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## Therapeutic Music Effectiveness in Managing Anxiety and Depression Feelings in Cancer Patients

Aida L. Ramos  
*Walden University*

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# Walden University

College of Nursing

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Aida Ramos

has been found to be complete and satisfactory in all respects,  
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## Review Committee

Dr. Margaret Harvey, Committee Chairperson, Nursing Faculty  
Dr. Geri Schmotzer, Committee Member, Nursing Faculty  
Dr. Mirella Brooks, University Reviewer, Nursing Faculty

Chief Academic Officer and Provost  
Sue Subocz, Ph.D.

Walden University  
May 2022

Abstract

Therapeutic Music Effectiveness in Managing Anxiety and Depression Feelings in

Cancer Patients

by

Aida Ramos

MSN, University of Medicine and Dentistry of NJ, 2009

BSN, College of New Rochelle, 2000

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

Walden University

May 2022

## Abstract

With the emergence of advances in health care technology, increased life expectancy has exacerbated the manifestation of chronic disease states such as cancer. The side effects of cancer treatments can lead to feelings of depression and anxiety, which can be as devastating as disease process. Many studies have provided evidence supporting the practice problem, therapeutic music effectiveness in managing anxiety and depression feelings in cancer patients. Available pharmacological treatments may result in additional side effects that may outweigh the benefits of their use. Current systematic reviews of literature demonstrating the effectiveness of therapeutic music use as a non-pharmacological therapeutic adjunct therapy to manage feelings of anxiety and depression in cancer patients is limited. This literature review was developed to aid health care workers with a focus on evidence supporting the effectiveness of implementing music therapy in cancer patients to improve mood disorders. The Theory of Music, Mood, and Movement and the Kolcaba's Nursing Comfort Theory were used as conceptual frameworks to structure this project. This systematic review includes 20 studies of primarily randomized-controlled trials. To ensure the highest quality of assessed literature, Polit & Beck's hierarchy levels of evidence grading was utilized. The analytical appraisal method preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) and the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) facilitated evidence analysis and synthesis. The potential nursing implications for nursing practice, is that music theory offers a holistic, safer, and more economical treatment option. In conclusion, the social implication of this systematic review is that these findings have the potential for guiding clinical protocols for greater societal function improvement.

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## Dedication

I would like to dedicate this project to my dear children Rachel, Jeanne, and Chris. I also want to dedicate this scholarly project to both my deceased mother and husband Bobby. My family and friends' unconditional love and support has nurtured my inner creativity and enabled me to complete this academic voyage.

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## Section 1: Nature of the Doctoral Project

### **Introduction**

A diagnosis of cancer can have a significant negative impact on the psychological health state of affected patients, and if left untreated can impede treatment survival. In cancer patients the focus of treatment is often directed at managing physical symptoms, as opposed to addressing emotional manifestations (Niedwiedz, Knifton, Robb, Katireddi & Smith, 2019). This can result in a patient slipping into deep depression, suffering from an anxiety disorder, or even contemplating suicide.

The prevalence of depression in cancer patients is reported at approximately 13% (Walker et al., 2013). Depending on depression assessment methods used, depression rates can range up to 49% in cancer patients. This failure to manage psychiatric symptoms can decrease the quality of life and survival rate, and increase treatment costs (Pitman, Suleman, MacMillan, Hyde, & Hodgkiss, 2018).

Emotional distress is a broad term encompassing combined symptoms of depression and anxiety, that if not properly treated can escalate and result in increased suicide risk and poor quality of life (Ng, Mohamed, Kaur, Sulaiman, Zainal, & Taib, 2017). In addition, the prevalence of emotional distress in cancer patients has been found to be under-reported, overlooked, and not addressed leading to poor treatment coping responses. Traditional cancer treatment modalities such as chemotherapy and radiation often result in detrimental side effects such as insomnia, feelings of helplessness, and gastric problems. These detrimental effects can lead to behavioral disturbances such as depression and anxiety. Alternate non-pharmacological interventions, such as therapeutic

music, have been proven to be an effective treatment option in improving patient mental status (Jasemi, et al., 2016).

The nature of this Doctoral Nursing Practice (DNP) project was to provide an extensive systematic review of literature of randomized controlled studies that can assist nurses in clinical settings that service oncology patients. The purpose of this project was to discover whether the incorporation of therapeutic music to decrease anxiety and depression symptoms in the oncology population would be effective. The goal of this DNP project is to provide an evidence-based study analysis of music therapy effectiveness to assist nurses in developing improved holistic standards of care for those diagnosed with cancer.

It is hoped that this DNP project can result in positive social change by providing current evidence-based literature to the nursing profession that music therapy use can ameliorate both physical and psychological patient outcomes. The social implications of failure to efficiently manage depression and anxiety feelings in cancer patients can result in increased social isolation, which may negatively impact patient outcomes (Teo , 2012).

This DNP project supports Walden University's mission of generating therapeutic societal changes that can positively impact the nursing profession (Walden University, 2012). Therapeutic music use is a safe, non-pharmacological option to positively improve social function in mood altering disorders. Depression and anxiety can reduce social function if inadequately treated (Leubner & Hinterberger, 2017). From a societal view, therapeutic music is an economical, non-invasive treatment modality as opposed to medi-

cations that have recurring side effects (Jasemi et al., 2016). This DNP project has the future potential to expand and be generalized to other health care facilities. The findings can also be shared to include other health care providers that specialize in mental illness without a coexisting diagnosis of chronic illness.

### **Problem Statement**

According to the Veterans Administration (VA) hospital, the identified local nursing problem reported is the psychological stress cancer patients experience, unfavorably impacts the patients' quality of life and treatment responses. To assist in a community-based quality improvement project, the hospital conducted a screening process between 2014-2016 on 400 cancer patients undergoing radiation utilizing the National Comprehensive Cancer Network (NCCN) distress thermometer during the first consultation and at follow-up appointments. The average age of participants was 67.1 years, with 95.6% of male gender of varied races, and with different types of cancer diagnoses. The screenings were able to be completed on 82.4% of target treatment population, with at least 57.4% being identified with a psychological complication, such as depression and/or anxiety causing significant distress that needed to be clinically addressed (Lomauro, Dawson, Magda, Tobias, & Kelly, 2017).

