

Music Therapy for Adults with Dementia and Their Caregivers Rapid Review

by

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In Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE

in

The Department of Music Therapy

State University of New York
New Paltz, New York 12561

December 2022

DIGITAL TECHNIQUES
FOR SIGNAL PROCESSING

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in Music Therapy
at the State University of New York at New Paltz

December 2022

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Music Therapy for Adults with Dementia and Their Caregivers: Rapid Review

Dementia, a chronic and progressive deterioration in cognitive function, affects 5%-8% of adults 60 years or older worldwide. In fact, the World Health Organization (WHO, 2021) reported of the approximately 55 million people worldwide who have dementia, 91% of cases are individuals who were 65 or older. The proportion of people with dementia (PWD) will also increase as the population of older adults increases worldwide. This number is expected to rise to 78 million by 2030 and 139 million by 2050 (WHO, 2021). Dementia is currently the seventh leading cause of death from all diseases and one of the leading causes of disability and dependency among older adults worldwide (WHO, 2021). The resulting decline in memory, thinking, orientation to time and space, comprehension, calculation, learning capacity, language, and judgment goes far beyond what might be expected from the normal biological aging process (WHO, 2021).

The Alzheimer's Association (2022) reports that people with dementia were more likely to have other chronic diseases and require more placements in nursing facilities and increased health care needs than other older adults. Health care and long-term care costs for people with Alzheimer's or other dementias are expensive, and dementia is one of the costliest diseases in society. By 2022, Alzheimer's and other dementias will cost the United States \$321 billion, including \$206 billion in Medicare and Medicaid spending (Alzheimer's Association, 2022). However, with the accelerated aging of the population, dementia poses a degree of economic challenge to the social health care system and the cost of social care.

There is often a lack of awareness and understanding of dementia, which leads to stigma and barriers to diagnosis and care (WHO, 2021). In the United States, the cost of caring for someone with dementia can be a tremendous financial burden for family members, who often

find it challenging to balance caregiving with full-time employment. Almost 70% of the total economic cost of caring for a person with dementia is borne by the family. Care for people with dementia is covered either through the family's out-of-pocket costs for health and long-term care or from the value of unpaid care (Alzheimer's Association, 2022). In addition, given the current system of health insurance coverage in the United States, the cost of hiring a professional caregiver may be unaffordable to a large portion of the population.

Alzheimer's Disease

Dementia is caused by a disease or injury to the brain. The diagnosis of dementia and related symptoms includes cognitive decline and behavioral changes. Due to the progressive nature of dementia's ever-changing, unpredictable, and incomprehensible behavioral changes, it affects more than just the patient themselves. One of the most common types of dementia is Alzheimer's disease (Arvanitakis & Bennett, 2019). In addition to the effects Alzheimer's disease has on physical and psychological health it also produces a monetary burden and mental stress on the patient's family (Steeman et al., 2006). Due to the need for care, it may be difficult for the patient's family caregivers to enjoy life as they did before as they need to focus more energy and time on the person with Alzheimer's disease. Families incur increased costs in providing for their family members with Alzheimer's disease as well. This will significantly reduce family well-being and social welfare (García-Valverde et al., 2020). The purpose of this thesis is to explore the effectiveness of music therapy in the care of person with dementia (PWD) and their caregivers by reviewing the results of research published from 2017-2021.

Literature Review

Music Therapy and Alzheimer's Dementia

The literature reporting the positive impact music has on dementia symptoms is robust. The earliest studies often compared music interventions to standard care or other activities (e.g., Smith, 1986; Millard & Smith, 1989). These early pilot studies, while not obtaining significant results, did suggest that music interventions may be effective in addressing the cognitive and behavioral symptoms related to Alzheimer's dementia. Music therapists and other health care professionals have continued to research the effects of music therapy on cognitive ability, communication skills, quality of life, and managing anxiety and agitation. A review of this entire body of research is beyond the scope of this rapid review, therefore, findings from recent systematic reviews will be summarized. Fusar-Poli et al. (2018) conducted a meta-analysis to determine the effects of music therapy on cognitive functioning of individuals with dementia. Six studies were included in their analysis. They reported evidence of beneficial effects of active music therapy experiences on global cognition. Jäncke (2008) emphasized episodic musical memory systems and semantic musical memory systems overlapped with parts of brain areas. Five studies in which the role of music in memory formation and recalled autobiographical and episodic information were included. The results showed that music listening evoked specific emotions, thereby regulating some cognitive functions (Jäncke, 2008). Evans et al. (2019) also reported that music help PWD reconnect with their memories. The above cited studies all illustrates the potential of music therapy for cognitive improvement. Raglio et al. (2014) proposed a structured music intervention model - global music approach for persons with dementia (GMA-D). This model uses music and music elements based on PWD's needs, clinical characteristics, and therapeutic rehabilitation goals in care. Raglio et al. (2014) found music

intervention has a positive impact on cognitive function in dementia. Gaviola et al. (2020) reported interventions such as individual music listening did not have a positive effect on the severity of dementia and cognitive function. However, Gaviola only assessed cognitive function in one study and the number of randomized controlled trials was limited. Thus, there is insufficient evidence related to cognitive function in their research. And this does not negate the effectiveness of music therapy in improving cognitive function.

Ninety percent of all dementia patients have some form of behavioral and psychological symptoms for the duration of their illness (Cerejeira et al., 2012). Additionally, Sourial et al. (2001) reported that 24%-98% of dementia patients display agitated behavior, reduced their quality of life and increased strain on their caregivers. Pedersen et al. (2017) indicated that music interventions (such as singing, dancing listening or instrument playing) has a positive effect on alleviating the agitation of PWD.

Music can activate the limbic system, and cause strong emotions (Jäncke, 2008). This music function could alter the emotions of PWD (Gerdner, 2005), encourage people to engage in enjoyable and personally meaningful experiences (Sixsmith & Gibson, 2007), and improve happiness in life (Kuot et al., 2021). Small et al. (2015) suggested this is beneficial in alleviating the loneliness of people with dementia. Compared to medication, music therapy is not addictive, has fewer neurological and physical side effects, and is less costly for relatives (Archie et al., 2013).

