

## Original Article

# The Effects of Music Therapy on Anxiety and Depression of Cancer Patients

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### ABSTRACT

**Background and Purpose:** Cancer patients often suffer from anxiety and depression. Various methods are used to alleviate anxiety and depression, but most of them have side effects. Music therapy can be used as a noninvasive method to reduce anxiety and depression. This study aimed to examine the effect of music therapy on anxiety and depression in patients with cancer.

**Materials and Methods:** This quasi-experimental study was conducted attaching hospitals in Urmia city. A total number of sixty patients with depression and anxiety were recruited using random sampling method and divided into two groups of control and intervention. Patients in intervention group listened to light music at least 20 min per day for 3 days. The degree of patients' anxiety and depression was assessed by Hospital Anxiety and Depression Scale at baseline and 3 days after music therapy. Data were analyzed by SPSS version 13 using *t*-test, Pearson, and ANOVA tests.

**Results:** The results showed no significant differences between demographic variable of intervention and control groups. Our findings indicated a significant decrease in the level of depression and anxiety among intervention group. There were significant relationships between anxiety, depression, and sex ( $P < 0.001$ ,  $r = 0.42$ ) as well as education ( $P = 0.003$ ,  $r = 0.37$ ).

**Conclusion:** This study revealed positive effects of music therapy on decreasing level of depression and anxiety in patients with cancer. Therefore, it is recommended to include music therapy in the nursing care.

**Key words:** Anxiety, Cancer, Depression, Music

### INTRODUCTION

Nowadays, human life expectancy has increased by improvement of public nutrition, social, and individual hygiene; prevention, control, and treatment of infectious diseases which was considered as the highest cause of mortality rates during the 19<sup>th</sup> century.<sup>[1]</sup>

Along with increasing life expectancy, chronic diseases such as cancer and its mortality were increased.

<sup>[2]</sup> It is estimated to have more than 482,543 deaths due to cancer in America during the first decade of 21<sup>st</sup> century, and the trend continues to raise.<sup>[3]</sup> In Iran, there were 20,665 cancer cases during 2001 and 22,351 of those cancer patients died within 2 years.<sup>[4]</sup> Cancer has many side effects, and the most notable consequences are anxiety and depression. It is reported that 75% of patients at the final stage of cancer,

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experience anxiety and depression<sup>[5]</sup> and between 50% and 85% of them suffer from anxiety and depression simultaneously.<sup>[6]</sup> The previous studies in Iran indicated that 20% of cancer patients suffer from anxiety and 40% suffer from depression. Anxiety and depression adversely affect the progression of cancer treatment, progress of cancer disease, treatment efficiency, and the patients' quality of life.<sup>[7]</sup> Furthermore, cancer may cause feelings of displeasure, stay away from friends or family, lack of motivation and defeat intolerance, decreased libido, decrease or increase in appetite and weight, decreased energy and cause fatigue, sleep disturbances, menstrual disorder, constipation, dry mouth, and headache.<sup>[8]</sup>

Medication and behavioral therapies are implemented to alleviate the level of patients' anxiety and depression.<sup>[9]</sup> Most of these methods have side effects on patient's body and minds such as addiction, drug dependency, blood pressure, weakening of vital signs, drowsiness, nausea, vomiting, and even shock. In addition, these routine therapeutic methods are time-consuming for nurses and impose heavy cost to the health-care systems.<sup>[10]</sup> Drugs for reducing anxiety and depression are not without side effects and at the same time, there is the possibility of recurring symptoms in case of dose reduction. Therefore, use of nondrug methods privileged to overcome depression and anxiety in patients with cancer. Accordingly, several nonpharmacological methods are encouraged to decrease anxiety and depression in patients with cancer including communication therapy.<sup>[11,12]</sup>

One of the methods used to relieve anxiety and depression is pleasant voice stimulant that is called music therapy. The use of music as a therapeutic approach has an old history. As the inscriptions in ancient Egypt, Greece, China, India, and Rome talked of music as a healer with a relaxing effect that reduces anxiety and creates relaxation.<sup>[13]</sup> Therapeutic effect of music on physical and psychological aspects of patients undergoing cardiac surgery and Alzheimer disease in various studies is confirmed.<sup>[14-16]</sup> Nevertheless, few studies have investigated the effect of music therapy on reducing the level of anxiety and depression in patients with cancer.