The local nursing practice problem relevance was to demonstrate the importance of presenting an alternate non-pharmacological treatment modality, such as therapeutic music to cancer patients, identified as having emotional distress. By utilizing a systematic evidence-based literature review of the use of therapeutic music, the significance and potential of therapeutic music use is being presented and analyzed. The goal of this project

is to demonstrate the importance of using music therapy as a possible method of reducing emotional distress for oncology patients, thus promoting better patient outcomes (De Witte, Spruit, Van Hooren, Moonen, & Stams, 2018).

## **Purpose**

### **Gap in Practice**

The main purpose of this systematic review of literature is to identify nursing practice non-pharmacological treatment options, specifically therapeutic music use. The aim was to demonstrate its effectiveness of diminishing the depression and anxiety feelings that cancer patients can exhibit. Despite medical advances with prescription medication administration, there are limited holistic treatments that have been studied which may assist in combating the psychological symptoms in cancer patients that may complicate physical recovery (Krishnaswamy & Nair, 2016).

Traditionally, pharmacological and behavioral modalities have been utilized to decrease the levels of anxiety and depression in cancer patients. Unfortunately, these treatment methods have been associated with detrimental effects, such as controlled drug dependence with overdose risks and vital sign fluctuations, which can be both life threatening and costly to health care systems (Jasemi et al., 2016). According to researchers Wang et al. (2018) using methods such as music therapy, guided imagery, and meditation, may positively impact patients' emotional health. Art therapy is a creative technique that includes artistic expression using dance, poetry, guided imagery, and therapeutic music. Of all these available treatment approaches, therapeutic music is the most recommended, however is still not frequently utilized (Wang et al., 2018).

**Guiding Practice Focused Question**

The guided practice focus question for this DNP project is: *Can an examination of the effectiveness of therapeutic music to treat patients, with cancer-related anxiety and depression, be helpful in providing an updated evidence-based health care provider interventional tool?* This systematic literature review approach will enable this learner to evaluate the effectiveness of incorporating therapeutic music as an evidence-based nursing practice tool when caring for cancer patients to reduce anxiety and depression.

**Addressing the Gap in Practice**

This DNP project has the potential to address the gap-in-practice to disseminate evidence-based interventions into clinical care to close the treatment gap (Kazdin, 2017). Research evidence is one of the most effective approaches to address the behavioral health needs of cancer patients and potentially impact patient outcomes (Howell et al., 2012). This systematic review of literature has the intention of providing a practice problem directed treatment efficacy, and evidence-based research findings to decrease the mental health treatment gaps of cancer patients (Alonzo, et al., 2018). A presentation of an integrative behavioral treatment option is imperative to support cancer care strategies (Greenlee, et al., 2017).

### **Nature of the Doctoral Project**

To complete this systematic review the effectiveness of music therapy was examined. To treat anxiety and depression in cancer patients, the sources of evidence were comprised of quantitative research and included a meta-analysis of randomized-controlled research studies (Leubner & Hinterberger, 2017; Kamioka et al. 2014). The approach was to organize and analyze the amassed evidence as a systematic review that were obtained from multiple sources such as: the Cumulative Index Nursing Allied Health Literature (CINAHL), Evidence Based Nursing, PubMed (Medline), the Cochrane Systematic Review Databases, Healthy People 2020, and the Centers for Disease Control. These databases were selected because they are evidence-based with a focus on professional health practices.

### **Project Approach**

The Walden University DNP Systematic Review Manual (2019) was used to guide the project. Using the established research question and inclusion criteria a comprehensive literature search was completed. The literature systematic review is the main structure of this project of evidence-based health care and is composed of five essential components that will be utilized to organize and analyze the gathered evidence:

1. The first step was formulating a clear research question that propelled the systematic review.
2. The second step involved reviewing large body of evidence consisting of both electronic and printed resources with a specific selection criterion to document the



inclusion criteria of study articles between 2011-2021. The excluded studies were those that were written in a language other than English.

3. The third step was to evaluate the quality of examined evidence and determine their appropriateness to meet the requirements of the systematic review. These criteria were met by performing a detailed literature review with periodic progress assessments to assess relevance of selected studies to assure quality and strength. Studies selected for inclusion in the systematic review were analyzed for quality and level of evidence using Polit & Beck's (2008) hierarchy process for critically appraising evidence for clinical decision-making. Each step of the process was documented following the PRISMA guidelines for a systematic review of the literature (Aromataris & Pearson, 2014). Study selection was documented using the PRISMA flowchart, and study analysis was recorded and presented in a study findings table that displays a synthesis of the evidence.

4. The final step involved a synthesis of research study findings to assure that any previously delineated literature review criteria goals were met, and that there was minimal review bias (Khan et al., 2003).

An assumption of this scholarly project is that therapeutic music therapy decreases depression and anxiety in oncology patients. Understanding the reasons healthcare professionals do not routinely utilize this behavioral theory is paramount to promoting its use. Nurse leaders can utilize the findings from this systematic review to reduce barriers to the use of therapeutic music, which could improve the overall well-being of patients experiencing a cancer diagnosis.

## **Significance**

### **Identification of Stakeholders**

The identified stakeholders are patients, nurses, doctors, behavioral health specialists, pharmacists, patient family members, nursing educators, nurse managers, and institutional board committee members. The evidence presented will affect stakeholders by making available current evidence-based practice knowledge that can be incorporated in patient treatment plans. This systematic review has the potential of improving patient outcomes, and increased quality of life. Patients, nursing staff, healthcare organizations, and their administrators have a vested interest in addressing negative behavioral manifestations in those coping with a cancer diagnosis.

### **Identification of Potential Contribution**

Potential contributions of the doctoral project to similar practice areas serving cancer patients with anxiety and depression is the enhancement of stakeholders practice knowledge to prevent patient complications. The outcome of this literature review is to provide evidence of the effectiveness of music non-pharmacological therapy that is safe, affordable and can be shared with other health care professionals to improve cancer patients' quality of life (Jasemi, Aazami, and Zabihi, 2016).

**Potential Transferability to Practice**

Identification of the potential transfer ability of the doctoral project into clinical practice include increasing health care provider knowledge to assist in the application of music therapy to manage mood disorders in oncology patients (Jasemi et al., 2016). The integration of evidence -based study results can serve for local health care facilities that provide medical and behavioral health care to cancer patients.

**Positive Social Change Implications**

This DNP project approach of a systematic review of literature offers the potential of an effective non-pharmacological treatment approach with evidence of therapeutic music use contributing to the positive improvement of social patient function (Leubner & Hinterberger, 2017). This can improve the care to these patients and meet not only their physical needs, but also their emotional needs. This can benefit the stakeholders by the promotion of better patient outcomes, decreasing costs related to additional hospitalizations, and the promotion of personal family relationship during a trying time. A systematic review of literature analysis can provide evidence that the management of cancer patients' psychological manifestations can decrease the health care costs of unidentified potential complications (Wang et al., 2018).