Summary of Findings from Meta Analyses

Seventeen meta-analyses reviewing the efficacy of music therapy to address symptoms related to Alzheimer's dementia have been published in the past 10 years. These review articles

reported on the effects of music therapy treatment on cognitive, behavioral, social-emotional symptoms and quality of life. A summary of their findings in each area follows:

The Effect of Music Therapy on Cognitive Symptoms Related to Dementia

Fusar-Poli et al. (2018) completed a meta-analysis which included 6 studies evaluating the effect of music therapy on cognitive functions in patients with dementia. Their results suggest that musical practice may enhance the activity of the inferior frontal cortex. Further they indicated that active music (such as music production – playing musical instruments or singing) could lead to improvements in the auditory and visual domains and in verbal memory. Finally, they reported that music-based exercise may improve general cognition and verbal fluency in patients with dementia (Fusar-Poli et al., 2018). These results are consistent with those of other studies examining the effect of music on cognition of individuals with dementia. Dorris et al. (2021) reported on the results of 21 randomized controlled trials that evaluated the effects of active music making interventions on the cognitive functioning, emotional well-being, and social engagement of older adults with probable mild cognitive impairment. Their results indicate that active music-making could improve cognitive functioning for older adults with probable mild cognitive impairment or dementia. Additionally, active music-making could potentially provide people with critical support for their cognitive, emotional, and social well-being (Sousa et al., 2020).

However, some studies reported different results. Ueda et al. (2013) completed a meta-analysis which included 20 studies which investigated the effects of music therapy on behavioral and psychological symptoms of dementia (BPSD), cognitive function, and activities of daily living in patients with dementia. Tsoi et al. (2018) included 38 studies in their meta-analysis and systematic review which examined the improvement in cognitive functions and behavioral

symptoms between interactive and receptive music therapies for people with dementia. Neither of these review studies reported significant effects of music therapy on cognition in adults with dementia (Ueda et al., 2013; Tsoi et al., 2018).

The Effect of Music Therapy on Behavioral Symptoms Related to Dementia

McDermott et al. (2013) evaluated the evidence of music therapy's effectiveness for people with dementia and to provide insight into models of action. They reviewed eighteen research studies and concluded that music therapy led to short-term improvement in mood and reduction in behavioral disturbance. Zhang et al. (2017) included 34 studies in their meta-analysis and systematic review which found that music therapy was associated with an improvement in disruptive behavior and cognitive function outcomes. Gómez-Romero et al. (2017) included 11 articles in their meta-analysis that explored benefits of music therapy for behavioral change in dementia from eleven articles of literature. Results of their review indicate that music therapy is beneficial and improves behavior disorders, anxiety, and agitation in subjects diagnosed with dementia.

The Effect of Music Therapy on Social-Emotional Symptoms Related to Dementia

A growing body of research confirms the positive effects of music on psychological, depression, and agitation aspects. For instance, Dowlen et al. (2018) conducted a systematic review to explore the psychological, social, and emotional benefits of music activities for people living with dementia. Eleven studies were included in their review. Results indicated that musicking provided a space for the person with dementia to be connected both to themselves, to other people and to the sensory environment (Dowlen et al., 2018). They also noted that the environment in which music therapy was provided enabled the person with dementia to feel a sense of security and a sense of belonging (Dowlen et al., 2018). Sittler et al. (2021) conducted a

systematic review to examine the research investigating the potential psychobiological mechanisms underlying the health-beneficial effects of music in people living with dementia. They reported that stress-reducing effects of listening to music in people living with dementia, as reflected mainly by a down-regulation of autonomic nervous system (ANS) activity.

Three meta-analyses were conducted that examined the research related to the efficacy of music interventions on agitation in PWD. Eun-Hi and Myonghwa (2015) evaluated the quality and effectiveness of a music intervention in reducing agitation in patients with Alzheimer's disease. Pedersen et al. (2017) assessed the effect of music interventions for agitation in patients with dementia. Sousa et al. (2020) investigated the utilization of music-based interventions, with patients with dementia, in the acute hospital setting. These three meta-analyses reviews concluded that music interventions can reduce agitation in persons with dementia (Eun-Hi & Myonghwa, 2015; Pedersen et al., 2017 & Sousa et al., 2020). Gaviola et al. (2020) evaluated the efficacy of individualized music listening compared to other music and non-music-based interventions from four studies. They reported that individualized music listening has a positive impact on behavioral and psychological symptoms of dementia (BPSDs) including agitation, anxiety and depression and physiological outcomes (Gaviola et al., 2020). Li et al. (2019) conducted a systematic review to identify the effects of participation in music therapy sessions. Their results suggest that participating in music therapy for 6 to 12 weeks might be appropriate in reducing depression for people with dementia when their determined the effectiveness of music therapy on reducing depression for people with dementia during different intervention intervals from seven article.

The Effect of Music Therapy on Quality of Life Related to Dementia

The effect of music therapy quality of life for individuals with dementia has also been reviewed. Vasionytė & Madison (2013) completed a meta-analysis of 19 studies examining the effects of music interventions on patients with dementia. They reported on the effect of several dimension of interventions including (Music therapy method [receptive music therapy or recreative music therapy]; Live vs. Recorded music; Selected music [chosen by patient or his relatives or caregivers]; Social context [personal or group intervention]; Type of music [classical/relaxation vs. pop/native music]), and their effect on the following outcome measures: (affective, behavioral, cognitive and physiological). The results suggest music interventions have the potential of increasing the quality of life for patients with dementia. Blackburn & Bradshaw (2014) conducted a critical review of the literature to identify the benefits therapy for people with dementia patients. They observed music therapy is a safe non-pharmacological intervention that can improve the quality of therapeutic interactions between them and their caregivers (Blackburn & Bradshaw, 2014). Clare & Camic (2020) conducted a systematic review which included 15 research studies in order to determine if recorded music resulted in more consistent positive behavioral and psychological outcomes. Their results suggest recorded music has a positive impact on quality of life, cognitive function, psychological and many other aspects (Clare & Camic 2020).

