Around the World 2

Impact of Music-Based Intervention on Cognitive and Emotional Outcomes in Alzheimer's Disease

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Key highlights:

- Culturally grounded music interventions can reduce anxiety and enhance emotional well-being in people with dementia, with particular benefits for psychic over somatic anxiety.
- Active participation in folk music sessions promotes engagement, social interaction, and a sense of personal identity, supporting Person-Centered Care approaches.
- Traditional music interventions show immediate and residual positive effects on well-being, highlighting their potential as a complementary non-pharmacological strategy in dementia care.

Alzheimer's disease (AD) is the most common cause of dementia worldwide and represents a major global health challenge due to its progressive impact on memory, cognition, and daily functioning. Beyond cognitive decline, many individuals with AD experience emotional distress, anxiety, social withdrawal, and identity loss, which profoundly affect both patients and caregivers. In recent years, non-pharmacological approaches have received increasing attention as complementary strategies to improve quality of life. Among these, music interventions have emerged as particularly promising, given their ability to engage preserved neural networks and evoke meaningful personal memories.

Music holds a unique position in the human brain. Neuroscience research has shown that musical memory and responsiveness often remain relatively intact in AD, even in moderate or severe stages of the disease (Matziorinis et al, 2022). Unlike other cognitive domains,

the ability to recognize familiar melodies, sing along, or respond emotionally to music is often preserved. This resilience has been attributed to the involvement of distributed brain networks, including those related to emotion, reward, and motor coordination, which are less affected in the early phases of AD. As such, music provides a powerful channel to foster emotional regulation, stimulate reminiscence, and facilitate social interaction.

Different types of musical interventions have been studied in Alzheimer's populations. Passive approaches, such as listening to personalized playlists or live performances, have been shown to reduce agitation, improve mood, and decrease behavioral disturbances. Active interventions, including group singing, drumming, or movement to music, promote engagement, social bonding, and communication. Importantly, when music is rooted in participants' cultural or personal histories, it can strengthen a sense of identity and continuity despite cognitive decline.

Clinical studies have reported promising outcomes. A recent systematic review of 11 clinical trials concluded that music therapy significantly improves memory, language, and orientation in older adults with Alzheimer's-type dementia (Jiménez-Palomares et al, 2024). Music therapy has been associated with reductions in anxiety and depressive symptoms, improvements in quality of life, and increased participation in daily activities (Lu et al, 2025). Physiological benefits, such as reductions in heart rate and cortisol levels, have also been documented, suggesting that music can modulate stress responses. Furthermore, family members and caregivers frequently describe enhanced communication and more positive interactions when music is incorporated into care routines. This relational impact is highly significant, as caregiver burden remains one of the greatest challenges in dementia care.

Despite these encouraging results, research in this field faces methodological limitations. Many studies involve small samples, short follow-up periods, and diverse intervention protocols, making it difficult to establish standardized guidelines. More robust clinical trials are needed to clarify the optimal "dose" of music, the most effective modalities, and the long-term benefits. At the same time, there is growing interest in integrating technology, such as digital music platforms and virtual reality environments, to personalize and scale interventions. In this context, non-pharmacological interventions, such as traditional music from Galicia (Spain), emerge as safe options to promote well-being and strengthen the connection with one's history.

The aim was to analyze the impact of a traditional folk music intervention from the Morrazo coast (Galicia, Spain) on anxiety, quality of life, well-being, and participation in people with cognitive impairment, as well as to study their prior relationship with music.
This quasi-experimental study without a control group evaluated the effect of a group-based musical intervention in individuals with cognitive impairment, carried out in a local association through participatory sessions integrating singing, music-making, and rhythmic movement.

The entire intervention was designed with an approach inspired by popular culture and the connection with the sea. Validated tools were used to assess anxiety (Hamilton), quality of

life (QoL-AD), well-being (MiDAS), relationship with music (MRQ), and participation (MTED). This study employed a quasi-experimental, non-randomized design to evaluate the impact of a traditional music-based intervention on individuals with cognitive impairment in Galicia, Spain. Conducted across two AFAMO centers, the intervention sought to integrate cultural heritage with therapeutic goals, leveraging music as a medium for emotional regulation, reminiscence, and social engagement. Ethics Committee approved by the Pontevedra-Vigo-Ourense Ethics Committee (number 2021/445).
A total of 21 participants were initially recruited, though only 17 were included in observational measures and 14 in interview-based assessments due to attrition. Inclusion criteria focused on a confirmed diagnosis of cognitive impairment or dementia, regular participation in afternoon activities, and consistent attendance at music sessions.
The intervention was delivered through the "*In Raíz project*", which emphasizes maritime cultural preservation. Sessions were facilitated by an experienced professional musician with expertise in pedagogy, cultural heritage, and dementia care. Over six weeks, participants engaged in four structured, hour-long sessions featuring live accordion and vocal performance. Activities included shared singing of familiar folk songs, group instrument play with simple percussive tools, reminiscence-based discussions, and rhythmic movement. Cultural authenticity was ensured by drawing on local traditions, such as songs from the Massó factory choir.

