

The Sound of Memory: Investigating Music Therapy's Cognitive Benefits in Patient with Dementia - A Network Meta-Analysis of Randomized Controlled Trials

INPLASY202430082

doi: 10.37766/inplasy2024.3.0082

Received: 19 March 2024

Published: 19 March 2024

Ting, B; Su, CH.

Corresponding author:

Berne Ting

berne.ting@gmail.com

Author Affiliation:

Ph.D. Program for Aging, College of Medicine, China Medical University.

ADMINISTRATIVE INFORMATION**Support** - This study did not receive any dedicated grants from public, commercial, or not-for-profit funding organizations.**Review Stage at time of this submission** - Data analysis.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202430082**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 19 March 2024 and was last updated on 19 March 2024.**INTRODUCTION**

Review question / Objective P – individuals with dementia; I – music therapy; C – control group without intervention; O – established measures for assessing cognitive function in dementia.

Condition being studied This study aims to investigate the impact of music therapy on the cognitive functions of patients with dementia. Dementia is a chronic condition that affects memory, thinking, and social abilities, significantly impacting daily living. Although there is no cure for dementia, some interventions have been found to potentially improve or alleviate symptoms. Music therapy, considered a promising non-pharmacological intervention, may enhance cognitive functions by stimulating patients' memories and emotions. However, evidence on the effects of music therapy on cognitive functions in dementia patients is still insufficient. Therefore, this study involves administering music therapy interventions to dementia patients and comparing

their outcomes with those of a control group that did not receive any intervention, using established cognitive function assessment metrics. Through this research, we aim to provide more evidence-based support for the management of dementia, as well as offer more intervention options for patients and caregivers.

METHODS

Participant or population Participants were diagnosed with dementia, MCI or participants must have self-reported memory loss.

Intervention Musical interventions.

Comparator Control group without intervention.

Study designs to be included Randomized Controlled Trials (RCTs).

Eligibility criteria The selection criteria for inclusion were as follows: Studies needed to be conducted as Randomized Controlled Trials

(RCTs), with the intervention groups receiving music therapy that included elements of rhythm, melody, and harmony. In contrast, control groups received either standard care, no treatment, or a non-music based intervention. The effectiveness of the interventions was assessed using scales designed to measure cognitive function. Additionally, participants in these studies were required to have been diagnosed with dementia, mild cognitive impairment (MCI), or to have self-reported memory loss. On the other hand, we excluded several types of publications from our analysis, including review articles, medical protocols, conference papers, case reports, letters to the editor, editorials, pilot studies, and preliminary results from ongoing research. Studies were also excluded if music therapy was used alongside other therapies, considered as a complementary or alternative treatment, or if the control group involved any form of music intervention. Lastly, studies lacking a primary outcome analysis were not considered.

Information sources Four electronic databases—PubMed, Embase, Web of Science, and the Cochrane Library.

Main outcome(s) The primary outcome of this study focuses on analyzing the impact of music therapy, including both active and passive forms, on the cognitive functions of patients with dementia. The research aims to evaluate the effectiveness of these therapeutic interventions in enhancing or maintaining cognitive functions, with the intervention period defined as ranging from 6 to 24 months. Through a systematic review and network meta-analysis approach, we will gather and analyze data from studies on various types of music therapy interventions at different time points to determine the efficacy and feasibility of music therapy in improving cognitive functions in patients with dementia.

Quality assessment / Risk of bias analysis To assess the methodological quality and identify any potential bias within the included studies, we employed the Cochrane Collaboration's Risk of Bias Tool for Randomized Trials (RoB 2, version 2, based in London, UK).

Strategy of data synthesis To manage the diversity of music therapy types, we adopted a random-effects model. This analysis was conducted utilizing the frequentist approach through MetaInsight (version 5.1.2, supported by funding from the National Institute for Health Research (NIHR), London, UK), an online network meta-analysis (NMA) platform. MetaInsight

incorporates the netmeta package from R for its statistical analyses.

Subgroup analysis Subgroup analysis: The types of music interventions from the studies were classified into several categories, including rhythmic intervention, active music therapy, passive music therapy, music listening, and singing.

Sensitivity analysis We conducted two sensitivity analyses: The first analysis utilized a one-study removal approach, and the second analysis focused on the pre-post correlation coefficient.

Language restriction No language limit.

Country(ies) involved Taiwan.

Keywords Dementia, cognitive, randomized controlled trials, music therapy, music medicine, music psychology, music intervention.

Contributions of each author

Author 1 - Berne Ting.

Email: berne.ting@gmail.com

Author 2 - Chen-Hsin Su.