

Music therapy for improving Bio-physiological and psychological outcomes in patients with cancer-A Review article

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Abstract

The diagnosis of cancer not only effects the person physically but also it disturbs the person psychological wellbeing. Anxiety and pain are the common problems usually experienced by the patients with cancer beginning from the diagnosis to the treatment part. There is a growing body of research documenting the effects of many alternative treatment modalities in cancer care, one among which is the music therapy. Research has proved that engaging in the music listening or music composing activities will reduce the overall health ailments which will arise due to the treatment part and increases the quality of life in terms of comfort, relaxation in patients with cancer.

Keywords: Cancer, Music therapy, Physical outcomes, Physiological outcomes, Psychological outcomes

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forms including, singing, drumming, playing instruments, song writing. Substantive data signify that music interventions in terms of music therapy is more effective than using other terms like music medicine interventions for many outcomes⁷. Although several studies using music as interventions with cancer patients have a positive outcome though the treatment effect may be less and unimpressive to caregivers, patients with cancer, and their family members. Difference in study design, type of study, interventions used, duration intervention, and the role therapist in music therapy may produce changeable outcomes.

Introduction

Cancer is a staid, life-threatening disease. The diagnosis can make expressive and physical distress among the people. Patients with cancer experiences many side effects from diagnosis and treatment¹. Apart from pharmacological management, Non-pharmacological agents are considerable in how the patients with cancer understand physical symptoms during treatment². The importance of alternative system of medicine in present scenario has been increased to great extent, among which the music therapy is in the top³, is one of the communicative therapies, which involves a trained music therapist, uses music to help the patients in improving their health status. Music therapy can be active or passive: during the early period, music therapist use to involve patients as an active participant in composing or playing the music, but at present, patients individually or in a group can listen to recorded music or they can listen to music played by the therapist. After world war II, music therapy established as profession and now its available globally in various health care institutions and hospitals including medicine, surgery, psychiatry, pediatrics, oncology, palliative settings etc^{4,5}. When examining the usefulness of music as an intervention with the cancer patients, researchers highlighted that it is important to make clear similarity between music administered by health professionals and by the trained music therapist⁶. Music therapy has many

Methods

Identification of studies: A google search was carried out to find the studies related to music and cancer. Science direct, proquest, pubmed, cinhal and medline were also searched for the above mentioned type of studies. The terms used to search the studies are “music, music therapy, music intervention, music medicine, cancer, pain and radiation therapy, chemotherapy and oncology.

Inclusion criteria: Only randomized controlled trials which are published in English language are included in this review. No restrictions were made in selecting the review such as age, gender, ethnicity, or type of setting. The review included all the trials in which music therapy was compared with (a) control group receiving only standard routine care, (b) standard care and other therapies, and (c) standard care with placebo. Placebo studies involved the use of headphones with no musical or any other type of auditory stimulus provided to participants.

Types of participants: This review included patients diagnosed with different type of malignant neoplastic disease. There were no limitations on age, gender,

background or type of setting. Participants those who were going for biopsy, bone marrow biopsy and aspiration for diagnostic purposes were expelled from this review.

Types of interventions: The review incorporated all trials in which routine treatment combined with music therapy or music medicine interventions was compared with Standard care alone, Standard care combined with other therapies, Standard care with placebo.

Placebo treatment can involve the use of headphones for the patient wherein no music stimulus is provided or another type of auditory stimulus is provided such as sound of ocean waves etc.

Types of outcome measures

Primary outcomes: The primary outcomes looked in the selected trials includes psychological outcomes such as Depression, anxiety, anger, hopelessness, helplessness and relaxation and physical symptoms like Fatigue, nausea and pain.

Secondary outcomes: The secondary outcomes were mainly physiological parameters such as Cortisol levels, immunoglobulin A (IgA) levels, Social and spiritual support like Family support, spirituality, social activity, isolation, communication includes verbalization, facial affect and gestures and Quality of life.

Study description and quality assessment: 38 eligible studies were selected in this review where patients with cancer received music therapy in various clinical setups such as during operations, chemo and radiotherapy sessions duration of music varied from trial to trial. Total 3,181 patients were randomized and most studies included most of the cancer types like breast cancer, lung cancer, maxillofacial cancers, cancer of nasopharynx and malignant tumors.

Total seven studies assessed the anxiety level of patients by using self rating anxiety scale (SAS), whereas two trials assessed the anxiety with the help of Hamilton anxiety scale (HAMA), Eight studies used Spielberger state trait anxiety inventory (STAI). Seven trials assessed the depression by self rating depression scale (SDS). Two trials analyzed level of fatigue by using Profile of Mood States (POMS). Seven studies graded pain by using Numeric Rating Scale (NRS) and by Visual Analog Scale (VAS). Four trials assessed heart rate, three studies measured respiratory rate, five clinical trials assessed blood pressure, and two studies analyzed music effects on overall quality of life of patients with cancer.