**Summary**

Music therapy offers a therapeutic music approach that is cost-effective, comprehensive, and is safe to use and may benefit both primary and secondary local health care providers (Spilloti et al., 2017). Systematic reviews of literature are viewed as the gold standard to examine and analyze the risks and benefits of clinical interventions

(Pussegoda et al., 2017). Enhancing clinical therapeutic strategies improves patient treatment compliance, and promotes the effectiveness of other interventions (Wang et al., 2018).

In this section the introduction of the problem of managing anxiety and depression in cancer patients, and the nature of the problem with potential positive social change implications of incorporating music therapy was discussed. The problem statement and its purpose and gap-in practice were also identified. Additionally, the significance of the project and its potential contributions to nursing practice was examined. In Section Two the theoretical framework and concepts will be described, as well as the project's relevance to nursing practice. The local background and context of the role of this DNP learner was also be considered.

## Section 2: Background and Context

### Introduction

Evidence-supported behavioral health treatment options are essential in nursing practice to address the stressful impact of cancer on the quality of life of patients (Williams, Brothers, Ryba, & Andersen, 2015). Patients with cancer frequently exhibit feelings of anxiety and depression (Jasemi et al., 2016). The failure to recognize and effectively treat depression and anxiety can result in poor patient treatment compliance and delayed cancer remission rates (Yang et al., 2014).

Despite their availability, evidence-base treatments have not been adequately integrated into nursing practice. The American Psychosocial Oncology Society (2014) published guidelines identified the importance of screening cancer patients for signs of anxiety and depression, and for clinicians to create treatment pathways. Inevitably, all clinics servicing cancer patients will be expected to implement evidence-based interventions like music therapy to meet quality of care standards (Williams, Brothers, Ryba, & Andersen, 2015). Multiple researchers have presented randomized controlled studies that provide evidence of the benefits of music therapy to improve mood disorders in cancer patients (Bradt et al., 2014; Jasemi et al., 2016).

The practice focused question that this doctoral project addresses is, *Can an examination of the effectiveness of therapeutic music, with cancer-related anxiety and de-*

*pression, be helpful in providing an updated evidence-based health care provider interventional tool?* The purpose of this DNP project is to review and synthesize evidence-based data on whether therapeutic music use can enhance the nursing practice treatment of cancer patients who suffer from depression and anxiety.

This section will include a description of pertinent concepts, models and theories. Among the explored concepts is Kolcaba's (1994) Nursing Comfort Theory and the Theory of Music, Mood, and Movement (Murrock & Higgins, 2009). This section examines local background on the context of the mood disorders cancer patients experience, and the role of the DNP student in providing clarification of the practice problem and role within this doctoral project.

### **Concepts, Models, and Theories**

The DNP project is inspired by Kolcaba's (1994) Nursing Comfort Theory that implies that meeting patient comfort needs is an essential human quality with holistic outcomes divided into two dimensions and will guide the systematic review to complete this DNP project. The first dimension is composed of three states: relief of basic needs, feelings of ease, and transcendence in which simple power performance is magnified. The compilation of the three states contribute to positive changes. Kolcaba's second and ultimate dimension is comprised of four contexts. The first context is physical body sensation, the second context psychological /spiritual, the third context social, and the final context environmental that includes therapeutic music (Kolcaba, 1994). The rationale for using Kolcaba's (1994) Nursing Comfort Theory as it relates to this DNP project is that it

provides a holistic theoretical framework to address multiple individualized cancer patients' needs.

Kolcaba's (1994) Nursing Comfort Theory is a middle range theory that was created to directly enhance patient and family's comfort. Kolcaba's Nursing Comfort Theory has more concrete ideas including the main concepts of meeting health care needs, providing comfort therapies, intervention variables, improving individualized comfort, and health seeking behaviors, maintaining institutional integrity, and the highest quality practice policies. These concepts aid nurses in creating a plan of comfort care with patient focused mutually agreed goals. This theory addresses the psychological and spiritual relief of depression and anxiety of cancer patients.

The Theory of Music, Mood, and Movement (MMM) introduced by Murrock and Higgins (2009) is a middle range theory that is derived from the foundations of rhythm, harmony, melody, interval, and pitch, which results in positive psychological responses after music is transmitted past the auditory brain cortex of the right hemisphere. The rationale for using the MMM theory is that it plays an important role in improving mood disorders, and ultimately improving patient health outcomes when applying therapeutic music use with movement in cancer patients. Secondary to chronic conditions and associated negative health care outcomes, it is important that nurses acquire recent evidence-based theories to positively guide nursing practice (Hammer, Cartwright-Alcarece, & Budin, 2019). The MMM theory (2009) is another middle range theory that professes that musical activity can activate non-adrenergic neurons in the brainstem and midbrain and activate the cholinergic actions in the central nervous system to promote a state of mental

relaxation. Burrai, Micheluzzi, & Began's (2014) randomized controlled trial subjected participants to live saxophone music examined this neurophysiological perspective as a holistic, noninvasive, non-pharmacological oncology care tool and findings demonstrated improved patient mood state.

### **Clarification of Terms**

The terms that have multiple meanings that clarify this DNP project include:

- *Anxiety*: A term that is rooted from the feeling of fear related to cancer diagnosis, radiologic testing and treatment (Feiler, 2011). Anxiety is defined as a subjective and unpleasant feeling that involves a potential perception of threat that is common in cancer (Baqutayan, 2012).
- *Depression*: According to the American Psychiatric Association (2020), the term depression is defined as a common condition that changes individual feeling and behavior, and is associated with a feeling of sadness. Depression in cancer patients is a multifactorial disorder that can vary from normal sadness to a pathological inability to adjust to stressors (Smith, 2015).
- *Therapeutic Music*: The American Music Therapy Association (2018) defined Music Therapy as, "the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship" (para 1). Bruscia (1998) defined therapeutic music as a systematic process in which a therapist assists a patient with music introduction to promote health changes.
- *Evidence-Based Practice*: Evidence-based practice according to Majid et al. (2011), is an approach that is based on research proven data designed to be applied to



deliver care of high quality to a particular population. Based on a nursing view, evidence-based practice is a technique that involves integrating problem-solving methods to provide health care delivery based on research study findings (Chien, 2019).

