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IMPACT OF MUSIC THERAPY ON DEPRESSIVE SYMPTOMS OF PEOPLE LIVING IN NURSING HOMES: A SYSTEMATIC REVIEW

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ABSTRACT

BACKGROUND: While depression is common among the older population, it is not something that is easily diagnosed or treated. Primary treatment for depression includes pharmacological treatment, however, there are many non-pharmacological treatments such as music therapy that can be implemented to help depression. The research surrounding music therapy on depression can provide insight to people who are in nursing homes that exhibit depression. **PURPOSE:** To investigate the impact of music therapy on nursing home residents with depression. **DESIGN AND METHODS:** The literature search was conducted using online databases, PubMed, CINAHL, and PsycINFO by applying the key terms ("depression" OR "depressive symptoms" OR "depressive disorder") AND ("music therapy OR music intervention") AND ("nursing home"). The search was limited to articles published between 2013 and 2021 to include the most recent studies and focused on older adult populations. Ten articles were selected to be included in this systematic review. **RESULTS:** Current evidence suggests that music therapy can help reduce depressive symptoms in older adults that reside in nursing homes. **DISCUSSION:** It is important for future nurses to identify the options for nonpharmacological treatment such as music therapy when warranted. Music therapy offers a number of benefits and the results from this systematic review suggest that music could be implemented as a complimentary therapy. People who are in nursing homes specifically may be at increased risk of experiencing depression or depressive symptoms. Healthcare professionals can use the information from this systematic review to further develop and establish a safe individualized plan of care for their patients. Exploring nonpharmacological options, specifically, music therapy in settings like nursing homes can promote health and better manage depression.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

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Chapter 1

Introduction

Depression, also called major depressive disorder or clinical depression, is a mood disorder that affects how a person feels, thinks, and behaves (Mayo Clinic, 2018). Depression can manifest as feelings of hopelessness, guilt, loss of interest in activities, persistent sadness, interrupted sleep patterns and changes in appetite (CDC, 2021). Of the 34 million Americans age 65 and older, more than 2 million suffer from some form of depression (Mental Health America, 2021). Older adults' development of depression can be attributed to genes, brain chemistry, personal history, isolation, retirement, death of friends and loved ones, and other life stressors (National Institute on Aging, 2021). Additionally, depression is more common in people who also have other illnesses such as heart disease or cancer whose function becomes limited. This is particularly concerning because 80% of older adults have at least one chronic condition, while 50% have two or more (CDC, 2021).

There are a number of pharmacological and non-pharmacological interventions being utilized today to treat depression. Current non-pharmacological treatments include cognitive behavioral therapy, exercise, problem-solving therapy, behavioral activation, and music therapy. Music therapy is an established health profession in which music is utilized as a therapeutic intervention to address the needs of an individual (American Music Therapy Association, 2021). Music therapy has been established to have a number of benefits. These benefits include easing anxiety, evoking memories, reducing agitation, increasing relaxation, and reducing stress (American Music Therapy Association, 2021). A study examining depression in the older

population, found that music serves as a direct stimulus to a person's limbic system, the area of the brain that deals with emotions and memory (Chan et al, 2010). The limbic system helps the body respond to intense emotions. In the study, participants experienced less depression or better emotional feelings which led to the conclusion that the music intervention had been processed efficiently in the limbic system and resulted in this positive change (Chan et al, 2010). This randomized control trial reviewed older adults that were in an outpatient setting. The current systematic review examines how music therapy can affect nursing home resident's levels of depression.

Significance of Problem

While depression is prevalent among the older population, it is not something that is easily diagnosed or treated. Nurses strive to promote health and wellness in their patients in a way that meets their physical and psychological needs. Individuals living in nursing homes also tend to be older, more frail, sicker, and have less financial and social support, further increasing their risks of depression (Montoya & Mody, 2011). Medications are currently the primary treatment for depression. People over the age of 65 have to be extremely careful when they are taking multiple medications for different conditions. Polypharmacy, along with advanced age, increase the risk of experiencing drug interactions (National Institute of Mental Health, 2021). It is essential for nurses to assess these risks and to become educated on other forms of therapy that could be provided for their patients (Chan et al, 2010).

Music can directly affect hormone serum levels and neurotransmitters in the brain which can help to relieve depressive symptoms (Demarin et. al, 2016). Music therapy could be

implemented into nursing home facilities' care plans to help improve the patient's levels of depression along with or in place of using medication. Depression among older adults, particularly nursing home residents, is a growing concern that should be studied more in depth. Social interactions between residents are limited and the COVID-19 pandemic has exacerbated this phenomenon throughout 2020-2022. The implementation of a non-pharmacological treatment such as music therapy could help to improve resident's depression. However, to date, there has been no work done to aggregate and synthesize the research on the impacts of music therapy on depression in nursing home residents.

Purpose

The purpose of this systematic review is to investigate the impact of music therapy on nursing home residents with depression. Through analysis of quantitative studies, specifically including music intervention and depression, this systematic review will explore the effectiveness of music therapy as a complimentary therapy for treatment of depression.

Table 1. *Definitions*

Depression	(Major depressive disorder) is a common and serious medical illness that negatively affects how a person feels, thinks, and behaves. Symptoms must last at least two weeks and must represent a change in the person's previous level of functioning for a diagnosis of depression (American Psychiatric Association, 2013).

Music Therapy	When music is utilized as a therapeutic intervention to address the needs of an individual, it is termed music therapy. It can come in a number of forms, including, but not limited to group singing and preferred listening. (American Music Therapy Association, 2021).
Alternative Treatment	This field includes the more mainstream and accepted forms of therapy outside traditional practice. This is used in place of conventional medicine (National Center for Complementary and Integrative Health, 2022).
Complimentary Therapy	When a non-mainstream practice is used together with conventional medicine, it's considered "complementary" (National Center for Complementary and Integrative Health, 2022).
Polypharmacy	The use of multiple drugs or more than are medically necessary, it is a growing concern for older adults (Maher et. al, 2014)

Chapter Summary

Older adults living in nursing homes are at a higher risk of developing depression which is often treated with medication that may have serious negative side-effects. Music therapy is a complimentary therapy that could be applied to improve depression, reduce the risk of polypharmacy, and lower the risk of side-effects. Studying the effects of different types of music interventions in nursing home residents will determine whether the treatment is successful in treating depression. Overall, music is a simple and lower-risk intervention that facilities could

utilize as a complimentary treatment for patients' plan of care.

Chapter 2

Literature Review

Introduction

This chapter will explore background information on depression as well as the measures used to diagnose depression and the severity of depression symptoms. Additionally, pharmacological and non-pharmacological treatments will be discussed. Music therapy is one non-pharmacological treatment that is used to treat depression and this chapter outlines the background, effects, and modalities of the intervention.

Depression Background

Depression disorders are complex, but treatable conditions that affect nearly 264 million people of all ages globally (WHO, 2021). Worldwide, depression is also the leading cause of disability and can become a serious health condition if left untreated (WHO, 2021). Depression comes in a variety of forms; however, a diagnosis must include symptoms present most of the day, every day for a minimum of two weeks (National Institute of Mental Health, 2016). The different types of depression include major depression, persistent depressive disorder, seasonal affective disorder, and psychotic depression. Major depression, the most common form, is diagnosed when a person has symptoms of depression for at least two weeks that interfere with activities of daily life. The second most common type of depression is persistent depressive disorder, when a person has symptoms of depression that last for at least 2 years (National Institute of Mental Health, 2016). Seasonal affective disorder is characterized by its seasonal

pattern, where symptoms appear to last four to five months per year (National Institute of Mental Health, 2016). Psychotic depression occurs when a person has severe depression in addition to a type of psychosis. Psychosis could be delusions or hallucinations, possibly attributed to dementia, Alzheimer's, schizophrenia, or other mental health disorders (National Institute of Mental Health, 2016).