Caregivers for Individuals with Dementia

The ability of adults with dementia to care for themselves decreases as the disease progresses, leading to more reliance on caregivers. Caregivers need to provide long-lasting, intensive, and constant care for patients with dementia to assist with activities of daily living, manage medications, and keep individuals safe. Those who provide care to individuals with

dementia have higher burdens and stress levels than other caregivers (Alzheimer's Association, 2022).

Caregivers may be family members, friends, or paid professionals. While caregiving can be rewarding and may strengthen the bond with a loved one, prolonged and extreme caregiving can become stressful and lead to a sense of burnout (Braun et al., 2010). Family caregivers who care for their loved ones with dementia showed higher rates of anxiety, depression, hopelessness, and lower subjective well-being than the general population (Tamplin et al., 2018). Caregivers of spouses with dementia were two-and-half times more likely to display symptoms of depression than caregivers of people with dementia who were not spouses (Alzheimer's Association, 2022). O'Dwyer et al. (2013) found that more than 25% of caregivers of people with dementia may have experienced depression.

As the prevalence of dementia increases, so will the need for caregivers. It is vital to provide opportunities for caregivers to receive the physical, emotional, and financial support needed. Caring for the physical and mental health of caregivers improves their quality of life and contributes to the level and efficiency of their work in caring for PWD. There are two reasons to justify this belief. First, it will enhance the caregivers' understanding of the treatment when they are included in the process, which in turn, will also help the caregiver provide better support to patients (Dassa, 2018).

Secondly, whether a family member or friend is a caregiver or not, they all have their own lives and jobs (Fields et al., 2018). When they must maintain their own daily lives and take care of a PWD simultaneously, the stress they bear is doubled. Additionally, caregiving can put a strain on the relationship between a family member and their loved one with dementia (Wellman, 2021). The stress that caregiving places on a family caregiver can have a negative impact on

their health. Compared with other care partners, family caregivers of those with dementia may experience a lack of free time due to increased demand for supervision or gradual deterioration in the PWD which reduces visible long-term positive returns for caregivers (Pinquart & Sörensen, 2004).

Music Therapy and Caregivers

The happiness index of caregivers has also received more and more attention as people attach more importance to individual welfare. A growing body of research confirms the positive effects of music on caregivers (Clark et al., 2021; Dassa et al., 2020). Brotons & Marti (2003) conducted a pilot project. In this project, participants have been subjected to a series of satisfaction questionnaires. The results showed that participating in music therapy groups helped caregivers learn different coping skills and provided caregivers with a supportive and understandable nursing environment (Brotons & Marti, 2003).

Music facilitates caregiver well-being (Baker, 2017). Music therapy also has been shown to regulate mood (Ray et al., 2016) reduce caregivers' stress, and anxiety (Wellman, 2021), and enhance caregivers' quality-of-life (Dassa, 2018). Wellman (2021) contrasted information about stress, anxiety, and mood changes from caregivers and clients during the music therapy program, as well as caregivers' perceptions of the music therapy experience. The results indicated that music therapy is a viable intervention which benefits caregivers with elevated mood, increased sense of connectedness, reduced stress and anxiety, and lowered burden (Wellman, 2021). Additionally, results from several studies suggest that group music therapy is beneficial in promoting creative self-expression, allowing participants to experience joy, and increasing their self-esteem (Baker, 2017; O'Callaghan, 1990) and a sense of achievement (Rio, 2018). Baker (2017) conducted a pilot study which described a songwriting music therapy program. This

songwriting model focused on different aspects of the caregiver's well-being, allowing the caregiver to vent negative emotions and build positive mindsets.

In recent years, there has been an emerging interest in researching benefits of music therapy for caregivers. Sourial et al. (2001) report that patient destructiveness and anxiety are closely related to caregiver burden. The authors suggest that a large caring workload may adversely affect patient care (Sourial et al., 2001). Group music therapy could relieve caregivers' stress and anxiety while providing a better caring environment for PWD (Hanser et al., 2011). McDermott et al. (2014) explained how music links special memories and emotions between PWD and family caregivers. Clark et al. (2021) conducted an interpretative phenomenological analysis. They interviewed and analyzed five Dyads groups involved in group therapeutic songwriting program. The results showed that music therapy with PWD and CG is beneficial in enhancing the quality of the relationship between caregiver and care recipient and increasing reciprocity within the dyad group of the patient and their caregiver (Clare et al., 2021). Those benefits help to improve the sense of security, belonging, and meaning of PWD and CG (Clare et al., 2020). At the same time, this group music therapy extends the care of PWD from the music therapy session to the PWD's daily life, thus forming continuous music therapy care (Brotons & Marti, 2003).

Relevance and Need for This Study

This paper reviews the research literature related to music therapy for adults with dementia and their caregivers. The review topic has important implications for health (individual and public), health care policy, and research. Alzheimer's dementia has physical, psychological, social, and economic effects on the person and their caregivers, families, and society. During the progression of the condition, PWD's mental health and social connections are negatively

impacted to some degree. At the same time, this negative impact increased the financial and psychological burden on the caregiver and affects the caregiver's daily social and living life (Górska et al., 2018). And as PWD and CG coping with changing roles and responsibilities, the opportunities for reciprocity, communication, and sharing of meaningful experiences between them diminished (Ablitt et al., 2009). In addition, music is a form of communication that transcends language (Evans et al., 2019). Music provides a bridge of communication in a non-verbal format. Music therapy can facilitate communication between caregivers and cared-for individuals (Gerdner, 2005; McDermott et al., 2013). Group music interventions encourage social interaction and emotional expression (Clare & Camic, 2020).

Recently Wilhelm and Willhelm (2020) conducted an integrative review to gather information on the use of music-based interventions with adult caretakers of individuals with chronic, degenerative, or life-limiting illnesses. They reviewed studies published between January 1st, 1995, and December 31st, 2014. The results of their review reported positive outcomes for caregivers who participated in music therapy sessions. Music therapy was found to enhance the benefits to the care partners - improving the dyadic relationship between the care partner and clients while alleviating the care partner's physical and emotional problems (Wilhelm & Willhelm, 2020).

