0 \pm 0.5
	Control	11.0 \pm 0.84	10.6 \pm 1.1

Table 2. Results of multivariate analysis of covariance on the mean posttest scores of anxiety sensitivity and self-efficacy of experimental and control groups with pretest control

Test	Value	df hypothesis	df error	F	P	Eta square
Pillai's trace	0.36	2	27	26.44	0.001	0.36
Wilks' Lambda	0.02	2	27	26.44	0.001	0.36
Hotelling's trace	46.7	2	27	26.44	0.001	0.36
Roy's largest root	46.7	2	27	26.44	0.001	0.36

As shown in table 2, the effect or difference is equal to 0.36, that is, 36% of the individual differences in posttest scores of anxiety sensitivity and self-efficacy is related to the impact of music therapy (group membership).

As shown in table 3, with pretest control between the experimental group and the control group, in terms of anxiety sensitivity ($P < 0.0001$; $F = 54.5$) and self-efficacy ($P < 0.0001$; $F = 45.5$).

Discussion

The findings of this study showed that music therapy has a significant effect on anxiety sensitivity and self-efficacy in adolescents with leukemia. This finding was consistent with the findings of Clark (2010) and Elliott et al. (2013).

Music therapy is a therapeutic remedy for individuals who are mentally, emotionally, perceived, and connected with others. Research results and clinical experience have illustrated that music therapy is effective for individuals who have not responded to other types of treatment. In other words, music is a form of stimulus that can heal through familiarity, and predicting and creating a sense of security (Tuinmann, Preissler, Bohmer, Suling, & Bokemeyer, 2017). Anxiety sensitivity is very common among cancer patients. Cancer causes anxiety in individuals. Cancer patients suffer from anxiety sensitivity due to the uncertainty of the outcome of treatment and breakthrough. In music therapy, as a non-pharmacological approach

to psychotherapy, the reliving and controlling of pain, such as deviation of thought, relaxation, and skin irritation, is difficult. It reduces anxiety sensitivity and makes it tolerable for the patient. It creates a sense of control in the individual, which makes them more comfortable and improves their sleep and relaxation; in addition, therapeutic music creates a sense of optimism and relaxation that also creates a sense of optimism in controlling pain, anger, and aggression (Hohmann, Bradt, Stegemann, & Koelsch, 2017).

It can be said that music therapy can reduce anxiety sensitivity in adolescents with leukemia, and reducing anxiety sensitivity can help patients to better cope with pain, eliminate negative emotions, and be more relaxed. In other words, the benefit of these methods is the increase in the effectiveness of analgesic drugs, which, as a result, reduces the number of doses of the drug required. Because the simultaneous use of pharmaceutical and non-pharmacological strategies (preparation, self-control, path diversion, attention, massage, hypnosis, use of analgesics) are known from the general principles of pain management (Espino-Lopez, Ingles, Ruescas-Nicolau, & Moreno-Segura, 2016), and because of anxiety due to chronic disease complications, including cancer, is considered a sick child in children and is one of the most severe and worrying behaviors in adolescence with leukemia. Therefore, in such circumstances, it is necessary to identify those behaviors that threaten the adolescent.

Table 3. Results of one-way analysis of covariance in multivariate analysis of covariance on posttest

Variables	SS	df	MS	F	P	Eta square
Anxiety sensitivity	189.77	1	189.77	54.5	0.0001	0.47
Self-efficacy	146.9	1	146.9	45.5	0.0001	0.39

SS: Sum of squares; df: Degree of freedom; MS: Mean of squares

The change in attitudes, as a threat, in adolescents with leukemia seems necessary and threat because the adolescent is wrong anxiety is thought to be necessary to cope with problems. Communication with a teenager if based on love and affection and self-confidence, will promote his/her self-esteem and give him/her an optimistic view of life. Evidently, parental participation in anxiety control is useful and other psychotherapy strategies, such as music therapy and tone calm, are effective in reducing adolescent's anxiety sensitivity (Yaman & Karabulut, 2016).

It can also be said that the use of music can be useful in improving adolescents' self-efficacy because throughout history art has been a means of adaptability, flexibility, creativity, love, friendship, and peace. Among the arts, music is very penetrating due to its energy generation, stimulation, possibility of abstraction and intrinsic gravity. The positive impact of music on the performance of the human brain and its applications is not a new topic, especially in the area of attention that has been explored in recent decades (Kahloul et al., 2017). Music education has a significant effect on the morphology and activity of the cerebral cortex. In adolescents with leukemia, there are various sensory pathways, some of which are due to neurological limitations. The use of music increases the neural branches, and this can strengthen adolescents' self-efficacy. In other words, long-term sensory stimulation increases the magnitude of brain synapses and ultimately leads to high levels of sensory perception.

Conflict of Interests

Authors have no conflict of interests.

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