The cause of depression is still currently being studied. Research suggests that depression can be attributed to a complex interplay of psychological, social, and biological factors (WHO, 2021). Depression is more common in people who have another illness such as cancer, diabetes, heart disease, or other chronic illnesses. As previously stated, because 80% of older adults have at least one chronic health condition, this further increases their risk of developing depression. Other risk factors include, personal or family history of depression, use of certain medications, use of alcohol or drugs, or experience of one or more stressful life events (National Institute of Mental Health, 2021). The demographic group that is the focus of this systematic review is older adults who reside in a nursing home. During this phase of life, people may be subjected to major life changes such as retirement, loss of spouse or friends, or loss of autonomy. People may need to move out of their homes and move to a facility or inpatient nursing home. Such life changes increase older adult's risk of developing depression.

Depression has numerous symptoms both physical and psychological. Symptoms may include ongoing feelings of sadness, anxiety, or feeling "empty" (National Institute of Mental Health, 2021). People suffering from depression may also feel helpless, worthless, guilty, and pessimistic. Physically, depression symptoms can manifest as decreased energy, fatigue, difficulty concentrating, difficulty sleeping, decreased appetite, irritability, and even aches,

pains, and headaches (National Institute of Mental Health, 2021). Depression is treatable, but sometimes it may go undiagnosed.

Barriers to Effective Care

Depression is not a normal part of aging but is a treatable condition. There is a great difference between grief and depression, although the line is blurred often when it comes to older adults. Older adults are often misdiagnosed and undertreated due to the fact that providers mistake symptoms of depression as a natural reaction to change as they age (CDC, 2021). There is also a stigma amongst older adults themselves that may lead them to not seek help because they do not entirely understand that treatment could help them feel better (CDC, 2021). This gap in education prevents older adults from getting the care they need. Additionally, their symptoms may be less obvious, and they are less likely to admit to feelings of sadness or grief (National Institute of Mental Health, 2021).

Measures of Depression

Careful assessment is an important part of evidence-based practice and initial assessment helps to determine the severity of the illness and proper treatment. Depression can be measured using a variety of approved scales. The scales reviewed in this systematic review include the Geriatric Depression Scale (GDS-15), the Montgomery–Åsberg Depression Rating Scale (MADRS), the Cornell Scale for Depression (CSD), the Beck Depression Inventory (BDI-II), and the Goldberg Depression and Anxiety Scale (Ahmadpanah et al., 2016; Amuk et al., 2003; Beck et al., 1988; Goldberg & Hillier, 1979; Sheikh & Yesavage, 1986). All of these scales

include their own set of questions that are self-reported by the individual to calculate a score that is then interpreted to determine how severe their depressive symptoms are.

Treatments

The two major types of treatment for depression include pharmacological and non-pharmacological interventions. Treatment plans can also include a combination of the two. The primary treatment plan for depression includes a combination of medication and psychotherapy (National Institute of Mental Health, 2021). These treatments can also be combined with complimentary treatments such as exercises, movement, sensory stimulation, and breathing exercises.

Non-Pharmacological Interventions

Current non-pharmacological treatments include cognitive behavioral therapy, exercise, problem-solving therapy, psychotherapy, and music therapy. Psychotherapy or "talk therapy" is the most common treatment for depression when paired with medication. It is effective by helping individuals work through difficult situations (National Institute of Mental Health, 2021). Cognitive behavioral therapy (CBT) includes a version called problem-solving therapy (PST) that can be used to treat older adults with depression (National Institute of Mental Health, 2021). These therapies are highlighted because this systematic review analyzes a few articles who utilize these therapies as well.

Some additional complementary therapies for depression include exercise such as movement, yoga, and dietary supplements. These complimentary therapies can be useful in

helping improve depression. Another type of therapy that could be used as a complimentary therapy is music therapy. Music therapy includes benefits such as easing anxiety, evoking memories, reducing agitation, increasing relaxation, and reducing stress (American Music Therapy Association, 2021). Music therapy as a form of complimentary therapy could easily be implemented into nursing homes as a cost effective and beneficial therapy.

Pharmacological Interventions

Medications called antidepressants can work well to treat depression. With the use of antidepressants, some symptoms may improve within a week, or they may take several weeks to work to their fullest extent. With any medication, people may experience some side effects. The most common side effects of antidepressants include nausea, vomiting, diarrhea, and sleepiness. Two common types of antidepressant medications are selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants (TCAs) (WHO, 2021). SSRIs work by increasing levels of serotonin in the brain, one of the neurotransmitters that carry signals between the brain and nerves (Mayo Clinic, 2019). Tricyclic antidepressants work similarly in that they increase levels of serotonin and norepinephrine; however, they also affect other neurotransmitters which can lead to a number of side effects such as nausea, vomiting, nervousness, dry mouth, dizziness, appetite changes and drowsiness. (Mayo Clinic, 2019).

Adults over the age of 65 have to be extremely careful when taking medications, especially when they are also taking additional medications for other conditions. Polypharmacy is common in older adults, so it is important to look out for drug interactions and adverse drug reactions that may occur. Common drug interactions that some TCAs and SSRIs cause are

disorientation or confusion, as well as irregular heart rate and even seizures (Mayo Clinic, 2022). Older adults are also at a higher risk for missing doses or overdosing (National Institute of Mental Health, 2021).

According to the Beers Criteria for Potentially Inappropriate Medication Use in Older Adults, SSRIs were added to the new use-with caution list (Croke, 2020). Specifically, older adults with a history of falls or fractures should use SSRIs and tricyclic antidepressants with caution because they increase the risk of both (Croke, 2020). Tricyclic antidepressants are contraindicated specifically in older adults that may have dementia, Parkinson's disease, and cardiovascular problems, as these conditions could be worsened (Wiese, 2011).

Use of Music Therapy

History of Music Therapy

Music is a form of art that has been around for centuries. There is report of an ancient Chinese book that dates back to 3000 years B.C that discusses how music has the power to ease the tension within the heart and to lessen obscure emotions (Demarin et al.,2016). The concept of utilizing music as a form of therapy dates back to 1789 where an article in the Columbian Magazine was published titled "Music Physically Considered" (American Music Therapy Association, 2021). Additionally, in the 1800s a physician and psychiatrist, Dr. Benjamin Rush, was a strong advocate of the use of music to treat medical diseases (American Music Therapy Association, 2021). In 1941, Harriet Ayer Seymour founded the National Foundation of Music Therapy. The American Music Therapy Association was started in 1998, and it currently represents music therapists in the United States and over 30 countries world-wide. Associations

such as these are important to provide information on what music therapy is and resources available to patients and caregivers. They also provide strategic priorities for specific populations on their online websites.

Music therapy is a special type of psychotherapy that utilizes musical intervention to aid in depression. It helps patients by promoting health, using music experiences, and using the relationships developed between patients and music therapists to induce change (Gök Ugur et. al, 2017). It helps to eliminate negative feelings and aid in relaxation, both physically and psychologically, for people suffering with depression (Gök Ugur et. al, 2017).

Neurological Effects of Music Therapy

Music has many therapeutic effects such as improving mood and overall calming effects. A study focused on music therapy and older adults with depression found that music serves as a direct stimulus to a person's limbic system, the area of the brain that deals with emotions and memory (Chan et al, 2010). In the study, the subjects experienced fewer depressive symptoms or had better emotions indicating that the music intervention had been processed efficiently in the limbic system (Chan et al, 2010). The brain is divided into hemispheres, and both are needed for a complete music experience. The frontal cortex specifically plays a significant part in melody and rhythm perception (Demarin et. al, 2016). Music stimulates the brain and can affect the processes that are responsible for memory, motor control, timing, and language (Demarin et. al, 2016). The right hemisphere also is vital in processing music. The right hemisphere of the brain leads to the secretion of hormones and the release of neurotransmitters such as dopamine, noradrenalin, enkephalin and endorphin (Gök Ugur et. al, 2017).

Music Therapy Modality

Music therapy can be implemented in a variety of ways. Music therapy can be facilitated in a group environment where people gather together to listen to music. It can also be delivered individually, with preferred genre of music being a consideration. Music therapy can be administered alone or along with another complimentary therapy such as music-with-movement or sensory stimulation therapy. In the studies included in this systematic review, music was administered both live and through a music device such as an iPod or a radio. Additionally, music therapy is a growing profession that requires training and is most often administered by music therapists. Music therapists assess emotional well-being, physical health, social functioning, communication abilities, and cognitive skills through their patient's responses to music (American Music Therapy Association, 2021). Music therapy is a form of sensory stimulation that creates responses due to familiarity and can provoke feelings of security associated with the music (American Music Therapy Association, 2021).