This study aims to assess the effects of music therapy on anxiety and depression among cancer patients through Hospital Anxiety and Depression Scale (HADS) questionnaire. In addition, the present study seeks to examine the correlation between demographic characteristics with levels of patients' anxiety and depression. We hope that the results of this study can improve the nurses' quality of care in cancer patients.

## MATERIALS AND METHODS

This quasi-experimental study was conducted at Imam Khomeini Hospital of Urmia city in 2014. Samples for each group was considered 30 persons using a preliminary study on 12 persons and considering the results of confidence interval 95% and power of test 80%, and total number of sixty patients aged 18–65 years old were included in this study. Patients with following criteria were eligible to be included in this study: Stages 1, 2, and 3 of cancer, ability to read and write, being able to communicate, no history of serious problems, no development of other malignancy, and at least 3 months passed from diagnosis. In this study, the two groups were matched for age, sex, education level, and stage of the disease. Permission to conduct this study was obtained from dean of hospital and wards. Patients received adequate information regarding aim, benefits, and risks of the study before data collection. On obtaining written permission, participants were randomly allocated to two groups of controls and experiments using simple random sampling method.

HADS questionnaire was used to measure the level of patients' anxiety and depression. This questionnaire has high sensitivity compared to other questionnaires in the measurement of anxiety and depression which has been widely used. Validity and reliability of the HADS questionnaire have been confirmed previously. The questionnaire included 14 items with 4 Likert-type response. Each item's score can vary from minimum of 0 and maximum of 3 which yield a total score ranging from 0 to 21. Scores from 0 to 7 represents natural anxiety and depression level, 8–10 mild, 11–14 moderate level, and 15–21 will be considered as severe anxiety and depression level.<sup>[17]</sup>

Baseline levels of depression and anxiety were assessed using the HADS questionnaire 24 h before the onset of intervention. Then, patients listened to music at least 20 min per day for 3 consecutive days and HADS questionnaire administrated at the end of each day. The intervention tools included a Walkman and a headphone of Sony Company. Type of music was selected after obtaining 5 expert's opinion, and the tape was recorded in the form of relaxing light music like the sea, rain, and water sound. Data was analyzed using SPSS version 13 (South Wacker Drive, Chicago, United States of America). Kolmogorov–Smirnov test was used to test normality of sample which revealed a normal distribution ( $P = 0.09$ ). Therefore, parametric tests were used to analyze the data. Mean and standard deviation were used to describe data. Independent *t*-test, Pearson, and ANOVA tests were used to analyze and compare the means.

## RESULTS

Results from this study showed that 57.2% of experiment group were male, and 61.8% were aged 30–45 years old. In terms of education, 68.2% of intervention group did not have diploma and 93.3% of them were married. In control group, the prevalence of male samples was 51.2% and 60% were aged 30–50 years old, 63% had no diploma, and 87.4% were married. Regarding type of cancer, 48% of interventions and 54% of controls had soft tissue cancer. The majority of our subjects were in Stage 3 of cancer [Table 1]. No statistically significant difference was found between any of the demographic variables of two groups. Independent *t*-test showed no significant difference in mean score of anxiety, depression between control and intervention groups before the study. There was no significant difference in mean score of anxiety and depression between four times intervals ( $P = 0.67$ ) among controls. While there was a significant reduction in the mean scores of anxiety and depression ( $P < 0.001$ ) in the intervention group [Table 2].

Results of correlation between demographic characteristics with anxiety and depression showed higher mean scores among women as well as educated individuals [Table 3]. Findings from Pearson test showed significant and positive association between anxiety and depression with gender ( $r = 0.42$ ,  $P < 0.001$ ) and level of education ( $r = 0.37$ ,  $P = 0.003$ ). However, we found no significant association between anxiety, depression and marital status ( $P = 0.21$ ), type of cancer ( $P = 0.76$ ), cancer stages ( $P = 0.32$ ), and age ( $P = 0.42$ ).

