



THE EFFECT OF MUSIC THERAPY ON THE EMOTIONAL WELL BEING AND
AGITATION LEVELS IN PERSONS WITH ALZHEIMER'S DISEASE

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Introduction

Alzheimer's disease (AD) is a disorder prevalent in the older population which is caused by the abnormal buildup of proteins (amyloid and tau) in the brain, leading to nerve cell damage and cell death. As a result, a patient with AD can experience a plethora of cognitive impairments which can include trouble recognizing faces, loss of personality, depression, agitation, and loss of ability to do daily tasks. In addition to being a devastating disease to the patient themselves, AD is terrible for the patient's family. Although a few medications exist to treat AD symptoms, there is no cure for this disease, costing AD families a combined \$1 trillion per year. Although most patients lose most if not all their cognitive abilities, they are often able to retain their ability to respond and engage with musical experiences.

This paper focuses on the qualitative analysis of four randomized controlled trials done to evaluate the effectiveness of music-based intervention on the emotional wellbeing of people with Alzheimer's disease. I was inspired to write this paper after volunteering at a nearby Alzheimer's center several times. I started playing violin for the residents and noticed how they lit up and even started singing along. Although some of them didn't speak much and obviously didn't remember much of their lives, they were able to sing the lyrics to the songs played. I wanted to analyze the studies which have been done so far and its evidence which will guide me to create my own 30-minute sessions of instrumental music using a violin to best fit the needs of residents.

Research Question

In patients with Alzheimer's disease, how does music therapy compared to standard care affect emotional well-being and agitation levels over the course of their respective treatment period?

Methodology

This study is a qualitative data synthesis containing four randomized controlled trials (RCTs) to evaluate the effects of music therapy compared to standard care on emotional wellbeing and agitation levels in patients diagnosed with Alzheimer's disease. The RCTs included in this study have been published within the last 5 years. A systematic search was conducted in PubMed and CINAHL databases.



Results

Study 1

Reschke-Hernández et al., 2023 conducted a randomized crossover trial among 32 care facility residents with Alzheimer's disease, aged 65–97 years. In the study, singing-based intervention grounded in the clinical practice model was compared to verbal discussion, and social engagement and effective response in persons with AD were measured. The study compared small group (3-5 participants in a group) live singing of participants' preferred songs with a guitar accompaniment to an analogous nonmusical activity—verbal discussion. Both activities used the same structure, strategies, and dosage. The study had six 25-minute sessions over two weeks with a two-week washout period and crossed over to the other intervention. Clinical dementia severity was assessed using Montreal cognitive assessment. Interventions used strategies across various conditions following the Clinical Practice Model.

Statistical analysis of this study was done using a separate linear mixed model for each dependent variable including feelings, emotions, and social engagement. The change in feelings was measured by the Dementia Mood Picture Test. Researchers used the Observed Emotional Rating Scale to record behavioral indicators of pleasure, anger, anxiety/fear, and depression/sadness in 5-minute intervals during the session. The Menorah Park Engagement Scale was also used to assess social engagement from the interventions.

The study showed that the music therapy group had a higher positive impact on emotion compared to that of the verbal discussion group. Participants demonstrated significantly more constructive social engagement during the singing intervention than during the verbal session. The study also found that people with moderate dementia demonstrated higher levels of constructive engagement during music therapy compared to those of people with severe dementia.

Interventionists used strategies within the familiarity theme of the clinical Practice model to promote and enhance the recognizability of songs and any associated memories. Repetition in music intervention in terms of repetitive lyrics, melody, rhythm patterns were associated with neural reward systems and elevated enjoyment of music, whereas in verbal secession repetitive patterns became uninteresting and odd. Therefore, performing pieces of music again or choosing a specific portion of the song to sing repeatedly showed the most positive results. Participants self-reported that they felt better and had more pleasure in response to music therapy compared to verbal discussion. Interpretation of the study might be limited by personal differences of researchers in their observations even though the study has utilized reliable and valid measurement tools.

Study 2

The second study used in this paper is a randomized controlled trial conducted by Gomez-Gallego et al. (2021) among ninety patients with Alzheimer's disease. People with aphasia and hearing impairment were excluded from the study. Participants were randomly assigned to three groups: active music intervention, receptive music intervention, and a control group.

The active music intervention included a welcome song, rhythmic exercises, music quiz, and a Goodbye song; all these factors included means of engagement and interaction. In receptive music intervention, a previously recorded playlist was played for the participants in a medium sized room, and residents could react however they wanted but did not directly interact with the music. The control group watched nature documentary videos in a large room.

Differences among groups in demographics and baseline scores in the outcome measures were assessed by analysis of variance (ANOVA). The study personals measured the effects of above interventions on cognition, behavior, mood, ability to do basic daily tasks, and motor function. The effect on cognition was assessed using Mini Examination of the Mental State tool and behavior changes were assessed using Neuropsychiatric inventory. Geriatric depression Scale was utilized to assess the mood and Barthel index measured patients' ability to perform daily tasks. Motor function was assessed using Tinneti Scale.