Chapter Summary

Treatments for depression are evolving. It is important for healthcare professionals, especially nurses in healthcare facilities, including long term care, to become educated on the different types of therapies that can be administered outside of the mainstream approach. Although "talk therapy" and medications are the primary route, music therapy as an alternative therapy to talk therapy, or even used as a complimentary therapy, or alongside it, could produce positive effects. Music therapy can be administered in many different ways; however, it is known that music has neurological effects on the brain. Music as a non-pharmacological treatment for

depression reduces the possibility of adverse reactions from pharmacological treatments such as SSRI's. Overall, the impact of music therapy on depression of individuals living in nursing homes should be explored systematically. The results of the current systematic review will provide the evidence needed to determine if music therapy should be considered more often when treating patients in nursing homes that have depression.

Chapter 3 Methods

Introduction

This systematic review analyzes literature surrounding music therapy and the effects it has on depression and depressive symptoms in nursing home residents. The previous chapters have introduced the purpose of this systematic review, provided background, and described the significance of the topic. This chapter will outline the literature search conducted to select articles to review. Additionally, this chapter will elaborate on how the literature was abstracted including the Matrix method and the approach used to evaluate the Level and Quality of Evidence using the John's Hopkins Evidence-Based Practice criteria.

Literature Search

The literature search was conducted using online databases, PubMed, CINAHL, and PsycINFO by applying mesh terms and key words that are relevant to a systematic review on the impact of music therapy on depression in nursing home residents. The key words used in the search were ("depression" OR "depressive symptoms" OR "depressive disorder") AND ("music therapy OR music intervention") AND ("nursing home"). The terms "music intervention" or "music therapy" and "depression" or "depressive" were required to be in the title or the abstract of the article. The search was limited to articles published between 2010 and 2021 to include the most recent studies and focused on older adult populations.

Inclusion criteria included quantitative research studies testing the use of music therapy as an intervention for older adults with depression or depressive symptoms living in nursing

homes. The types of literature searched consisted of randomized controlled trials, quasi-experimental, and exploratory designs. All literature found was published in English and studies were found worldwide. Exclusion criteria were literature reviews, including systematic reviews, integrative reviews, and meta-analysis, editorials or opinions, articles that did not measure depression as the outcome, or articles that were not available in English.

The search yielded 81 potentially relevant articles; PubMed yielded 43 articles, CINAHL yielded 33 articles, and PsycINFO yielded 5 articles. Six duplicate articles were excluded, and 75 articles were reviewed. Sixty-five articles were excluded based on the titles or abstracts. Articles excluded did not discuss depression specifically in older adult nursing home residents with music as an intervention. As a result, the search yielded 10 articles eligible to be included in this systematic review; 7 yielded by PubMed, 2 yielded by CINAHL, and 1 yielded by PsycINFO. The data in each article were reviewed, extracted, and rated according to the Matrix Method synthesized in Table 2 (Garrard, 2017).

Level and Quality of Evidence

The Johns Hopkins Research Appraisal Tool along with The Johns Hopkins Evidence Level and Quality Guide (Appendix A) were used for all ten articles included in this systematic review. Each article was rated based on their level and quality of evidence accordingly (Dang & Dearholt, 2017). Level of evidence was given a rating from level I to level V, with level I being the highest level of evidence and V being the lowest level of evidence. Level I include experimental studies and randomized control trials, level II includes quasi experimental studies, level III includes non-experimental studies and qualitative studies, and level V includes clinical

practice guidelines and consensus panels. Each article was then assigned a grade for quality of evidence ranging from A to C, with A being the highest quality of evidence and C being the lowest quality of evidence.

Chapter Summary

This research process yielded 10 articles eligible to be included in this systematic review; 7 yielded by PubMed, 2 yielded by CINAHL, and 1 yielded by PsycINFO. Out of the 10 articles selected, six are classified as Level 1, one as Level II, and three as Level III according to the Johns Hopkins Evidence Level and Quality Guide (Dang & Dearholt, 2017). The methodology was checked by classmates and the Honors Adviser in the Honors Thesis Seminar class (i.e., NURS 300H). If questions arose, the Honors Adviser and Thesis Supervisor were consulted. They were also consulted if an article needed to be added or removed throughout the research process.