This rapid review builds on and expands upon Wilhelm and Willhelm's (2020) study and has a narrower focus, specifically focusing on joint participation between a caregiver and an adult family member with Alzheimer's or other dementia in music-based experiences. The specific questions this rapid review seeks to answer:

1. What is the effect of joint participation in music therapy sessions on family caregivers and their family member with Alzheimer's disease?

2. Is there a difference in the effectiveness of music therapy based on methods used or number and format of sessions family caregivers and their family members attend?
3. What is the quality of current music therapy research related to joint music therapy sessions between family caregivers and their family members?

Method

Rapid reviews provide a streamlined method of synthesizing research evidence in a timely manner (Khangura et al., 2012). Systematic rapid methods are used to review existing literature with limits placed on the number of databases that are searched, date range of the search, number of screeners involved and language of included studies (Garrity et al., 2021). Relevant research may not be identified given the narrow parameters of a rapid review, yet there is evidence that suggests conclusions reached in a rapid review are similar to those of a more formalized systematic review (Watt et al., 2008). Rapid reviews collect and analyze the cumulative literature to synthesize relevant research validity (Gough, et al., 2012). This rapid review can provide supporting evidence for the inclusion of music therapy for individuals with dementia and their care partners.

Search strategy and Selection Criteria

CINAHL, Medline, and PsychInfo were searched using the keywords “music therapy” and “caregiver” to identify research studies published between the years of 2015 and 2021 that reported on the results of music therapy sessions that included both a family caregiver and their family member with Alzheimer’s disease. Search limitations included publication dates, language of publication, and type of article. These limitations are permitted by rapid review guidelines to limit the breadth and depth of the review (Grant et al., 2009; Tricco et al., 2017). Articles had to meet the following criteria to be included in this rapid review:

1. Written in English.
2. Published between 2015 and 2017.
3. Published in a peer reviewed journal.
4. Music therapy sessions had to include both a family caregiver and their family member with Alzheimer's disease.
5. Music therapy sessions had to be facilitated by a music therapist.
6. Meet the criteria for a quantitative or qualitative research study.

Articles with the following characteristics were excluded from this review:

1. Article was not in English.
2. The intervention described was not a music therapy method.
3. The music intervention was not facilitated by a music therapist.
4. PWD and their caregiver did not participate in the research study.
5. Conference proceedings and program descriptions.
6. Reports based on the music therapist's experience of facilitating a music therapy group for PWD and their family caregivers.

Article Selection Process

Articles identified in each database search were screened by title and by abstract. A master list of articles appearing to meet inclusion criteria based on title and abstract review was compiled for the researcher's database. Duplicates were then removed, and full-text articles were screened. The following information was extracted from each eligible study: author(s), year of publication, setting where music therapy sessions were held, the number of music therapy sessions participants received, music therapy methods used, and results.

Quality Assessment

Articles were assessed for quality using the CLEAR-NPT checklist to evaluate reports of nonpharmacological trial (Boutron et al.2005). These guidelines were adapted for use in evaluating music therapy studies by Yinger and Gooding (2015). CLEAR-NPT aims to evaluate randomized controlled trials of non-pharmacological treatments or NPT (Boutron, 2005). These criteria are designed to assess the quality of the treatment, the therapist's professionalism, the validity of the study, and potential bias. The Quality Assessment Rating Checklist consists of ten items: Allocation Sequences, Detailed Intervention, Intervention content, Intervention had appropriate skill, Adherence, Unit of Delivery, Setting, Blinding-Outcome Assessors, Follow-Up Schedule, and Intention to Treat. The CLEAR-NPT quality assessment guidelines used in this review are shown in Table 1.

Table 1

Quality Assessment Rating Items & Guidelines adapted from the Clear-NPT

1	<p>Was the generalization of allocation sequences adequate? Give 1 point only if a suitable method was used to generate the sequence of randomization (i.e., simple randomization via table of random numbers or computer-generated numbers).</p>
2	<p>Were details of the Intervention delivery schedule to each group made available? Give 1 point only if all the following information was described in the report or made available in some type of addendum: information about number of sessions, session duration, and session frequency including practice sessions.</p>
3	<p>Were details of the intervention content to each group made available? Give 1 point only if all the following information was described in the report or made available in some type of addendum: information about person selecting the music, type of music; music delivery method; intervention materials, intervention strategies</p>
4	<p>Was care providers' experience or skill in each arm appropriate? Give 1 point if the intervention was delivered by a board-certified music therapist with appropriate education and experience.</p>

-
- 5 **Was participant adherence assessed quantitatively?**
Give 1 point if the number of sessions attended was reported.
 - 6 **Were delivered to individuals or groups of individuals?**
Give 1 point if the number of clients more than one.
 - 7 **Where was the intervention delivered?**
Give 1 point only if all the following information was described in the report or made available in some type of addendum: location, privacy level, and ambient sound.
 - 8 **Were outcome assessors adequately blinded to assess the primary outcomes?**
Give 1 point for participant-reported outcomes in which the participant is the outcome assessor; Give 0 point if blinding is not feasible.
 - 8a **If outcome assessors were not adequately blinded, were specific methods use to avoid ascertainment bias?**
(Systematic differences in outcome assessment)
 - 9 **Was the follow-up schedule the same in each group?**
Give 1 point if planned follow-up schedules were the same in each group.
 - 10 **Were the main outcomes analyzed according to the intention-to-treat principle?**
Give 1 point if all participants randomized were included in the analysis and kept in their original group; Give 0 point if all participants randomized were not included in the analysis or not kept in their original group.

Note: Adapted for use with music therapy studies by Yinger (2015)

The *Reporting Guidelines for Music-Based Interventions* for reporting on the transparency and specificity of interventions developed by Robb et al. (2011) were used to assess the quality of music intervention reporting in each included study. The checklist for reporting music-based interventions includes interventions-theory, content, delivery schedule, interventionist, treatment fidelity, setting, and unit of delivery (Robb et al., 2011, p. 342). This form is intended to help ensure that music-based interventions in studies are transparently reported to help investigators better access relevant information. The Music Intervention Reporting Guidelines used in this review are shown in Table 2.

