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[Intervention Review]

Music interventions for improving psychological and physical outcomes in people with cancer

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ABSTRACT

Background

This is an update of the review published on the Cochrane Library in 2016, Issue 8. Having cancer may result in extensive emotional, physical and social suffering. Music interventions have been used to alleviate symptoms and treatment side effects in people with cancer. This review includes music interventions defined as music therapy offered by trained music therapists, as well as music medicine, which was defined as listening to pre-recorded music offered by medical staff.

Objectives

To assess and compare the effects of music therapy and music medicine interventions for psychological and physical outcomes in people with cancer.

Search methods

We searched the Cochrane Central Register of Controlled Trials (CENTRAL; 2020, Issue 3) in the Cochrane Library, MEDLINE via Ovid, Embase via Ovid, CINAHL, PsycINFO, LILACS, Science Citation Index, CancerLit, CAIRSS, Proquest Digital Dissertations, ClinicalTrials.gov, Current Controlled Trials, the RILM Abstracts of Music Literature, <http://www.wfmt.info/Musictherapyworld/> and the National Research Register. We searched all databases, except for the last two, from their inception to April 2020; the other two are no longer functional, so we searched them until their termination date. We handsearched music therapy journals, reviewed reference lists and contacted experts. There was no language restriction.

Selection criteria

We included all randomized and quasi-randomized controlled trials of music interventions for improving psychological and physical outcomes in adults and pediatric patients with cancer. We excluded patients undergoing biopsy and aspiration for diagnostic purposes.

Data collection and analysis

Two review authors independently extracted the data and assessed the risk of bias. Where possible, we presented results in meta-analyses using mean differences and standardized mean differences. We used post-test scores. In cases of significant baseline difference, we used change scores. We conducted separate meta-analyses for studies with adult participants and those with pediatric participants. Primary outcomes of interest included psychological outcomes and physical symptoms and secondary outcomes included physiological responses, physical functioning, anesthetic and analgesic intake, length of hospitalization, social and spiritual support, communication, and quality of life (QoL). We used GRADE to assess the certainty of the evidence.

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Main results

We identified 29 new trials for inclusion in this update. In total, the evidence of this review rests on 81 trials with a total of 5576 participants. Of the 81 trials, 74 trials included adult (N = 5306) and seven trials included pediatric (N = 270) oncology patients. We categorized 38 trials as music therapy trials and 43 as music medicine trials. The interventions were compared to standard care.

Psychological outcomes

The results suggest that music interventions may have a large anxiety-reducing effect in adults with cancer, with a reported average anxiety reduction of 7.73 units (17 studies, 1381 participants; 95% confidence interval (CI) -10.02 to -5.44; very low-certainty evidence) on the Spielberger State Anxiety Inventory scale (range 20 to 80; lower values reflect lower anxiety). Results also suggested a moderately strong, positive impact of music interventions on depression in adults (12 studies, 1021 participants; standardized mean difference (SMD): -0.41, 95% CI -0.67 to -0.15; very low-certainty evidence). We found no support for an effect of music interventions on mood (SMD 0.47, 95% CI -0.02 to 0.97; 5 studies, 236 participants; very low-certainty evidence). Music interventions may increase hope in adults with cancer, with a reported average increase of 3.19 units (95% CI 0.12 to 6.25) on the Herth Hope Index (range 12 to 48; higher scores reflect greater hope), but this finding was based on only two studies (N = 53 participants; very low-certainty evidence).

Physical outcomes

We found a moderate pain-reducing effect of music interventions (SMD -0.67, 95% CI -1.07 to -0.26; 12 studies, 632 adult participants; very low-certainty evidence). In addition, music interventions had a small treatment effect on fatigue (SMD -0.28, 95% CI -0.46 to -0.10; 10 studies, 498 adult participants; low-certainty evidence).