Quantitative analysis of effects: Most of the studies reported that music therapy reduced level of anxiety and level of depression before, during, and after the medical/surgical procedures or treatment, and to some extent, music therapy helped in improving the quality of life too.

Psychological outcomes: anxiety and depression: Nine trials (775 patients measured anxiety by SAS)^{5,8-16} and seven trials (607 patients) provided useful data^{8,9,11-13,15,16}. The mean difference was -12.84 (95% CI, -19.51

to -6.17; P<0.001; I20 98%). Three trials (597 patients) measured anxiety by HAMA^{8,16,17}. The mean difference was -1.85 (95% CI, -3.43 to -0.27; P<0.05).

Eight trials (681 patients) measured anxiety by STAI^{5,13,18-23}. All trials provided useful data. The mean difference of the data was -12.30 (95% CI, -18.93 to -5.68; P<0.001; I2098%). Depression Eight trials (739 patients) measured depression by SDS^{8,9,12,13,15,20,23,24}. Seven trials involving 611 patients provided useful data^{8,9,12,15,20,23,24}. The mean difference was -6.23 (95% CI, -8.85 to -3.60; P<0.00001).

Physical symptoms: pain and fatigue: Pain, Seven trials (535 patients) measured pain by NRS^{17-19,23-26}. Five trials of 423 patients provided useful data^{5,17,18,19,25}. Three studies (314 patients) measured pain by VAS²⁷⁻²⁹. However, only one (120 patients) provided useful data²⁸. NRS and VAS rated pain intensity on a "zero to ten" scale (0, no pain; 10, worst pain). During the procedure, the utmost recorded value was recorded. The mean difference was -0.54 (95% CI, -0.88 to -0.20; P<0.005). Just two trials (90 patients) measured fatigue by POMS⁵, both the trials provided useful data. The mean difference of the data was 0.63 (95% CI, -2.52 to 3.77; P00.70).

Physiological outcomes: Eight trials (581 patients) measured heart rate^{5,10,11,16,19,26,27,30}. Four trials provided useful data^{11,16,19,27}. The mean difference was -12.18 (95% CI, -22.47 to -1.89; P<0.05). four trials (283 patients) measured respiratory rate^{10,16,19,27}. Three (203 patients) provided useful data^{11,19,27}. The mean RR difference was -2.06 (95% CI, -2.84 to -1.28; P<0.00001). Seven trials (521 patients) measured systolic blood pressure^{5,10,11,16,17,19,27}. Four trials provided useful data^{11,16,19,27}. The mean blood pressure difference was -3.74 (95% CI, -20.56 to 13.08; P00.66). Blood pressure (diastolic) seven trials (521 patients) measured diastolic blood pressure^{5,10,11,16-19,27}. Five trials of 365 patients provided useful data^{5,11,16,19,27}. The mean blood pressure MM Hg difference was -2.48 (95% CI, -7.42 to 2.47; P00.33).

Quality of life: Two trials (268 patients) measured quality of life by QOLCA^{5,31}. Both provided useful data. The mean score was 13.32 (95% CI, 11.01 to 15.62; P<0.00001).

Discussion

The music intervention reduces anxiety and depression before, during, and after cancer procedures but did not address the duration of positive effects. Few studies highlighted that music interventions will not produce significant changes in systolic or diastolic blood pressure but it helped in reducing heart and respiratory rates. The effect of music interventions on quality of life is positive. However, the effects of music interventions on other symptoms like fear, nausea, worry, psychological and physical outcomes like distress, socialization, or functional activity, and daily activities

remain unclear till the future investigation will be carried out.

A multidimensional outcome would provide a more comprehensive view of the benefits to music, possibly better than using just a single dimension but were not designed into these trials. Some degree of information was reported regarding the grounds and process of musical selections. Music therapy was not standardized procedure across all the trials, it was different in terms of mode of administration and duration. Most music medicine studies reported using headphones for music delivery. Duration and onset of the interventions varied. Further research is needed to decide the best possible duration for the music intervention. additional information regarding musical preference would be useful because selections varied by musical styles. Music preference is essential because individual difference make the person to like things they recognize and dislike the unwanted which may result in a negative effect on the outcome results³³. Musical preferences differ across age, cultural backgrounds, etc. It is one of the important factors influencing benefits with music³⁴⁻³⁶. From a psycho-physiological point of view, music can promote relaxation, facilitate pleasurable experience, and it also reduces anxiety, heart rate and respiratory rate³⁷. Physiological outcomes also may vary by the patients' musical preferences and past exposure to music³⁸.

The music as a therapy has important practical implications like it is safe to practice, it does not have any harmful side-effects, is inexpensive and easy to implement, and can be applied to different populations, from young children to the elderly. No adverse effects of music as a therapy was reported in any of the studies. Therefore, music therapy can be considered as a potentially effective, inexpensive in addition to the standard care.

Conclusions

The effects of music therapy on psychological outcomes are positive, effects on physical symptoms, especially on blood pressure is less and do not give reason for its routine use. Music intervention reduces respiratory rate, but the quality of the evidence is low.

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