Table 2*Music Intervention Reporting Guidelines*

-
- 1 Intervention theory** -- Score 1 If these details are reported:
Provide a rationale for the music selected; specify how qualities and delivery of the music are expected to impact targeted outcomes.
- 2 Intervention content**
Provide precise details of the music intervention and, when applicable, descriptions of procedures for tailoring interventions to individual participants.
- 2a Person selecting the music** -- Score 1 If these details are reported:
(1) Pre-selected by music therapist.
(2) Pre-selected by participant.
(3) Tailored based on patient assessment.
- 2b Music delivery method** (live or recorded) -- Score 1 If these details are reported:
When using live music, specify who delivered the music and the size of the performance group.
- 2c Intervention strategies** -- Score 1 If these details are reported:
Describe music-based intervention strategies under investigation.
- 3 Intervention delivery schedule** -- Score 1 If these details are reported:
Report number of sessions, session duration, and session frequency including practice sessions.
- 4 Interventionist** -- Score 1 If these details are reported:
Specify interventionist qualifications and credentials.
- 5 Treatment fidelity** -- Score 1 If these details are reported:
Describe strategies used to ensure that treatment and/or control conditions were delivered as intended (e.g., interventionist training, manualized protocols, and intervention monitoring).
- 6 Setting** -- Score 1 If these details are reported:
Describe where the intervention was delivered: include location, privacy level, and ambient sound.
- 7 Unit of delivery** -- Score 1 If these details are reported; Score 0.5 if only part of these details are reported:
Specify whether interventions were delivered to individuals or groups of individuals, including the size of the group.
-

Note: Taken from the *Reporting Guidelines for Music-Based Interventions* by Robb et al. (2011)

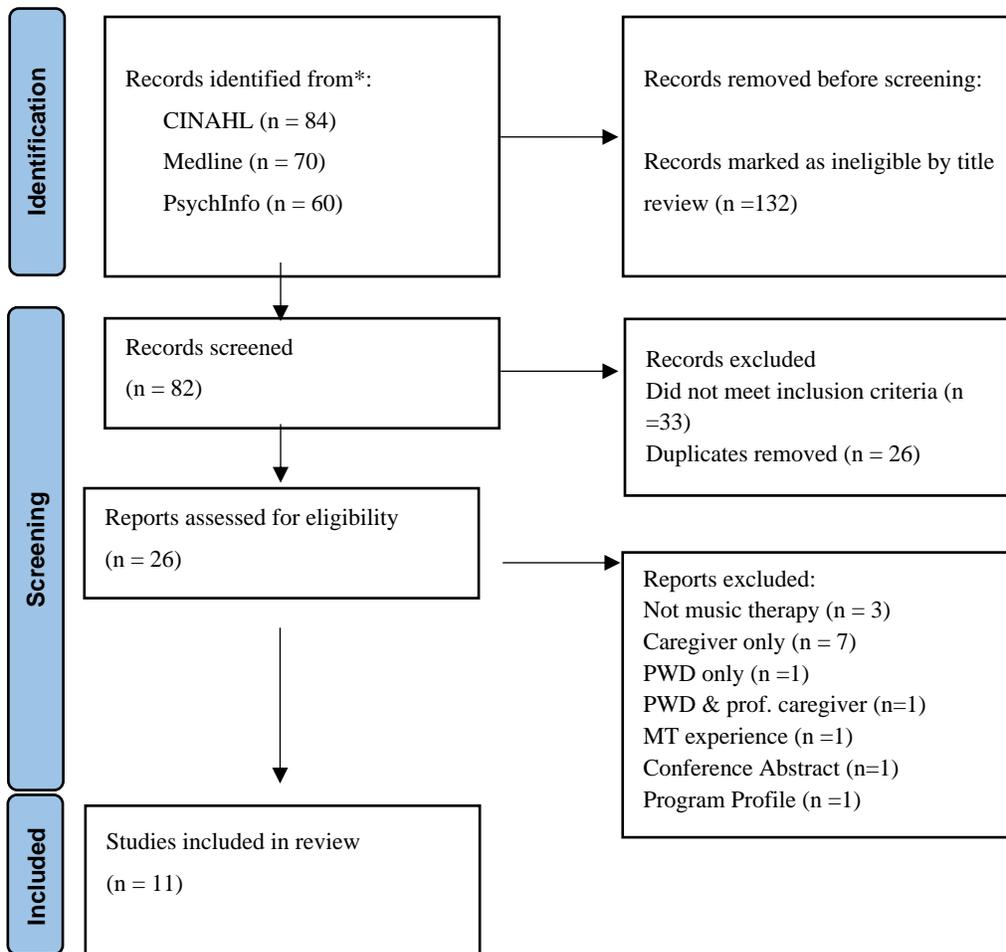
Results

Screening Results

Using the inclusion criteria, 214 articles were screened. Of these, 11 articles met the inclusion criteria and are included in this review. Figure 1 provides an overview of the study screening and selection process: 214 articles were screened (84 from CINAHL; 70 from Medline; and 60 from PsychInfo), of which 132 were marked as ineligible based on title review. Next, 82 abstracts were screened, of which 26 were duplicate studies, and 33 did not meet inclusion criteria. 26 full-text articles were reviewed. Of those, 15 was excluded as they did not meet inclusion criteria. 11 studies met the six inclusion criteria (See Figure 1) and were included in this review.

Figure 1

Flow diagram of search strategy and article selection (Moher et al. 2010)



Study Characteristics

Study participants attended anywhere between two and 23 music therapy sessions (mean = 12.5) which were 20 to 60 minutes in duration (mean = 40 minutes). Among those, eight researchers used re-creative methods (Baird & Thompson, 2019; Dassa, 2018; Dassa et al., 2020; Holden et al., 2019; Rio, 2018; Tamplin et al., 2018; Thurn et al., 2021; Wellman, 2021), three researchers used receptive methods (Baird & Thompson, 2019; Dassa, 2018; Dassa et al., 2020; Thurn et al., 2021), and two researchers used improvisation methods (Holden et al., 2019; Rio,

2018). Music selection was by the PWD in three studies (n = 27%) the caregivers (CG) in two studies (n = 18%) the music therapist in two studies (n = 18%) and by both music therapist and client in one study (n = 9%). It is unclear who selected the music in the remaining three studies.

