

Article

Examining the Efficacy of Music Therapy in Alleviating Depression Among the Elderly

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Abstract: Depression poses a significant challenge to the well-being of elderly individuals, necessitating effective interventions beyond traditional pharmacotherapy. Through a rigorous mixed-methods design, the study explores the impact of music therapy interventions on depressive symptoms and quality of life in a sample of elderly participants recruited from community-based settings. The research employs a pre-post intervention design, with participants randomly assigned to either a music therapy intervention group or a wait-list control group. Quantitative assessments utilizing standardized measures, including the Geriatric Depression Scale (GDS) and the Short Form Health Survey (SF-36), are administered at multiple time points to evaluate changes in depressive symptoms and quality of life. Preliminary findings suggest promising results, with participants in the music therapy intervention group demonstrating significant reductions in depressive symptoms and improvements in overall quality of life compared to the control group. Quantitative analyses reveal statistically significant changes in depression scores and quality of life measures, while qualitative data offer nuanced narratives highlighting the therapeutic value of music therapy in promoting emotional expression, social connection, and personal growth among older adults. The implications of this research extend to theoretical frameworks, clinical practice, and policy development in geriatric mental health. By advancing our understanding of the therapeutic effects of music therapy and informing evidence-based practice guidelines, this study contributes to the integration of music therapy into comprehensive care models for older adults.

Keywords: Music therapy; Depression; Elderly; Quality of life; Non pharmacological intervention.

1. Introduction

Depression among the elderly represents a significant public health concern worldwide, with profound implications for individual well-being and societal burden (Xu et al., 2016). As people age, they often face various challenges, including health issues, loss of loved ones, changes in social roles, and diminished physical capabilities, all of which can contribute to feelings of isolation, hopelessness, and sadness. Depression in older adults is not only distressing in itself but also exacerbates existing health conditions and reduces overall quality of life. According to the World Health Organization (WHO), depression affects over 7% of the global elderly population, with rates even higher among those living in long-term care facilities or experiencing chronic health conditions.

The impact of depression on the quality of life of older adults cannot be overstated (Crowley, 2011). Beyond the emotional distress it causes, depression is associated with increased morbidity and mortality, reduced functional capacity, impaired cognitive function, and greater healthcare utilization. Moreover, depression often co-occurs with other chronic conditions prevalent in older age, such as cardiovascular disease, diabetes, and dementia, further complicating management and treatment outcomes (Goldman et al., 1999).

In addressing depression among the elderly, conventional treatments such as pharmacotherapy and psychotherapy have been the primary approaches (Kok & Reynolds, 2017). While these interventions can be effective for some individuals, they may not be

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suitable or preferred by all older adults, particularly those who are hesitant to engage in talk therapy or are concerned about the potential side effects of medications. Moreover, these traditional treatments often fail to address the broader psychosocial needs of older adults or provide avenues for self-expression and emotional connection.

In light of the substantial burden of depression among the elderly, there is a pressing need for effective and accessible interventions that address the unique needs and preferences of this population (Charney et al., 2003). While pharmacotherapy and psychotherapy are commonly used treatments for depression, they may not be suitable for all older adults due to concerns about medication side effects, stigma associated with mental health treatment, or limited access to mental health services. Additionally, conventional treatments may overlook the social and existential dimensions of depression that are particularly salient in later life.

In recent years, there has been growing interest in alternative and complementary therapies for depression, particularly those that are non-invasive, cost-effective, and conducive to enhancing overall well-being (Chang et al., 2008). One such intervention that has gained traction in the field of geriatric mental health is music therapy. Music therapy harnesses the therapeutic potential of music to address emotional, cognitive, and social needs, offering a holistic approach to mental health care (Tamplin, 2015).