Figure 1. *PRISMA Flowchart of Article Selection*

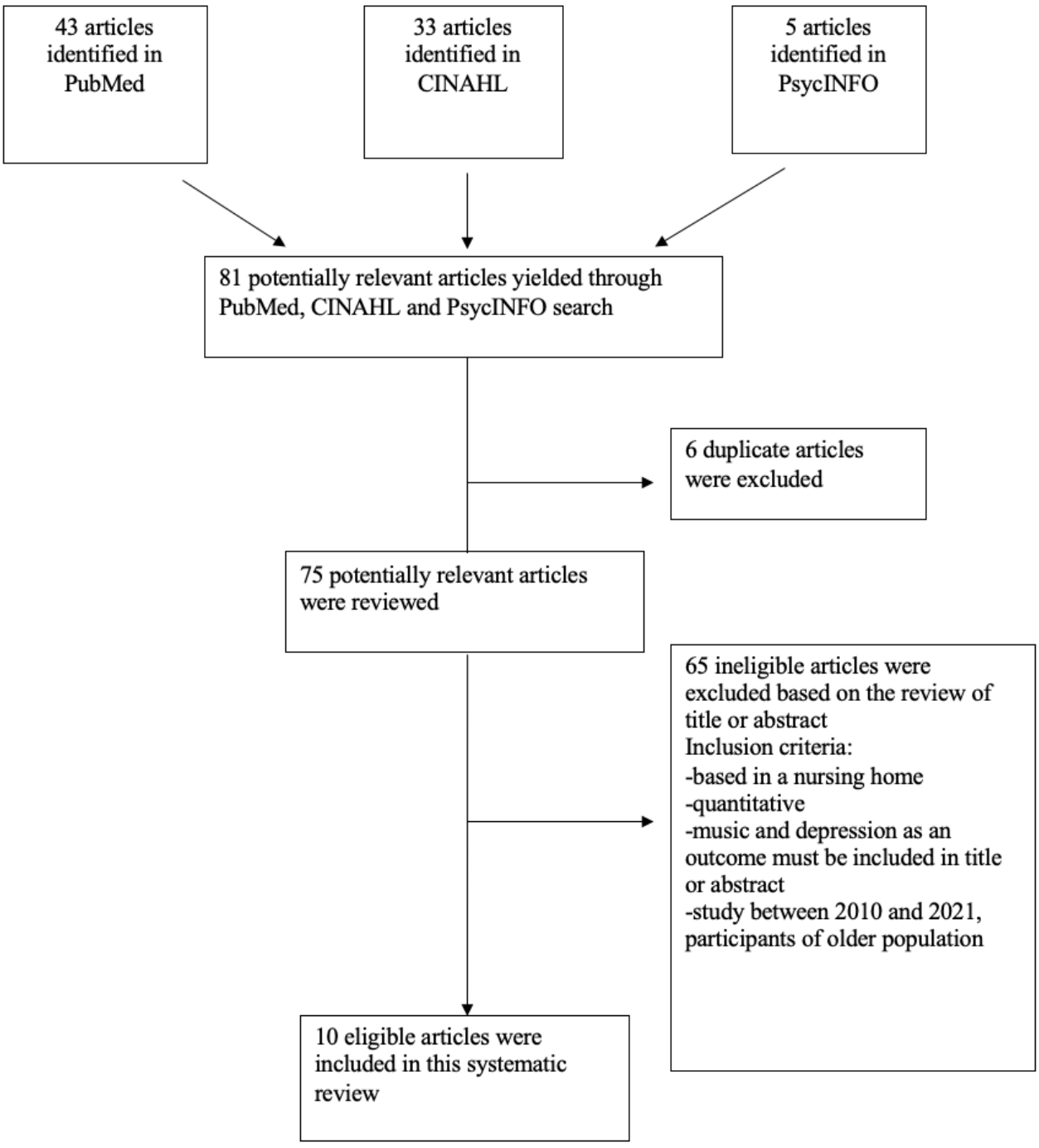

Table 2. *Matrix Tables*

Authors, (Year), Country	**Purpose**	**Sample and Setting**	**Design**	**Relevant Findings**	**Strengths, Limitations, Level & Grade**
Cooke, M., Moyle, W., Shum, D., Harrison, S., & Murfield, J. (2010) Australia "Effect of music on quality of life and depression in older people with dementia"	Investigate the effect of live music on QOL and depression in older people with dementia using the Dementia Quality of Life and the Geriatric Depression Scale.	Two mixed gender aged care facilities in Queensland, Australia Site A: 164 residents Site B: 94 residents	A randomized controlled cross-over design, music intervention and reading control group	- This study did not show any significant improvement in quality of life scored for elderly patients with dementia. -Depression scores decreased in those who were experiencing music intervention compared to the reading group, however they were not statistically significant **Implications:** This study did not show any significant improvements. This study suggests that music therapy may have no greater impact than other forms of alternative therapy.	**Strengths:** use of randomized controlled trial, use of descriptive criteria for participants in the study **Limitations:** sample size too small to determine the effectiveness of music therapy verses reading on a larger scale, results were inconclusive **Level & Grade:** IC

Authors, (Year), Country	**Purpose**	**Sample and Setting**	**Design**	**Relevant Findings**	**Strengths, Limitations, Level & Grade**
Lu, S. F., Lo, C. H., Sung, H. C., Hsieh, T. C., Yu, S. C., & Chang, S. C. (2013) Taiwan Effects of group music intervention on psychiatric symptoms and depression in patient with schizophrenia	To investigate the effects of group music therapy on psychiatric symptoms and depression for patients with schizophrenia in a nursing home.	80 patients with schizophrenia were randomly allocated to a music intervention group (MIG) or usual care group (UCG). 38 patients in the MIG and 42 in the UCG completed the study.	Randomized control trial The MIG received a 60-min group music therapy twice a week, a total of ten sessions. The UAG only received the usual care with no music therapy. The positive and negative syndrome scale (PANSS) and the depression scale for schizophrenia (CDSS) was utilized at baseline, post-test, and 3 month follow up.	- The study showed that group music therapy effectively reduced PANSS and CDSS scores when comparing baseline assessments to post-tests. - Follow up assessments did not show that this improvement was maintained without the intervention. **Implications:** Nurses should be educated in group music therapy. Group music therapy is an economical and easily administered nonpharmacological option for reducing depression and psychiatric symptoms.	**Strengths:** data collection tools, sample size, ethical approval and consent was given, data was collected by 8 blinded assessors who were trained by a psychiatrist **Limitations:** no double-blind design, limited time, limited funding (follow up data was not collected after 6 and 12 months) **Level & Grade:** IB

Author(s), (year), Country	**Purpose**	**Sample and Setting**	**Design**	**Relevant Findings**	**Strengths, Limitations, Level & Grade**
Gök Ugur, H., Yaman Aktaş, Y., Orak, O. S., Saglambilen, O., & Aydin Avci, İ. (2017) Turkey The effect of music therapy on depression and physiological parameters in elderly people living in a Turkish nursing home	To examine how music therapy effects depression and physiological parameters in elderly people who live in nursing homes.	Turkish Nursing Home 64 elderly people (32 music and 32 control groups)	Randomized controlled, single blind study	**Physiological Parameters:** - Music therapy was shown to decrease systolic blood pressure in nursing home residents. **Depression:** - The difference between post-test GDS scores of the two groups was found to be statistically significant ($t= -2.86$, $p < .01$) **Implications:** - Nurses can apply the music therapy to elderly people who have chronic diseases and or suffer from depression in order to manage with symptoms.	**Strengths:** reliable data collection tools, use of blinding to reduce bias, randomized methodology **Limitations:** study conducted in only one nursing home, cognitive levels were not measured by researchers prior to studying their depressive symptoms, only Turkish traditional music and Turkish Sufi music were utilized in this study **Level & Grade:** IA

Authors, (Year), Country	**Purpose**	**Sample and Setting**	**Design**	**Relevant Findings**	**Strengths, Limitations, Level & Grade**
Ray, K. D., & Mittelman, M. S. (2017). USA Music therapy: A nonpharmacological approach to the care of agitation and depressive symptoms for nursing home residents with dementia	To explore the effects of music therapy on nursing home residents with depression and dementia.	Three nursing homes in New York: Menorah Center for Rehabilitation and Nursing Care, the former Shorefront Center for Rehabilitation and Nursing Care, and the former Metropolitan Jewish Geriatric Center (n=132) Participants served as their own controls	Exploratory design Data was collected at: -before music therapy -after 2 weeks of the intervention -post treatment -2 weeks post treatment	- Depression symptoms decreased slightly from the first to the second baseline. - Depression symptoms reduced significantly after the music therapy intervention. -Depression began to rise again 2 weeks post treatment when the intervention was removed. **Implications:** - Music therapy practitioners and long-term care workers should consider music therapy as a nonpharmacological treatment.	**Strengths:** sample size, appropriate design and time frame **Limitations:** internal validity of tests and results reported post treatment by participants, treatment results were rated by CNAs, not a randomized control **Level & Grade:** IIIA

Authors, (Year), Country	**Purpose**	**Sample and Setting**	**Design**	**Relevant Findings**	**Strengths, Limitations, Level & Grade**
Werner, J., Wosch, T., & Gold, C. (2017). Germany Effectiveness of group music therapy versus recreational group singing for depressive symptoms of elderly nursing home residents	To examine the effectiveness of group music therapy versus group singing for nursing home residents of the geriatric population.	Two German nursing homes. 117 participants Music therapy: (n=62) Recreational group singing: (n=55)	Randomized, Pragmatic Trial, Exploratory Analysis Music therapy: (20 units of 40 minutes, 2×/week) Recreational group singing: (10 units of 90 minutes, 1×/week) Montgomery–Åsberg Depression Rating Scale measured depression	- Depressive symptoms improved significantly more in those who were in the music therapy group compared to the recreational singing group. - There was an increase in depression scores in the group that participated in group singing. **Implications:** - This study warrants that music therapy reduces depression in elderly nursing home residents more effectively than group singing.	Strengths: sample size, use of two music interventions, randomization Limitations: lack of blinding, some participants were unable to speak, only included mobile and mobilized patients (not bedridden) **Level & Grade:** IIIA

Authors, (Year), Country	**Purpose(s)**	**Sample and Setting**	**Design**	**Relevant Findings**	**Strengths, Limitations, Level & Grade**
Cheung, D., Lai, C., Wong, F., & Leung, M. (2018) Hong Kong The effects of the music-with-movement intervention on the cognitive functions of people with moderate dementia	To investigate the use of music interventions on the cognitive function, depressive symptoms and anxiety on nursing home residents with dementia. To examine the effects of the six-week music-with-movement (MM) intervention, as compared with music listening (ML) and social activity (SA)	Interviewed 165 participants from 12 nursing homes with moderate dementia, Participants were randomly allocated into three groups. Intervention participants (*n* = 58) received a 12-week music & movement program (MM) led by a trained health care professional, while the participants in the ML comparison group (*n* = 54) listened to their own preferred music, and those in the last group SA (*n* = 53) engaged in social chatting	A randomized control trial Music listening: (n=54) Music & Movement: (n=58) Social Activity: (n=53)	- In the music listening group there was a significant change in cognitive functioning and delayed memory from the baseline measures. -Only the music and movement group, not the music listening group showed a reduction in depression symptoms **Implications:** -Over half of the sample had no formal schooling, so the conclusion that preferred listening did not reduce depression symptoms may have not been represented by the GDS scores.	**Strengths:** big sample, random assignment of interventions, detailed data collection methods including six tools to measure the outcomes, ethical approval was obtained **Limitations:** inability to recruit enough participants to make up an additional group – the usual care group, the postulation that reducing anxiety and depressive symptoms will enhance cognitive functions could not be confirmed from the analysis **Level & Grade:** IB