Study characteristics are presented in Table 3.

Table 3

Study Characteristics of Included Studies

Author(s) & Year of Publication	Music Therapy Setting	# Of Music Therapy Sessions	Who Selected Music	Results
Baird & Thompson (2019)	Home	Not Specified	CG	<ul style="list-style-type: none"> • Language expression ability declined • Maintain relevant musical skills • Mood improved
Clark et al. (2021)	Community spaces or Care facility	6	Music Therapist	<ul style="list-style-type: none"> • Stimulating dyad group to engage with music • Stimulating mental processes. • Re-energizes participants' interests and skills • Providing meaningful opportunities to connect with memories and life experiences • Promoting interaction and collaboration, social connection, empathic relationships, and inclusive experiences
Clark et al. (2020)	Community or Care Home	6	PWD	<ul style="list-style-type: none"> • Support the quality of the relationship
Dassa (2018)	Nursing Home	4	CG	<ul style="list-style-type: none"> • PWD and CG Found ways to connect with each other • Reliving shared experiences • Reducing the stress and feelings of separation
Dassa et al. (2020)	Home	12	Music Therapist	<ul style="list-style-type: none"> • Provided the PWD and CG the power to support each other

Holden et al. (2019)	Home	6	PWD	<ul style="list-style-type: none"> Increasing the comfort and benefits for dyad group
Raglio et al. (2016)	Not specified	12	Not Specified	<ul style="list-style-type: none"> Decreasing PWD behavioral disturbances Improving CG psychological and stress conditions
Rio (2018)	Community Services Building or Adult Recreational Center	Not Specified	Music Therapist	<ul style="list-style-type: none"> Providing emotional support Increasing meaningful interactions Reducing caregiver stress Stimulating shared, musical experiences of memory, language, and socialization Building connections with caregivers
Tamplin et al. (2018)	A Spacious Room	20	PWD	<ul style="list-style-type: none"> Establish relationships
Thurn et al. (2021)	Unclear	2	Not Specified	<ul style="list-style-type: none"> Coping with challenging situations Improving quality of life
Wellman (2021)	Education Center	1 - 23	Music Therapist & PWD	<ul style="list-style-type: none"> Reducing stress and anxiety Changing mood for the better

Note: CG = Caregiver; PWD = Person with dementia

Music Interventions

Eight researchers investigated the effects of a re-creative music therapy method, four researchers a receptive music therapy method, three researchers a compositional method, and two researchers an improvisation music therapy method. The music therapy method variations used in this review are shown in Table 4.

Table 4*Music Interventions Reported*

Study	Music Therapy Methods
Baird & Thompson (2019)	Vocal Recreation: Singing familiar songs. Receptive: Listening to original version of the familiar song.
Clark et al. (2021)	Composition: Song transformation.
Clark et al. (2020)	Composition: Song transformation.
Dassa (2018)	Receptive Listening to favorite song. Receptive Dancing to favorite song.
Dassa et al. (2020)	Re-creative: Singing familiar songs; Dancing and playing drum to favorite song. Receptive Listening to songs.
Holden et al. (2019)	Re-creative: Singing songs. Improvisation: Instrumental playing.
Raglio et al. (2016)	Unclear
Rio (2018)	Improvisation: Instrumental playing. Re-creative: Singing songs; Dancing and playing drum to songs. Composition: Song transformation.
Tamplin et al. (2018)	Vocal Recreation: Singing familiar songs; Learning new songs.
Thurn et al. (2021)	Receptive: Listening to original version of the familiar song. Recreation: Singing and dancing to familiar songs.
Wellman (2021)	Recreation: Singing or playing familiar songs.

Demographics

Participants in the reviewed studies ranged in age from 50 to 92. Table 5 summarizes the characteristics of the study participants. The age range of PWD was 50 to 95 (mean = 73.74) The age range of CG was 45 to 92 (mean = 71.4). Seven articles examined the effects of music therapy on the dyad group members, and four looked only at the patients. Five articles reported the relative relationship between patients' gender and their caregivers. Eight articles reported caregivers had a familial relationship with the patients, such as a spouse or family member. The

participants (CG and PWD) in seven studies were spousal. In three of the studies the CG was a family member of the PWD (daughter, son, etc.). Only seven articles reported CG gender with a total of 63% (n = 29) of caregivers identifying as female, and 36% (n= 17) identifying as male. Race/Ethnicity was not reported in any of the studies.

Table 5*Characteristics of Study Participants*

Author	# Of participants	PWD Gender	CG Gender	PWD Age Range	CG Age Range	CG Relationship to PWD	# Of Sessions
Baird & Thompson (2019)	2	F=1	M=1	77	Not specified	Spouse	Not Specified
Clark et al. (2021)	20	F=4 M=5	F=6 M=4	62-92	59-92	8 Spouse 2 Family	6
Clark et al. (2020)	28	F=7 M=7	F=9 M=5	62-92	54-92	11 Spouse 3 Family	6
Dassa (2018)	6	F=0 M=3	F=3 M=0	60-85	59-76	3 Spouse	4
Dassa et al. (2020)	4	F=0 M=2	F=2 M=0	67-85	62-75	3 Spouse	12
Holden et al. (2019)	18	F=7 M=2	Unclear	61-95	Not Specified	Not Specified	6
Raglio et al. (2016)	8	F=1 M=3	F=3 M=1	Age means: 78.25	Age means: 78.25	4 Spouse	12
Rio (2018)	10~60	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified	Not Specified
Tamplin et al. (2018)	12	F=7 M=5	F=6 M=6	57-89	58-88	12 Spouse	20