The results suggest a large effect of music interventions on adult participants' QoL, but the results were highly inconsistent across studies, and the pooled effect size was accompanied by a large confidence interval (SMD 0.88, 95% CI -0.31 to 2.08; 7 studies, 573 participants; evidence is very uncertain). Removal of studies that used improper randomization methods resulted in a moderate effect size that was less heterogeneous (SMD 0.47, 95% CI 0.06 to 0.88, $P = 0.02$, $I^2 = 56\%$).

A small number of trials included pediatric oncology participants. The findings suggest that music interventions may reduce anxiety but this finding was based on only two studies (SMD -0.94, 95% CI -1.9 to 0.03; very low-certainty evidence). Due to the small number of studies, we could not draw conclusions regarding the effects of music interventions on mood, depression, QoL, fatigue or pain in pediatric participants with cancer.

The majority of studies included in this review update presented a high risk of bias, and therefore the overall certainty of the evidence is low. For several outcomes (i.e. anxiety, depression, pain, fatigue, and QoL) the beneficial treatment effects were consistent across studies for music therapy interventions delivered by music therapists. In contrast, music medicine interventions resulted in inconsistent treatment effects across studies for these outcomes.

Authors' conclusions

This systematic review indicates that music interventions compared to standard care may have beneficial effects on anxiety, depression, hope, pain, and fatigue in adults with cancer. The results of two trials suggest that music interventions may have a beneficial effect on anxiety in children with cancer. Too few trials with pediatric participants were included to draw conclusions about the treatment benefits of music for other outcomes. For several outcomes, music therapy interventions delivered by a trained music therapist led to consistent results across studies and this was not the case for music medicine interventions. Moreover, evidence of effect was found for music therapy interventions for QoL and fatigue but not for music medicine interventions. Most trials were at high risk of bias and low or very low certainty of evidence; therefore, these results need to be interpreted with caution.

PLAIN LANGUAGE SUMMARY

Can music interventions benefit people with cancer?

The issue

Cancer may result in extensive emotional, physical and social suffering. Music therapy and music medicine interventions have been used to alleviate symptoms and treatment side effects and address psychosocial needs in people with cancer. In music medicine interventions, patients simply listen to pre-recorded music that is offered by a medical professional. Music therapy requires the implementation of a music intervention by a trained music therapist, the presence of a therapeutic process and the use of personally tailored music experiences.

The aim of the review

This review is an update of a previous Cochrane review from 2016, which included 52 studies. For this review update, we searched for additional trials studying the effect of music interventions on psychological and physical outcomes in people with cancer. We searched for studies up to April 2020.

What are the main findings?

We identified 29 new studies, so the evidence in this review update now rests on 81 studies with 5576 participants. Of the 81 studies, 74 trials included adults and 7 included children. The findings suggest that music therapy and music medicine interventions may have a beneficial effect on anxiety, depression, hope, pain, fatigue, heart rate and blood pressure in adults with cancer. Music therapy but not music medicine interventions may improve adult patients' quality of life and levels of fatigue. We did not find evidence that music interventions improve mood, distress or physical functioning, but only a few trials studied these outcomes. We could not draw any conclusions about the effect of music interventions on immunologic functioning, resilience, spiritual well-being or communication outcomes in adults because there were not enough trials looking at these aspects. Due to the small number of trials, we could not draw conclusions for children. Therefore, more research is needed.

Overall, the treatment benefits of music therapy interventions were more consistent across trials than those of music medicine interventions, leading to greater confidence in the treatment impact of music therapy interventions delivered by a trained music therapist.

No adverse effects of music interventions were reported.

Quality of the evidence

Most trials were at high risk of bias, so these results need to be interpreted with caution. We did not identify any conflicts of interests in the included studies.

What are the conclusions?

We conclude that music interventions may have beneficial effects on anxiety, depression, hope, pain, and fatigue in adults with cancer. Furthermore, music may have a small positive effect on heart rate and blood pressure. Reduction of anxiety, depression, fatigue and pain are important outcomes for people with cancer, as they have an impact on health and overall quality of life.