Authors, (Year), Country	**Purpose**	**Sample and Setting**	**Design**	**Relevant Findings**	**Strengths, Limitations, Level & Grade**
Onieva-Zafra, M. D., Hernández-Garcia, L., Gonzalez-del-Valle, M. T., Parra-Fernández, M. L., & Fernandez-Martinez, E. (2018). Spain Music intervention with reminiscence therapy and reality orientation for elderly people with Alzheimer Disease living in a nursing home	To explore the effects of an 8-week nursing intervention, including 2 weekly sessions of music and reminiscence therapy together on depression and anxiety.	Sample of 19 patients divided into 2 groups Control: (n=10) Intervention group: (n=9) Nursing home in Spain	Pilot study, nonrandomized quasi-experimental design using 2 groups (pretest and posttest) 8-week study Goldberg Tests for anxiety and depression were assessed.	The difference between post-test Goldberg test scores was found to be statistically significant for reducing depression. There were no significant effects found on anxiety. **Implications:** - Music has the ability to help people cope with feelings by increasing self-esteem. This can aid in improving anxiety and depression.	**Strengths:** reasonable and workable **Limitations:** no control group, small sample size, nonblinded randomization, and the lack of a periodic follow-up **Level & Grade:** IIB

Authors, (Year), Country	**Purpose**	**Sample and Setting**	**Design**	**Relevant Findings**	**Strengths, Limitations, Level & Grade**
Ray, K. D., & Götell, E. (2018). USA The use of music and music therapy in ameliorating depression symptoms and improving well-being in nursing home residents with dementia	To investigate the use of music therapy in diminishing depressive symptoms and improving well-being in nursing home residents with dementia.	Three nursing homes in New York. 62 participants, only 26 participants allowed for video analysis	Exploratory study All participants served as their own control, comparing baseline to end results. 2 weeks of music therapy given by trained CNAs who taught them to add singing and music-with-movement activities to their daily life.	- Resident's depression symptoms significantly declined following the two weeks of music therapy. - They increased once the intervention was removed after two additional weeks. **Implications:** - This research can be applied to the clinical setting as a therapeutic form of care for patients with depressive symptoms.	**Strengths:** video provided many hours of data that could be observed, utilized more than one nursing home **Limitations:** not everyone agreed to participate in the full study, The MIDAS measurement tool is still being tested for validity **Level & Grade:** IIIB

Authors, (Year), Country	**Purpose(s)**	**Sample and Setting**	**Design**	**Relevant Findings**	**Strengths, Limitations, Level & Grade**
Moghaddasifar, I., Fereidooni-Moghadam, M., Fakharzadeh, L., & Haghighi-Zadeh, M. H. (2019). Iran Investigating the effect of multisensory stimulation on depression and anxiety of the elderly nursing home residents	To investigate the effects of multisensory stimulation on anxiety and depression in elderly nursing home residents. To measure the effects of auditory stimulations that were performed by playing relaxing instrumental music.	28 old people living in nursing homes in Ahvaz, who were divided into two groups: intervention and control Interventions included stimulations of touch, sound, and sight Time frame:4 weeks, 3 sessions weekly, 25 mins each	Randomized control trial	- The intervention resulted in a 4.4 decrease in depression scores. - Applying the effects of multiple stimulations offers a combination of things being felt by individuals and was expressed in this study. **Implications:** - Multisensory stimulation could improve anxiety and depression in elderly nursing home residents. - In future studies these individual stimulations should be studied more in depth.	Strengths: randomized methodology Limitations: small sample size, control group comparing another intervention could have given more insight Level & Grade: IB

Authors, (Year), Country	**Purpose**	**Sample and Setting**	**Design**	**Relevant Findings**	**Strengths, Limitations, Level & Grade**
Pérez-Ros, P., Cubero-Plazas, L., Mejías-Serrano, T., Cunha, C., & Martínez-Arnau, F. M. (2019). Spain Preferred music listening intervention in nursing home residents with cognitive impairment	To examine the effects of preferred music listening as an intervention in nursing home residents with cognitive impairment.	119 adults aged 65 years or older in a nursing home in Spain Intervention (preferred listening): (n=47) Control: (n=72)	Randomized intervention study	Utilized MMSE and GDS scores - Patients showed a preference for popular music of the 1950s and 1960s. - The intervention was not found to decrease depression in the intervention group, but the control group with no intervention increased by the end of the study. **Implications:** - Music was shown to slow the deterioration of cognitive and emotional symptoms. - This suggests the use of music as a non-pharmacological strategy.	**Strengths**: random allocation, comprehensive geriatric assessment **Limitations**: female dominant, could have used a larger sample to prove a larger effect, may have been bias due to Hawthorne effect **Level & Grade:** IA

Chapter 4 Results

The data collected from the synthesis of the selected literature are reviewed in this section. The sample demographics, study designs, inclusion and exclusion criteria for each study, intervention, and results are explained in this section. Table 2 synthesizes the articles that were included in this systematic review. Ten studies were included and were published between 2013 and 2019 (Cheung et al., 2018; Cooke et al., 2010; Gök et al., 2017; Lu et al., 2013; Moghaddasifar et al., 2019; Onieva-Zafra et al., 2018; Pérez-Ros et al., 2019; Ray & Mittelman, 2017; Ray & Götell, 2018; Werner et al., 2017).

Study Design

The 10 studies reviewed utilized a variety of designs. The majority (6) were randomized controlled trials (Cheung et al., 2018; Gök et al., 2017; Lu et al., 2013; Moghaddasifar et al., 2019; Pérez-Ros et al., 2019; Werner et al., 2017). Of the studies that were randomized control trials, three of them compared the music intervention to a usual care group, or participants who did not receive the music intervention and proceeded with their day-to-day activities and care (Lu et al., 2013; Moghaddasifar et al., 2019; Pérez-Ros et al). One of the studies was a randomized controlled cross-over design with music intervention compared to a reading control group (Cooke et al., 2010). Two of the studies used exploratory designs that examined the effect of music therapy over a period of time with each participant's initial baseline serving as their own control (Ray & Mittelman, 2017; Ray & Götell, 2018). One of the studies was a nonrandomized quasi-experimental design using two groups: pretest and posttest (Onieva-Zafra et al., 2018).

Control

Half (5 of the 10) of the studies reported having a control group that received normal routine care and interventions including activities of daily living (ADL's), occupational therapy (OT), physical therapy (PT), basic care. meal provision, and social activities without the implementation of music therapy (Gök et al., 2017; Lu et al., 2013; Moghaddasifar et al., 2019; Onieva-Zafra et al., 2018; Pérez-Ros et al., 2019). One of the studies randomly assigned participants to three groups, two music intervention groups that were compared to a social activity group (SA) where participants chatted casually twice a week for six weeks (Cheung et al., 2018). Another study utilized a reading group intervention as the control, where a range of reading/social activities were selected for the session including reading, telling jokes, and quiz activities (Cooke et al., 2010). Two of the studies were exploratory designs, in which all participants served as his or her own control to measure the effectiveness of music therapy and music activities on depression (Ray & Mittelman, 2017; Ray & Götell, 2018). One study included a control group that engaged in recreational group singing compared to the intervention of interactive music therapy (Werner et al., 2017).

Study Sample

Sample Size

The sample sizes of the studies reviewed ranged from 19-156 participants, with a median sample size of 64 and a mean sample size of 79. Three of the studies included sample sizes from

0-50. Three studies included sample sizes that ranged from 51-100, three studies included sample sizes that ranged from 101-150, and one study had a sample size that fell between 151-200.

Settings and Recruitment

Studies included in this review were conducted worldwide. Two of the 10 studies were conducted in the United States of America (Ray & Mittelman, 2017; Ray & Götell, 2018), two were conducted in Spain (Onieva-Zafra et al., 2018; Pérez-Ros et al., 2019), one was conducted in Hong Kong (Cheung et al., 2018), one study was conducted in Australia (Cooke et al., 2010), one in Taiwan (Lu et al., 2013), one in Turkey (Gök et al., 2017), one in Germany (Werner et al., 2017), and one was conducted in Iran (Moghaddasifar et al., 2019). All ten of the studies recruited participants directly through in-patient nursing homes or long-term aged care facilities.

