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Cochrane Database of Systematic Reviews 2016, Issue 8. Art. No.: CD006911.

DOI: [10.1002/14651858.CD006911.pub3](https://doi.org/10.1002/14651858.CD006911.pub3).

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[Intervention Review]

Music interventions for improving psychological and physical outcomes in cancer patients

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Editorial group: Cochrane Gynaecological, Neuro-oncology and Orphan Cancer Group.

Publication status and date: New search for studies and content updated (conclusions changed), published in Issue 8, 2016.

Citation: Bradt J, Dileo C, Magill L, Teague A. Music interventions for improving psychological and physical outcomes in cancer patients. *Cochrane Database of Systematic Reviews* 2016, Issue 8. Art. No.: CD006911. DOI: [10.1002/14651858.CD006911.pub3](https://doi.org/10.1002/14651858.CD006911.pub3).

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ABSTRACT

Background

Having cancer may result in extensive emotional, physical and social suffering. Music interventions have been used to alleviate symptoms and treatment side effects in cancer patients.

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) (2016, Issue 1), MEDLINE, Embase, 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 January 2016; 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 adult and pediatric patients with cancer. We excluded participants 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.

Main results

We identified 22 new trials for inclusion in this update. In total, the evidence of this review rests on 52 trials with a total of 3731 participants. We included music therapy interventions offered by trained music therapists, as well as music medicine interventions, which are defined as listening to pre-recorded music, offered by medical staff. We categorized 23 trials as music therapy trials and 29 as music medicine trials.

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The results suggest that music interventions may have a beneficial effect on anxiety in people with cancer, with a reported average anxiety reduction of 8.54 units (95% confidence interval (CI) -12.04 to -5.05, $P < 0.0001$) on the Spielberger State Anxiety Inventory - State Anxiety (STAI-S) scale (range 20 to 80) and -0.71 standardized units (13 studies, 1028 participants; 95% CI -0.98 to -0.43, $P < 0.00001$; low quality evidence) on other anxiety scales, a moderate to strong effect. Results also suggested a moderately strong, positive impact on depression (7 studies, 723 participants; standardized mean difference (SMD): -0.40, 95% CI -0.74 to -0.06, $P = 0.02$; very low quality evidence), but because of the very low quality of the evidence for this outcome, this result needs to be interpreted with caution. We found no support for an effect of music interventions on mood or distress.

Music interventions may lead to small reductions in heart rate, respiratory rate and blood pressure but do not appear to impact oxygen saturation level. We found a large pain-reducing effect (7 studies, 528 participants; SMD: -0.91, 95% CI -1.46 to -0.36, $P = 0.001$, low quality evidence). In addition, music interventions had a small to moderate treatment effect on fatigue (6 studies, 253 participants; SMD: -0.38, 95% CI -0.72 to -0.04, $P = 0.03$; low quality evidence), but we did not find strong evidence for improvement in physical functioning.

The results suggest a large effect of music interventions on patients' quality of life (QoL), but the results were highly inconsistent across studies, and the pooled effect size for the music medicine and music therapy studies was accompanied by a large confidence interval (SMD: 0.98, 95% CI -0.36 to 2.33, $P = 0.15$, low quality evidence). A comparison between music therapy and music medicine interventions suggests a moderate effect of music therapy interventions for patients' quality of life (QoL) (3 studies, 132 participants; SMD: 0.42, 95% CI 0.06 to 0.78, $P = 0.02$; very low quality evidence), but we found no evidence of an effect for music medicine interventions. A comparison between music therapy and music medicine studies was also possible for anxiety, depression and mood, but we found no difference between the two types of interventions for these outcomes.

The results of single studies suggest that music listening may reduce the need for anesthetics and analgesics as well as decrease recovery time and duration of hospitalization, but more research is needed for these outcomes.

We could not draw any conclusions regarding the effect of music interventions on immunologic functioning, coping, resilience or communication outcomes because either we could not pool the results of the studies that included these outcomes or we could only identify one trial. For spiritual well-being, we found no evidence of an effect in adolescents or young adults, and we could not draw any conclusions in adults.

The majority of studies included in this review update presented a high risk of bias, and therefore the quality of evidence is low.

Authors' conclusions

This systematic review indicates that music interventions may have beneficial effects on anxiety, pain, fatigue and QoL in people with cancer. Furthermore, music may have a small effect on heart rate, respiratory rate and blood pressure. Most trials were at high risk of bias and, therefore, these results need to be interpreted with caution.

PLAIN LANGUAGE SUMMARY

Can music interventions benefit cancer patients?

The issue

Cancer may result in extensive emotional, physical and social suffering. Current cancer care increasingly incorporates psychosocial interventions to improve quality of life. 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, the patient simply listens 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 2011, which included 30 studies and found support for an effect of music interventions on several psychological and physical outcomes. 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 published and ongoing studies up to January 2016. We considered all studies in which music therapy or music medicine was compared with standard treatment alone or standard care combined with other treatments or placebo.

What are the main findings?

We identified 22 new studies, so the evidence in this review update now rests on 52 studies with 3731 participants. The findings suggest that music therapy and music medicine interventions may have a beneficial effect on anxiety, pain, fatigue, heart rate, respiratory rate and blood pressure in people with cancer. Because of the very low quality of the evidence for depression, it is unclear what impact music interventions may have. Music therapy but not music medicine interventions may improve patients' quality of life. 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, coping, resilience or communication outcomes because there were not enough trials looking at these aspects. Therefore, more research is needed.

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, pain, fatigue and quality of life (QoL) in people with cancer. Furthermore, music may have a small positive effect on heart rate, respiratory rate and blood pressure. Reduction of anxiety, fatigue and pain are important outcomes for people with cancer, as they have an impact on health and overall QoL. Therefore, we recommend considering the inclusion of music therapy and music medicine interventions in psychosocial cancer care.