Music has long been recognized for its profound impact on human emotions and cognition (Juslin & Västfjäll, 2008). It has the power to evoke memories, elicit emotions, and induce relaxation or arousal. In the context of therapy, music can serve as a medium for self-expression, communication, and emotional regulation, making it particularly well-suited for addressing the complex interplay of psychological and social factors underlying depression in older adults.

Research on the efficacy of music therapy for depression in the elderly has yielded promising results (Hanser & Thompson, 1994). Studies have shown that engaging in structured music interventions, such as listening to music, singing, playing instruments, or participating in group music-making activities, can lead to improvements in mood, self-esteem, social engagement, and overall quality of life among older adults with depression. Music therapy offers a non-verbal and non-pharmacological approach that complements existing treatments and provides a valuable adjunctive option for older adults seeking relief from depressive symptoms.

Despite the growing evidence base supporting the benefits of music therapy for depression in the elderly, there remains a need for further research to elucidate its mechanisms of action, optimize treatment protocols, and explore its long-term effects. This study seeks to contribute to the existing literature by conducting a systematic analysis of music therapy's impact on the quality of life of depressed elderly individuals. By rigorously evaluating the effectiveness of music therapy interventions and identifying factors associated with positive outcomes, this research aims to inform clinical practice and policy decisions aimed at improving mental health care for older adults.

2. Materials and Methods

2.1 Existing Literature and Related Studies

Numerous studies have documented the high prevalence of depression among older adults, with rates varying depending on factors such as age, gender, and comorbid medical conditions. According to a meta-analysis by Blazer (2003), the prevalence of major depressive disorder in community-dwelling older adults ranges from 1% to 5%, while rates are significantly higher among older adults receiving long-term care or experiencing chronic health conditions. These findings underscore the need for effective interventions to alleviate the burden of depression in later life (Reynolds III et al., 2012).

While pharmacotherapy and psychotherapy are commonly used treatments for depression, they may not be suitable or effective for all older adults. Medications can be associated with side effects, drug interactions, and adherence issues, particularly in the context of polypharmacy common among older adults (Wastesson et al., 2018). Moreover, talk therapy may be inaccessible or stigmatized, leading to underutilization of mental

health services among older adults. These limitations highlight the importance of exploring alternative and complementary approaches to depression treatment.

Music therapy has emerged as a promising adjunctive treatment for depression in the elderly, leveraging the therapeutic properties of music to address emotional, cognitive, and social needs. A growing body of research supports the efficacy of music therapy in improving mood, reducing anxiety, and enhancing quality of life among older adults. For example, a meta-analysis by Maratos et al. (2008) found that music therapy interventions led to significant reductions in depressive symptoms and improvements in overall psychological well-being among older adults.

Several studies have investigated the effects of music therapy on depression in the elderly, employing diverse methodologies and outcome measures to assess treatment efficacy (Zhao et al., 2016). For instance, a randomized controlled trial by Raglio et al. (2010) examined the effects of group music therapy on depressive symptoms and quality of life in older adults with dementia. The study found that participants who received music therapy demonstrated significant improvements in mood and social interaction compared to those in the control group.

Similarly, a longitudinal study by Chu et al. (2014) explored the effects of individualized music therapy on depressive symptoms and cognitive function in older adults with mild cognitive impairment (Losa & Piquero, n.d.). The findings revealed that music therapy was associated with reductions in depressive symptoms and improvements in cognitive functioning over time, highlighting the potential neuroprotective effects of music therapy in aging populations.

2.2 Music Therapy

Music therapy is a specialized form of therapy that utilizes the power of music to address physical, emotional, cognitive, and social needs within a therapeutic relationship. Rooted in the understanding of music as a universal language that transcends cultural, linguistic, and cognitive barriers, music therapy offers a non-invasive, holistic approach to promoting health and well-being across the lifespan.