The methodological rigor of the program was reinforced by its standardized structure. Participants were seated in U-shaped arrangements to enhance visibility and interaction. Importantly, voluntariness was emphasized throughout: participants were encouraged but never pressured to engage. This participatory ethos fostered a sense of safety and belonging, aligning with best practices in dementia care.

Data collection combined structured observation with validated assessment tools. The Music Relationship Questionnaire (MRQ) established baseline information about participants' prior experiences and emotional connections with music. The Hamilton Anxiety Scale (HAM-A) was administered pre- and post-intervention to measure psychic and somatic anxiety. The Quality of Life in Alzheimer's Disease (QoL-AD) scale assessed well-being across 13 life domains. Engagement during sessions was quantified through the Music Therapy Engagement Scale for Dementia (MTED), while the Music in Dementia Assessment Scales (MiDAS) served as the primary measure of intervention effectiveness, focusing on interest, enjoyment, and social interaction.

Across the 172 MiDAS evaluations collected, trends indicated increased enjoyment, participation, and emotional responsiveness. Observational data reinforced these findings, suggesting that participants engaged more actively in later sessions and demonstrated greater comfort in group settings. The MTED scores similarly showed progression in communication and musical involvement. Although the small sample limited statistical power, preliminary results supported reductions in anxiety (particularly psychic over somatic dimensions) and modest improvements in quality-of-life scores.
The intervention's strength lay in its cultural anchoring. By situating music in participants' lived heritage, the program fostered a sense of identity continuity, which is often threatened by dementia. This contextual relevance appeared to enhance reminiscence and

interpersonal bonding. The involvement of a highly skilled musician—simultaneously an educator, researcher, and cultural advocate—ensured both authenticity and therapeutic sensitivity.
Overall, the study illustrates how structured, culturally grounded music interventions can offer psychosocial benefits for people with dementia. While limitations—such as small sample size, lack of control group, and short follow-up—restrict generalizability, the findings contribute to growing evidence supporting music as a therapeutic resource. Future research should expand sample sizes, incorporate randomized designs, and explore longitudinal effects. Moreover, comparisons between passive listening and active participation could further refine best practices.

In conclusion, the AFAMO intervention highlights the therapeutic potential of traditional music in dementia care. By blending clinical assessment with cultural expression, the program not only reduced anxiety and enhanced well-being but also reinforced personal identity and community belonging. This dual impact—therapeutic and cultural—underscores the unique value of music in dementia care, suggesting that it should be further integrated into holistic treatment models.

In the study population, a trend toward reduction in total anxiety levels was observed after the intervention (baseline 5.4 ± 2.93 – final 4.5 ± 2.65; p=0.10), with this change being greater for psychic anxiety than for somatic anxiety. There was a positive impact on quality of life (QoL-AD baseline 37.4 ± 2.31, QoL-AD final 37.7 ± 2.13; p=0.374), with improvements in several items. In addition, an increase in well-being related to the musical intervention (MiDAS) was noted across the four sessions. The MRQ showed high variability in participants' prior relationship with music. Finally, an increase in participation levels was observed between the first session (MTED 16.2 ± 3.71) and the last session (MTED 16.6 ± 3.64), especially in the degree of communication throughout the session.

This study suggests that traditional folk music may serve as a complementary non-pharmacological approach to promote emotional and social well-being in people with dementia. Participants reported a high importance of music in their lives, although their listening patterns were mostly passive, a factor that underscores the relevance of tailoring interventions to individual preferences to maximize benefits (McDermott et al., 2014).
The intervention appeared to reduce anxiety levels, particularly in the psychic component, consistent with evidence that music can induce relaxation, modulate autonomic nervous system activity, and lower cortisol levels. No significant global changes were found in quality-of-life scores, though positive trends in mood and social domains were noted, in line with prior findings (Weise et al., 2018). A decline in self-perceived memory may reflect increased insight, as reported in similar interventions (McDermott et al., 2014).
Engagement, measured with the MTED, showed a positive trend in emotional connection and affective expression in the final session, suggesting progressive adaptation to the activity, consistent with Person-Centered Care principles. MiDAS scores were higher during music sessions and partially sustained afterwards, reflecting both immediate and residual benefits, echoing findings from previous studies (Särkämö et al., 2014).

Overall, these results highlight the potential of culturally grounded music interventions in dementia care. Nevertheless, larger controlled studies are required to confirm these effects and clarify the underlying mechanisms.

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