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A systematic review of the effect of music therapy on agitation in people with dementia in long-term care settings

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Declaration

I hereby declare that this dissertation is my own work and effort and that it has not been submitted elsewhere for any award. Where other sources of information have been used, they have been acknowledged.

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Abstract

Background: Around 57 million people worldwide are estimated to be living with dementia, and its prevalence is steadily increasing as the population ages (World Health Organization, 2025). Evidence suggests that in individuals with dementia, listening to music may trigger positive memories (Zhang *et al.*, 2025). This can contribute to improved engagement and reduction in agitation, which is a frequent and challenging behavioural disturbance for residents in long-term care settings.

Aim: To systematically review evidence on the effect of music therapy on agitation in people with dementia in long-term care settings.

Research Design: A systematic review of four databases via EBSCOhost was conducted to identify, appraise and synthesise relevant evidence. Included studies were randomised trials involving people with dementia in long-term care that used music therapy or music-based interventions, with all five included being music-based interventions rather than clinical music therapy, and measured agitation with validated or standardised tools. Five studies met criteria and were included in a narrative synthesis due to variation in intervention type and delivery.

Results: The findings regarding efficacy for agitation were mixed. Some studies reported improvements, particularly with personalised or individualised interventions, with greater effects for verbal than physical agitation. Other studies found no statistically significant improvement, suggesting music-based interventions are not universally effective and outcomes may be influenced by delivery and implementation.

Conclusion: Music therapy, when understood broadly to include music-based interventions, may be a promising low-risk and person-centred approach for supporting some people with dementia experiencing agitation, but it should not be viewed as a universally effective intervention. In practice, such approaches should be personalised, integrated into individualised care plans, and used alongside clinical assessment. Further research is needed to identify which residents benefit most, which forms of agitation respond best, and how these interventions can be delivered consistently in long-term care settings.

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Acronyms and Abbreviations

- **ABMI:** Agitated Behavior Mapping Instrument
- **AGEline:** AgeLine Database (gerontology)
- **AMTA:** American Music Therapy Association
- **BPSD:** Behavioural and Psychological Symptoms of Dementia
- **CASP:** Critical Appraisal Skills Programme
- **CINAHL:** Cumulative Index to Nursing and Allied Health Literature
- **CMAI:** Cohen-Mansfield Agitation Inventory
- **CMAI-NH:** Cohen-Mansfield Agitation Inventory – Nursing Home
- **EBSCO:** Elton B. Stephens Company (database platform)
- **MDS (PHQ-9):** Minimum Data Set (Patient Health Questionnaire – 9)
- **MEDLINE:** Medical Literature Analysis and Retrieval System Online
- **MBIs:** Music-based Interventions
- **NICE:** National Institute for Health and Care Excellence
- **NPI:** Neuropsychiatric Inventory
- **NPI-NH:** Neuropsychiatric Inventory – Nursing Home
- **NPIs:** Non-pharmacological Interventions
- **PICO:** Population, Intervention, Comparison, Outcome (framework)
- **PRISMA:** Preferred Reporting items for Systematic Reviews and Meta- Analyses
- **RCTs:** Randomised Controlled Trials
- **RoB 2:** Revised Cochrane Risk of Bias tool
- **SocINDEX:** Sociology Index Database
- **SWiM:** Synthesis Without Meta-analysis

Chapter 1: Introduction and Background

1.1 Introduction

The aim of this dissertation is to present a systematic review that focuses on evaluating the effect of music therapy on agitation in people with dementia living in long-term care settings. Within this chapter, the topic of interest is introduced by evaluating how music therapy is used to manage agitation, while providing background on the therapeutic and psychological challenges associated with dementia and the evolving approaches to dementia care. The research question is then developed, moving from a general topic of interest to a specific and answerable form. The chapter concludes with an outline of the dissertation's structure.

Around 57 million people worldwide were estimated to be living with dementia in 2021, and its prevalence is steadily increasing as the population ages (World Health Organization, 2025). Dementia is characterised by a progressive cognitive and functional decline and is frequently complicated by behavioural and psychological symptoms of dementia (BPSD) (Mercier *et al.*, 2024). Among BPSD, agitation is one of the most common and arguably the most distressing manifestation (Alzheimer's Association, 2025). It considerably disrupts daily care routines and places a heavy burden on healthcare staff (Carrarini *et al.*, 2021). As a result, it often leads to an increase in the usage of psychotropic medication (Yoon *et al.*, 2024). However, growing concerns about the safe use of pharmacological approaches have prompted a shift toward non-pharmacological interventions (NPIs), which include music therapy as an alternative (Wang *et al.*, 2025). Policy developments emphasise a shift towards person-centred approaches in dementia care. The Government of Jersey's Dementia Strategy (Government of Jersey and Dementia Jersey, 2024) focuses on providing personalised, person-centred support. This approach is consistent with NICE guideline (2018), which establishes person-centred care as the essential foundation for managing all aspects of dementia, including behavioural and psychological symptoms.

1.2 Background

In the United Kingdom and Jersey, cases of dementia are increasing while healthcare resources, including services that focus on delivering specialist dementia care, remain limited (Alzheimer's Society, 2024; Dementia Jersey, 2024). Long-term care settings, including nursing homes and residential homes, house some of the most vulnerable individuals with dementia (Xue *et al.*, 2025). Agitation is the one of the most common behavioural symptom in these residents, leading to increased healthcare demand (Teigland *et al.*, 2024). Pharmacological interventions, which include the use of antipsychotics, are common to manage it (Tampi *et al.*, 2020), but they are linked to adverse outcomes such as increased mortality, stroke, and falls (Vivacqua *et al.*, 2026). This emphasises the need for safe, effective, and widely deployable interventions tailored to vulnerable adult populations.

NPIs, which include music therapy, have been proposed as a safer approach to managing agitation (Choudry *et al.*, 2025). It is important to distinguish between music therapy and broader music-based interventions (MBIs). The American Music Therapy Association (AMTA) (2005) defines music therapy as a structured, evidence-based clinical intervention delivered by a qualified music therapist, involving techniques such as singing, playing instruments, and guided listening. In contrast, MBIs encompass a wider range of activities, including recorded music listening or background music, which may be administered by caregivers or nursing staff without specialist training (McArthur and Patel, 2026).

Evidence suggests that certain regions in the brain responsible for music processing are often preserved for individuals with dementia; listening to music may trigger positive memories that increase dopamine levels, a neurotransmitter associated with the experience of pleasure and reward (Zhang *et al.*, 2025). This neurological response may contribute to improved engagement and reduced behavioural disturbance (van der Steen *et al.*, 2025).

Based on a recent study by Hu and Xu (2026), it was found that music therapy significantly reduces agitation in people with dementia. However, their review drew on studies from a range of care settings and was not limited to long-term care alone.

Residents in long-term care often live with advanced dementia alongside other health conditions, and managing agitation in this group can be particularly challenging given the complexity of their needs. They are also more reliant on staff to carry out interventions, which may influence both how music therapy is delivered and how effective it is. This makes it difficult to apply findings from broader reviews directly to long-term care. A review that focuses specifically on these settings is therefore needed to better understand what works for this specific population.

1.3 Defining the Research Question

To develop a specific and answerable research question, the PICO framework was utilised (Higgins *et al.*, 2024). This conceptual tool is fundamental to the systematic review process as it facilitates the translation of a broad area of inquiry into specific, searchable components. By providing a structured approach, the framework ensures that the literature search is systematic, focused, and objective, which helps to reduce selection bias and helps to ensure transparency. Defining the scope of the review establishes clear boundaries for the research and ensures that it remains aligned with its primary objectives.

Table 1.1 PICO Framework (Higgins *et al.*, 2024)

PICO Element	**Application**
Population	Individuals with dementia living in long-term care settings
Intervention	Music Therapy (including music-based interventions)
Comparison	No intervention / standard care / Wait-list / Active alternative controls
Outcome	Agitation measured by validated scales

Question: What is the effect of music therapy on agitation in people with dementia in long-term care settings?

Aim: To systematically review evidence on the effect of music therapy on agitation in people with dementia in long-term care settings.

Objectives:

1. To systematically search for and identify relevant studies on music therapy for agitation in people with dementia living in long-term care settings.
2. To perform a narrative synthesis of the findings of included studies to understand the effect of music therapy on agitation.
3. To assess the methodological quality and risk of bias of included studies using recognised appraisal tools.
4. To identify gaps in the evidence and discuss implications for dementia care practice and future research.

1.4 Structure of the Dissertation

Having considered the background context and posed the research question in this chapter, in the next chapter the research design will be outlined, including a critical discussion of the systematic review methodology, the search strategy, selection criteria and critical appraisal tools used. The ethical issues in research will also be discussed. Chapter three will present the findings of the study providing a critical appraisal and assessment of quality in the included studies. Chapter four will present a discussion of the findings. The final chapter will revisit the research question to assess how far it has been answered and present a conclusion and recommendations.

Chapter 2: Research Design

2.1 Introduction

This chapter provides the overall plan for the design of the systematic review. It outlines the review methods used to explore the effect of music therapy on agitation in individuals with dementia living in long-term care settings. It explains the use of a quantitative systematic review with narrative synthesis and identifies the key elements required to address the review question: *What is the effect of music therapy on agitation in people with dementia living in long-term care settings?*

The chapter includes a search strategy that outlines the study selection process, data collection and extraction methods and discusses quality appraisal, risk of bias assessment, and the ethical issues relevant to conducting this systematic review.

This review is designed to explore, consolidate and critically evaluate the evidence on the effectiveness of music therapy for agitation specifically within long-term care settings. For the purpose of this review, the title uses the term music therapy which adopts an inclusive definition to incorporate a broader range of structured MBIs used in dementia care. This approach is necessitated by the clinical reality that formal, credentialed music therapy is not always accessible in long-term care settings. By including interventions led by qualified music therapists as well as activities led by other staff members, this review provides a comprehensive view of the musical care delivered in practice.

2.2 Research Paradigm

The research question situates the project within the positivist paradigm. A paradigm reflects a worldview that frames the nature of reality and the ways in which knowledge of that reality is obtained (Park *et al.*, 2020). Ontologically, positivism rests on the premise that a tangible reality exists regardless of human perception (Pretorius *et al.*, 2024). From this realist viewpoint, the world is structured by cause-and-effect mechanisms which can be systematically observed, explained and quantified (Ali, 2024). This is different from constructivist or interpretivist paradigms which suggest that reality

is socially constructed and shaped by individual experience and interaction (Tanlaka and Aryal, 2025). While constructivist or interpretivism may provide additional valuable detail, they do not offer the broad applicability needed for clinical guidelines (Tanlaka and Aryal, 2025).