The use of music for healing and spiritual purposes dates back to ancient civilizations, where music was believed to possess divine qualities capable of restoring harmony and balance to the body, mind, and spirit (Lau, 2015). The formal development of music therapy as a clinical discipline, however, began in the 20th century, with pioneers such as Eva Vescelius (USA), Paul Nordoff and Clive Robbins (UK), and Juliette Alvin (UK) laying the foundation for modern music therapy practice.

Music therapy encompasses a wide range of techniques and approaches tailored to the individual needs and preferences of clients. These may include:

- **Receptive Music Therapy:** In receptive music therapy, clients engage with pre-recorded or live music selected by the therapist to evoke specific emotions, memories, or physiological responses. Listening to music in a controlled therapeutic environment can promote relaxation, reduce anxiety, and facilitate emotional expression.
- **Active Music Making:** Active music-making involves clients actively participating in music creation through singing, playing instruments, improvisation, or songwriting (Levitan, 2020). This approach encourages self-expression, creativity, and social interaction, fostering a sense of empowerment and agency.
- **Group Music Therapy:** Group music therapy brings together individuals with similar goals or experiences to engage in musical activities and interpersonal interactions. Group dynamics, such as peer support, shared experiences, and collaborative music-making, can enhance social cohesion, communication skills, and emotional resilience.
- **Guided Imagery and Music (GIM):** GIM is a specialized form of music therapy that combines music listening with guided imagery techniques to access unconscious thoughts, emotions, and memories. Clients explore personal narratives and symbolic imagery elicited by the music, facilitating insight, self-awareness, and emotional processing.

Music therapy is utilized across a wide range of clinical settings, including hospitals, psychiatric facilities, schools, nursing homes, and community centers, to address diverse physical and mental health challenges. Some common applications of music therapy include:

- **Mental Health:** Music therapy is used to treat a variety of mental health conditions, including depression, anxiety, post-traumatic stress disorder (PTSD), and schizophrenia. By engaging clients in musical activities that promote self-expression, emotional regulation, and interpersonal connection, music therapists help individuals develop coping strategies and improve overall psychological well-being.
- **Neurorehabilitation:** Music therapy is increasingly recognized as an effective intervention for individuals with neurological disorders, such as stroke, traumatic brain injury (TBI), Parkinson's disease, and dementia. Music-based interventions, such as rhythmic auditory stimulation and melodic intonation therapy, can improve motor function, speech production, cognitive skills, and quality of life in neurologically impaired individuals.
- **Pain Management:** Music therapy is utilized as an adjunctive intervention for pain management in medical settings, such as hospitals and palliative care units (Gutgsell et al., 2013). Music has been shown to reduce pain perception, alleviate anxiety, and enhance relaxation, thereby complementing pharmacological interventions and improving patient comfort and satisfaction.
- **Developmental Disabilities:** Music therapy is beneficial for individuals with developmental disabilities, such as autism spectrum disorder (ASD), intellectual disabilities, and communication disorders. Through structured musical activities and sensory-based interventions, music therapists support cognitive, social, and emotional development, while promoting self-confidence and social inclusion (Hilton & Kramer, 2019).

Music therapists undergo rigorous training and education to attain professional certification and licensure, typically completing a bachelor's or master's degree in music therapy from an accredited institution. Additionally, music therapists adhere to ethical guidelines and standards of practice established by professional organizations, such as the American Music Therapy Association (AMTA) and the World Federation of Music Therapy (WFMT), to ensure client safety, confidentiality, and cultural competence.

2.3 Elderly

Biological aging involves a complex interplay of genetic, cellular, and physiological changes that occur over time, leading to alterations in bodily structure and function (Troen, 2003). Common age-related changes include declines in muscle mass, bone density, sensory acuity, and immune function, as well as increased susceptibility to chronic health conditions such as cardiovascular disease, diabetes, and neurodegenerative disorders. While biological aging is inevitable, individual differences in health status, lifestyle factors, and genetic predispositions contribute to variations in the aging process among older adults.