### **Relevance to Nursing Practice**

#### **Existing Scholarship Nursing History**

The broader problem in nursing practice is that anxiety, coupled with depression in cancer patients when untreated, can lead to detrimental treatment effects. The focus of this project is a systemic review presenting the evidence-based treatment option of therapeutic music has been demonstrated by researchers to be effective alternatives to decrease anxiety and depression in cancer patients (Uslu, 2017).

#### **Summary of Current State of Nursing Practice**

Currently nursing has recognized the importance of addressing the psychologically negative effects associated with cancer. One of the highest unmet dilemmas that is faced by cancer patients are psychiatric needs that increase with prolonged illness (Jasemi et al., 2016). Depression and anxiety develop in these patients as a result of the impact of combined therapy side effects from chemotherapy, radiation, and hormonal treatments (Komatsu et al., 2012). Although it is clinically recognized that early treatment to prevent psychological illness manifestation is vital, there are limited treatment approaches (Akechi , Okuyama, & Endo , 2011).

An interest in alternative interventions such as music therapy, is vital to support emotional health stability (Boehm et al., 2016). The current state of nursing practice problem is that there are geographical differences in how depression and anxiety are

managed, therefore standardized nursing treatment guidelines specific to cancer patients are needed (Pitman et al., 2018). To improve the practice problem of cancer related behavioral manifestations, complementary therapy methods such as therapeutic music use, should be considered as an effective alternative treatment (Bradt et al., 2011). Multiple studies have provided evidence that therapeutic music prior to procedures or chemotherapy can reduce anxiety (Li et al., 2012; Bradt et al., 2011; Domingo et al., 2015; Jasemi et al., 2016; Rossetti et al., 2017 & Uslu, 2017).

### **Previous Strategies and Standard Practices**

Standard behavioral management strategies have included pharmacological treatment that was insufficient to treat depression and anxiety and had resulted in complications such as medication addiction and overdose (Jasemi et al., 2016). Antidepressants can interact with chemotherapy and lead to toxicity within the central nervous system by causing a potentiating effect (Smith, 2015). Pythagoras a Greek philosopher promoted the healing qualities of music in repairing the soul (Spilioti et al., 2017). In the 18th century Paragiter was among the first to introduce music therapy to treat psychiatric disorders that improved associated heart rate and blood pressure responses, and improved physiological outcomes (Uslu, 2017).

Recently music has been more broadly used as a therapeutic intervention, and in the field of oncology randomized controlled studies, research has suggested that music therapy is associated with better behavioral outcomes such as improved self-esteem and the encouragement of emotional expression (Domingo et al.; Bradt et al., 2011). Music

interventions include singing and active listening (Domingo et al., 2015). Music therapy is considered an inexpensive integrated health care practice strategy that can improve relaxation, communication, and reduce stress and depression (Spilioti et al., 2017). Music therapy as an integrative holistic intervention has not been linked to risks or side effects that would impair cancer treatment (Domingo et al., 2015). Nurse directed guidelines are needed to facilitate gaps in addressing standard practices, and for managing anxiety and depression in cancer patients (Jasemi et al., 2016).

This doctoral project examines advances in incorporating complementary interventions such as music therapy into nursing practice. A gap exists in which there is limited evidence-based available to help health care providers understand the effects of implementing therapeutic music into the clinical setting. This is important to assist in formulating practice policies supporting therapeutic use in varied oncological settings (Porter et al., 2017). Traditionally implemented treatment modalities such as psychotropic medications have risky side effects, are more time consuming to nurses, and a heavy expense for health care (Jasemi et al., 2016).

## **Local Background and Context**

### **Summary of Local Evidence**

There is a shortage of guidelines to treat mental health conditions in oncology patients. Mood disorders identified in the local hospitals, such as anxiety and depression,

have resulted in sleep disturbances and chronic fatigue complications (Cleeland et al., 2013).

The purpose of examining the topic using a review of literature is to examine the effectiveness of therapeutic music in managing anxiety and depression in cancer patients and provide available evidence-based practices. The evidence presented from a systemic review of evidence that will be covered in Section 3 will include a collection and analysis of evidence.

### **Institutional Context of Problem**

The institutional context of the problem is composed of local hospital and oncology outpatient hospitals in the North Atlantic part of the country. This comprises the predominant health care system servicing identified oncology patients with mood disorders, that would benefit from alternative treatment guidelines.

Age adjusted rates for cancer in this area are higher than the Healthy People 2020 target with significantly marked higher incidence of mental illness. The strategic vision is to increase patient active involvement in holistic health care treatment selection (Opromallo, 2014).

## **Role of the DNP Student**

### **Professional Context**

I currently practice within the professional context of an Advanced Practice Nurse in two urban outpatient adult health care clinics located in the North Atlantic region of

the country. My relationship to the Doctoral project was inspired by my mother who was a paranoid schizophrenic with stage IV cervical cancer. She had underlying anxiety and the only way that she was clinically able to tolerate radiation therapy was by playing her favorite Spanish music.

My professional context to the doctoral project is that in the internal medicine clinic where I practice, we have over 50% of our patients with anxiety and depression, secondary to chronic physiological conditions. There are speakers in each room streamlining soothing instrumental jazz music. In multiple ongoing patient satisfaction surveys since 2018 over 80% of patients have noted the calming effects of this music significantly relaxing them during their wait times.

My role as a DNP student was to complete this doctoral project to aid in creating treatment guidelines. My plan was to accomplish this by utilizing this systematic review of literature supporting the use of music therapy in cancer patients to reduce feelings of anxiety and depression. My specific role is to present this evidence to local medical facilities that the use of therapeutic music provides significant evidence of its benefits in decreasing anxiety and depression. My aim in completing this project was to summarize the collected evidence recommendations and help modify local health care institution guidelines to improve nursing practice.

My motivation for this doctoral project was based on the noted socioeconomic disadvantage of the community served. The goal was to make accessible evidence supported guidelines that is effective, safe, and affordable. As an advanced practice nurse,

my primary role involves integrating best practice options to improve clinical care quality standards.

### **Potential Biases**

To ensure that potential bias is minimized, systemic review study findings were further synthesized with the critical appraisal method, Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA). In addition, Polit & Beck's (2008) hierarchy levels of evidence was utilized to assure that identified literature review criteria goals were met. This systematic meta-analysis review provides sufficient evidence that aligns with the practice- focused question procedural step approach utilizing a standardized methodology to generate clinical practice recommendations (Higgins & Green, 2011).