Participant Demographics

The definition of older adult and specific ages varied from study to study. Of the 9 studies that reported ages, seven had an inclusion criteria of 65 years or older for the participants. One study identified their inclusion criteria as 60 years or older (Moghaddasifar et al., 2019). The last study of those that reported ages reported a mean average for their participants age in their study as 83.5 for the music intervention and 85.5 for the group recreational singing intervention (Werner et al., 2017). The lowest mean age was found in one study in Taiwan at a psychiatric nursing home that was 52.3 years old (Lu et al., 2013).

All of the studies included both male and female participants. Out of the 10 studies included, 8 of the studies contained predominantly female participants: 51.3% (Pérez-Ros et al.,

2019), 63.2% (Onieva-Zafra et al., 2018), 64.3% (Moghaddasifar et al., 2019), 70.2% (Cooke et al., 2010), 75.8% (Cheung et al., 2018), 79.0% (Werner et al., 2017), 84.8% (Ray & Mittelman, 2017), 85.5% (Ray & Götell, 2018). The two remaining studies included mostly male participants, 65.7% in the music group and in the control (Gök et al., 2017), and 73.8% were male in total for the usual care group and music group (Lu et al., 2013).

Inclusion and Exclusion Criteria

Inclusion criteria varied for each study that was included. Depression is common but often undiagnosed, so most studies (8/10) did not require a diagnosis of depression but rather required participants to meet other depression-related inclusion criteria. However, depression symptoms were assessed as an outcome in all studies. No studies used gender as an inclusion or exclusion criteria, however, 9 out of the 10 studies used age. The only study that had a substantially lower average age was the study conducted in Taiwan, with a mean of 52.3 years old (Lu et al., 2013). One article required a specific time frame of at least two months in the nursing home in order to be included (Moghaddasifar et al., 2019). Six studies included a diagnosis of dementia, with two of those requiring mid-stage (Cheung et al., 2018; Cooke et al., 2010; Pérez-Ros et al., 2019; Ray & Mittelman, 2017; Ray & Götell, 2018) and one required Alzheimer's disease specifically (Onieva-Zafra et al., 2018). All six of those studies also included documented depressive symptoms. Three of the ten articles required a lack of other significant mental health or psychiatric disorders aside from depression or dementia (Moghaddasifar et al., 2019; Ray & Mittelman, 2017; Ray & Götell, 2018). One of the articles

required a diagnosis of schizophrenia (Lu et al., 2013). All of the studies included required consent, effective communication, and cooperation from the participants.

Exclusion criteria for the studies covered in this review varied. All of the studies excluded participants that were unable to communicate, had hearing loss, or visual deficits. Visual deficits were included as an exclusion criterion because some interventions utilized music therapy along with sensory stimulation (i.e. watching a music video). Participants were also excluded if they refused. Participants were excluded for 1 out of the 10 studies if they were in the process of grieving a recent death (Moghaddasifar et al., 2019). Additional exclusion criteria used in single studies included those who had a history of alcohol or drug consumption (Onieva-Zafra et al., 2018), were bedridden or receiving short-term care in the nursing home (Werner et al., 2017), terminal illness (Pérez-Ros et al., 2019), absence of depressive symptoms documentation (Ray & Mittelman, 2017; Ray & Götell, 2018), or disinterest in group music or social activities (Cheung et al., 2018). One article also excluded participants who suffered from cerebrovascular disease or a traumatic brain injury (Onieva-Zafra et al., 2018).

Interventions

All of the studies examined the intervention of music therapy. Music therapy was administered in many forms and as either a primary therapy (5/10) or a form of complimentary therapy (5/10). Four out of the 10 studies utilized professional music therapists as performers, trainers to CNAs/staff, or as the individual responsible for choice of music (Ray & Mittelman, 2017; Ray & Götell, 2018; Cheung et al., 2018; Gök et al., 2017). Participants listened to music of their choice in only one of the studies (Pérez-Ros et al., 2019). In one of the studies, two

interventions were used in a cross-over design between group music singing and listening and reading (Cooke et al., 2010). Another form of music therapy included as an intervention was group singing and dancing (Ray & Mittelman, 2017; Ray & Götell, 2018; Werner et al., 2017). One study's intervention included listening to Turkish traditional music and Turkish Sufi music in a group setting (Gök et al., 2017).

Four articles examined the intervention of music therapy compared to another form of therapy such as music and movement and music listening (Cheung et al., 2018), passive music such as listening and active music such as watching music videos and playing instruments (Lu et al., 2013), music therapy combined with tactile, auditory, visual and sensory stimulation (Moghaddasifar et al., 2019), and listening and singing accompanied by reminiscence therapy and reality orientation (Onieva-Zafra et al., 2018).

Intervention Intensity

The interventions in the studies included in this systematic review varied by intensity and frequency. The total minutes of music therapy delivered over entire study interventions ranged from 120-1500 minutes, with individual sessions ranging from 25-60 minutes at a time. Half (5/10) of the studies spread out the music therapy sessions between 2-5 weeks (Lu et al., 2013; Pérez-Ros et al., 2019; Ray & Mittelman, 2017; Ray & Götell, 2018; Moghaddasifar et al., 2019), while 4/10 studies took place over 6-8 weeks (Cooke et al., 2010; Cheung et al., 2018; Onieva-Zafra et al., 2018; Pérez-Ros et al., 2019), and one study lasted 12 weeks (Werner et al., 2017).

Outcome Measures

A total of 4 of the 10 studies used the Geriatric Depression Scale (GDS) to measure levels of depression in participants (Cheung et al., 2018; Cooke et al., 2010; Gök et al., 2017; Pérez-Ros et al., 2019). This scale was originally developed by Sheik and Yesavage and the version utilized was the GDS-15, one of the most popular measures used in clinical settings, and its focus is on asking the participants how they felt during the previous week and consist of 15 yes or no questions (Sheikh & Yesavage, 1986). The GDS-15 has 92.2% sensitivity, 95.2% specificity, and 0.94 internal consistency (Chan et al., 2010). One study measured depression using the Montgomery–Åsberg Depression Rating Scale (MADRS) (Werner et al., 2017). The MADRS has a high validity and reliability (r = 0.95) (Ahmadpanah et al., 2016). Three out of the 10 articles analyzed depression with the Cornell Scale for Depression (CSD), a 19-item assessment tool that measures the severity of depressive symptoms (Ray & Götell, 2018; Ray & Mittelman, 2017; Pérez-Ros et al., 2019). The Cornell Scale for Depression has been reported as a reliable tool for nursing home residents with dementia with a high level (Cronbach's alpha: 0.86) of internal consistency (Amuk et al., 2003). Depression was measured in one study using the Beck Depression Inventory (BDI-II) which is a 21-item self-report screening tool (Moghaddasifar et al., 2019). Each item was scored on a 4-point scale from 0-3 and the highest overall score for all 21 questions was 63 (Moghaddasifar et al., 2019). The internal reliability of the BDI-II was reported good for older adults (Cronbach's alpha = 0.86) and an acceptable test-retest reliability (r = 0.74) was reported (Moghaddasifar et al., 2019). Another instrument that was utilized in one of the studies was the Goldberg Depression and Anxiety Scale, an 18-item self-report symptom inventory (Onieva-Zafra et al., 2018). The Goldberg test gives scores of 0 to 9 for the number of symptoms of depression and anxiety and each question is answered in a yes

(1 point) or no (0 point) format (Onieva-Zafra et al., 2018). The depression scale has a sensitivity of 85% and a positive predictive value of 0.85 (Goldberg et al., 1988). All studies conducted pre-test and post-tests to analyze results from the intervention compared to the control after music therapy was implemented.

Level of Quality of Evidence

Quality of evidence was examined and assigned to each of the articles that were included in this systematic review. The six randomized control trials included in this review fall into the category of Level 1 for strength of evidence. Of the six level 1 studies, according to the Johns Hopkins Evidence-Based Practice Guidelines, two were rated as A (high), three were rated as B (good) and one was rated as C (low) (Dang & Dearholt, 2017). One of the studies included was categorized as Level 2, and a rating of B (good). The remaining three articles received Level 3 gradings for strength, and two were rated A (high), while one was rated B (good).