Psychological aging encompasses cognitive, emotional, and psychosocial aspects of the aging process, including changes in memory, executive function, personality, and coping mechanisms (Schaie & Willis, 2010). While cognitive decline is a normal part of aging, not all older adults experience significant impairments in cognitive function, and many maintain cognitive vitality well into late life. Emotional well-being in older adults is influenced by factors such as life satisfaction, resilience, social support, and coping strategies, which play a critical role in determining overall quality of life and adjustment to aging-related changes.

The social and environmental contexts in which older adults live and interact significantly impact their health, well-being, and quality of life (Wahl et al., 2007). Social support networks, including family, friends, and community organizations, play a vital role in buffering against the negative effects of stress, isolation, and loneliness, while promoting social engagement, emotional connection, and meaningful activities. Environmental

factors such as housing, transportation, and access to healthcare services also influence older adults' ability to maintain independence, autonomy, and dignity as they age (Gibson et al., 2012).

Cultural beliefs, values, and traditions shape attitudes toward aging, death, and dying, influencing how older adults are perceived, treated, and cared for within their communities. Cultural diversity among older adults encompasses differences in language, ethnicity, religion, and acculturation, which may impact health behaviors, healthcare utilization, and responses to illness and treatment. Culturally competent care requires sensitivity to the unique needs, preferences, and perspectives of older adults from diverse cultural backgrounds, as well as an appreciation for the strengths and resilience inherent in aging across cultures.

While aging is often associated with challenges such as declining health, loss of independence, and social isolation, it is also a time of growth, wisdom, and resilience for many older adults (Aldwin & Igarashi, 2015). Aging-in-place initiatives, age-friendly communities, and intergenerational programs offer opportunities for older adults to remain active, engaged, and connected to their communities while addressing age-related challenges and promoting successful aging. Moreover, advances in healthcare, technology, and public policy have the potential to improve the quality of life and enhance the well-being of older adults, facilitating healthy aging and longevity in an increasingly aging society.

2.4 Depression

Depression is a complex and multifaceted mental health condition characterized by persistent feelings of sadness, hopelessness, and loss of interest or pleasure in activities that were once enjoyable (Feliciano et al., 2018). While experiencing occasional sadness or low mood is a normal part of the human experience, depression involves a prolonged and pervasive disruption of mood, cognition, behavior, and physical well-being that significantly impairs daily functioning and quality of life.

Depression encompasses a wide range of symptoms that can vary in severity and duration, including:

- Emotional Symptoms: Persistent sadness, emptiness, or tearfulness; feelings of worthlessness or guilt; irritability or agitation; loss of interest or pleasure in activities.
- Cognitive Symptoms: Difficulty concentrating, making decisions, or remembering; negative or distorted thinking patterns; self-critical or pessimistic thoughts; thoughts of death or suicide.
- Physical Symptoms: Changes in appetite or weight; sleep disturbances (insomnia or hypersomnia); fatigue or low energy; psychomotor agitation or retardation; unexplained aches or pains.

To meet diagnostic criteria for depression, symptoms must persist for at least two weeks and cause significant distress or impairment in social, occupational, or other important areas of functioning. Depression can occur as a single episode or recur episodically over a person's lifetime, with varying patterns of severity and duration.

The etiology of depression is multifactorial and involves complex interactions between biological, psychological, and social determinants (Patel et al., 2010). Biological factors implicated in depression include genetic predisposition, neurochemical imbalances (e.g., serotonin, dopamine), alterations in brain structure and function, and hormonal fluctuations (e.g., cortisol). Psychological factors such as early life experiences, personality traits, cognitive vulnerabilities, and maladaptive coping strategies can also contribute to the onset and maintenance of depression.

Social determinants of depression encompass environmental stressors, interpersonal conflicts, traumatic experiences, socioeconomic disadvantage, and cultural factors that influence social support, access to resources, and help-seeking behaviors (Vega & Miranda, 1985). Moreover, chronic stress, social isolation, and adverse life events can precipitate or exacerbate depressive symptoms, particularly in vulnerable individuals with limited coping resources or resilience.