### **Summary**

This DNP project aim was to update nurse-driven guidelines and to effectively apply therapeutic music use to treat cancer patients exhibiting anxiety and depression. In this section the concepts, models and theories were explored in relation to their relevance to nursing practice. In addition, the local background and context of the identified problem was discussed, as well the role of DNP student.

In section three the collection and analysis of evidence, practice focused question, and sources of evidence will be described. The systematic review of published outcomes and research will be presented with subsequent analysis and synthesis This section

presented sources of evidence-based published research and outcomes, as supported by data analysis and synthesis.

### Section 3: Collection and Analysis of Evidence

#### **Introduction**

This doctoral project has been developed to compile and disseminate evidence obtained from a review of literature to address the problem of determining the effectiveness of applying music therapy as an intervention, and to decrease anxiety and depression in cancer patients. The background and context for conducting this project is that cancer related manifestations such as depression and anxiety should be diagnosed and effectively treated early to prevent more severe psychological and physical complications which can be disabling (Piet, Wurtzen, & Zachariah, 2012). According to Mitchell (2011), major depression and anxiety occurred 15% and 10% respectively in oncology patients, while 38% accounted for varied mood disorders.

The major sections of section 3 include a review of the local problem in relation to a clarification of its alignment to the practice-focused question. Sources of evidence are identified to address and clarify the relationship to project purpose. This section also lists databases, search engines, key search terms, scope of review, and conclude with analysis and synthesis of presented evidence.

### **Practice Focused Question**

The local problem that led to conducting this project was a need to share evidence-based findings with local health care facilities that had identified a gap-in practice care disparities based on limited intervention choices for cancer patients. This approach aligns long-term projected goals, which are to relate these findings to the future treatment advancements of vulnerable health care communities. The practice focused



question for this project is: *Can an examination of the effectiveness of therapeutic music to treat patients with cancer-related anxiety and depression, be helpful in providing an updated evidence-based health care provider interventional tool?*

### **Clarification of Purpose**

The purpose of this systematic review is to present findings from evidence-based studies, and to subsequently analyze and synthesize data to disseminate into nursing practice at local health institutions. This project aligns with the practice-focused question by providing evidence from multiple studies that music therapy as an intervention is effective in decreasing anxiety and depression in oncology settings. This systematic review provides the evidence-based data to support nurse guidelines for the use of music therapy as a safe, cost-effective alternate intervention in quality care management.

### **Clarification of Operational Definitions**

The operational definitions of the systematic review process are the conduction of a methodological, detailed process with an identified research plan. There is an organization of current literature, data coding, findings synthesis, and a final description of the evidence strength for formal practice recommendation (Hanson-Abromeit & Moore, 2014). The key aspects of the doctoral project, are a presentation of evidence of the depression and anxiety phenomenon noted in cancer patients, and the effectiveness of the intervention music therapy.

### **Sources of Evidence**

Sources of evidence used for the systematic review to address the practice-focused question included level I to VII studies published between 2011 and 2021. The incorporation of the various methods of scientific inquiry into the systematic review allows for a thorough approach to understanding the various contributing factors relating to the practice-focused question: whether music therapy is effective in combatting the depression and anxiety that is often a result of a cancer diagnosis.

### **Relationship of Evidence to Purpose**

The review of literature sources includes the databases the Cumulative Index Nursing Allied Health Literature (CINAHL), Cochrane Systematic Review Databases, Healthy People 2020, the Centers for Disease Control (CDC), and Pubmed (Medline). The relationship of this evidence to the purpose described in section 1 is that the databases were selected as peer reviewed. This approach of collecting and analysis offered the appropriate evidence-based data to address the practice-focused question with a focus on professional health care practices. The selection of studies for inclusion in the systematic review occurred in two phases.

The first phase consisted of reading the titles and abstracts of all the studies discovered by the search terms. Review of the titles and abstracts identify studies meeting inclusion criteria. The inclusion criteria for selected research articles were predominantly random controlled studies published in last 10 years involving subjects of ages 16 or older, and the exclusion criteria are no articles published in a language other than English. Phase two consisted of reading the full text of the articles identified as meeting the

inclusion criteria to validate the studies content for inclusion in the systematic review (Pare & Kitsiou, 2016).

The multiple terms that were used for database searchers include depression, anxiety, cancer, therapeutic music, and effectiveness of interventions. The research studies were compiled from English language sources with a scope of articles published between 2011 and 2021 that contained evidence of therapeutic music use and its effectiveness in decreasing anxiety and/or depression.

This collection and analysis of evidence will provide the appropriate way to address the practice focused question. While the synthesized studies are predominantly randomized controlled trials, this review of literature was exhaustive and comprehensive as it included varied research study methods. Most literature reviews that involve therapeutic music to treat anxiety and depression, have previously had limited meta-analysis design structures (Leubner & Hinterberg, 2017).

### **Analysis and Synthesis**

Walden University's Manual for Systematic Review guided the completion of this doctoral project (Walden University, 2019). The 12 steps outlined in the manual provided the guidelines for completion of the systematic review. To evaluate and assess the integrity of systematic review of literature a methodological procedure tool the PRISMA checklist (Selcuk, 2019) and the Grading of Recommendations Assessment Development and Evaluation (GRADE) model approach were used to avoid personal bias. The purpose of selecting PRISMA checklist evidence was to validate that key analysis criteria for sources of evidence are met that align with the practice focused question, approach, and

procedural steps that was to be utilized. This assisted in the performance of a detailed review of essential varied, current research study designs (Leubner & Hinterberg, 2017). Additionally, Polit & Beck's (2008) hierarchy assisted in formulating a clinically significant critical appraisal of the studies based on seven levels of evidence.

Following the identification of applicable studies and analysis of the individual studies, a presentation of the appraisal was incorporated into a table to display the inclusion results. The methodology of the literature review process to support the systematic review findings and a synthesis of the findings is also presented.

## Summary

Section 3 provided a clarification of the DNP project practice focused questions, purpose, and operational definitions. Section 3 also examined the sources of evidence and analyzed published research outcomes. The inclusion criteria were discussed along with the literature analysis plan. In Section 4 the collection and analysis of this evidence presents research findings that addresses the practice-focused question implications to b guide evidence-based clinical practice recommendations. This section also discusses the findings from the published literature, the strengths and limitations of the DNP project, and a dissemination plan.

