
Effects of music therapy on behavioral and psychological symptoms of dementia: a systematic review and meta-analysis

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CRD summary

The authors concluded that music therapy was effective for the management of the behavioural and psychological symptoms of dementia. The effects were small for depression and behavioural outcomes, and moderate for anxiety. The quality assessment of studies was limited, but most studies were likely to have been subject to bias. The authors' conclusions appear somewhat over-optimistic.

Authors' objectives

To evaluate the effects of music therapy on behavioural and psychological symptoms, activities of daily living, and cognitive function, in patients with dementia.

Searching

MEDLINE, CINAHL, PsycINFO, and Ichushi (Japanese database) were searched to February 2011. Search terms were reported. The search was limited to articles published in English or Japanese. The reference lists of previous systematic reviews were searched.

Study selection

Eligible for inclusion were randomised controlled trials (RCTs), controlled clinical trials, and cohort studies that evaluated one music-related experience or a combination of music-related experiences, such as singing, listening, performing, rhythmic exercising, and improvising. Uncontrolled before-and-after studies and case studies were excluded. Participants had to be older people formally diagnosed with any type of dementia. Primary outcomes of interest were changes in psychological symptoms (depression and anxiety), and behaviour (agitation, apathy, elation, and irritability). Secondary outcomes of interest were changes in cognitive function, and activities of daily living.

Over half of the included studies were conducted in Asia; the rest were conducted in Europe (none in the UK), the USA, or Australia. Patients had senile dementia of Alzheimer's type, vascular type, Parkinson's type, or mild-to-severe mixed types. The mean age (where reported) ranged from 72.6 years to 89.5 years. Most studies were of combined music-related experiences, often based on music that was familiar to participants. The comparators were usual care (not defined). Various professionals (most of whom were music therapists) or students delivered the interventions, which lasted (on average) for 36 minutes per day, on two-to-three days a week, for 10 weeks. Various outcome measures were used (reported in the paper).

Two reviewers independently selected studies for inclusion. Disagreements were resolved by consensus, or with the involvement of a third reviewer, if necessary.

Assessment of study quality

Study quality was assessed using the Critical Appraisal Skills Programme (CASP) checklist, designed for RCTs. This had seven criteria, and a maximum score of 16. The CASP scoring system was based on GRADE criteria.

Two reviewers independently assessed study quality.

Data extraction

Two reviewers independently extracted the data to calculate mean differences and 95% confidence intervals. Disagreements were resolved by involving a third reviewer. Study authors were contacted for missing data, if necessary.

Methods of synthesis

Standardised mean differences were pooled in random-effects meta-analyses (DerSimonian and Laird). The magnitude of an effect was interpreted using Cohen's criteria (SMD \geq 0.20 to $<$ 0.50 was small; SMD \geq 0.50 to $<$ 0.8 was medium; and SMD \geq 0.8 was large). Statistical heterogeneity was assessed using I^2 (I^2 $>$ 50% was considered substantial).

Subgroup analyses were carried out to assess intervention impact, according to intervention length, diagnosis, and type of music therapy. Sensitivity analysis was carried out to explore the impact of study quality (CASP \geq 10 or \leq 9) and study design. Publication bias was assessed for studies with an effect size greater than 0.20, using a funnel plot.

Results of the review

Twenty studies (651 participants; range 12 to 68) were included. There were 10 RCTs and 10 controlled trials (reported in the table). The average CASP scale score was 9.5 out of 16. None of the studies met all seven criteria; seven were single-blind (evaluator or analyst); and an intention-to-treat analysis was performed in six studies.

Music-related interventions were associated with statistically significant reductions in depression (SMD -0.32, 95% CI -0.68 to -0.04; $I^2=44%$; nine studies; 250 participants); anxiety (SMD -0.64, 95% CI -1.05 to -0.24; $I^2=55%$; eight studies; 258 participants); and behaviour or neuropsychological outcomes (SMD -0.49, 95% CI -0.82 to -0.17; $I^2=58%$; 11 studies; 397 participants). Publication bias was not detected in any analysis.

No statistically significant changes were reported for cognition (16 studies; $I^2=0$; 428 participants) and activities of daily living (six studies; $I^2=0$; 195 participants).

Subgroup analysis results were reported. Sensitivity analysis (exploring the impact of study quality and design) did not materially alter the findings.

Authors' conclusions

Music therapy was effective for the management of the behavioural and psychological symptoms of dementia. The effects were small for depression and behavioural outcomes, and moderate for anxiety.

CRD commentary

The review question was clear and the inclusion criteria were presented with sufficient detail to allow replication. Appropriate data sources were searched, but language and publication restrictions mean that relevant studies might have been missed. The review process included efforts to minimise error and bias, but a basic quality assessment tool was used. Study details were presented, but the details of the comparator were unclear. The chosen method of synthesis seems to have been justified. Appropriate subgroup and sensitivity analyses were conducted, and the results were clearly presented; many of the analyses had significant levels of statistical heterogeneity.

The review's quality assessment was limited, but most studies were likely to have been subject to bias. With this in mind, the authors' conclusions appear somewhat over-optimistic.

Implications of the review for practice and research

Practice: The authors advocated music therapy before pharmacological intervention (recommended by guidelines at the time) for the management of the behavioural and psychological symptoms of dementia.

Research: The authors stated that future studies with robust methods were required to establish strong evidence for the effects of music therapy on the symptoms of dementia. Particularly, the effects of music therapy on specific behavioural outcomes.

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