Epistemologically, positivism holds that knowledge must be developed objectively, which requires the researcher to remain impartial and uninvolved with the object of study to avoid affecting the outcomes (Park *et al.*, 2020). This view of knowledge provides the foundation for this review's emphasis on quantitative research. A quantitative approach is appropriate because this review aims to evaluate the measurable effects of music therapy on agitation in individuals with dementia living in long-term care settings. By synthesising data from studies that measure variables numerically, the review will be able to make comparisons across studies. This approach ensures that the findings are directly relevant to clinical practice and provides evidence that may inform policy, care, and guidelines (Allida *et al.*, 2025).

This systematic review is positivist as it focuses on measurable outcomes of agitation. The reality in this review refers to outcomes reported in primary studies regarding the physiological and behavioural responses of individuals with dementia when exposed to an auditory stimulus in the form of music. A positivist approach views these reported responses as observable objective occurrences that exist independently of the researcher (Park *et al.*, 2020).

2.3 Methodology

Systematic review provides a structured and reproducible approach to identify, appraise and synthesise available evidence on a clearly defined research question (Shaheen *et al.*, 2023) and therefore best fits the aim and objectives of the project. In contrast to traditional narrative reviews, where the choice of literature can be more subjective and therefore susceptible to bias, a systematic approach can minimise risks through the use of predefined parameters and a standardised workflow (Brignardello-Peterson *et al.*, 2025).

This review focuses on evidence extracted from Randomised Controlled Trial (RCT) design, including parallel-group trials, cluster-randomised trials, and crossover RCTs. Individual parallel-group RCTs are well suited to evaluating interventions effectiveness, allowing direct comparison while minimising the risk of bias (Schulz *et al.*, 2010). However, restricting the review strictly to parallel designs would have excluded valuable, high-quality evidence conducted within a long-term care environment. Therefore, cluster trials which randomise entire care homes rather than individual residents are included, as this design mitigates the risk of accidental exposure to the intervention among residents sharing the same clinical environment. Similarly, crossover trials are included, though the methodological complexity of this design is acknowledged, specifically the calming effects of a music intervention may carry over into the standard care phase, making it difficult to determine if the baseline has changed. Because these trial designs differ methodologically, the findings are not statistically pooled; instead, evaluation is made by synthesising the findings narratively.

2.4 Justification for Quantitative Measurement of Agitation

This review is designed to determine whether music therapy produces measurable improvement in outcomes in agitation for residents in long-term care settings across multiple studies. This requires the use of data that can be aggregated, compared and interpreted in a way that supports evidence-based decision-making. Qualitative methods, while offering depth and context, cannot quantify intervention effects or provide the level of comparability required for systematic evaluation (Nielsen *et al.*, 2023).

Agitation is a complex behavioural symptom that can present in different forms, including pacing, verbal outbursts and repetitive behaviours (Patrick *et al.*, 2022). Because of this complexity, it is essential that agitation is measured using validated instruments that can capture its varied presentations in a consistent and replicable way. Among the most widely used tools in the literature are the Cohen-Mansfield Agitation Inventory (CMAI), which assesses the frequency of 29 agitated behaviours across three domains, including physically aggressive, physically non-aggressive, and verbally

agitated behaviours (Cohen-Mansfield *et al.*, 1989), and the Neuropsychiatric Inventory (NPI), which measures the frequency and severity of a range of neuropsychiatric symptoms, including agitation as a specific domain (Cummings *et al.*, 1994). Other validated instruments that measure agitation may also be encountered in the included studies. One inclusion criterion is the that the agitation is measured using a validated scale, rather than through subjective or informal observations. By applying this standard, the review ensures that information is extracted consistently, and that intervention effects can be compared objectively across studies. The use of validated measurement tools as an inclusion criterion strengthens the methodological consistency of the review and the overall quality of the evidence that is synthesised.

2.5 Methods

The search strategy is the backbone of a systematic review, as an inadequate search strategy can produce a biased review (Shaheen *et al.*, 2023). Therefore, the search strategy was structured to be comprehensive, transparent, and replicable rather than limiting the search to studies that are easily accessible. The search was carried out using four major databases: CINAHL Complete, MEDLINE, AGEline, and SocINDEX Full Text. All searches were conducted through the EBSCOhost platform.

The selection of databases was made to provide thorough coverage and to capture the multidisciplinary nature of dementia care (Table 2.1).

Table 2.1 Selection of Databases

MEDLINE:	Recognised as a primary bibliographic resource in the life sciences, it was used for its coverage of medical research. It has an extensive index of RCTs which ensured that the review incorporated high-quality clinical evidence.
CINAHL Complete:	Music Therapy is often delivered within care settings. CINAHL (Cumulative index to Nursing and Allied Health Literature) is essential for ensuring that care-based research is included, which may be less visible in standard medical databases.
AGEline and SocINDEX:	Dementia is understood not only as a medical but also a social issue. These databases provide coverage of gerontology and sociology studies, allowing for more comprehensive coverage of relevant areas of care.

Using multiple databases helped to minimise selection bias and ensure that major approaches are represented within the review (Moreno-Morales *et al.*, 2020).

To guide the search strategy terms, the PICO framework (Table 1.1) is revisited. This systematic approach to developing search terms ensured that concepts from all PICO domains are included to support the relevance of the studies retrieved. Boolean operators were then used to combine search terms and create a precise search string (Table 2.2)

Table 2.2 Search Terms and Boolean Operators

Dementia* → OR	Alzheimer*	Alzheimers disease*	Cognitive impairment*	Cognitive decline*	Memory loss
AND					
music therapy* → OR	Music intervention*	Music based intervention*	singing	listening to music	
AND					
Long term care* → OR	Nursing home*	Care home*	Residential facility*	Aged care facility*	Skilled nursing facility*
AND					
agitation → OR	Agitated behavio*	Challenging behavio*	BPSD*	Behavioural and psychological symptoms of dementia*	Aggression*

To ensure current evidence and a focused scope, a ten-year publication window (February 2016 to February 2026) was established. Additionally, the review focused exclusively on long-term care facilities. This setting presents a clinically complex population where agitation is highly prevalent and requires intensive management. Restricting inclusion to long-term care ensures the findings are directly applicable to institutional environments, as results from community based and acute care studies often do not transfer due to differing levels of clinical stability, dementia severity and dependency.

Following the database search, limiters were applied to restrict results to peer-reviewed, English language articles published within the ten-year window. Concurrently, the EBSCOhost platform automatically identifies and removes duplicate records. The remaining unique articles were exported for manual screening.

Table 2.3 Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
• Studies involving individuals diagnosed with dementia in long-term care settings • Any form of Music therapy / music-based Interventions • Randomised Controlled Trials (RCTs) • Reports on agitation measured by validated scales • Studies that report ethical approval, institutional review board approval or waiver, or clear ethical procedures and consent process	• Non-Dementia Diagnosis • Individuals living in community-based / acute settings • Non-Musical intervention • Pharmacological focus • Ineligible study design (non RCTs) • Studies that don't measure agitation • Studies prior to February 2016 • Non-peer reviewed • Published in other language

2.5.1 Data Collection and Screening Procedure

The study selection process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page *et al.*, 2021). The exported records underwent a two-phase manual screening process against the predefined

inclusion and exclusion criteria (Table 2.3). First, titles and abstracts were screened to exclude clearly irrelevant studies. Following this, attempts were made to retrieve the full texts of all potentially eligible articles. Records that could not be retrieved due to paywalls or lack of institutional access were excluded, as the timeframe constraint of the dissertation made alternative retrieval methods unfeasible. Second, the successfully retrieved articles underwent a comprehensive full-text review to determine final eligibility. The entire selection process, including databases, search terms, and number of retrieved and unretrieved records is presented systematically in Chapter 3.

Following the final selection, data from the included studies were extracted into a standardised table. This process systematically captured key characteristics, including participant demographics, intervention parameters, and primary outcomes regarding agitation, to facilitate the final narrative synthesis.

2.5.2 Data Analysis Methods and Critical Appraisal Strategy

To ensure the quality of included studies, each included study underwent a formal critical appraisal to identify risk of bias. Thos process is essential for identifying systematic errors in a study's design or execution that could lead to inaccurate results regarding the effectiveness of music therapy.

A two-stage appraisal process was utilised. First, the Critical Appraisal Skills Programme (CASP) RCT Checklist (Critical Appraisal Skills Programme, 2024) is used to evaluate the overall validity of the trials and their applicability to the target population. Next, the revised Cochrane Risk of Bias tool (RoB 2) (Sterne *et al.*, 2019) provided a detailed assessment across five specific domains of bias. As this review includes various RCT designs, the RoB 2 suite represents an appropriate framework, as it provides specific algorithms for assessing parallel, crossover, and cluster trials (Sterne *et al.*, 2019).

To ensure data is gathered consistently, a standardised data extraction table was developed. This allows for the systematic recording of key details from each paper, including the study design, the specific music therapy or music-based intervention, and the tools used to measure agitation. Extracting data in this manner ensured that all

studies were evaluated fairly and objectively before being compared. Finally, due to the clinical heterogeneity of the included studies, the extracted data were analysed using narrative synthesis.

2.6 Ethical Principles

Ethics in research prioritises the protection of participants involved during the collection of data. However, systematic reviews function within a different and uniquely defined ethical context. As the review examines existing literature, it does not necessitate the inclusion of human participants or the collection of primary data. The data analysed are secondary, anonymised, and already published in the public domain. Although no human participants are involved directly, ethical principles must still be observed to ensure integrity and transparency.

While a formal ethical review is not a requirement in systematic reviews, to support a strong ethical foundation, this review adopted Beauchamp and Childress's (2001) four principles of biomedical ethics: beneficence, non-maleficence, autonomy, and justice.

Beneficence is defined as the commitment to promote the well-being of others. In the context of this review, beneficence is upheld not only by the commitment to improve patient outcomes but also by the generation of new knowledge through the synthesis of current research. By systematically evaluating the effects of music therapy in individuals with dementia in long-term care settings, this review seeks to provide evidence-based recommendations designed to improve the quality of life and reduce agitation for this vulnerable population.

Non-maleficence, or the obligation to do no harm, is important in secondary research to avoid dissemination of inaccurate or biased findings that may compromise clinical decisions. To address this, predefined inclusion and exclusion criteria are applied, and all included studies are systematically evaluated for potential bias. The use of CASP and RoB2 tool (Sterne *et al.*, 2019) reduces the risk of basing findings on unreliable evidence.

Autonomy is maintained in this review by promoting transparency and respect for the reader and the wider scientific community, although no direct patient interaction

occurs. This is preserved through strict application of PRISMA 2020 reporting guidelines. In addition, only studies that reported ethical safeguards were included, such as ethical approval, institutional review board approval or waiver, or a clear explanation of ethical procedures and consent processes. One included study did not report formal ethical approval. However, it provided a clear justification and described appropriate ethical procedures. A detailed and transparent description of the methodology including the search strategy, this allows the reader to critically assess the process and strengthen the credibility of the review.