## Section 4: Findings and Recommendations

### **Introduction**

If not addressed effectively, depression and anxiety in cancer patients is a common debilitating manifestation that can negatively affect the quality of life of these patients (Jasemi et al., 2016; Dash, 2017; Niedzwiedz et al., 2019). A gap in practice is the limited available reviews of literature supporting the clinical use of therapeutic music as an interventional tool to decrease anxiety and depression in oncology patients (Pittman et al., 2018; Spilioti, 2017). The lack of holistic training in identifying and utilizing non-pharmacological interventions such as therapeutic music likely attributes to this societal problem (Jasemi et al., 2016; Wang et al., 2018). The practice-focused question of this DNP project is: *Can a systematic review of the literature examining the effectiveness of therapeutic music to treat patients with cancer-related anxiety and depression help provide an updated evidence-based health care provider interventional tool?*

The purpose of formulating this Doctoral project was to compile and synthesize evidence of the effectiveness of an alternate treatment modality such as therapeutic music. This project's developed an overarching framework to aid in implementing a protocol to incorporate therapeutic music as an interventional tool guideline in health care facilities to manage better depression and anxiety in cancer patients (Boehm et al., 2016; Domingo et al., 2015).

## **Summary of Sources of Evidence**

This section contains the systematic review of literature findings and recommendations derived from primary and secondary peer-reviewed research. The evidence obtained utilized the analytical appraisal method, Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), which served as a guide for examining and synthesizing this literature review. PRISMA is the preferred guideline approach to conducting a systematic review and facilitating a comprehensive and structured reporting of evidence. PRISMA consists of a 27-item checklist with systematic review recommendations regarding: title, abstract, introduction, methods, results presentation, screening, inclusion, and exclusion criteria. The PRISMA flow diagram (refer to Figure 1) describes article identification, screening, and eligibility based on inclusion and exclusion criteria (Moher et al., 2009).

## **Inclusion Criteria**

Clinically supporting literature was selected containing the following Boolean search terms: *cancer patients*, *depression*, *anxiety*, *therapeutic music*, and *effectiveness*. Analysis of the studies chosen aided the selection of articles. The initial search displayed 195 studies, and after removing duplicates, 150 articles remained. With the application of inclusion and exclusion criteria, sources of evidence narrowed down from 30 research articles to 20 that remained to be analyzed and synthesized using PRISMA (Refer to Figure 1). The databases selected contained relevant studies retrieved from the following: Medline Plus CINAHL, the Cochrane Database of Systematic Reviews, PubMed, and the

Google Scholar base, which were all obtained from the Walden University electronic library.

The inclusion articles analyzed multiple studies in this literature review that focused on providing strong evidence of the effectiveness of incorporating music therapy to treat cancer patients that exhibit depression and anxiety. The articles selected shared the following themes: Therapeutic music as an intervention to treat depression , anxiety, the demographic sample population of cancer patients, and the outcome effectiveness of therapeutic music interventions (Boehm et al., 2014; Bro et al., 2018; Jasemi et al., 2016; Lima et al., 2020; Domingo et al., 2015).

This systematic review of literature examined the effectiveness of therapeutic music use in cancer patients exhibiting depression and anxiety. After sampling a combination of search words, a total of 195 articles remained. Articles older than ten years in languages other than English, irrelevant studies based on reviewed abstracts did not meet exclusion criteria. After identified duplicates, 20 studies remained that met the inclusion criteria (Refer to Figure 1).

As listed in Appendix A, the selected inclusion articles in the literature review for a critical appraisal is a matrix of evidence synthesized for strategical analysis. The systematic review of the literature derives from primarily peer-reviewed studies without gender or geographical limitations. This matrix table summarized: author and publication year, study design, research hypothesis, population and methodology, analysis results,



Polit & Beck's level of evidence, future research, data analysis, future research and clinical implications, and GRADE study strength evaluation. The purpose of this review was to delineate study similarities and differences to examine clinical implications more effectively (Pussegoda et al., 2017).

This systematic review table of evidence was analyzed using Polit & Beck's (2008) hierarchical levels of evidence, Levels I-VI, for systematic literature appraisal. This DNP project utilized PRISMA synthesis recommendations to preserve the accuracy of the review of the literature (Sarkis- Onofre, Catala- Lopez, Aromataris, et al., 2021). Systematic reviews are advantageous in presenting evidence evaluating the benefits and limitations of studies to guide and improve informed patient-focused clinical guidelines (Pussegoda et al., 2017).

### **Exclusion Criteria**

The exclusion criteria for this systematic review included cancer patients below 16 years of age. Articles published in languages other than the English language and older than ten years did not qualify. Excluded studies failed to contain information pertinent to the problem-focused question, and overall the project excluded 130 articles.

A Dash (2017) case study that involved only 1 participant, a cancer patient that received ten music therapy interventions, was excluded as a limited study with a small sample size. The Niedzwiedz et al. (2019) synthesis of systematic reviews examined depression and anxiety in cancer patients but failed to include music therapy as an

intervention. The Tang et al. (2020) meta-analysis of the effects of music therapy on depression became excluded as the study sample did not include cancer patients. A study on the impacts of music therapy to evaluate mental health outcomes failed to address cancer patients with a mixture of adult and participants younger than 16 years of age (Wesseldijk et al., 2019).

To assure the validity and reliability of studies analyzed and synthesized, I consulted with the DNP chairpersons and the DNP mentor. The selected research studies were organized into Appendix A.

