Music-assisted relaxation to improve sleep quality: meta-analysis

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CRD summary
The authors of this review concluded that music-assisted relaxation was an effective aid for improving sleep quality in patients with various conditions. The overall conclusion appeared to be supported by the evidence presented, but the most effective form and type of music intervention for different populations remained to be determined.

Authors' objectives
To evaluate the efficacy of music-assisted relaxation for sleep quality in adults with sleep complaints with or without a comorbid medical condition

Searching
EMBASE (from 1997), MEDLINE (from 1950), Cochrane (from 2000), PsycINFO (from 1987) and CINAHL (from 1982) were searched to July 2008 for studies published in English, German, French or Dutch. Search terms were reported. Reference lists from identified studies were examined to locate additional articles.

Study selection
Eligible studies had to be randomised controlled trials (RCTs) conducted in an adult (18 to 60 years) or elderly (60 years or older) population with primary sleep complaints or sleep complaints comorbid with a medical condition. Studies of those with neurological or severe cognitive disorders were excluded. Music-assisted relaxation was defined as therapeutic relaxation improving interventions in which music is the key ingredient. Additional measures (such as oral or written instructions) were permitted. Music was considered to be recorded music intentionally used for promotion of sleep quality in a passive way. Music could be patient preferred or selected by researchers. Studies that involved active use of music (such as playing instruments) were excluded. The primary outcome measure was sleep quality defined as the multi-dimensionally assessed subjective experience of sleep.

Participant mean age was 51 years of age. Studies involved patients in hospital settings, elderly people in the community and students. Intervention duration varied between 20 and 45 minutes per session. Follow-up ranged from two days to three weeks. Most studies used music accompanied by a relaxation technique or instruction. Control groups experienced no intervention, silence, usual care or scheduled rest. Pittsburgh Sleep Quality Index (PSQI) or the Richards-Campbell Sleep Questionnaire (RCSQ) were used as subjective self-rating scales.

The authors did not state how many reviewers selected studies for the review.

Assessment of study quality
Trial quality was assessed using the Delphi list of nine items (including randomisation, allocation concealment and blinding). Only studies with a positive score on five or more items (≥55% of the maximum attainable score) were included.

Two reviewers assessed the studies independently and achieved consensus on included trials.

Data extraction
Pre-test and post-test means and standard deviations were extracted from each included study. Standardised mean differences (SMDs) and 95% confidence intervals were calculated based on sample size. Scores were converted by subtracting the real score from the maximum score to ensure compatibility with the PSQI outcome measures for the study using the RCSQ outcome.

The authors did not state how many reviewers extracted data for the review.
Methods of synthesis
Pooled standardised mean differences were calculated using a fixed-effect model of meta-analysis. An effect size of 0.2 was interpreted as small, 0.5 moderate and 0.8 large. Statistical heterogeneity was investigated through the $\chi^2$ and $I^2$ tests. Publication bias was assessed using a funnel plot.

Results of the review
Five trials (308 participants) were included. Mean sample size was 69. Studies scored 5 or 6 out of 9 on the Delphi quality scale; this was in some part due to difficulties of blinding for the intervention. All trials used randomisation to allocate participants to treatment groups. The funnel plot did not suggest publication bias.

Music-assisted relaxation had a moderate effect on sleep quality of patients with sleep complaints (SMD -0.74, 95% CI -0.96 to -0.52). There was no evidence of statistical heterogeneity. None of the studies reported any adverse effects.

Subgroup analyses showed no statistically significant contribution of additional relaxation measures, but the combined result of the meta-analysis on studies without added relaxation measures showed statistical heterogeneity.

Authors’ conclusions
Music-assisted relaxation was an effective aid for improving sleep quality in patients with various conditions.

CRD commentary
The authors defined inclusion criteria for patients, intervention, outcomes and study designs. The search encompassed a range of databases, but did not include unpublished material and the authors could not rule out publication bias. Quality was assessed by two reviewers; it was unclear whether more than one reviewer was involved in study selection and data extraction (which would have helped minimise bias). Pooled studies were clinically diverse. There was some investigation of heterogeneity through subgroup and regression analysis. Although the overall conclusion appeared to be supported by the evidence presented, the most effective form and type of music intervention for different populations remained to be determined.

Implications of the review for practice and research
Practice: The authors stated that since no adverse effects were reported, nurses could use the findings of the review in practice to promote music-assisted relaxation. The intervention could be used without extensive investment in training and materials and was cheap and readily available.

Research: The authors stated that the role of music in a multifaceted intervention that combined cognitive-behavioural and/or educational elements required further exploration. Future studies should assess both objective and subjective outcome measures of sleep quality and it would be of interest to determine the most effective form of music intervention and type for different populations. Future studies should have strict inclusion criteria based on a good definition of the sleep problem.

Funding
The study was part of a project supported by a grant from ZonMW, Netherlands Organization for Health Research and Development (non-profit).

Bibliographic details

PubMedID
19456998

DOI
10.1111/j.1365-2648.2009.04982.x
Original Paper URL
http://onlinelibrary.wiley.com/journal/122368525/abstract

Indexing Status
Subject indexing assigned by NLM

MeSH
Adolescent; Adult; Aged; Aged, 80 and over; Female; Humans; Male; Middle Aged; Music Therapy; Program Evaluation; Randomized Controlled Trials as Topic; Relaxation Therapy; Sleep Initiation and Maintenance Disorders /therapy; Treatment Outcome; Young Adult

AccessionNumber
12009107256

Date bibliographic record published
23/12/2009

Date abstract record published
07/04/2010

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.