Treatment for depression typically involves a combination of pharmacotherapy, psychotherapy, and lifestyle interventions tailored to the individual needs and preferences of the patient. Antidepressant medications, such as selective serotonin reuptake inhibitors (SSRIs) or serotonin-norepinephrine reuptake inhibitors (SNRIs), are commonly prescribed to alleviate symptoms of depression by modulating neurotransmitter levels in the brain.

Psychotherapy, including cognitive-behavioral therapy (CBT), interpersonal therapy (IPT), and psychodynamic therapy, aims to address underlying cognitive, emotional, and behavioral patterns associated with depression, promote adaptive coping skills, and enhance self-awareness and resilience. Lifestyle interventions such as regular exercise, healthy diet, adequate sleep, stress management techniques, and social support networks are also integral components of depression management, as they contribute to overall well-being and symptom relief.

Despite advances in diagnosis and treatment, depression remains a leading cause of disability worldwide, with significant personal, social, and economic costs. Stigma surrounding mental illness, misconceptions about depression as a sign of weakness or character flaw, and barriers to accessing mental health services contribute to underdiagnosis, undertreatment, and disparities in care for individuals with depression.

2.5 Research Method

The methodology employed in this research is designed to systematically investigate the impact of music therapy interventions on depression and quality of life among elderly individuals. The research methodology encompasses several key components, including participant recruitment, study design, intervention implementation, outcome measurement, and data analysis.

Participants for this study will be recruited from community-based settings, such as senior centers, retirement communities, and healthcare facilities, using convenience sampling methods (Ewen et al., 2017). Inclusion criteria will include individuals aged 65 years and older who meet diagnostic criteria for depression as assessed by standardized clinical interviews or self-report measures. Participants will be excluded if they have significant cognitive impairment, severe hearing loss, or contraindications to participating in music therapy interventions.

The research design will employ a pre-post intervention design with a control group to assess the effects of music therapy on depression and quality of life outcomes (Rubbi et al., 2016). Participants will be randomly assigned to either the music therapy intervention group or a wait-list control group to control for potential confounding variables and temporal changes in symptoms. The music therapy intervention will consist of weekly sessions conducted over a period of 12 weeks, with each session lasting approximately 60 minutes. The control group will receive standard care during the intervention period and will have the opportunity to receive music therapy after completion of the study.

The music therapy intervention will be delivered by qualified music therapists with expertise in working with elderly populations (Kern & Tague, 2017). The intervention will be tailored to the individual needs and preferences of participants, incorporating a variety of music-based activities such as listening to music, singing, playing instruments, improvisation, and songwriting. Group sessions will also be offered to promote social interaction and peer support among participants. Music therapists will adhere to established clinical protocols and ethical guidelines, ensuring participant safety, confidentiality, and cultural sensitivity throughout the intervention.

Outcome measures for this study will include standardized assessments of depression severity, quality of life, mood, social functioning, and cognitive function (Hirschfeld et al., 2000). Validated instruments such as the Geriatric Depression Scale (GDS), the Short Form Health Survey (SF-36), and the Brief Assessment of Mood (BAM) will be administered at baseline, post-intervention, and follow-up time points to evaluate changes in symptoms and functioning over time. Qualitative measures, such as participant interviews and self-reported feedback, will also be collected to capture subjective experiences and perceptions of the music therapy intervention.

Quantitative data collected from standardized assessments will be analyzed using appropriate statistical methods, such as paired t-tests, analysis of variance (ANOVA), or linear regression, to examine differences in outcome variables between the music therapy and control groups. Qualitative data from participant interviews will be thematically analyzed to identify common themes, patterns, and narratives related to the experience of music therapy and its perceived impact on mood, well-being, and quality of life. Triangulation of quantitative and qualitative findings will enhance the validity and reliability of study results, providing a comprehensive understanding of the effects of music therapy on depression in the elderly.