### **Findings and implications**

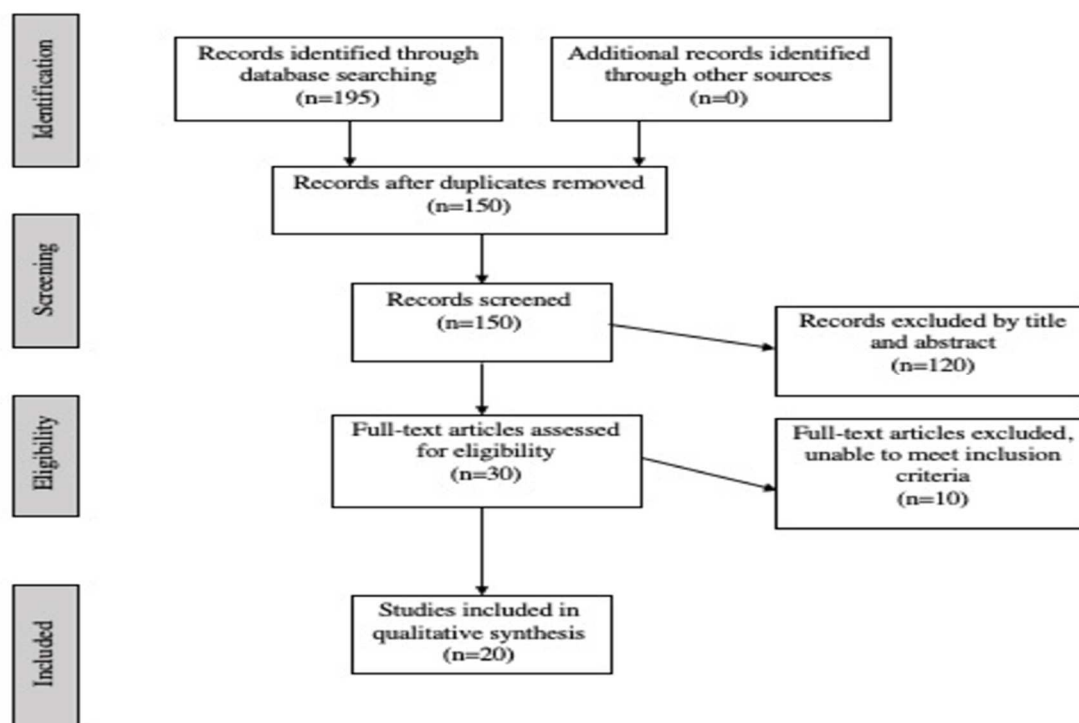
Several systematic literature reviews recommended that patients with cancer receive an assessment for depression and anxiety manifestations. Researchers also suggested that providers should clinically implement non-pharmacological music interventions with proven efficacy into practice guidelines (Jasemi et al., 2016. Domingo et al., 2015). The guidelines aim to provide oncologists and primary care providers with a framework on how this alternative treatment approach can decrease mortality rates associated with improperly treated mood disorders in cancer patients.

This systematic review of the DNP project literature resulted in 195 articles, with 150 excluded. The exclusion reasons included limited abstract access, duplications,

research older than ten years, and lack of study relevance. After screening the remaining studies, this resulted in 30 relevant articles. The final screening process yielded (n=20) articles meeting the inclusion/exclusion criteria (refer to Figure 1), of which 65% were RCT studies. The remaining studies were five systematic reviews, three non-randomized controlled trials that included one quasi-experimental study, and a cohort retrospective study. Using PRISMA analyzed all the selected articles for appropriateness for literature review reporting. The PRISMA checklist below improved study clarity and reporting transparency (Selcuk, 2019).

**Figure 1**

PRISMA Flow Diagram



Note. PRISMA (preferred reporting items for systematic reviews and meta-analysis).

This literature review selected articles were analyzed and synthesized for study quality strength utilizing the GRADE model approach. The purpose of appraising the articles with the GRADE model was to analyze study inconsistencies, bias risk, evidence certainty, efficiency and the validity of presented levels of evidence. The GRADE system provides an evidence-based summary and systematic approach to assist in formulating practice guidelines and recommendations (Brozec et al., 2020).

The level of evidence for eight of 20 selected articles demonstrated the highest quality of evidence. The Alcantara et al. (2018) randomized controlled trial provided a strong correlation between decreased depression and improved quality of life in 164 patients with breast and gynecological cancer. This study yielded and provided essential data that the most accurate positive effect measurement was similar to the estimated positive effect outcome derived from utilizing the music therapy intervention.

Another high-quality study was the Wang et al. (2018) systematic review that included 30 randomized controlled trials involving breast cancer patients. Presented research data displayed high precision in concluding a reduction in depression and anxiety supported multiple studies incorporated mood scales with demonstrated direct significant behavioral improvement outcomes. The increased evidence strength consistency was apparent in the most of the 30 selected studies in this systematic review.

The Jasemi et al. (2016), Quasi-experimental study design demonstrated a significant improvement in depression and anxiety diminishment. The combination of a mood scale and high sensitivity survey significantly increased the validity and reliability of the

study. Lima et al. (2020), and Valero et al. (2021) randomized controlled studies also met the criteria for high-quality study ratings. Meeting these criteria was based on consistently balanced scale measurements of socioeconomic data in correlation with clearly presented positive improvements in cancer related symptoms as evidenced by positive changes in quality of life, depression, and anxiety.

The final three high-quality studies: Bradt (2016), Bro et al. (2018), and Zhou et al. (2011), demonstrated notable clinical applicability. They concluded based on the solid presentation and relevance of outcome data implementation, supporting multiple mood scale construct validity, and clinical relative evidence credibility while maintaining minimal bias to effectively meet GRADE appraisal guidelines (Brozec et al., 2021).

The other twelve articles displayed a moderate quality of evidence. The Boehm et al. (2014) article had moderate quality of evidence as a systematic review by presenting a reasonable estimate in effect size. They included 13 trials consisting of 606 breast cancer patients demonstrating the positive effects of therapeutic music in decreasing depression and anxiety in cancer patients. Despite the actual results being close to the estimated effect of substantially decreased depression and anxiety, the identified weakness is this article was data inconsistency and failure of the researchers to provide sufficient evidence validating quality of life improvement with the music therapy intervention.

The Domingo et al. (2015), non-randomized control trial was another moderate quality study with 68 admitted advanced cancer patients that provided strong a substantial confidence interval of presented evidence in this study over two years. This trial emphasized a methodological study design with a significant depth of evidence supporting the

alleviation of both anxiety and depression with music therapy use. The only weakness is that the authors failed to demonstrate a low risk for bias with the selected study design. Evidence was affected by a lack of subject randomization that indirectly included standard scale measurement correlation with secondary outcomes.

O'Sheen et al (2021), Ramirez et al. (2018), and Rosetti et al. (2017), and Lin et al. (2011) are all randomized controlled trials that had moderate comparative statistical reliability and demonstrated minimal bias with direct comparison of baseline measurements. This observation applies to both treatment and control groups. There was a lack of cancer study participant diversity and failed to show the quality of life differences between study groups decreasing treatment data outcome relativity and validity.

The Chen et al. (2018) quasi-experimental and Chou (2020) randomized controlled double-blind studies involved female cancer patients. These study designs reduced the influence of immeasurable variables to decrease bias of treatment effect data and demonstrated strong causality and validity evidence. Their limitations were that findings derived from indirect observations limiting clinical applicability.

The Lin et al. (2011), Mondanaro et al. (2020), and O'Steen et al. (2021) randomized controlled trials (RCT) were all hospital based, demonstrating strong evidence of mood improvement and quality of life improvements in cancer patients. Studies had limited lengths of study sessions varying from 1 to 3 total cycles of chemotherapy, minimizing study effect data validity.