Justice, the principle of fairness and equity, is maintained in this review through a systematic search strategy that ensures fair inclusion of studies from all relevant populations and care settings. The search strategy was designed to be broad and inclusive, incorporating multiple databases to minimise the risk of relevant evidence from being omitted because of narrow selection criteria.

2.7 Summary

Having justified a systematic review of a quantitative research study as the most suitable design for answering the review question, this chapter has outlined the review methodology, study selection process, assessment of quality and ethical considerations. The following chapter will present the findings from the included studies and synthesise the evidence in relation to the review question.

Chapter 3: Findings

3.1 Introduction

This chapter presents the findings of the systematic review. The chapter begins by presenting the search results and the study selection process, then summarises the characteristics of the included studies. This is followed by the assessment of methodological quality and risk of bias before offering a narrative synthesis of the findings.

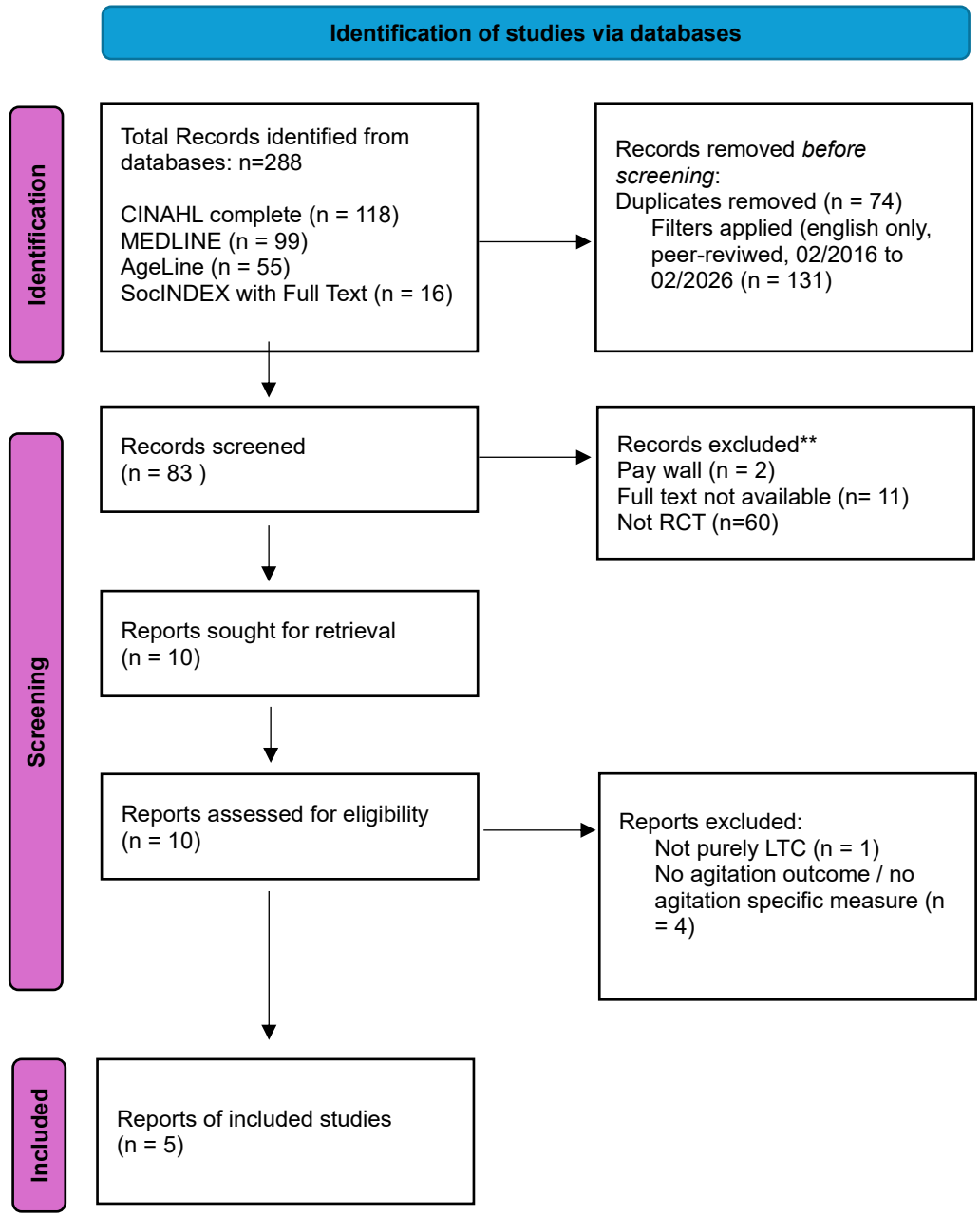
For the purpose of this study, the term music therapy is used to refer to structured music-based interventions, including both formal therapist-led music therapy and broader music-based activities delivered in long-term care settings. However, following study selection, the final included studies were more accurately classified as MBIs rather than formal therapist-led music therapy.

3.2 Search Results and Study Selection

The comprehensive literature search across the four selected databases, MEDLINE, CINAHL Complete, AGEline, and SocINDEX, yielded a total of 288 records (Figure 3.1). Following the automatic removal of 74 duplicate records by EBSCOhost and the application of initial database limiters which excluded 131 records, 83 unique titles and abstracts were screened against inclusion and exclusion criteria. Of the 83 records screened, 73 did not proceed to full-text review. Most were excluded after title and abstract screening because they were not RCTs. This number also included 13 records that could not be accessed due to paywalls or lack of full-text availability within the dissertation timeframe. The remaining 10 articles were retrieved and assessed for eligibility.

Upon full-text review, a further 5 studies were excluded. The reason for exclusion at this stage included the lack of exclusive long-term focus due to inclusion of home-based setting in one study, and the absence of a strictly relevant agitation measure in four studies. In total, 5 RCTs met all the criteria and were included in the final narrative synthesis.

Figure 3.1 PRISMA Flow Diagram (Page *et al.*, 2021)



3.3 Characteristics of Included Studies

The five included studies were published between 2020 and 2024. One was conducted in Germany, one in Hong Kong and three in the United States. All studies were undertaken in a long-term care setting, including nursing homes or nursing facilities, which was consistent with the focus of the review. The detailed characteristics of the included studies are presented in Table 3.1.

Table 3.1 Data Extraction Table

Study (Author, Year, Country	Study Design / Sample Size	Intervention Details	Control Group	Outcome Measures (Agitation)	Findings
Inoue *et al.,* 2024 United States of America	-RCT -N = 261 -Intervention Group: 148 -Control Group: 113	Personalised music via MP3 players / speakers. Dosage: At least 30 minutes, twice a week for 4 weeks.	Standard care	Agitation scale (CMAI)	Mixed results. Some lower antipsychotic medication use and better mood during music but agitation results were not consistent.
Cheung *et al.,* 2020 Hong Kong	-RCT -N = 165 -Music with Movement: 58 -Listening to Music: 54 -Social Activity: 53	Music with movement (dancing) Music listening Dosage: 30-45 minutes twice a week for 6 weeks	Social activity without music	Chinese CMAI-NH	All three groups had lower agitation after the programme. No significant difference between the three groups.
Weise *et al., 2020* Germany	-RCT -N = 20 -Individualised recorded music via mp3 players = 10 -Control group = 10	Individualised recorded music via mp3 players Dosage: 30 minutes, every other day for 4 weeks	Wait-list control group	CMAI	Sleep quality improved significantly. Agitation did not differ significantly between groups, but there were trends for some improvement.

Sisti et al., 2024 United States of America	-RCT -N = 976 -Intervention group = 483 Control group = 493	Personalised preferred music delivered via a personalised music device Dosage: provide 30 minutes of music per day when behaviours were likely to occur	Standard care	ABMI	Fewer verbally agitated behaviours and more pleasure observed. No significant change in physically agitated behaviours.
Kwak et al., 2020 United States of America	-RCT -N = 59	'Music & Memory' programme personalised playlists on iPods delivered by staff Duration: 14 week crossover design, including 6 week intervention and control phases with a 2-week washout period.	Standard care	CMAI, NPI-NH	No statistically significant differences were found in agitation, behavioural symptoms or psychotropic medication use over time.

Sample sizes varied across the studies. Weise *et al*. (2020) was the smallest study and included 20 nursing home residents with dementia in a pilot RCT. Kwak *et al.* (2020) included 59 residents with dementia from nursing homes in a randomised crossover trial. Cheung *et al.* (2020) included 165 residents with moderate dementia from nursing homes in Hong Kong. Inoue *et al.* (2024) included 261 residents from nursing facilities in the United States. Sisti *et al.* (2024) was the largest study and included 976 nursing home residents with Alzheimer's disease or related dementias in nursing homes.

The included studies examined a range of music-based interventions. Weise *et al.* (2020), Inoue *et al.* (2024), Sisti *et al.* (2024) and Kwak *et al.* (2020) focused mainly on individualised or personalised music listening approaches. Cheung *et al.* (2020) compared music with movement, music listening and social activity.

The duration and mode of delivery also differed. Weise *et al.* (2020) used individualised recorded playlists for 30 minutes every other day over four weeks. Inoue *et al.* (2024) used personalised music, delivered by staff twice weekly and aiming for at least 30 minutes per session over four weeks. Cheung *et al.* (2020) delivered group music-with-movement sessions for 30 - 45 minutes twice weekly for six weeks. Kwak *et al.* (2020) used the 'Music & Memory' programme in a 14-week crossover design, which included six-week intervention and control phases separated by a two-week washout period. Sisti *et al.* (2024) used preferred music delivered through a personalised music device and with staff advised to provide approximately 30 minutes of music per day when agitation was likely to occur.

Outcome measurement was broadly consistent across the final selection (Table 3.2). Agitation was measured using the Cohen-Mansfield Agitation Inventory (CMAI), an adapted version of the CMAI, or the Agitated Behavior Mapping Instrument (ABMI). The CMAI is commonly used in people with cognitive impairment and is a validated observational rating scale. As it observes the frequency of behaviours over a defined period, it is useful for capturing specific behaviours in relation to treatment effects, such as MBIs. However, a limitation is that it can rely on staff observation and recall, which means it may be open to potential bias. The ABMI used by Sisti *et al.* (2024) also measured agitated behaviours directly through structured observation, which reduced

reliance on staff recall, although it only captured behaviours during the observation period.