Research Findings

Of the 10 studies included in the review, 8 showed that the intervention of music therapy resulted in statistically significant reductions in depression symptoms on their respective scales (Cooke et al., 2010; Gök et al., 2017; Lu et al., 2013; Moghaddasifar et al., 2019; Onieva-Zafra et al., 2018; Ray & Mittelman, 2017; Ray & Götell, 2018; Werner et al., 2017). Cheung et al. (2018) showed a reduction in depression scores but did not yield statistical significance. Only one study did not show a reduction of depressive symptoms, but rather how music therapy prevented depressive symptoms from worsening (Pérez-Ros et al., 2019). The control group in

this study showed a significant increase in depressive symptoms from pre-test to post-test according to the Yesavage scale ($p<0.001$), while the music intervention group from pre-test to post-test did not change (Pérez-Ros et al., 2019). The results from this study support the use of music therapy as a non-pharmacological strategy to prevent an increase in depressive symptoms.

Specific Music Intervention Effects by Level of Quality

Level 1 Study Results

Of the six Level 1 studies, the majority (4) showed significant reductions in depressive symptoms over the course of the music therapy intervention. The cross-over designed study included in this review compared music intervention group to a reading group, and the results from this study showed that when the reading group crossed over into the music group their scores decreased (3.61 to 3.46), whereas when the music group crossed over into the reading group their scores increased (3.17 to 3.57) (Cooke et al., 2010). The GDS depression scores were significantly reduced over time ($p<0.01$), indicating that music therapy as an intervention is more effective on reducing depressive symptoms as a non-pharmacological intervention over reading and social activities (Cooke et al., 2010). Lu et al. (2013), found that the CDSS scores significantly improved from pre-test to post-test utilizing music therapy as an intervention and from baseline to follow up showed a p value of 0.002. In another study, music therapy was conducted along with multi-sensory stimulations of touch, sound, and sight (Moghaddasifar et al., 2019). The intervention group in the pre and post-test stages was 14.5 ± 5.5 and 10.1 ± 5.3, thus the intervention led to a statistically significant ($p>-.001$) 4.4 decrease in the BDI-II

depression scores (Moghaddasifar et al., 2019). Gök et al. (2017) found statistically significant differences (t= -2.86, p<.01) in the two post-test scores. One study showed a slightly different pattern, for Pérez-Ros et al. (2019) showed an increase in depression in the control group based off results collected from the GDS depression scale. The control group had a 2-point increase from 10/15 to 12/15, while the intervention group stayed consistent at 8/15 (Pérez-Ros et al., 2019). In the study comparing music and movement (MM), to music listening (ML), and social activity (SA), only the MM group showed promising reduction in depression symptoms, although not statistical significance (p=0.96) (Cheung et al., 2018). This indicated that although both were forms of music therapy, perhaps music paired with another sensory stimulation such as movement would have a greater impact on depression.

Level 2 Study Results

One level 2 study was included in this review and found that music therapy led to a reduction in depressive symptoms. Onieva-Zafra et al. (2018) found there to be a significant difference in depression scores following the music intervention. This was found by comparing pre and post scores on the Goldberg depression scale (p= 0.01). Participants were assessment at baseline (before the intervention), and post scores were determined after the 8-week intervention The control group showed 3.6 ± 1.776 while the intervention group showed 1.56 ± 1.59.

Level 3 Study Results

Of the three level 3 studies, all showed a reduction in depressive symptoms over the course of the music therapy intervention. Werner et. al (2017) study found that that interactive

music therapy significantly reduced depressive symptoms to a greater extent than recreational group singing. Recreational group singing showed an increase in depressive symptoms after 5 weeks (+1.65) and after 10 weeks (+2.04), and interactive music therapy showed a decrease after 5 weeks (-1.15) and after 10 weeks (-2.47) according to the MADRS scale. Specific symptoms that showed significant changes in the interactive music group were concentration ($p=0.004$), lassitude ($p=0.017$), inability to feel ($p=0.007$), and pessimistic thoughts ($p=0.002$) (Werner et al., 2017). Ray and Götell (2018), found that depression symptoms significantly declined following 2 weeks of music therapy ($p \leq 0.001$). Additionally, information showed that symptoms increased during a 2-week washout period where no intervention took place but appeared to stabilize following the 2-weeks music activity, further supporting the positive benefits of music therapy when carried out consistently. Ray and Mittelman (2017) found that depression symptoms also decreased significantly after music therapy intervention ($p < 0.001$).

Long-term Effects of Music Therapy

Of the 10 studies analyzed, 3 collected follow up data after the intervention was over (Lu et al., 2013; Ray & Götell, 2018; Ray & Mittelman, 2017). Lu et al. (2013), found that CDSS scores significantly improved from pre-test to post-test utilizing music therapy as an intervention. However, 3-month follow-up assessments did not show that this improvement was maintained without the intervention (Lu et al., 2013). In another study, during a 2-week wash out period in between music therapy and music activity interventions, depression symptoms increased according to the Cornell Scale for Depression (Ray & Götell, 2018). However, the symptoms began to stabilize following the 2-weeks of music activity on the intervention group

(Ray & Götell, 2018). Similarly, Ray & Mittelman (2017) recorded depression scores using the Cornell Scale for depression 2 weeks post treatment when the intervention was removed and found that depression began to rise again. The findings in these 3 studies lead to the conclusion that music therapy can be effective in improving or maintaining depression symptoms, however, it may not have lasting effects. Instead, these studies indicate that music therapy should be used regularly to lower depressive symptoms and prevent the possibility of a relapse of symptoms.

Chapter Summary

The current literature investigating the widespread effects of music therapy offer various perspectives on how music therapy impacts nursing home residents with depressive symptoms. A majority of the articles (8/10) showed statistically significant reductions in depressive scores on their respective scales. Modality and intervention intensity varied for each article, however, all articles utilized music therapy in some way with intent to decrease depression scores. Only two articles did not show a statistically significant reduction in depression scores. Cheung et al. (2018) showed a slight reduction in depression scores throughout the music therapy intervention but was not statistically significant while Pérez-Ros et al. (2019) did not show a reduction in depressive symptoms but rather no change.

Chapter 5 Discussion

This systematic review explored the current literature surrounding music therapy and the effects it has on depression and depressive symptoms in nursing home residents. The previous chapters have introduced the purpose of this systematic review, provided background and significance of the topic, addressed the research methods, and discussed the results and findings. This chapter will provide a reintroduction to the purpose of this review, a summary of the key findings, major strengths and limitations, recommendations for practice, future directions for research, and conclusions.

Summary of Findings

The findings from the examined literature support that music therapy utilized as a nonpharmacological intervention for depression in older adult nursing home residents has positive benefits. A majority (8/10) of articles reviewed showed statistically significant reductions in depressive scores on their respective scales. One study did not show a reduction in symptoms, authors did report that pre- and post-test scores for the music therapy group showed no change and the control group with no music intervention showed an increase which is also a beneficial outcome (Pérez-Ros et al., 2019). Cheung et al. (2018), showed a slight reduction in depression scores throughout the music therapy intervention, however, the difference in outcomes between groups did not attain the level of statistical significance.

This review includes several important takeaways. Overall, this research suggests that music therapy can be therapeutic for depressive symptoms and can be offered in various forms, whether that be complimentary to another form of music therapy or stand-alone utilizing one

specific modality. Music can be administered as music and movement and music listening (Cheung et al., 2018), passive music such as listening and active music such as watching music videos and playing instruments (Lu et al., 2013), music therapy combined with tactile, auditory, visual and sensory stimulation (Moghaddasifar et al., 2019), and listening and singing accompanied by reminiscence therapy and reality orientation (Onieva-Zafra et al., 2018).

Strengths and Limitations

As with all research, this systematic review has strengths as well as limitations. The strengths of this review are the use of majority level 1 quality studies and the examination of multiple types of music interventions that fall under the category of music therapy. Examining multiple types of music therapy interventions and how they were administered provides a more comprehensive analysis of this research topic. Previous research discusses music therapy but does not provide much detail on specific types of music therapies in comparison. Additionally, this review includes a strict criterion for nursing home facilities to narrow the focus down and only included articles that were from the most recent years. This ensured that the review focused specifically on nursing home residents due to their high risk of developing depression and fills a critical gap that has not been reviewed before. Recent research made sure that current treatments were being reviewed and compared to music therapy to provide accurate recommendation for future practice. This systematic review included studies from all over the world, so it is able to provide universal representation outside of just the U.S healthcare system.