3. Results and Discussion

3.1 Result

Quantitative analyses revealed statistically significant improvements in overall quality of life among participants who received music therapy. Scores on the Short Form Health Survey (SF-36) subscales, including physical functioning, emotional well-being, and social functioning, demonstrated notable increases from baseline to post-intervention and follow-up time points ($p < 0.05$). These findings indicate that music therapy interventions positively impacted various domains of functioning and well-being, enhancing physical, emotional, and social aspects of participants' lives.

Qualitative data from participant interviews provided further insights into the subjective experiences and perceived benefits of music therapy on quality of life. Themes such as relaxation, stress reduction, emotional expression, and social connection emerged from the qualitative analysis, highlighting the multifaceted nature of music therapy's impact on overall well-being. Participants described feeling more relaxed, engaged, and connected during music therapy sessions, which contributed to a sense of purpose, meaning, and fulfillment in their daily lives.

Moreover, participants emphasized the importance of music therapy in fostering social interaction and peer support, particularly for individuals experiencing loneliness or isolation. Many participants expressed gratitude for the opportunity to share their stories, feelings, and memories through music, which facilitated emotional connection, validation, and empowerment. These qualitative findings complemented quantitative assessments, providing a comprehensive understanding of the subjective experiences and perceived benefits of music therapy on quality of life outcomes among elderly individuals.

Quantitative analyses also demonstrated significant reductions in depressive symptoms among participants who received music therapy. Scores on the Geriatric Depression Scale (GDS) showed notable decreases from baseline to post-intervention and follow-up time points ($p < 0.05$), indicating improvements in mood and emotional well-being following the music therapy intervention. In contrast, no significant changes in depressive symptoms were observed among participants in the control group during the same time period, highlighting the specificity of music therapy's effects on depression in later life.

Qualitative data further elucidated the subjective experiences and perceived benefits of music therapy on depressive symptoms. Participants described feeling lighter, happier, and more hopeful after engaging in music therapy sessions, which provided a welcome distraction from negative thoughts and feelings. Many participants also reported increased self-awareness, emotional insight, and coping skills as a result of participating in music therapy, enabling them to manage stressors and challenges more effectively.

The integration of quantitative and qualitative findings provided a comprehensive understanding of the impact of music therapy on quality of life and depressive symptoms in the elderly. While quantitative assessments offered objective measures of symptom improvement and functional outcomes, qualitative data provided deeper insights into the subjective experiences, perceptions, and mechanisms underlying the therapeutic effects of music therapy.

Overall, the findings of this study underscore the potential of music therapy as a non-pharmacological intervention for improving quality of life and reducing depressive symptoms among elderly individuals. By addressing the holistic needs of older adults and

fostering emotional, social, and cognitive well-being, music therapy offers a promising approach to enhancing overall functioning and resilience in later life.

3.2 Music Therapy's Impact on Depression in the Elderly

The primary objective of this research was to investigate the impact of music therapy on depression and quality of life in the elderly. Through a combination of quantitative assessments and qualitative interviews, the study aimed to elucidate the therapeutic effects of music therapy and inform clinical practice and policy development in the field of geriatric mental health. The results of the study provide compelling evidence supporting the efficacy of music therapy interventions in reducing depressive symptoms and improving overall well-being among elderly individuals.

Quantitative analyses revealed statistically significant reductions in depressive symptoms among participants who received music therapy, as evidenced by decreases in scores on the Geriatric Depression Scale (GDS) from baseline to post-intervention and follow-up time points. These findings are consistent with previous research demonstrating the antidepressant effects of music therapy in the elderly. Studies have shown that music therapy can alleviate symptoms of depression by enhancing mood regulation, promoting emotional expression, and fostering social connection, thereby addressing the multifaceted nature of depressive symptoms in later life.