Table 3.2 Outcome Measures by Study

Study	Outcome measure tool	Outcome measure
Inoue *et al.,* 2024	Cohen-Mansfield Agitation Inventory (CMAI)	Results were mixed across study periods. Some analyses suggested lower antipsychotic use and, at times lower antianxiety use or improved agitation scores, but findings were not consistent across the full sample.
Cheung *et al.,* 2020	Chinese CMAI-NH	No significant between-group difference; all three groups improved in agitation
Weise *et al.,* 2020	CMAI	Sleep improved compared with control. Total agitation did not differ significantly between groups. Some agitation scores improved from before to after the intervention
Sisti *et al.,* 2024	Agitated Behavior Mapping Instrument (ABMI)	Fewer verbally agitated behaviours on structured observation; more observed pleasure. No significant effect on physically agitated behaviours. Staff reported agitation measures in the same trial showed no significant effect
Kwak *et al.,* 2020	CMAI, Neuropsychiatric Inventory – Nursing Home Version (NPI-NH)	No statistically significant reduction in overall agitation or psychotropic medication use

3.4 Narrative Synthesis

3.4.1 Participant Profiles and Dementia Severity

Across the five included studies, participants were residents with dementia living in long-term care settings. This was consistent with the population and setting identified in the review question. However, the studies differed in relation to dementia severity and participant characteristics. Cheung *et al.* (2020) focused specifically on residents with moderate dementia, which was relevant to the use of group music with movement because participants needed some capacity to engage with music, movement and social

interaction. In contrast, studies such as Inoue *et al.* (2024), Sisti *et al.* (2024), Weise *et al.* (2020), and Kwak *et al.* (2020) focused more on personalised or individualised music listening approaches.

These differences are important because dementia severity and the ability to participate may influence how residents respond to music-based interventions. Residents with moderate dementia may benefit from structured group activity and social engagement, while residents with varying levels of cognitive and physical ability may be more suited to familiar personalised music delivered individually. Differences in participant profile may partly help explain why effects on agitation varied, although this cannot be confirmed from the present evidence alone.

3.4.2 Interventions and Music Selection

The specific methods used to select and deliver the music varied across the five trials, reflecting different approaches within the field of MBIs. In trials conducted by Weise *et al.* (2020), Inoue *et al.* (2024), Sisti *et al.* (2024), and Kwak *et al.* (2020), the focus was mainly on receptive listening using individualised or personalised content. For Weise *et al.* (2020), this involved providing residents with MP3 players containing recorded playlist tailored to their specific musical preferences. Inoue *et al.* (2024) utilised a similar personalised approach, where personalised music was delivered by staff at least twice weekly. Sisti *et al.* (2024) also used preferred music delivered through a personalised music device as part of a 'Music & Memory' intervention. Kwak *et al.* (2020) similarly evaluated the 'Music & Memory' programme, using personalised music playlist delivered on iPods or other digital devices by trained nursing home staff. On the other hand, Cheung *et al.* (2020) employed a more active and social delivery model, where music was paired with physical movement in a group setting. These sessions lasted between 30-45 minutes, while some listening-based interventions used around 30 minutes per session. By documenting the differences in equipment, staff involvement, and session duration, it becomes clear that while all five studies aimed to reduce agitation, they used different intervention approaches to achieve that goal.

3.4.3 Overall Effect of Music-based Intervention on Agitation

Overall, the five included studies suggest that music interventions may help reduce agitation or improve related behavioural outcomes in some people with dementia living in long-term care settings. However, the evidence was mixed, and the size and pattern of benefit differed according to intervention type, delivery method, implementation fidelity and the specific behaviours measured.

Weise *et al.* (2020) was a small pilot of individualised recorded music. Sleep quality improved significantly compared with control. Total agitation did not differ significantly between groups, though some agitation scores improved from before to after intervention. Findings should be interpreted cautiously because of the small sample size.

Cheung *et al.* (2020) found that all groups, including those involved in music with movement, music listening, and social activity, saw a reduction in agitation scores on the Chinese CMAI-NH. However, the music-based groups were not significantly more effective than the social activity group. This is an important finding because it suggests that for moderate dementia, the benefit may not be due to music alone, but may also be linked to structured activity, social interaction, and reduced boredom in the care settings.

Inoue *et al.* (2024) examined personalised music in relation to mood, agitation, and psychotropic medication use. Results were mixed across study periods. Some analyses suggested lower antipsychotic use and, at times, lower antianxiety use or improved agitation scores, but these findings were not consistent across the full sample. Observational data pointed to more positive mood during listening. Overall, the medication findings are suggestive rather than definitive.

Sisti *et al.* (2024) reported findings from a large cluster-randomised trial using structured observation. Verbally agitated behaviours were reduced and observed pleasure increased. There was no significant effect on physically agitated behaviours. Staff-reported agitation measures in the same trial showed no significant effect. This

suggests that music may help some forms of agitation more than others, and that results can depend on how agitation is measured.

Kwak *et al.* (2020) provided more cautious findings. Although the study evaluated 'Music & Memory' programme using a randomised crossover design, no statistically significant reduction in agitation was found over time. This finding suggests that personalised music listening does not always produce measurable improvements in agitation.

3.4.4. Variations by Intervention Type

The included studies suggest that different forms of music-based interventions may influence agitation outcomes through different mechanisms. Receptive, listening-based approaches were examined in Weise *et al.* (2020), Inoue *et al.* (2024), Sisti *et al.* (2024), and Kwak *et al.* (2020), while a more interactive group-based approach was examined in Cheung *et al.* (2020). Individualised receptive listening interventions appear practical and accessible for long-term care settings. Weise *et al.* (2020) provided preliminary evidence that listening to personally relevant music may improve some outcomes, such as sleep, although total agitation did not differ significantly between groups and the sample was small. Inoue *et al.* (2024) and Sisti *et al.* (2024) further supported the potential of staff-led personalised music interventions for selected outcomes. Inoue *et al.* (2024) reported mixed findings, including signals of lower medication use in some analyses. Sisti *et al.* (2024) found fewer verbally agitated behaviours on structured observation. However, Kwak *et al.* (2020) did not find a statistically significant reduction in agitation, showing that receptive music interventions may not be effective in all settings.

The interactive approach used by Cheung *et al.* (2020) highlighted a slightly different pattern. While the music-with-movement group demonstrated a reduction in agitation, it was not significantly more effective than the music listening or social activity groups. This indicates that while active music interventions may be beneficial, their value may also reflect structured social interaction and routine.

Although these patterns are useful, the evidence is not yet strong enough to conclude that one form of intervention is clearly superior to another. A more cautious interpretation is that both individualised listening and interactive group activities may be beneficial, but their effect may depend on resident needs, dementia severity, staff involvement, and facility resources.

3.4.5 Duration and Pattern Effects

The duration and pattern of effects also differed across studies. Weise *et al.* (2020) and Inoue *et al.* (2024) both evaluated interventions over a four-week period. Weise *et al.* (2020) reported better sleep quality compared with control, with mixed findings on agitation. Inoue *et al.* (2024) reported mixed findings, including signals of lower medication use and improved agitation scores in some analyses only. These results suggest that consistent music listening over about four weeks may be linked to short-term changes on some outcomes, but findings were not consistent across all measures or studies.

Cheung *et al.* (2020) implemented a longer six-week intervention. The finding that agitation improved across all groups over this time suggests that the introduction of regular, structured activity involving music or social engagement can have a positive effect on behaviour in long-term care settings. Sisti *et al.* (2024) used a larger pragmatic design and showed that personalised music may reduce verbally agitated behaviours, although effects were not seen for physically agitated behaviours. Kwak *et al.* (2020) used a 14-week crossover design, which included two six-week phases separated by a two-week washout period, but no statistically significant reduction in agitation was found over time.

However, a notable limitation across the studies is that the duration of intervention and follow-up varied. While some studies included follow-up assessment after the intervention period, others primarily measured outcomes immediately following the intervention phase. Consequently, while some studies suggest immediate or short-term benefit, it remains unclear how long these effects last over a more extended period.

3.5 Methodological Quality and Risk of Bias

The methodological quality of the included studies varied. As presented in tables 3.3 and 3.4, which shows differences across the studies in relation to randomisation, study design, blinding, attrition, outcome measurement and intervention implementation.

Table 3.3 Assessment of Quality guided by ROB 2

Domain	Weise et al. (2020)	Cheung et al. (2020)	Inoue et al. (2024)	Sisti et al. (2024)	Kwak et al. (2020)
1: Randomisation	**Low risk:** Used a random number generator and groups were equal at the start.	**Low risk:** Randomised properly and groups matched at the beginning.	**Low risk:** Picked people and groups randomly.	**Low risk:** Nursing homes were randomised to intervention or control groups.	**Low risk:** Residents were randomly assigned to one of two conditions in a crossover design.
2: Deviations from Interventions	**Some concerns:** Small study, and staff might have known who got the treatment.	**Some concerns:** Patients and helpers knew who was getting the treatment.	**Some concerns:** Done during normal daily care, making it hard to keep the treatment totally separate.	**Some concerns:** The intervention was delivered in routine nursing home care, so delivery may have varied between facilities	**Some concerns:** The intervention was delivered by nursing home staff, and the study raised concerns about whether Music & Memory was implemented consistently.
3: Missing Data	**Low risk:** Kept track of everyone and noted why any sessions were missed.	**Low risk:** Some people dropped out due to illness, but they clearly explained why.	**Some concerns:** Some data was missing and they didn't fully explain how they handled it.	**Some concerns:** Residents who died or were discharged before follow-up were excluded from the analytic sample	**Some concerns:** It was not fully clear how missing outcome data across the different time points were handled.
4: Measuring Outcomes	**Some concerns:** Staff scored the patients, and they might have known	**Some concerns:** Nurses scored the outcomes and might have noticed	**Some concerns:** Used regular facility records, and it's unclear if the	**Some concerns:** The study used structured observation with	**Some concerns:** Staff assessed resident outcomes using CMAI and NPI-

	who was in which group.	who got the treatment.	scorers knew about the treatment.	ABMI, which reduced staff recall bias, but observers were not blinded to the intervention.	NH, which may introduce reporting bias.
5: Reporting Results	**Low risk:** Reported their results exactly as they planned.	**Low risk:** Reported all the results they promised to.	**Some concerns:** They didn't publish their plan, so they might have just picked the best results to show.	**Low risk:** The study reported the main structured observation outcomes, including verbal and physical agitated behaviours.	**Low risk:** The study reported the main outcomes described in the methods, including agitation, behavioural symptoms and medication use.
Overall Risk	**Some concerns:** Mainly because of the small number of people and staff knowing who got the treatment.	**Some concerns:** Mostly because it's hard to hide who gets a behavioural treatment from the nurses.	**Some concerns:** Because it's unclear who knew about the treatment and some data was missing.	**Some concerns:** Mainly because the study randomised nursing homes rather than individual residents, intervention delivery may have been varied between facilities, and observers were not blinded.	**Some concerns:** Mainly because outcomes relied on staff reporting and there were concerns about consistent implementation of the intervention

Table 3.4 Assessment of Quality using Critical Appraisal Skills Programme (CASP) RCT Checklist

CASP CHECKLIST QUESTION	Inoue (2024)	Cheung (2020)	Weise (2020)	Sisti (2024)	Kwak (2020)
Did the trial address a clear focused issue?	Yes	Yes	Yes	Yes	Yes
Was the assignment of patients to treatment randomised?	Yes	Yes	Yes	Yes	Yes
Were all of the patients who entered the trial properly accounted for at its conclusion?	Can't tell	Yes	Yes	Yes	Yes
Were patients, health workers and study personnel 'blind' to treatment?	No	No but research assistant / assessors were blinded	No	No	No
Were the groups similar at the start of the trial?	Can't tell	Yes	Yes	Partially	Yes
Aside from the experimental intervention, were the groups treated equally?	Yes	Yes	Yes	Yes	Yes
How large was the estimate of the treatment effect?	Small to moderate	Not clear	Small to moderate	Moderate	Not Significant
How precise was the estimate of the treatment effect?	Limited precision	Not clear	Low precision	Precise	Low Precision
Can the result be applied to the local population, or in your context?	yes	Yes	Yes	Yes	Yes
Were all clinically important outcomes considered?	yes	yes	yes	Yes	Yes
Are the benefits worth the harms and costs?	yes	Can't tell	yes	Yes	Yes

All five studies used random allocation, but differed in relation to blinding, attrition, and outcome measurement. Cheung *et al.* (2020) used block randomisation across three groups. Inoue *et al.* (2024) reported random selection and random assignment within facilities. Weise *et al.* (2020) also used random assignment in its pilot waitlist-controlled design. Sisti *et al.* (2024) used parallel cluster-randomised controlled trial design, while Kwak *et al.* (2020) used a randomised crossover design.