Thurn et al. (2021)	4	F=2 M=0	Unclear	50-60	Unclear	2 Family	2
Wellman (2021)	92	Unclear	Unclear	64-91	45-90	Not Specified	1 ~ 23

Quality Assessment

The author gave assessment scores to each study using the adapted CLEAR-NPT Guidelines (Yinger & Gooding, 2015) and the Music Intervention Reporting Guidelines (Robb et al., 2011). CLEAR-NPT rating scores are shown in Table 6. Music Intervention Reporting Guideline Scores are reported in Table 7. Studies with complete information for each criterion were given a “1”; with partial information assigned “0.5” or missing information a “0”. The median score of the studies evaluated using the CLEAR-NPT guidelines was 8. For this review, studies with a score of 8 and above were considered high-quality studies. Studies with a score below 7 were considered studies with a greater risk of bias. The mean of studies evaluated by the CLEAR-NPT Guidelines is 7.45 suggesting a moderate risk of bias.

Table 6

Quality Assessment: CLEAR-NPT Guidelines

Criteria	Baird & Thompson (2019)	Clark et al. (2021)	Clark et al. (2020)	Dassa (2018)	Dassa et al. (2020)	Holden et al. (2019)	Raglio et al. (2016)	Rio (2018)	Tamplin et al. (2018)	Thurn et al. (2021)	Wellman (2021)
Allocation Sequences	0	1	1	0	1	1	0	1	1	1	1
Detailed Intervention	1	1	1	1	1	1	0	0	1	1	1
Intervention content	1	1	1	1	1	1	0	1	1	0	1
Intervention had appropriate skill	1	1	1	1	1	1	1	1	1	1	1
Adherence	0	1	1	1	1	1	0	1	1	1	1

Unit of Delivery	0	1	1	1	1	1	1	1	1	1	1
Setting	1	1	1	1	1	1	0	1	1	0	1
Blinding— Outcome Assessors	1	1	1	1	1	1	1	1	1	1	1
Follow-Up Schedule	0	1	1	0	0	1	1	0	1	0	1
Intention to Treat	0	0	0	0	0	0	0	0	0	0	0
Total Score	5	9	9	7	8	9	4	7	9	6	9

Eight studies used appropriate methods to generate randomized sequences. Nine studies provided details of the intervention delivery schedule for each group, such as number of sessions, length of sessions, and frequency of sessions. Nine studies provided details of the intervention content for each group, such as music provider information; music types; music delivery methods; intervention materials, and strategies, and recorded intervention sites. All 11 study articles involved a board-certified music therapist. However, none of the articles were randomized group studies, and most studies were either single case studies or multiple cases studies. Therefore, in this item, all studies scored 0. Six research articles provide the same follow-up schedule for each group of participants.

Table 7

Quality Assessment: Music Intervention Reporting Guidelines

Criteria	Baird & Thompson (2019)	Clark et al. (2021)	Clark et al. (2020)	Dassa (2018)	Dassa et al. (2020)	Holden et al. (2019)	Raglio et al. (2016)	Rio (2018)	Tamplin et al. (2018)	Thurn et al. (2021)	Wellman (2021)
Intervention Theory	1	1	1	1	1	1	1	1	1	1	1
Person Selecting the Music	1	1	1	1	1	1	0	1	1	0	1

Music Delivery Method	1	1	1	1	1	1	0	1	1	0	1
Intervention Strategies	1	1	1	1	1	1	1	1	1	1	1
Intervention Delivery Schedule	0	1	1	1	1	1	1	1	1	0	1
Interventionist	1	1	1	1	1	1	1	1	1	1	1
Treatment Fidelity	1	1	1	1	1	1	1	1	1	1	1
Setting	1	1	1	1	1	1	0	1	1	0	1
Unit of Delivery	1	1	1	1	1	1	0.5	1	1	1	1
Total Score	8	9	9	9	9	9	5.5	9	9	5	9

Eleven studies provided intervention theory and music-based intervention procedures for the selection of music interventions. In all the studies, music therapists participated in the experimental music intervention. Eleven musical interventions provided treatment as expected. Nine studies reported on music selection and the music delivery methods. In two research studies, there is no clear intervention delivery schedule. Two studies reported a lack of setting information on music therapy. Ten research reports show the research unit of delivery, and one of them lacks partial information, so the score of this term is 0.5.

Clear, detailed description of interventions in research publications is critical to improve replication and translation of music-based interventions in clinical practice (Robb et al., 2011). Overall, the intervention information of Music Intervention Reporting in the eleven research studies included is complete and of high quality. This high transparency of music intervention information facilitates better identification and understanding of key research information.

Music Therapy Sessions and Outcomes

The following questions will report on the results of this rapid review.

What is the effect of joint participation in music therapy sessions on family caregivers and their family member with Alzheimer's disease?

Seven studies (n = 64%) suggest that music therapy helped PWD enhance social skills and interpersonal relationships (Clark et al. (2020); Clark et al. (2021); Dassa (2018); Dassa et al. (2020); Holden et al. (2019); Rio (2018); Tamplin et al. (2018)). Six studies (n = 55%) reported that the relationship and emotional communication between the care-accepter and care-companion had improved after music therapy (Baird & Thompson, 2019; Clark et al., 2020; Clark et al., 2021; Dassa, 2018; Dassa et al., 2020; Rio, 2018; Tamplin et al., 2018). Four studies (n = 36%) noted that music therapy was beneficial in reducing the stress of CG (Dassa, 2018; Raglio et al., 2016; Holden et al., 2019; Wellman, 2021). Six studies (n = 55%) indicated that music therapy was helpful in improving CG support (Clark et al., 2021; Dassa, 2018; Dassa et al., 2020; Rio, 2018; Tamplin et al., 2018; Thurn et al., 2021). Three studies (n = 27%) reported improved PWD quality of life (Thurn et al., 2021; Clark et al., 2020; Clark et al., 2021). All studies (n = 100%) indicated that music therapy effectively reduced behavior in dementia (such as helping manage the aggressive symptoms associated with dementia (e.g Tamplin et al., 2018), and improving the psychological symptoms of dementia (e.g Holden et al., 2019)). One study (n = 9%) showed that music therapy was reduced the medical cost budget for caring for PWD (Baird & Thompson, 2019)

Is there a difference in the effectiveness of music therapy based on methods used or the number and format of sessions family caregivers and their family members attend?