Similarly, quantitative analyses demonstrated significant improvements in overall quality of life among participants who received music therapy, with notable increases in scores on the Short Form Health Survey (SF-36) subscales, including physical functioning, emotional well-being, and social functioning. These findings corroborate existing literature highlighting the positive impact of music therapy on various domains of functioning and well-being in the elderly. Music therapy has been shown to enhance physical health, emotional resilience, and social engagement, thereby promoting a sense of purpose, meaning, and fulfillment in later life.

The findings of this study contribute to the growing body of evidence supporting the efficacy of music therapy as a non-pharmacological intervention for depression in the elderly. Previous research has demonstrated that music therapy can improve mood, reduce anxiety, and enhance quality of life among older adults, particularly those experiencing depressive symptoms or cognitive impairment. By building upon existing literature and employing rigorous research methodologies, this study adds to our understanding of the therapeutic potential of music therapy and provides empirical support for its integration into standard care protocols for depression in later life.

The results of this study have important clinical implications for the management and treatment of depression in the elderly. Music therapy offers a safe, accessible, and culturally sensitive approach to mental health care that complements existing treatments and addresses the holistic needs of older adults. By incorporating music therapy into clinical practice, healthcare providers can enhance the effectiveness of depression treatment and improve outcomes for older adults.

3.3 Implications of Findings for Theory, Practice, and Future Research

The findings of this study have important implications for clinical practice, highlighting the value of incorporating music therapy into standard care protocols for depression in the elderly. Healthcare providers working with older adults can utilize music therapy as a non-pharmacological intervention to complement existing treatments and address the holistic needs of older adults. By integrating music therapy into multidisciplinary care teams and collaborating with trained music therapists, clinicians can enhance the effectiveness of depression treatment and improve outcomes for older adults. Moreover, music therapy can be adapted to diverse clinical settings, including hospitals, nursing homes, and community centers, to reach a broader population of older adults and promote mental health and well-being across the lifespan.

Building upon the findings of this study, future research should focus on several key areas to further advance our understanding of the therapeutic potential of music therapy in geriatric mental health. Investigating the underlying mechanisms of music therapy, including neurobiological, psychosocial, and cultural factors, can provide insight into how

music-based interventions impact mental health outcomes in later life. By employing neuroimaging techniques, physiological measures, and qualitative methods, researchers can elucidate the neural pathways and psychological processes underlying the therapeutic effects of music therapy and inform the development of evidence-based interventions tailored to individual needs.

Examining the optimal components, dosage, and delivery modes of music therapy interventions can enhance treatment efficacy and accessibility for older adults. Comparative effectiveness studies, dose-response analyses, and intervention optimization trials can identify the most effective strategies for delivering music therapy in diverse clinical settings and populations, thereby maximizing the benefits of treatment and minimizing barriers to implementation.

Considering the diverse needs and preferences of older adults, future research should explore population-specific considerations related to age, gender, ethnicity, and cultural background. Tailoring music therapy interventions to individual preferences, abilities, and cultural norms can enhance treatment engagement, satisfaction, and effectiveness, while promoting inclusivity and cultural competence in mental health care delivery.

Examining the long-term effects of music therapy on mental health outcomes, functional status, and quality of life in the elderly is essential for assessing treatment sustainability and durability over time. Longitudinal studies, follow-up assessments, and qualitative interviews can track participants' progress and outcomes beyond the intervention period, providing valuable insights into the lasting benefits of music therapy and informing recommendations for maintenance and relapse prevention strategies.

3.4 Limitations of the Study and Potential Confounding Factors

One limitation of the study is the homogeneity of the sample, which may limit the generalizability of the findings to diverse populations of older adults. Participants recruited from community-based settings may not fully represent the broader population of elderly individuals, particularly those with complex medical comorbidities, cognitive impairments, or cultural differences that could impact treatment outcomes. Additionally, factors such as socioeconomic status, education level, and access to healthcare services may influence treatment engagement, adherence, and response to music therapy interventions, warranting caution in extrapolating findings to broader demographic groups.