Blinding status was reported on some studies. Cheung *et al.* (2020) was described as single-blinded. Research assistants collecting ratings were blinded to allocation, but frontline staff who provided informant ratings may have known which activities residents received. In Weise *et al.* (2020), blinding was not possible because project staff and nursing home staff knew which participants received the intervention. In Sisti *et al.* (2024), blinding observers to facility allocation was difficult in a cluster pragmatic trial and was not clearly demonstrated. In Inoue *et al.* (2024) and Kwak *et al.* (2020), blinding procedures were less clearly detailed. Although true blinding in studies using non-pharmacological interventions is difficult (Monaghan *et al.,* 2021), it is possible to have an outcome assessor who is blinded to the group the participant was in.

Outcome measurement across several studies relied on staff observing and rating the resident's behaviour using CMAI or adapted versions of the CMAI. As staff members may have been aware of the intervention, this reliance may introduce subjective bias. However, this is not clear within all studies, and observer and assessor bias cannot be ruled out. Sisti *et al.* (2024) reduced some reliance on staff recall by using structured observations through ABMI, although this only captured behaviours during specific observation periods. Therefore, the risk of bias varied across included studies.

Attrition and missing data also varied. Cheung *et al.* (2020) reported an attrition rate of 19.4%, mainly due to acute illness or changes in physical condition. Inoue *et al.* (2024) included 261 participants in the main analysis. Incomplete data in the smaller observational subsample occurred in part because two participants died and two were unavailable for observation. Weise *et al.* (2020) was mainly limited by its small pilot sample rather than by major reported loss to follow-up. Sisti *et al.* (2024) had a much larger sample, but because the study randomised nursing homes rather than individual

residents, differences between facilities and how the intervention was delivered may have influenced the findings. Kwak *et al.* (2020) was strengthened by its crossover design, but the study raised concerns about whether the 'Music & Memory' was implemented consistently in routine nursing home care.

Taken together, the evidence base was suitable for inclusion in this review, but most studies had limitations relating to blinding, outcome measurement, missing data, study design or implementation. Therefore, the findings should be interpreted with caution.

3.6 Summary

Overall, the five included studies present mixed evidence regarding whether MBIs reduce agitation in people with dementia living in long-term care settings. The size and specific pattern of these benefits differed depending on how the music was delivered, implemented, and which specific behaviours were being measured. The evidence was mixed, although several studies reported improvements in agitation or related behavioural outcomes. Music-based approaches, particularly personalised or individualised listening, were associated with improvements in some behavioural outcomes and, in one study, with signals of lower antipsychotic and, in some analyses, antianxiety medication use.

At the same time, there are notable methodological limitations across included studies. The small sample size of the pilot study, the difficulty of the blinding behavioural interventions, the challenges of routine implementation, and the reliance on staff-rated observations mean that findings should be interpreted with caution. Even so, the review supports the view that music-based interventions may represent a promising non-pharmacological approach for managing agitation in people with dementia living in long-term care settings.

The findings will be discussed in the following chapter.

Chapter 4: Discussion

4.1 Introduction

This chapter discusses the findings presented in Chapter 3 in relation to the review question: *What is the effect of music therapy on agitation in people with dementia living in long-term care settings?* The term music therapy is used broadly to include structured MBIs. The final included studies were more accurately classified as MBIs rather than formal therapist-led music therapy. Therefore, this chapter discusses the evidence in relation to personalised music listening, individualised recorded music, 'Music & Memory', music listening, and music with movement interventions.

The discussion begins by interpreting the overall findings, before considering why the effect of MBIs differed across the included studies. It then discusses the influence of intervention type, delivery method, dementia severity, outcome measurement, and implementation in long-term care settings. The chapter also considers the implications of the findings for nursing practice, particularly in relation to person-centred dementia care and NPIs to agitation. Finally, the strengths and limitations of the review are considered.

4.2 Summary of Main Findings

The findings suggest that MBIs may help reduce agitation or improve related behavioural outcomes in some people with dementia living in long term-care settings. However, the evidence is mixed and did not demonstrate a consistent reduction in agitation across all five included studies. Inoue *et al.* (2024) reported positive effects of personalised music, including reductions in some psychotropic medication use and agitation scores, as well as observational and staff reported improvements in residents' mood and engagement. Sisti *et al.* (2024) found that personalised music was associated with reduced verbally agitated behaviours and increased observed pleasure, although there was no significant effect in physically agitated behaviours. Weise *et al.* (2020) provided preliminary evidence from small pilot RCT, reporting significant improvement in sleep quality and trends towards improvement in social participation and agitation. Cheung *et al. (*2020) found that agitation improved across music with movement, music

listening and social activity groups, but there were no statistically significant differences between the groups. Kwak *et al.* (2020) found no statistically significant improvements in agitation, behavioural symptoms or psychotropic medication use.

Taken together, these findings suggest that MBIs may be beneficial, but their effect varies. The evidence appears strongest, though still mixed, for personalised or individualised music listening in relation to some behavioural outcomes, particularly verbal agitation and mood-related responses. However, the evidence is less clear for physical agitation and for long-term sustained reductions in agitation. This may be

4.3 Interpretation of Findings in Relation to the Review Question

The findings partly answer the question in relation to whether music therapy affects agitation in people with dementia living in long-term care settings. The evidence suggests that MBIs may have positive effect on agitation in some circumstances, but the overall effect is not consistent enough to conclude that they reliably reduced all forms of agitation in long-term care residents with dementia.

The mixed findings are important because agitation is not a single behaviour. It can include verbal agitation, physical aggression, non-aggressive physical behaviours, restless and repetitive behaviours, related behaviours such as refusal to follow directions may also occur (Kratzer *et al.,* 2023). Sisti *et al.* (2024) is particularly useful in this respect because it separated verbal and physical agitation. The study found a reduction in verbally agitated behaviours but not physically agitated behaviours. This suggests that music may be more effective for some forms of agitation than others. However, where agitation is associated with pain, unmet needs, environmental discomfort or more complex neuropsychiatric symptoms, MBIs may need to be used alongside broader person-centred assessment and management rather than a standalone approach (Carrarini *et al.,* 2021).

Cheung *et al.* (2020) also complicates the interpretation of effectiveness. Although all groups improved, music with movement and music listening were not significantly more effective than social activity. This suggests that some observed benefits may not be

caused by music alone. Instead, structured attention, social contact, routine, engagement and reduced boredom may also contribute to improvements in agitation (McArthur *et al.,* 2026). This clinically important because it suggests that MBIs should not be viewed only as a musical stimulus, but as part of a broader person-centred activity approach.

4.3.1 Influence of Intervention Type and Delivery

The included studies used different forms of MBIs, and this variation may partly explain the mixed findings. The risk of bias in reporting results from the included studies highlights some methodological limitations. Although the studies used similar outcome measurement tools, the specific outcomes being measured varied and therefore it is not possible to draw firm causal conclusions. Four studies primarily used receptive music listening approaches. These included personalised music, individualised recorded music, and 'Music & Memory' interventions. Cheung *et al.* (2020) included a more interactive approach through music with movement, alongside music listening group and a social activity comparator.

Personalised or individualised music listening appeared to be practical and acceptable in long -term care settings. Inoue *et al.* (2024), Sisti *et al.* (2024), Weise *et al.* (2020), and Kwak *et al.* (2020) all used approaches where music was selected according to the resident's preferences or life history. This person-centred element is important in dementia care because familiar music may connect with long-term memory, identity and emotional recognition even when cognitive function has declined (Santini *et al.,* 2025). In practice, this means that the effectiveness of MBIs may depend not only on playing music, but on selecting music that is personally meaningful to the resident.

However, the findings also demonstrate that personalisation alone does not guarantee effectiveness. Kwak *et al.* (2020) evaluated 'Music & Memory' but found no statistically significant improvement in agitation or behavioural symptoms. This suggests that successful delivery depends on more than the intervention design. Fidelity, staff confidence and engagement, timing, consistency and integration into daily care routines may all influence the implementation and evaluation outcomes of MBIs in long-term

care settings (Schneider *et al.,* 2024; Rasing *et al.,* 2025). If residents do not receive the intervention at the right time, or if staff are unable to deliver it consistently, potential benefits may not be realised.

Music with movement may work through different mechanisms. In Cheung *et al.* (2020), music was combined with physical movement and group interaction. This may promote engagement, mobility, social connection and stimulation. However, because the social activity group also improved, it is difficult to separate the effect of music from the effect of structured group activity. For residents with moderate dementia who can engage in group activity, music with movement may be useful, but the evidence does not show that it is clearly superior to other meaningful social activities.

4.3.2 Timing, Dose and Duration of Effects

The duration and frequency of the interventions varied across the included studies. Weise *et al.* (2020) used individualised recorded music for 30 minutes every other day for four weeks. Inoue *et al.* (2024) used personalised music twice weekly for approximately 30 minutes over four weeks. Cheung *et al. (*2020) used 30 to 45 minute sessions twice weekly for six weeks. Sisti *et al.* (2024) advised staff to provide around 30 minutes of personalised music per day when agitation was likely to occur. Kwak *et al.* (2020) used a 14-week cross over design, including six-week intervention and control phases separated by a two-week washout period.