While there are strengths to this study, there are also limitations. Two of the research articles analyzed were written by the same researcher and emerged from the same study, which could lead to potential bias. Additionally, in one article not everyone agreed to participate in the full study due to the use of videotaping and this article included the MIDAS measurement tool which is still being tested for validity. Three of the studies included did not include blinding which could lead to bias and skewed results. All of the articles examined the implementation of music therapy as a treatment option; however, the specific administration varied greatly. Music therapy is a broad term for interventions that include music that can be presented in any form. For example, music was administered both in a group setting and individually in the articles reviewed. Another difference was that some music interventions were implemented with another complimentary therapy such as music-with-movement or sensory stimulation therapy. Due to the various way in which music therapy was conducted, it is difficult to which specific intervention may be driving the overall positive impact and whether or not the complementary therapy that was given alongside music therapy can be responsible for the decrease in depressive symptoms.

Music therapy was administered by a wide variety of people including researchers, musicians, CNAs, and music therapists in the studies, which could lead to bias and variation in the results since music therapists may be more qualified to administer the therapy. Also, while it is a strength as far as representativeness, this systematic review included participants from a number of countries which may also create limitation. This introduces obstacles such as cultural differences and language barriers in terms of competent care and how receptive residents were to the therapy. There is the possibility that relevant articles may have been excluded due to publishing in another language. Another limitation was that articles included patients with dementia in several of the studies, which may have an impact on the results compared to patients

without dementia. For example, most of the depression assessments are self-reported questionaries, so a person with dementia may have difficulty answering questions accurately. Lastly, participant exclusion criterion often used in articles included in this review included people who could not verbally communicate, so they are not represented in these studies and findings cannot be generalized to that population. However, music therapy could still be beneficial for people who cannot communicate verbally.

Recommendations

Although the standard treatment for depression is pharmacological interventions, there are a number of nonpharmacological options that should be considered in practice such as exercise, yoga, dietary supplements, talk therapy and music therapy. The findings in this literature review support that music therapy has the potential to benefit nursing home residents with depression and serve as an option to avoid any potential adverse effects that adding a medication such as a TCA or an SSRI would introduce. Music therapy could be implemented as a standard approach to care in nursing homes specifically. This can be introduced by hiring professional music therapists or activity staff, nursing assistants or even using volunteers to engage with nursing home residents that exhibit depressive symptoms.

As patient advocates, the healthcare professionals in nursing home settings can work with interdisciplinary colleagues from pharmacy and music therapy to identify whether nonpharmacological or pharmacological interventions should be implemented. Cost is a major concern as well for treatment. The average cost of psychotherapy in the U.S. ranges from $100 to $200 per session, according to a 2019 report by SimplePractice, a practice management system

for mental health professionals (Lauretta, 2021). Medication ranges depending on whether a person has insurance or not and whether they are receiving the generic or brand name. Average cost of medication also depends on what dosage they are prescribed and how many medications. Without insurance, a one-month supply of generic brand antidepressants can range from $15-$200 (Eisenberg Center at Oregon Health & Science University, 2007). According to the 2018 Member Survey & Workforce Analysis, average hourly rates for individual music therapy sessions were between $50-90 while average hourly rates for group music therapy sessions were between $60-90. This means that music therapy can be utilized as a cost-effective nonpharmacological therapy, especially in a group setting, for nursing home residents. If music therapy was conducted by non-professionals, or possibly volunteers, it could be even more cost-effective and potentially free. This was examined in this systematic review, for music therapy was administered by a number of different individuals with varying credentials.

Future Research

Music therapy can be administered in a variety of forms and show positive results. However, because music therapy is an umbrella term for the breadth of options that may be offered, it is difficult to aggregate the results across multiple studies. There is lack of research to allow for comparisons of whether one form of music therapy is more beneficial than the next. Additionally, because music therapy was administered by researchers, certified nursing assistants, music therapists in different studies, the research does not conclude whether one interventionist is more effective than the next. Lastly, research relied heavily on surveys that the patient had to take to determine their symptoms and scores. Residents who had a diagnosis of

dementia may have had a cognitive barrier to understanding the questions that they were being asked which may have skewed the results.

Future research should explore the differences between specific music interventions. Cheung et al. (2018) compared three groups: a control group and two music intervention groups (music listening and music and movement). This design allows the interpretation of which music intervention was more effective because external factors such as setting, and participants are controlled. A cross-over design may also be beneficial to examine which type of music intervention is more impactful on depressive symptoms. Additionally, future research should explore the relationship between the qualifications of the person administering the music therapy and whether that plays a part in the results that are yielded. Another future implication is to consider the age restriction, for this review focused on the older adult population and did not explore how younger people with depression may be impacted by music therapy. However, music may still provide benefits to younger populations with depressive symptoms.

Lastly, this research supports that music therapy can offer benefits to people who have a diagnosis of dementia. More than half (6/10) studies included in this review focused on participants with a diagnosis of dementia along with depressive symptoms. There is significant research on how music can affect memory and many other factors in people with dementia. Depression can develop as a secondary outcome to people who suffer from dementia, which this study aimed to investigate. Future research should adequately assess participants' stages of dementia to determine whether their self-reported answers are accurate when determining depression scores.

Chapter Summary

This systematic review, summarizes and synthesizes the existing literature surrounding music therapy used for depression in older adults living in nursing homes. The standard approach to caring for depression does not currently involve music therapy as a first line of treatment or even as a complement to other treatments. Music therapy offers a number of benefits and the results from this systematic review suggest that music could be implemented effectively as a complimentary therapy. People who are in nursing homes specifically may be at increased risk of experiencing depression or depressive symptoms. Future research should focus on the impact of specific music interventions and the relationship between the person responsible for administering music therapy and its beneficial impacts. Healthcare professionals can use the information from this systematic review to further develop and establish a safe individualized plan of care for their patients. Exploring nonpharmacological options, specifically, music therapy in settings like nursing homes can promote health and better manage depression.

Appendix A

Johns Hopkins Nursing Evidence-Based Practice Evidence Level and Quality Guide

Evidence Levels	Quality Guides
Level I Experimental study, randomized controlled trial (RCT) Systematic review of RCTs, with or without meta-analysis	**A High quality:** Consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence **B Good quality:** Reasonably consistent results; sufficient sample size for the study design; some control, fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence **C Low quality or major flaws:** Little evidence with inconsistent results; insufficient sample size for the study design; conclusions cannot be drawn
Level II Quasi-experimental study Systematic review of a combination of RCTs and quasi-experimental, or quasi-experimental studies only, with or without meta-analysis	
Level III Non-experimental study Systematic review of a combination of RCTs, quasi-experimental and non-experimental studies, or non-experimental studies only, with or without meta-analysis Qualitative study or systematic review with or without a meta-synthesis	
Level IV Opinion of respected authorities and/or nationally recognized expert committees/consensus panels based on scientific evidence Includes: • Clinical practice guidelines • Consensus panels	**A High quality:** Material officially sponsored by a professional, public, private organization, or government agency; documentation of a systematic literature search strategy; consistent results with sufficient numbers of well-designed studies; criteria-based evaluation of overall scientific strength and quality of included studies and definitive conclusions; national expertise is clearly evident; developed or revised within the last 5 years **B Good quality:** Material officially sponsored by a professional, public, private organization, or government agency; reasonably thorough and appropriate systematic literature search strategy; reasonably consistent results, sufficient numbers of well-designed studies; evaluation of strengths and limitations of included studies with fairly definitive conclusions; national expertise is clearly evident; developed or revised within the last 5 years **C Low quality or major flaws:** Material not sponsored by an official organization or agency; undefined, poorly defined, or limited literature search strategy; no evaluation of strengths and limitations of included studies, insufficient evidence with inconsistent results, conclusions cannot be drawn; not revised within the last 5 years

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