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Music Therapy Reduces the Intensity of Pain Among Patients With Cancer

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Background: Most of the cancer patients may suffer from pain; therefore, music therapy -as a noninvasive method- is sometimes used to help reduce the pain of cancer patients.
Objective: To evaluate the effects of music therapy on pain in some patients with cancer.
Material and Methods: This semi-experimental study was performed at Urmia teaching hospital in 2011. A total number of 60 patients with soft tissue cancer were randomly selected and allocated to control and intervention groups. Intervention group received 20-minute music for three consecutive days. The degree of pain was measured by Visual Analog Scale (VAS) before and after music therapy. Data were analyzed at the three times using SPSS and the information was described using mean, SD and analyzed by using t-test, ANOVA and Pearson.
Results: The results showed no significant differences in demographic variable between intervention and control groups. Intensity of pain in intervention group in the three times showed significant diminution ($P < 0.001$); but in control group, pain intensity did not change during the study ($P = 0.12$). There was significant relationship between intensity of pain and stage of the cancer ($r = 0.46$, $P = 0.008$) and kind of cancer ($r = 0.38$, $P = 0.002$).
Conclusions: By considering positive effects of music on pain in patients with cancer, health care providers can use music and encourage patients to use it for enhancing the effects of analgesics, decreasing the pain and promoting quality of life.

Keywords: Music Therapy; Pain; Cancer

1. Background

With increasing life expectancy, chronic diseases including cancer morbidity and mortality are growing in importance (1). Such patients suffer from diseases for long periods of time and after discharging from the hospital, they mostly require home-based care and therapy. Therefore, several programs have been developed to manage their needs (2). Cancer is a disease with many complications such as pain (3). Thus according to the studies, pain affects a large proportion of this group of patients and is often difficult to manage effectively (4). Thousands of these patients (in-hospital or out-of hospital) are suffering from severe afflictions (5); as 20% to 90% of them experience varying degrees of pain. There are many causes for pain in cancer, among which the growth of the tumor, side effects of the treatment including chemotherapy, radiation therapy, surgeries or background diseases are of note (6). In fact, pain is most common complaint of people for seeking help from the medical profession (7).

Both medical and surgical methods are used to relieve physical pains (4). Most of these treatments have considerable side effects on the body and mind (8). Analgesics are potentially addictive and their prolonged use may result in drug dependency, hypotension, weakening of vital functions, drowsiness, nausea, vomiting and even shock. Some of these methods are also time consuming and costly to the health care systems (9, 10). Therefore, it is recommended to use non- pharmacological approaches to relieve pain. Nurses use many non- pharmacological approaches to relieve pain such as medication, imagery, deep breathing and music (11). Music therapy can be done by sound stimuli, and it has been shown that music therapy can help in reducing the level of pain (12). Listening to music leads to muscle relaxation, distraction from pain, reduction of pain intensity and decreased transfer of pain impulses to the central nervous system (7). Listening to music may also decrease heart rate, increase depth of breathing and positively affect anxiety, depression and pain (13). Also, music therapy can be used at home (2). The use of music as a therapeutic tool has a long history, as in the inscriptions discovered in Egypt, Greece, China, India and Rome, music has been considered as a healing tool. It

Implication for health policy/practice/research/medical education:
Music Therapy is available for the management of pain with low cost and side effects; therefore, identification of music effects on the pain levels of cancer patients is very important for using it by health practitioners and nurses in the care plan of such patients, as it can enhance the quality of life in this group if patients.

has a calming effect and can reduce the use of analgesics (14). Although despite its effectiveness, it is not used as a therapeutic intervention. Also, the effectiveness of music on reducing the pain has not been established to date. According to the previous investigations the results of such studies are very limited with regard to their low quality and high risk of bias. The measurement of the efficacy is done immediately after the intervention and thus the validity of their results has been questioned (15). Also, most of the studies have evaluated the analgesic efficacy of music in acute pain, but patients with cancer may frequently suffer from chronic pain (16).

2. Objectives

The purpose of this study was to explore the effects of music therapy on intensity of pain in patients with cancer by using Visual Analog Scale (VAS). We also sought to investigate the relationship between demographic variables and pain intensity.

3. Materials and Methods

This semi-experimental study was conducted among 60 patients of Imam Khomeini teaching hospital of Urmia, 2011. In fact by using a pilot study that was conducted on 12 patients and with regard to 95% confidence interval and power test equal to 80%, the minimum sample size for each group was estimated to be 30 patients. The inclusion criteria were as follows: age of 18 - 65 years, patients in stage one, two or three of cancer, being able to communicate (in case of illiteracy), no previous history of severe disorders including other malignancies and being diagnosed within the last three months. In this study, we enrolled patients with soft tissue cancer, bone cancer and leukemia who had pain. The two study groups were almost equal with regard to age, sex, education and stage of the cancer. Most of the subjects had a soft tissue cancer (intervention group = 48%, control group = 54%) and the majority of patients had stage three cancer (intervention group = 44%, control group = 40%). After obtaining informed written consent, the participants were divided into the intervention and control groups by using simple random sampling.

Data were collected using demographic questionnaire and Visual Analog Scale (VAS) for pain intensity. Pain intensity was classified as no pain [0], mild pain [1-3], moderate pain [3-6], severe pain [6-9] and intolerable pain [10]. Three days before the intervention, pain of the subjects was assessed by using VAS. Then, patients of the intervention group listened to their favorite music during the next three days and were re-evaluated daily. Music was not played for the patients of the control group. The intervention tool included a Sony walkman and a headphone. A 20-minute music tape was prepared by considering the comments of five experts, which was Mozzart music (including sea sound, rain sound and water sound) and was played at the bedside of the participants. Three days before and after music therapy, intensity of pain was assessed for both groups. The amount of consumption of analgesic drugs and their kind was also recorded in the two groups during the study. Data were analyzed at the three time intervals using SPSS software 13 and the information was described using mean, SD and analyzed by using t-test, Pearson correlation coefficient and ANOVA.