These differences make it difficult to identify an optimal dose. The evidence does not show clearly whether short, frequent sessions are better than longer but less frequent sessions. It also remains unclear whether music should be delivered routinely, when agitation is likely, or at the early signs of distress. Sisti *et al.* (2024) and Kwak *et al.* (2020) are particularly relevant here because 'Music & Memory' style interventions are intended to be used when behaviours are likely or beginning to emerge. In practice, this requires staff to recognise early signs of agitation and respond promptly.

The durability of effects is also uncertain. Some studies measured outcomes immediately after the intervention period, while others had more extended designs.

Weise *et al.* (2020) acknowledged that it remained unclear whether benefits were sustained over time. This is an important limitation for long-term care practice. An intervention that only reduces agitation during or immediately after music listening may still be clinically useful, especially during personal care or periods of distress. However, it should not be presented as a long-term solution unless there is evidence that effects are maintained.

4.3.3 Measurement of Agitation and Influence on Findings

The included studies used different tools to assess agitation, including the Cohen-Mansfield Agitation Inventory (CMAI), adapted versions of the CMAI, the Chinese CMAI-NH, the Agitated Behavior Mapping Instrument (ABMI), the Neuropsychiatric Inventory-Nursing Home version (NPI-NH), and medication review. These tools measure different aspects of agitation and may partly explain why findings varied.

The CMAI is widely used in dementia research and captures different types of agitated behaviours (Cesana *et al. 2023)*. However, in several studies it relied on staff observation or staff recall. This may introduce reporting bias, especially when staff know which residents received the intervention (Griffiths *et al.,* 2020). Staff rated outcomes may be affected by reporting bias, particularly when staff are not blinded to the intervention or when expectations about the intervention influence subjective ratings (Griffiths *et al.,* 2020; van der Ende *et al.,* 2023)

Sisti *et al.* (2024) addressed this issue by using structured observations through the ABMI. This reduced reliance on staff recall and may explain why the study detected an effect on verbally agitated behaviours when other staff reported measures in related research did not show a clear effect. However, structured observation also has limitations because it captures behaviour only during specific observation periods. Because agitation behaviours may be infrequent, brief observation periods may not capture the full pattern of behavioural change (Griffiths *et al.,* 2020).

Medication use is another important outcome, but it should be interpreted carefully. Inoue *et al.* (2024) reported reduced antipsychotic and antianxiety medication use,

which is clinically meaningful because these medications are commonly used to manage behavioural and psychological symptoms of dementia (Magierski *et al.,* 2020). However, medication reduction does not directly prove that agitation reduced, as prescribing can be influenced by organisational factors, staff practice, medical review and wider care culture (Smeets *et al.,* 2021; Lühnen *et al.,* 2023). Even so, it is an important finding because reducing reliance on psychotropic medication is an important goal in dementia care (Moth *et al,* 2021).

4.4 Methodological Quality and Confidence in the Evidence

The methodological quality of the five studies varied. All included studies used random allocation, which strengthens the evidence base compared with non-randomised designs. However, several limitations reduce confidence in the findings.

Blinding was a major issue. In music-based NPIs, it is difficult to blind participants or staff because they are usually aware of whether music is being delivered (van der Steen *et al.,* 2025). This increases the risk of performance and detection bias, particularly where staff also rate outcomes. Cheung *et al.* (2020) was described as single-blinded, but the use of informant-rated measures still means that bias cannot be fully excluded. Sisti *et al.* (2024) used structured observation, but observers were not blinded to intervention allocation.

Sample size also affected the strength of the evidence. Weise *et al.* (2020) was a small pilot study with only 20 participants, so its findings should be viewed as preliminary rather than definitive. In contrast, Sisti *et al.* (2024) included 976 residents and provides stronger evidence, although its current cluster-randomised design introduces issues related to variations between nursing homes. Differences in staff engagement, leadership, care routines and implementation fidelity may have influenced results.

Implementation fidelity was another recurring concern. MBIs may appear simple, but successful delivery requires attention to residents' music preferences and responses, access to equipment, staff time, appropriate timing, and integration into care routines (Kwak *et al.,* 2021; Amano *et al.,* 2021). Kwak *et al.* (2020) is especially important because

it found no statistically significant effect and raised concerns about the ability of facility staff to implement 'Music & Memory' consistently. This suggests that MBIs should not be recommended without considering staff training, workload and organisational support.

4.5 Implications for Nursing Practice

The findings have important implications for nursing practice in long-term care settings. First, MBIs may be considered as a part of a person-centred, non-pharmacological approach to managing agitation in dementia. They are generally low-cost, non-invasive and adaptable to individual residents. They may be especially useful where agitation appears linked to boredom, distress, loneliness, reduced engagement or environmental overstimulation.

Second, the findings support the importance of personalisation. Nurses and care staff should not assume that any relaxing music will be effective. The evidence suggests that music is more likely to be meaningful when it reflects the resident's preferences, identity, cultural background and life history. In practice, this may involve collecting information from residents, family members, friends or care staff who know the person well.

Third, MBIs should be used as part of assessment led care rather than as a generic activity. Agitation may be triggered by pain, infection, hunger, thirst, constipation, fear, overstimulation, unmet emotional needs or environmental factors (Carrarini *et al.,*2021). Nurses should therefore continue to assess and address underlying causes of agitation. Music should not replace clinical assessment, pain management, communication strategies or environmental modification.

Fourth, staff training and implementation planning are essential. The mixed findings suggest that simply providing devices or playlist is unlikely to be enough. Care staff need guidance on when to use music, how to monitor response, when to stop the intervention, and how to document its effect. This is particularly relevant in long-term care settings where staffing pressures may limit consistent delivery.

Finally, these findings are relevant to advancing nursing practice because they support a move away from reliance on pharmacological management alone. For nurses working with people with dementia, MBIs may offer a practical way to promote person-centred care, reduce distress and support quality of life. However, the evidence supports cautious implementation rather than blanket recommendation.

4.6 Implications for Long-term Care and Jersey Context

In the Jersey context, the findings are relevant because local dementia care policy emphasises person-centred support and care that is responsive to individual needs (Government of Jersey and Dementia Jersey, 2024). MBIs may fit well with this direction because they can be tailored to a resident's personal history, preferences and emotional responses. However, because none of the included studies were conducted in Jersey, the findings should be applied cautiously. Any use of MBIs in Jersey's long-term care settings would need to consider local staffing levels, training needs, availability of resources and the ability of care teams to deliver the intervention consistently.

For long-term care services, the most useful approach may be to embed MBIs into individualised care plans. This could include documenting preferred music, preferred delivery method, signs that music is helpful, signs that it causes distress, and the best time of the day to use it. For example, some residents may benefit from music before personal care, during periods of restlessness, or when verbal agitation begins. Others may dislike headphones or become overstimulated, requiring different approach.

In Jersey, where adult social care services may face workforce and resource pressures, MBIs could support dementia care if introduced with clear guidance, staff training, and realistic implementation planning (Jersey Care Commission 2022; Rasing *et al.,* 2025; Amano *et al.,* 2021). However, they should not be presented as a substitute for specialist dementia support or adequate staffing. Instead, they should be seen as one component of person-centred dementia care.

4.7 Strengths and Limitations of this Review

A key strength of this review is its focused population and setting. By limiting inclusion to RCTs including people with dementia living in long-term care settings, this review provides findings that are more directly relevant to nursing homes, residential care homes and nursing facilities. This is important because findings from community or acute care settings may not be transferable to residents with higher levels of dependency and more advanced dementia.

Another strength is the focus on RCT designs, including individual RCTs, cluster-randomised trials and crossover RCTs. This improves the methodological quality of the evidence compared with including uncontrolled or purely observational studies. The use of validated or standardised agitation measures also strengthened the review by ensuring that included studies measured agitation or agitated behaviours directly.

However, the review also has limitations. Only five studies were included, and they differed in intervention type, duration, delivery method, comparator and outcome measurement. This heterogeneity meant that meta-analysis was not appropriate and limited the strength of conclusions (Campbell *et al.,* 2020). The inclusion of only English language, peer-reviewed studies may also have excluded relevant evidence. However, within the constraints of a Master's study dissertation, this influenced the inclusion criteria.

The use of music therapy as an inclusive term, which included structured MBIs is another limitation. Although it was clearly defined in the review, the final included studies were more accurately classified as MBIs rather than formal therapist led music therapy. This means the findings should not be interpreted as evidence for formal music therapy delivered by a qualified music therapist. Instead, they apply mainly to structured MBIs used in long-term care settings.

4.8 Recommendations for Future Research

Future research should use larger, well designed RCTs with clear reporting of intervention fidelity. Studies should specify how music preferences were identified, who

delivered the intervention, how often it was delivered, when it was used, and how resident response was monitored. This would make it easier to identify which components are most important for reducing agitation.

Future studies should also distinguish between different types of agitation. The findings from Sisti *et al.* (2024) suggest that verbal and physical agitation may respond differently to MBIs. Therefore, future research should report outcomes separately for verbal agitation, physical agitation, aggression, restlessness and other behavioural domains.

Longer follow-up periods are also needed. It remains unclear whether MBIs produce sustained benefits or mainly short-term improvements during and immediately after sessions. Future studies should examine whether regular use over several months can reduce agitation, improve quality of life or reduce psychotropic medication use.

Finally, research should explore implementation in real-world long-term care settings. This should include staff workload, training needs, barriers to deliver, family involvement, cultural relevance of music selection and resident acceptability. These factors are essential if MBIs are to be used safely and consistently in practice.

4.9 Summary

This chapter has discussed the findings of the systematic review in relation to the effect of music therapy, operationalised as MBIs, on agitation in people with dementia living in long-term care settings. Overall, the evidence was mixed. Some studies reported improvements in agitation or related behavioural outcomes, particularly in relation to personalised music listening and verbal agitation. However, other studies found no statistically significant differences, and the findings were influenced by intervention type, delivery method, outcome measurement and implementation fidelity.

The review suggests that MBIs may be a promising non-pharmacological approach for managing agitation in long-term care settings, but they should be implemented cautiously and as part of wider person-centred dementia care. The next chapter will draw together the overall conclusions of the dissertation and present recommendations for practice and future research.

Chapter 5: Conclusion and Recommendations

5.1 Introduction

This chapter concludes the dissertation by returning to the review question: *What is the effect of music therapy on agitation in people with dementia living in long-term care settings?* As established throughout the dissertation, the term music therapy was used broadly to include structured MBIs. However, the five studies included in the final review were more accurately classified as MBIs rather than formal therapist-led music therapy.

This chapter summarises the overall conclusion of the review, outlines implications for nursing practice and long-term care, and presents recommendations for practice and future research.

5.2 Overall Conclusion and Answer to the Review Question

This systematic review found that MBIs may reduce agitation or improve related behavioural outcomes in some people with dementia living in long-term care settings. However, the evidence was mixed and does not support a firm conclusion that these interventions consistently reduce agitation across all residents or all forms of agitation.

