

Efficacy of Music Therapy vs. Second-Generation Antipsychotics for Treatment of Neuropsychiatric Symptoms in Patients with Mild to Moderate Alzheimer's Disease

Background

- Alzheimer's Disease (AD) is a neurodegenerative disorder which is hallmarked by cognitive decline and memory loss.
- Patients also exhibit neuropsychiatric symptoms (NPS) such as anxiety, irritability, aggression, psychosis, delusions, hallucinations, and more (Apostolova, 2016).
- Antipsychotic drugs (APD) are considered the first-line therapy for NPS in dementia, yet they are associated with an increase in mortality (Goodarzi & Ismail, 2019)
- Non-pharmacological interventions such as music therapy have gained popularity due to their therapeutic benefits within AD populations.
- A comparison of pharmacological and non-pharmacological interventions is an important area of research for this patient population.

PICO Question

In adults diagnosed with Alzheimer's disease (P), how effective is music therapy (I) compared to antipsychotic pharmacological treatment (C) in reducing neuropsychiatric symptoms (O)?

Methods/Search Strategy

- A literature review was conducted utilizing the following databases: PubMed, CINAHL, and JSTOR and included the terms: "Alzheimer's disease", "music", "music therapy", "antipsychotics", and "efficacy."
- Search criteria were narrowed by papers published between January 2011 and July 2021, but exceptions were made for rigorous studies completed prior to 2011.

Table of Evidence

Intervention	Level	Size of Sample	Measures	Findings	Author, Date
Music Therapy	1	30 nursing home residents	Hamilton Scale (anxiety), Geriatric Depression Scale	Statistically significant improvements in anxiety and depression.	Guétin et al., 2009
	1	14 residents + 10 caregivers	NPI-NH	NPS decreased overall and improvements continued for two months after the study.	Hsu et al., 2015
	1	104 nursing home residents	Cohen-Mansfield agitation inventory	Reduced agitation and physically aggressive behaviors overall.	Lin et al., 2011
	1	288 participants	MMSE, Auditory verbal learning test, Verbal fluency	Those with mild dementia showed a trend towards lower NPI scores.	Lyu et al., 2018
	1	59 from skilled nursing facility	MMSE, Barthel Index, NPI	NPI total score decreased with statistical significance. Empathetic relationship improved.	Raglio et al., 2008
	3	44 long-term care residents	MMSE, CNPI, QOL-AD	Listening to opera and learning the song associated with improvement in all measures.	Chen et al., 2019
	4	30 patients with severe AD	MMSE, Likert scale, Friedman test, NOSGER	Agitation and apathy decreased significantly. No significant difference in depression or QOL.	Dahms et al., 2021
	4	13 long-term care residents	Cohen-Mansfield agitation inventory, MMSE	Decreases in agitation attributable to music therapy on all scales.	Harrison et al., 2021
	4	39 hospital patients	Autonomic nerve index, Faces Scale, BEHAVE-AD	Reduced stress, increased relaxation, increased parasympathetic NS activity.	Sakamoto et al., 2013
Antipsychotic Drugs	1	421 outpatient	Clinical Global Impression of Change Scale	No significant differences in improvement on the CGIC scale.	Schneider et al., 2006
	1	889,378 patients	Statistical comparison	Antipsychotics associated with increased risk of stroke, fracture, and mortality.	Watt et al., 2020
	2	58,412 in Swedish registry	Charlson comorbidity index, MMSE	APDs administered at time of diagnosis increased mortality in the total cohort.	Schwertner et al., 2019

Synthesis of Results

Music Therapy

- Across the board improvement in neuropsychiatric symptoms, verbal fluency, and overall wellbeing
- Feasibility of implementation, ability to tailor therapy to an individual's culture and interests
- Zero side effects and unlimited dosage
- Most useful in mild to moderate AD

Antipsychotics

- Overall benefits may be counter-balanced if not outweighed by adverse effects
- Increase in the level of sedation and increased risk of mortality compared to placebo
- Effective in control of acute and severe symptoms

Recommendations

- There is a need for more research, and treatment plans will heavily depend on patient symptom severity and circumstances.
- Our findings reveal that APD therapy poses a much higher risk to patient mortality and is not suitable as a long-term treatment plan.
- APD should be reserved as a final treatment where benefits outweigh the risks.
- Music therapy can improve mild NPS, so it could be implemented in early-stage Alzheimer's.
- The utilization of music therapy should be strongly considered and further investigated as the primary form of treatment of NPS in AD, at least in early stages and as a potential treatment to decrease progression of symptoms.

Barriers to Implementation

The literature review revealed a lack of consistency between therapeutic techniques. Some studies utilized self-selection of music while others provided standard music for all participants. Additionally, some involved active participation while others listened to music passively. This variation indicates a potential barrier for a standardized implementation of music therapy.

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