## DISCUSSION

The findings of this study show the effect of music therapy on the anxiety and depression of patients with cancer. Several studies showed a beneficial effect of music on reducing anxiety in patients undergoing cesarean,<sup>[18]</sup> abdominal surgery,<sup>[19]</sup> and patients admitted in critical care unit.<sup>[20]</sup> Our findings are consistent with Horne-Thompson and Grocke<sup>[21]</sup> study that showed the beneficial effect of music therapy on reducing the level of anxiety among patients with cancer.

Another finding from this study includes the effect of music on the reduction of depression in patients with cancer. A study at China in 2011 also showed that music reduces depression in cancer patients.<sup>[22]</sup> Sheiban *et al.*<sup>[23]</sup> showed the effect of music on depression among Iranian

**Table 1: Demographic characteristics of control and intervention group**

Demographic characteristics in control group	Percentage	Demographic characteristics in intervention group	Percentage
<b>Sex</b>			
Male	51.2	Male	57.2
Female	48.8	Female	42.8
<b>Age</b>			
18-30	9.3	18-30	10.2
31-45	60	31-45	61.8
46-55	11.7	46-55	21.4
56-65	19	56-65	6.6
<b>Material status</b>			
Single	12.6	Single	6.7
Married	87.4	Married	93.3
<b>Educational level</b>			
Under diploma	63	Under diploma	68.2
University	37	University	31.8
<b>Type of disease</b>			
Soft tissue cancer	54	Soft tissue cancer	48
Bone cancer	16.4	Bone cancer	32
Leukemia	29.4	Leukemia	20
<b>Stage of disease</b>			
Stage 1	28.8	Stage 1	25.2
Stage 2	31.2	Stage 2	30.8
Stage 3	40	Stage 3	44

**Table 2: Comparing the mean of anxiety and depression in intervention and control groups in the four times interval**

Groups anxiety and depression	24 h before intervention	1 <sup>st</sup> day	2 <sup>nd</sup> day	3 <sup>rd</sup> day	Test result (P, F)
Music therapy group	14.46±2.13	11.36±2.9	9.53±1.34	8.63±2.57	<0.001, 2.80
Control group	14.72±2.06	13.78±3.04	14.67±2.12	14.34±2.48	0.67, 8.45

sample. A study in America in 2006 also showed the effect of music on depression.<sup>[24]</sup>

We also found significant relationships between the level of anxiety, depression, sex, and education. Our finding is consistent with Mohamadi Zeidi *et al.*<sup>[25]</sup> study that showed anxiety is higher among women. In contrast, results of the present study reversed a positive relationship between anxiety and education.<sup>[25]</sup> That is, highly educated individuals experience a higher level of anxiety compared to their counterparts.

## CONCLUSION

According to the findings of this study, use of music therapy is an easy, inexpensive, and safe method to reduce

**Table 3: The relationship between demographic characteristics with anxiety and depression**

Demographic variables	SD±mean	P
Gender		
Male	13.78±2.34	0.003
Female	14.72±2.04	
Marital status		
Single	13.89±2.39	0.21
Married	14.07±1.92	
Type of cancer		
Soft tissue cancer	14.27±2.41	0.76
Bone cancer	14.23±2.74	
Leukemia	13.65±2.56	
Cancer stages		
Stage 1	13.94±1.33	0.32
Stage 2	14.09±2.33	
Stage 3	14.24±2.56	
Age		
18-30	14.57±2.73	0.42
31-45	13.61±2.19	
46-55		
56-65	14.18±2.07	
66-75		
Education level		
Primary school	9.83±2.52	0.008
Guidance school	11.34±1.21	
High school	12.92±2.56	
University	14.04±2.42	
Postgraduate		

anxiety and depression. Therefore, it is recommended to implement music therapy as a part of nursing care services.

There are some limitations in this study which need to be addressed. The first limitation is low number of sample size. Another limitation of the current study is mere attention to anxiety and depression as the outcome in patients with cancer. However, future studies may benefit from investigating effects of music therapy on other health problems of cancer patients.

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### Conflicts of interest

There are no conflicts of interest.

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