The strongest evidence of benefit was associated with personalised or individualised music. Inoue *et al.* (2024) reported positive effects on mood, agitation level and psychotropic medication use. Sisti *et al.* (2024) found that personalised music reduced verbally agitated behaviours and increased observed pleasure, although no significant reduction was found in physically agitated behaviours. Weise *et al.* (2020) also provided preliminary support for individualised recorded music, although its small pilot design limits the strengths of its findings.

In contrast, Cheung *et al.* (2020) found improvements across music with movement, music listening and social activity groups, but no statistically significant differences between groups. This suggests that structured activity, social engagement and staff attention may also contribute to reduced agitation. Kwak *et al.* (2020) found no statistically significant improvement in agitation, behavioural symptoms or psychotropic

medication use, highlighting that personalised music may not be effective when implementation is inconsistent or difficult to sustain in routine care.

Therefore, the answer to the review question is cautious. MBIs may have a positive effect on agitation for some residents with dementia in long-term care settings, particularly when music is personalised and delivered consistently. However, they should not be viewed as a universal or standalone intervention. Their effectiveness appears to depend on the type of agitation, the individual resident, the timing of delivery and the quality of implementation.

5.3 Implications for Nursing Practice

The findings support the cautious use of MBIs as part of person-centred, non-pharmacological dementia care. These interventions may be particularly useful where agitation appears linked to distress, boredom, loneliness, reduced engagement or environmental overstimulation.

However, music should not replace clinical assessment. Agitation may be caused by pain, infection, constipation, hunger, thirst, fear, fatigue, communication difficulties or environmental discomfort (Ooi *et al.,* 2018). Nurses should therefore continue to assess and address possible underlying causes before, or alongside, any MBIs.

Personalisation is important for its effective use. Music is more likely to be meaningful when it reflects the resident's preferences, life history, culture and identity. Nurses and care staff should avoid assuming that any relaxing music will be effective. Instead, Information should be gathered from the resident where possible, as well as from family members, friends, care records and staff who know the person well.

Implementation is also important. The mixed findings suggest that simply providing a playlist or music device is unlikely to be enough. Staff need to understand when to use music, how to observe the resident's response, when to stop the intervention and how to document whether it was helpful.

5.4 Recommendations for Practice

MBIs should be considered as one component of person-centred dementia care for residents who experience agitation. They may be most appropriate when agitation is associated with distress, boredom, loneliness or reduced engagement.

Where possible, music should be personalised. Staff should identify music that is meaningful to the resident by involving the resident, family members, friends, and care staff. This information should be documented in the individualised care plan, including preferred music, delivery method, suitable times of use, signs of benefit, signs of distress and when the intervention should be stopped.

MBIs should always be used alongside clinical assessment. Nurses and care staff should continue to assess for pain, illness, discomfort, unmet needs and environmental triggers when a resident becomes agitated (Carrarini *et al.,* 2021).

Staff should receive basic training before delivering MBIs. Training should include safe use of equipment, appropriate timing, monitoring of resident responses and documentation outcomes. Interventions should be reviewed regularly and continued only where there is evidence of benefit for the individual resident.

5.5 Relevance to Long-term Care in Jersey

The findings are relevant to Jersey's long-term care context because they support approaches that are person-centred, practical and responsive to individual need (Government of Jersey and Dementia Jersey, 2024). MBIs may fit well within dementia care because they can be adapted to a resident's personal history, cultural background and emotional preferences.

For Jersey care homes, a practical approach would be to introduce MBIs through individualised care planning. This could involve asking families about meaningful music, creating playlists, documenting when music appears helpful, and reviewing whether it reduces distress or improves engagement.

However, the findings should be applied cautiously. None of the included studies were conducted in Jersey, and local care homes may differ in staffing levels, resources, training opportunities and organisational pressures. MBIs should therefore not be presented as a replacement for adequate staffing, specialist dementia support or clinical assessment. Instead, they should be considered as one component of person-centred dementia care and introduced with clear guidance, staff training and local evaluation.

5.6 Recommendations for Future Research

Further research is needed before stronger conclusions can be made about the effectiveness of MBIs for agitation in dementia. Future studies should use larger sample sizes, clearly reported randomisation methods and robust outcome measures. Where possible, outcome assessors should be blinded to reduce the risk of bias.

Future research should also distinguish between types of agitation. Verbal agitation, physical agitation, aggression, restlessness and resistance to care may not respond to music in the same way. Reporting these outcomes separately would help identify which residents are most likely to benefit.

Longer follow-up periods are also needed. Current evidence does not clearly show whether MBIs produce sustained benefits or mainly short-term improvements during and immediately after sessions. Future studies should examine whether regular use over time can reduce agitation.

Implementation should also be studied more carefully. Future research should report how music preferences were identified, who delivered the intervention, how often it was delivered, whether staff followed the intervention protocol and what barriers affected delivery. Research in UK and Jersey's long-term care settings would also be valuable to assess feasibility, acceptability and effectiveness in care systems most relevant to this dissertation.

5.7 Final Conclusion

This systematic review found mixed evidence on the effect of structured MBIs on agitation in people with dementia living in long-term care settings. Personalised music showed the most promise, particularly for verbal agitation, but findings were inconsistent and influenced by intervention delivery, outcome measurement and implementation fidelity.

The review concludes that MBIs may be a promising non-pharmacological approach for supporting some residents with dementia who experience agitation. However, they should not be viewed as universally effective. Their value lies in their potential to support person-centred care when they are personalised, carefully delivered, monitored and integrated into wider dementia care planning.

For advanced nursing practice, the findings support the cautious use of personalised MBIs as a non-pharmacological strategy that may reduce distress and support engagement for some residents. For Jersey's long term-care settings, these interventions may be relevant and practical, but implementation should be planned carefully and evaluated locally. Further high-quality research is needed to establish which residents benefit most, which forms of agitation respond best, and how MBIs can be delivered consistently in real-world long-term care environments.

References

Ali, I. M. (2024) 'A Guide for Positivist Research Paradigm: From Philosophy to Methodology', *Idealogy Journal*, 9(2), pp. 187-196. Available at: https://doi.org/10.24191/idealogy.v9i2.596

Allida, S. M. *et al.* (2025) 'A practical guide to living evidence: reducing the knowledge-to-practice gap', *European Journal of Cardiovascular Nursing*, 24(1), pp. 165-175. Available at: https://doi.org/10.1093/eurjcn/zvae048

Alzheimer's Association (2025) '2025 Alzheimer's disease facts and figures', *Alzheimer's & Dementia*, 21, article number e70235. Available at: https://doi.org/10.1002/alz.70235

Alzheimer's Society (2024) *The economic impact of dementia*. Available at: https://www.alzheimers.org.uk/what-we-do/policy-and-influencing/economic-impact-of-dementia (Accessed: 1 March 2026).

Amano, T. *et al.* (2021) 'Strategies for implementing music-based interventions for people with dementia in long-term care facilities: A systematic review', *International Journal of Geriatric Psychiatry*, 36(12), pp. 1-13. Available at: https://doi.org/10.1002/gps.5641

American Music Therapy Association (2005) *What is music therapy?*. Available at: https://www.musictherapy.org/about/musictherapy/ (Accessed: 28 February 2026).

Beauchamp, T. L. and Childress, J. F. (2001) *Principles of Biomedical Ethics*. 5th edn. Oxford University Press. Available at: https://librarysearch.rgu.ac.uk/permalink/44RGU_INST/f9bu2h/alma991001659639704636

Brignardello-Petersen, R. *et al.* (2025) 'Systematic reviews of the literature: an introduction to current methods', *American Journal of Epidemiology*, 194(2), pp. 536-542. Available at: https://doi.org/10.1093/aje/kwae232

Campbell, M. *et al.* (2020) 'Synthesis without meta-analysis (SWiM) in systematic reviews: reporting guideline', *BMJ*, 368, article number l6890. Available at: https://doi.org/10.1136/bmj.l6890

Carrarini, C. *et al.* (2021) 'Agitation and Dementia: Prevention and Treatment Strategies in Acute and Chronic Conditions', *Frontiers in Neurology*, 12, article number 644317. Available at: https://doi.org/10.3389/fneur.2021.644317

Cesana, B. M. *et al.* (2023) 'A Confirmatory and an Exploratory Factor Analysis of the Cohen-Mansfield Agitation Inventory (CMAI) in a European Case Series of Patients with Dementia: Results from the RECage study', *Brain Sciences*, 13(7), article number 1025. Available at: https://doi.org/10.3390/brainsci13071025

Cheung, D. S. K. *et al.* (2020) 'Is music-with-movement intervention better than music listening and social activities in alleviating agitation of people with moderate dementia? A randomized controlled trial', *Dementia*, 19(5), pp. 1413-1425. Available at: https://doi.org/10.1177/1471301218800195

Choudry, M. *et al.* (2025) 'Treatment of agitation in dementia – a systematic review', *International Journal of Emergency Medicine*, 18, article number 101. Available at: https://doi.org/10.1186/s12245-025-00902-7

Cohen-Mansfield, J. *et al.* (1989) 'A description of agitation in a nursing home', *Journal of Gerontology*, 44(3), pp. M77-M84. Available at: https://doi.org/10.1093/geronj/44.3.M77

Critical appraisal Skills Programme (2024) *CASP checklist: for randomised controlled trials (RCTs)*. Available at: https://casp-uk.net/casp-checklists/CASP-checklist-randomised-controlled-trials-RCT-2024.pdf (Accessed: 1 February 2026)

Cummings, J.L. *et al.* (1994) 'The Neuropsychiatric Inventory: Comprehensive assessment of psychopathology in dementia', *Neurology*, 44(12), pp. 2308-2314. Available at: https://doi.org/10.1212/WNL.44.12.2308

Dementia Jersey (2024) *Our impact 2024*. Available at: https://dementia.je/about-us/dementia-jersey/our-impact-2024/ (Accessed: 1 March 2026).

Government of Jersey and Dementia Jersey (2024) *Strong Foundations: A dementia strategy for Jersey (2024-2029)*. Available at: https://www.gov.je/SiteCollectionDocuments/Health%20and%20wellbeing/Dementia%20strategy%20for%20Jersey.pdf (Accessed: 28 February 2026).

Griffiths, A. W. *et al.* (2020) 'Validation of the Cohen-Mansfield Agitation Inventory Observational (CMAI-O) tool', *International Psychogeriatrics*, 32(1), pp. 75-85. Available at: https://doi.org/10.1017/S1041610219000279

Higgins, J. P. *et al.* (2024) *Cochrane Handbook for Systematic Reviews of Interventions*. Available at: https://www.cochrane.org/authors/handbooks-and-manuals/handbook/current (Accessed: 1 March 2026).