4. Results

Regarding demographic characteristics, 57.2% of the participants of the intervention group were male, 61.8% were between 30- 50 years old, 38.2% had education level below high school diploma and 93.3% were married. In the control group, 51.9% of the subjects were male, 60% were between 30- 50 years old, 63% had education level below high school diploma and 87.4% were married. There was no statistical difference in demographic variables of the two study groups. Also, there was no significant difference between pain intensity mean of the participants of both groups. Comparison of pain intensity using ANOVA in the three time intervals before study showed no difference in the control (P = 0.34) and intervention (P=0.67) groups (Table 1). But pain intensity was reduced after receiving music therapy in the experimental group (P < 0.001); however, there was no significant difference in control group(P = 0.12) (Table 2). The mean number of daily consumed analgesic drugs in the intervention group was 2.34 ± 1.27, but in the control group was 3.98 ± 1.46, which was significantly different (P = 0.03). Evaluation of the relationship of demographic characteristics with pain intensity showed high mean and SD in bone cancer and stage three of cancer (Table 3). Using Pearson correlation coefficient showed significant relationship between intensity of pain and stage of the disease (r = 0.46, P = 0.008) as well as the intensity of pain and kind of cancer (r = 0.38, P = 0.002).

Table 1. Comparison of the Intensity of Pain in the Three Times Before Intervention among the Intervention and Control Groups

Pain Group, Mean ± SD	First Day Pain, Mean ± SD	Second Day Pain, Mean ± SD	Third Day Pain, Mean ± SD	P Value
Control group	5.12 ± 1.63	5.05 ± 2.34	5.22 ± 1.98	P = 0.34
Intervention group	5.32 ± 1.97	5.92 ± 1.24	5.46 ± 2.06	P = 0.67

Table 2. Comparison of the Intensity of Pain in the Three Times After Starting the Intervention among the Intervention and Control Groups

Pain Group, Mean ± SD	First Day Pain, Mean ± SD	Second Day Pain, Mean ± SD	Third Day Pain, Mean ± SD	P Value
Control group	5.83 ± 1.86	5.13 ± 2.72	5.65 ± 2.37	P = 0.12
Intervention group	4.87 ± 1.02	4.48 ± 2.82	3.96 ± 2.32	P < 0.001

Table 3. The Relationship between Demographic Characteristics of Patients and Pain Intensity

Demographic Characteristics	Mean ± SD	P Value
Sex		P = 0.67
Male	5.34 ± 2.66	
Female	5.76 ± 2.56	
Age, y		P = 0.34
18 - 30 years	5.57 ± 2.24	
31 - 45 years	5.61 ± 1.91	
46 - 55 years	5.48 ± 2.07	
56 - 65 years	5.38 ± 2.82	
Marital status		P = 0.21
Single	5.47 ± 2.31	
Married	5.98 ± 2.54	
Educational level		P = 0.82
Primary	5.22 ± 2.31	
Guidance	5.34 ± 2.67	
High school	5.42 ± 2.37	
College	5.72 ± 2.45	
Type of Disease		P < 0.001
Soft Tissue Cancer	5.32 ± 2.11	
Bone Cancer	6.13 ± 2.32	
Leukemia	5.65 ± 1.98	
Stage of disease		P = 0.003
1	5.14 ± 1.28	
2	6.09 ± 2.21	
3	6.24 ± 2.46	

5. Discussion

The results of the present study showed the positive effect of music therapy on decreasing the pain of cancer patients. The results of some studies performed in Turkey (17) and Iran (18) confirmed the reducing effect of music therapy on distress and pain among these patients. Also, the findings of a research conducted by Uyar M et al. on the impact of music therapy on pain reduction of patients who were admitted to intensive care unit are consistent with the results of our study (19). Our results are also in line with the study conducted by Zhang JM et al. that showed soothing music may have psychological and physical outcomes in cancer patients (20). Another study that was done by Kwekkeboom also showed that patients with cancer who received music therapy experienced significantly less pain and stress compared to patients who only received medication (21). The finding of Korczak D study in Germany also showed that music reduces pain and anxiety and improves physiological parameters that may lead to relaxation and development of a positive mood (15).

With regard to the relationship between demographic characteristics and intensity of pain, our findings demonstrated significant relationships between intensity of pain and stage of cancer as well as the kind of cancer. In line with the results of our study, the study performed by Yousefinejad showed that patients with bone cancer and those with stage three cancer experienced higher levels of pain intensity (22). In this study, we did not find any relation between other demographic variables and intensity of pain, while Kumar et al reported that Indian females are more pain-sensitive than the males (23). This difference can be due to cultural and racial differences.

This study is limited by small sample size and the short follow up periods of participants; therefore, we propose conducting further studies with larger sample sizes and longer follow-ups to confirm our results. In conclusion, patients with cancer are in need of professional palliative care for the improvement of their quality of life which is in contrast with the goals of curative medicine that only focuses on increasing the survival of patients. Therefore, using modalities such as music therapy by considering its effects on reduction of pain among cancer patients, its availability, low cost and no having side effects, can be suggested to healthcare practitioners and nurses as well as the patients' family. This study also supports the practice of evidence-based nursing for the care of patients with cancer.

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Authors' Contribution

Study design: M. J., N. A.; data collection: M. J.; data analysis: M. J., L. S.; manuscript Writing: F. Kh., N. Kh.

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