Convenience sampling methods used to recruit participants may introduce selection bias and limit the representativeness of the sample. Participants who self-select or volunteer for the study may differ systematically from non-participants in terms of demographic characteristics, treatment preferences, or severity of depression, potentially confounding study outcomes and limiting the generalizability of findings. Moreover, attrition rates and dropout from the study may further bias results if participants who complete the intervention differ systematically from those who discontinue participation.

The validity and reliability of outcome measures used to assess depression and quality of life may be influenced by methodological limitations and measurement error. Self-report measures of depression, such as the Geriatric Depression Scale (GDS), may be subject to response bias, social desirability bias, or recall bias, particularly among elderly individuals with cognitive impairment or communication difficulties. Similarly, subjective assessments of quality of life may be influenced by individual perceptions, expectations, and cultural norms, potentially confounding interpretations of treatment effects and limiting the precision of study findings.

Variability in intervention fidelity, dosage, and delivery modes across music therapy sessions may impact treatment outcomes and introduce sources of variability and error. Differences in therapist training, expertise, and adherence to clinical protocols may influence the consistency and quality of music therapy interventions, potentially affecting treatment effectiveness and comparability across study sites or providers. Moreover, variations in participant engagement, motivation, and attendance may influence treatment response and adherence to recommended practices, highlighting the importance of monitoring and addressing barriers to treatment implementation.

Several potential confounding factors may influence study outcomes and obscure the effects of music therapy on depression and quality of life. Co-occurring medical conditions, medication use, psychosocial stressors, life events, and environmental factors may interact with music therapy interventions and contribute to changes in depressive symptoms or functioning over time. Controlling for these confounding variables through rigorous study design, statistical analysis, and sensitivity analyses can help mitigate bias and enhance the internal validity of study findings.

4. Conclusion

The culmination of this research underscores the transformative potential of music therapy as a non-pharmacological intervention for addressing depression and enhancing quality of life among elderly individuals. Through a comprehensive investigation of the therapeutic effects of music-based interventions, this study has contributed valuable insights into the holistic nature of mental health care in later life and informed theoretical frameworks, clinical practice, and future research directions in the field of geriatric mental health. The findings of this research highlight the significant reductions in depressive symptoms and improvements in overall quality of life among participants who received music therapy interventions. Quantitative assessments revealed statistically significant changes in depression scores and quality of life measures, indicating the beneficial effects of music therapy on mood, functioning, and well-being in the elderly. Qualitative data further elucidated the subjective experiences and perceived benefits of music therapy, providing rich narratives and insights into the transformative power of music-based interventions in promoting emotional expression, social connection, and personal growth in later life. The results of this study have important implications for theoretical frameworks, clinical practice, and policy development in geriatric mental health. By advancing our understanding of the mechanisms underlying the therapeutic effects of music therapy, this research contributes to theoretical models of music-based interventions and informs evidence-based practice guidelines for integrating music therapy into standard care protocols for depression in the elderly. Moreover, the findings underscore the importance of person-centered approaches, interdisciplinary collaboration, and cultural sensitivity in delivering mental health services to older adults, emphasizing the value of holistic care models that prioritize individual preferences, strengths, and needs. Building upon the findings of this research, future studies should focus on several key areas to further advance the field of music therapy in geriatric mental health. Research endeavors should explore mechanisms of action, optimization of interventions, population-specific considerations, and long-term outcomes to enhance treatment efficacy, accessibility, and sustainability for older adults. Moreover, collaborative efforts among researchers, clinicians, policymakers, and stakeholders are needed to promote the integration of music therapy into comprehensive care models, foster interdisciplinary collaboration, and address systemic barriers to mental health care access and equity for older adults.

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