Hu, J. and Xu, L. (2026) 'The impact of music therapy on agitation in elderly patients with dementia: A systematic review and meta-analysis', *Archives of Gerontology and Geriatrics*, 140, article number 106048. Available at: https://doi.org/10.1016/j.archger.2025.106048

Inoue, M. *et al.* (2024) 'A Personalized Music Intervention in Nursing Home Residents Living With Dementia: Findings From a Randomized Study', *Journal of Applied Gerontology*, 43(11), pp. 1611-1620. Available at: https://doi.org/10.1177/07334648241257797

Jersey Care Commission (2022) *Addressing challenges and risks in social care: Discussion paper*. Available at: https://carecommission.je/wp-content/uploads/2022/11/Discussion-Paper-Addressing-Challenges-and-risks-in-adult-social-care.pdf (Accessed: 2 March 2026).

Kratzer, A. *et al.* (2023) 'Agitation and aggression in people living with dementia and mild cognitive impairment in shared-housing arrangements – validation of a German version of the Cohen-Mansfield Agitation Inventory-Short Form (CMAI-SF)', *Health and Quality of Life Outcomes*, 21, article 51. Available at: https://doi.org/10.1186/s12955-023-02132-y

Kwak, J. *et al.* (2020) 'Findings From a Prospective Randomized Controlled Trial of an Individualized Music Listening Program for Persons With Dementia', *Journal of Applied Gerontology*, 39(6), pp. 567-575. Available at: https://doi.org/10.1177/0733464818778991

Kwak, J. *et al.* (2021) 'Lessons learned from the statewide implementation of the Music & Memory program in nursing homes in Wisconsin in the USA', *Dementia*, 20(5), pp. 1617-1630. Available at: https://doi.org/10.1177/1471301220962234

Lühnen, J. *et al.* (2023) 'Psychosocial interventions for reducing antipsychotic medication in care home residents', *Cochrane Database of Systematic Reviews*, 2023(8), article number CD008634. Available at: https://doi.org/10.1002/14651858.CD008634.pub3

Magierski, R. *et al.* (2020) 'Pharmacotherapy of Behavioral and Psychological Symptoms of Dementia: State of the Art and Future Progress', *Frontiers in Pharmacology*, 11, article number 1168. Available at: https://doi.org/10.3389/fphar.2020.01168

McArthur, V. and Patel, M. (2026) 'Assessing the inclusion of Music Therapy and Music Interventions in National Dementia Strategies and Clinical Practice Guidelines: A Scoping Review', *Healthcare*, 14, article number 511. Available at: https://doi.org/10.3390/healthcare14040511

McArthur, V. *et al.* (2026) 'The Effectiveness and Feasibility of Non-Pharmacological Interventions for Reducing Behavioural and Psychosocial Symptoms of Dementia and Improving Patient Experience in Acute Settings: A Systematic Review', *Behavioral Sciences*, 16(5), article number 688. Available at: https://doi.org/10.3390/bs16050688

Mercier, C. *et al.* (2024) 'The treatment of behavioural and psychological symptoms in dementia: pragmatic recommendations', *Psychogeriatrics*, 24(4), pp. 968-982. Available at: https://doi.org/10.1111/psyg.13116

Monaghan, T.F. *et al.* (2021) 'Blinding in clinical trials: seeing the big picture', *Medicina*, 57(7), article 647. Available at: https://doi.org/10.3390/medicina57070647

Moreno-Morales, C. *et al.* (2020) 'Music Therapy in the Treatment of Dementia: A Systematic Review and Meta-Analysis', *Frontiers in Medicine*, 7, article number 160. Available at: https://doi.org/10.3389/fmed.2020.00160

Moth, A. E. *et al.* (2021) 'What Makes Deprescription of Psychotropic Drugs in Nursing Home Residents with Dementia so Challenging? A Qualitative Systematic Review of Barriers and Facilitators', *Drugs & Aging*, 38(9), pp. 671-685. Available at: https://doi.org/10.1007/s40266-021-00875-1

National Institute for Health and Care Excellence (2018) *Dementia: assessment, management and support for people living with dementia and their carers*. Available at: https://www.nice.org.uk/guidance/ng97 (Accessed: 1 March 2026).

Nielsen, K. *et al.* (2023) 'Quantitative process measures in interventions to improve employees' mental health: A systematic literature review and the IPEF framework', *Work & Stress*, 37(1), pp. 1-26. Available at: https://doi.org/10.1080/02678373.2022.2080775

Ooi, C. H. *et al.* (2018) 'Managing challenging behaviours in dementia', *Singapore Medical Journal*, 59(10), pp. 514-518. Available at: https://doi.org/10.11622/smedj.2018125

Page, M. J. *et al.* (2021) 'The PRISMA 2020 statement: an updated guideline for reporting systematic reviews', *BMJ*, 372, article number n71. Available at: https://doi.org/10.1136/bmj.n71

Park, Y. S. *et al.* (2020) 'The Positivism Paradigm of Research', *Academic Medicine*, 95(5), pp. 690-694. Available at: https://doi.org/10.1097/ACM.0000000000003093

Patrick, K. S. *et al.* (2022) 'Specific agitation behaviours in dementia differentially contribute to aspects of caregiver burden', *Psychogeriatrics*, 22(5), pp. 688-698. Available at: https://doi.org/10.1111/psyg.12871

Pretorius, L. (2024) 'Demystifying research paradigms: Navigating ontology, epistemology, and axiology in research', *The Qualitative Report*, 29(10), pp. 2698-2715. Available at: https://doi.org/10.46743/2160-3715/2024.7632

Rasing, N. *et al.* (2025) 'Barriers and Facilitators for Implementing Music Interventions in Care Homes for People with Dementia and Depression: Process Evaluation Results of the Multinational Cluster-Randomized MIDDEL Trial', *Behavioral Sciences*, 15(8), article number 1004. Available at: https://doi.org/10.3390/bs15081004

Santini, S. *et al.* (2025) 'Effects of person-centered music-based intervention in the rehabilitation of older adults with mild to moderate dementia', *Journal of Alzheimer's Disease Reports*, 9(1), pp. 1-12. Available at: https://doi.org/10.1177/25424823251367291

Schneider, J. *et al.* (2024) 'Music in Care Home Settings: Guidelines for Implementation and Evaluation Based on the Music Interventions for Depression and Dementia in

Elderly Care (MIDDEL) Study in the UK', *Journal of Long-Term Care*, 2024, pp. 252-262. Available at: https://doi.org/10.31389/jltc.294

Schulz, K. F. *et al.* (2010) 'CONSORT 2010 Statement: updated guidelines for reporting parallel group randomised trials', *BMJ*, 340, article number c332. Available at: https://doi.org/10.1136/bmj.c332

Shaheen, N. *et al.* (2023) 'Appraising systematic reviews: a comprehensive guide to ensuring validity and reliability', *Frontiers in Research Metrics and Analytics*, 8, article number 1268045. Available at: https://doi.org/10.3389/frma.2023.1268045

Sisti, A. *et al.* (2024) 'Using structured observations to evaluate the effects of a personalized music intervention on agitated behaviors and mood in nursing home residents with dementia: results from an embedded, pragmatic randomized controlled trial', *American Journal of Geriatric Psychiatry*, 32(3), pp. 300-311. Available at: https://doi.org/10.1016/j.jagp.2023.10.016

Smeets, C. H. W. *et al.* (2021) 'Can the PROPER intervention reduce psychotropic drug prescription in nursing home residents with dementia? Results of a cluster-randomized controlled trial', *International Psychogeriatrics*, 33(6), pp. 577-586. Available at: https://doi.org/10.1017/S1041610220000629

Sterne, J.A.C. *et al.* (2019) 'RoB 2: a revised tool for assessing risk of bias in randomised trials', *BMJ*, 366, l4898. Available at: https://doi.org/10.1136/bmj.l4898

Tampi, R. R. *et al.* (2020) 'Antipsychotics in the management of behavioral and psychological symptoms of dementia: maximizing gain and minimizing harm', *Neurodegenerative Disease Management*, 10(1), pp. 5-8. Available at: https://doi.org/10.2217/nmt-2019-0036

Tanlaka, E. F. and Aryal, S. (2025) 'Interpretivist Constructivism: A Valuable Approach for Qualitative Nursing Research', *Open Journal of Therapy and Rehabilitation*, 13(1), pp. 8-19. Available at: https://doi.org/10.4236/ojtr.2025.131002

Teigland, C. *et al.* (2024) 'Healthcare Resource Utilization Among Patients With Agitation in Alzheimer Dementia', *Journal of Health Economics and Outcomes Research*, 11(2), pp. 118-124. Available at: https://doi.org/10.36469/jheor.2024.124455

van der Ende, N. A. M. *et al.* (2023) 'Blinding of outcome assessors and its association with outcome in a randomized open-label stroke trial', *International Journal of Stroke*, 18(5), pp. 562-568. Available at: https://doi.org/10.1177/17474930221131706

van der Steen, J. T. *et al.* (2025) 'Music-based therapeutic interventions for people with dementia', *Cochrane Database of Systematic Reviews*, 2025(3), article number CD003477. Available at: https://doi.org/10.1002/14651858.CD003477.pub5

Vivacqua, M. N. *et al.* (2026) 'The association between new-use of antipsychotics and all-cause mortality in a cohort of patients with dementia in Argentina', *PLOS Mental Health*, 3(2), article number e0000554. Available at: https://doi.org/10.1371/journal.pmen.0000554

Wang, J. *et al.* (2025) 'Efficacy of music therapy as a non-pharmacological measure to support alzheimer's disease patients: a systematic review', *BMC Geriatrics*, 25, article number 508. Available at: https://doi.org/10.1186/s12877-025-06073-7

Weise, L. *et al.* (2020) 'Feasibility and effects of individualized recorded music for people with dementia: A pilot RCT study', *Nordic Journal of Music Therapy*, 29(1), pp. 39-56. Available at: https://doi.org/10.1080/08098131.2019.1661507

World Health Organization (2025) *Dementia*. Available at: https://www.who.int/news-room/fact-sheets/detail/dementia (Accessed: 1 January 2026).

Xue, D.-M. *et al.* (2025) 'Dignity of Older Adults in Long-Term Care Facilities: A Systematic Review of Qualitative Evidence from Residents, Staff, and Relatives', *Healthcare*, 13, article number 2839. Available at: https://doi.org/10.3390/healthcare13222839

Yoon, J. M. *et al.* (2024) 'Psychotropic use for behavioural and psychological symptoms of dementia during COVID-19 pandemic: a systematic review and meta-analysis', *BMC Geriatrics*, 24, article number 967. Available at: https://doi.org/10.1186/s12877-024-05563-4

Zhang, Y. *et al.* (2025) 'Exploring the effects of combined nostalgic activities and music therapy on Alzheimer's disease outcomes', *Frontiers in Psychology*, 16, article number 1526761. Available at: https://doi.org/10.3389/fpsyg.2025.1526761