Table 3, 4, 5 summarize the music therapy methods, the session format, and number. The findings in this review suggest that receptive methods (Baird & Thompson, 2019; Dassa, 2018; Dassa et al., 2020; Thurn et al., 2021), re-creative methods (Baird & Thompson, 2019; Dassa,

2018; Dassa et al., 2020; Holden et al., 2019; Rio, 2018; Tamplin et al., 2018; Thurn et al., 2021; Wellman, 2021) and improvisation methods (Holden et al., 2019; Rio, 2018) alleviate patients' symptoms in different ways. Group therapeutic songwriting (TSW) (Clark et al. (2020); Clark et al. (2021)); MusicKit (Thurn et al., 2021) and neurological music therapy techniques (NMT) (Holden et al., 2019) were found to improve the relationship between PWD and CG, as well as the quality of their life.

Clark et al. (2020) performed a single-group quasi-experimental pre-post design concentrated on TSW for PWD and CG. During these six sessions, the music therapist customizes the lyrics, composing and music listening, singing, playing, and recording sessions for the PWD and CG according to the needs of the participants. Researchers assessed the acceptability of the TSW intervention for the PWD and CG group by analyzing and comparing pre and post participant data throughout the program. The results of the study showed that TSW helped participants to develop empathetic relationships, provided experiences of inclusion, and improved the critical health and well-being of dyad members (Clark et al., 2021). In addition, TSW may have the potential to reduce depression in individuals with mild dementia and improve the quality of life for family caregivers (Clark et al., 2020). MusicKit is context-oriented, transferring musical elements - voice, rhythm, melody - into the care environment. PWD is taught by a music therapist or caregiver to use modular music elements to musically process his influences, emotions, needs, or messages for better communication (Thurn et al., 2021). Then, PWD could contact CG through music interactive experience. MusicKit as a modular music intervention helped people cope with challenging situations caused by the behavioral and psychological symptoms of dementia to improve their quality of life (Thurn et al., 2021). Holden et al. (2019) conducted a 6-week music therapy session. music therapists increased participants'

arousal and alertness responses by using music that was strongly emotionally relevant to them, singing and playing together, and promoting improvements in participants' memory and attentions. Neurological music therapy techniques (Holden et al., 2019) were reported to increase the comfort and benefits for people with dyad members early during dementia (Holden et al., 2019).

Overall, recreative methods were investigated most frequently, followed by receptive methods and improvisation methods (See Table 4). In those eleven studies, both PWD and CG participated in group sessions, and the number of sessions they attended ranged from 1 to 23 (see Table 3). Those eleven studies showed that music therapy had a positive effect on PWD and CG. The findings were consistent with the researchers' experimental expectations. There was no difference in the effectiveness of music therapy by the music therapy methods, the sessions format, or the sessions number.

What is the quality of current music therapy research related to joint music therapy sessions between family caregivers and their family members?

According to the quality assessment in Table 6, the number of high-quality studies (scoring 8 and above) for this paper was six (n = 55%). Current music therapy studies related to combined music therapy between family caregivers and their family members are of moderate quality. Some of the studies were of low quality due to the lack of detailed study details, such as detailed intervention and allocation sequences.

According to the music intervention reporting quality assessment (Table 7), the reporting transparency of music intervention in the eight studies (n=82%) is high, with the highest number for this paper was 9 which are Clark et al. (2021); Clark et al. (2020); Holden et al. (2019); Tamplin et al (2018); Wellman (2021). The transparency of music intervention reporting in the

two studies (n=18%) was low which are Baird & Thompson (2019) and Raglio et al. (2016). The average score of music intervention reporting in eleven articles is 8.2, with a median of 9.

The current quality of music therapy research related to joint music therapy sessions between family caregivers and their family members is good. 8 high-quality studies (Clark et al., 2021; Clark et al., 2020; Dassa, 2018; Dassa et al., 2020; Holden et al., 2019; Rio, 2018; Tamplin et al., 2018; Wellman, 2021) investigating the effect of music therapy in adults with dementia and their caregivers were included (see Table 3). In those 8 high-quality studies, 2 studies used receptive methods (Dassa, 2018; Dassa et al., 2020), 6 studies used re-creative methods (Dassa, 2018; Dassa et al., 2020; Holden et al., 2019; Rio, 2018; Tamplin et al., 2018; Wellman, 2021) and 2 studies used improvisation methods (Holden et al., 2019; Rio, 2018).

Overall, the detailed reports of music intervention in the selected studies in this rapid review are relatively complete, and the transparency of music intervention is rather good. This rapid review results showed that re-creative methods music therapy had a good therapeutic effect for PWE and CG.

Limitations and Areas for Future Research

The current review may have limitations, and the list of studies included may be incomplete, as thesis, dissertations, and studies published in languages other than English were excluded. Some short-term research projects may have led to insignificant results due to the small number of participants, or the limited number of music therapy sessions provided. More studies which include literature published in languages other than English, and unpublished studies, may be needed in the future to prove the validity and accuracy of the experimental results.

Conclusions

The purpose of this review was to summarize the current evidence supporting the effective benefits of music therapy for adults with dementia and their caregivers. The findings suggest that the receptive method, re-creative method, compositional methods and improvisational method in music therapy have significant beneficial outcomes for PWD and their CG by reducing stress and anxiety, establishing cooperation, enhancing the relationship, and improving the quality of life. There is a growing body of experimental evidence that music therapy can benefit PWD and CG. However, due to the small number of studies in this review and some of the findings in this review are at some risk of bias, it is essential to provide further evidence. In future studies, several additional recommendations could potentially help enhance the validity and generalizability of the music therapy-related literature: (1) improving intervention reporting; (2) reducing the risk of bias; and (3) comparing music therapy or other standard care conditions.

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