Active music intervention improved cognition based on MMSE scores compared to RMI and Control groups. Similarly, positive effects on behavior were seen in AMI, whereas it did not change in RMI and deteriorated in the control group. The ability to do daily tasks was improved in the AMI group, reduced in the RMI group, and remained the same in the control group. Although motor skills slightly improved in the AMI group, there were no statistically significant improvements in any of the three groups. No significant change in mood observed in any groups after the interventions.

Study 3

The third study analyzed in this paper was a parallel cluster-randomized controlled trial conducted by Sisti A et al. (2024) among 976 nursing home residents with Alzheimer's disease to evaluate the effects of personalized music interventions on agitated behaviors and mood. 483 NH (nursing home) residents were assigned to the intervention group and 493 were assigned to the control group.



The intervention group was offered their preferred music delivered on a personalized music device through a program known as Music and Memory. The staff were instructed to give 30 minutes of music per day when agitated behaviors typically occur or to treat agitated behaviors in progress. The controlled group treated agitation with usual care including ambient or group music. The personal music was chosen based on songs residents liked at their young age, around 16-26 years.

The residents' behavior was assessed using The Agitated Behavior Mapping Instrument Tool at baseline, 4-months, and 8-months. In the ABMI tool, agitated behaviors are categorized into none, some (1-3 agitated behaviors), and many (4+ agitated behaviors). The study demonstrated improvements in verbal agitation among moderately agitated patients, whereas no impact was noted in severe agitation. In terms of physically agitated behaviors, anger, fear, alertness, or sadness, there was no significant effect. Residents in NHs selected to receive the intervention were more often observed to be happy compared to residents in usual care.

Study 4

The final study used in this paper is a pragmatic randomized controlled trial conducted by Harrison T et al. (2021). The setting of the study was 13 Long-term care facilities and study conducted among 158 residents with AD. The intervention group had music therapy, and the control group had audiobooks. This study analyzed the effect of music versus control on agitation. The study used a Mini Mental Status Examination (MMSE) to assess cognitive status and then the Cohen-Mansfield aggression inventory with four subscales to measure agitation.

The study found that decreases in agitation were seen in both music and audio books in three out of the four subgroups. The fourth subgroup of agitation- physical aggression-decreased during the music and increased afterwards. Generally, physical aggression increases with audiobooks.

Table of Evidence

Study	Design & Sample	Intervention	Outcome Measures	Key Findings	Quality/Notes
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Reschke-Hernández et al., 2023	RCT, n=32, nursing home residents, 65–97 yrs	Singing vs verbal discussion	Emotional wellbeing, agitation scales	Improved social & emotional well-being; reduced mild agitation	High-quality, crossover design
Gómez-Gallego et al., 2021	RCT, n=90, community/clinic	Group music vs group listening	Mood, cognition	Group music more effective for emotional engagement	Moderate quality
Sisti et al., 2024	RCT, n=976, nursing homes	Personalized music playlist	Agitation, mood	Reduced verbal agitation; no significant effect on physical agitation	High-quality, pragmatic trial
Harrison et al., 2021	RCT, n=158, long-term care	Music vs auditory books	Agitation, cognition	Music reduced agitation more than books	Randomized Controlled Trial

Conclusion



Based on the results and analysis of four randomized controlled trials, music therapy shows significant benefits for individuals with Alzheimer's disease. These benefits include reduced agitation, improved mood regulation, and enhanced cognitive function. Specifically, active forms of music therapy produce greater improvements in cognition and agitation levels compared to receptive listening methods. Music and audiobooks reduced agitation in three of four subgroups, but physical aggression only improved during music (worsening afterward, and generally with audiobooks). The studies also showed that the effect of music therapy on agitation is related to its severity. Consequently, positive effects were recorded higher in patients with low to moderate agitation levels, whereas no significant effects were noted in patients with severe agitation. Intervention residents were observed happier than usual-care residents.

Future Directions

Incorporating music therapy into the management of Alzheimer's disease is beneficial to enhance patients' quality of life by improving cognitive function and reducing agitation, alongside other interventions. Implementing organized sessions of active music therapy and using specific, personal music choices may provide greater emotional, cognitive, and behavioral benefits. Selecting music that is familiar to patients from their teenage and early adulthood age may further help them to be more active cognitively and show improvements emotionally.

I will be implementing methods in these studies that showed improvement into my own 30-minute sessions that I will then use at my local memory care center that I volunteer at. I will intentionally be picking pieces of music relevant to the residents during their youth to maximize engagement. In addition, I will surround the actual music with trivia and storytelling about the songs to further active participation and involvement.

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