The final two moderate quality of evidence studies are Spilioti et al. (2017) and the Yates & Silverman (2015) studies containing levels of treatment efficacy and

findings applicability limitations by subject size. Spilioti et al. (2017) Non-RCT had significant positive mood improvements based on diverse sociodemographic and multiple music types. The quality of evidence was limited by small number of participants with different types of cancer who received different chemotherapy but indirectly provided evidence of mood improvement. The Yates & Silverman (2015) RCT study was limited to 22 participants and various cancers, but mood scale data was consistent with decreased mood improvement. Of the 20 selected, analyzed articles, no selected study demonstrated a low quality of evidence as the overall data recommendations estimated to actual effects outweigh the study limitations.

### **Polit and Beck Levels of Evidence: I-VII**

In this DNP project, systematic reviews were included and systematically analyzed according to Polit & Beck's (2008) hierarchy of 7 levels of evidence arranged into a ranking pyramid based on study strengths and types of research design. The top of the pyramid is Level I evidence, comprised of systematic reviews meta-analysis. It is the most reliable standard of evidence-based studies as the highest form of evidence for clinical decision-making. Systematic reviews summarize multiple studies and provide relevant knowledge (Selcuk, 2019).

Polit & Beck's (2008) Level II evidence comprises single random controlled and single non-randomized controlled trials considered of moderate strength and quality. Random- controlled trials (RCT) seek to reduce sources of bias by randomly allocating study participants in comparison to the control group to provide evidence of intervention

effectiveness. Non-randomized controlled trials (Non-RCT) are non-blinded and provide less powerful evidence than RCT studies.

Polit & Beck's (2008) Level III-Level VI is at the middle of Polit & Beck's pyramid base. Level III are systematic reviews of observational studies or Quasi-experimental considered to be of lower strength and quality. As the pyramid moves closer to the bottom, the strength and quality of evidence are of weaker strength and quality. Level IV is a single correlational study, and Level V is composed of systematic reviews of qualitative studies. Level VI are single descriptive qualitative studies. The final Level VII is expert opinions.

### **Polit & Beck Level I Evidence**

Boehm et al. (2014) performed a systematic review and meta-analysis that examined predominantly RCT and non-RCT studies consistent with Polit and Beck's (2008) level I evidence study design. Boehm et al. (2014) conducted a systematic review of thirteen clinical trials involving breast cancer patients with music therapy as the intervention. The researchers used the Jahad mood scale (standardized mean difference of -1.10; 95%), demonstrating a positive effect on anxiety but insufficient evidence of decreased depression or quality of life improvement. A limitation of this systematic review was that there were insufficient numbers of studies per outcome.

In the second Level, I evidence systematic review, Bro et al. (2018) examined the outcomes of music therapy in multiple conditions, an analysis that included 18 RCT and non-RCT studies focused on varied cancer patients. Similar to the Boehm et al. (2014)



study, there was a noted reduction in anxiety in 50% of participants, but no evidence of depression improved outcome analysis after music therapy intervention.

The third Level I evidence systematic review and meta-analysis, Zhang et al. (2012), reviewed 32 RCT studies involving music interventions with cancer patients to evaluate behavioral and physical outcomes. Positive effects on anxiety reduction were consistent with Bro (2018), Boehm et al. (2014), and Chou (2020) systematic reviews in 7 high-quality studies assessed with the Self-rating anxiety scale. They also concluded in 8 moderate quality studies based on two moderate quality scales, the Hamilton anxiety scale, and the Spielberger State-Trait Anxiety Inventory scale, demonstrated decreased anxiety. Unlike the Boehm et al. (2014) systematic review studies that had no evidence of depression improvement with music intervention, the Zhang et al. (2012) systematic review and meta-analysis demonstrated that therapeutic music improved depression in cancer patients in 7 moderate -quality studies.

Based on Polit and Beck's (2008) Level I classification of evidence, the Wang, Fan, & Tan (2018) systematic review and analysis of 30 RCTs is the fourth evidence level. This review involved breast cancer patients receiving music therapy using the Jahad scale similar to Boehm et al. (2014) and the Hamilton Anxiety-Rating Scales for anxiety in 2 trials with 200 participants like Zhang et al. (2012) systematic reviews. In the Wang et al. (2018) systematic review, there was significant evidence of the positive benefits of anxiety improvement and decreased depression symptoms similar to the Zhang et al. (2017) systematic review.

The fifth Polit & Beck's (2008) final Level I evidence source is the Kohler et al. (2020) systematic review and meta-analysis of 21 RCT and non-RCTs which had promising results of improved depression and anxiety in cancer patients. Despite an analysis of a smaller volume of studies than the other systematic reviews, which coincided with the positive outcomes verified by Wang et al. (2018) and Zhang et al. (2017).

### **Polit & Beck: Level of Evidence II**

Polit and Beck's (2008) hierarchy level II of evidence includes RCTs and non-RCTs. Twelve studies that met inclusion criteria for systematic review were RCT trials concluding similar music therapy interventions demonstrating decreased depression and anxiety in cancer patients. This was evidenced by improved mood scale scoring and a shorter length of stay. These 12 RCT studies include The Alcantara-Silva et al. (2018), Bradt & et al. (2016); Chen et al. (2017); Chou (2020); Lima et al. (2020); Lin et al. (2011); O'Callaghan et al. (2012); Rosetti et al. (2014); Spilioti & Gala (2017); Toole et al. (2017); Valero-Cantero (2020); and Widiyono, Setiranin, & Eflendy (2019) all classified as Level II evidence (Polit & Beck, 2008).

The 12 studies that met inclusion criteria for systematic review were RCT trials that concluded similar therapeutic intervention decreased depression and anxiety findings, as evidenced by improved mood scale scoring and shorter length of stay. In an RCT, Alcantara-Silva et al. (2018) performed an intervention of music listening with ten sessions of 35 minutes each. They noted a decrease in depression and an increase in quality of life in gynecological cancer patients. Chen et al. (2018) conducted an RCT trial

of breast cancer patients involving eight music imagery sessions lasting 60 minutes each and had strong evidence of decreased depression. The other ten studies that met inclusion criteria for systematic review were RCT trials that concluded that similar therapeutic intervention decreased depression and anxiety findings as evidenced by improved mood scale scoring and shorter length of stay (Refer to Appendix A)

Several of these RCT studies demonstrated depression reduction with quality of life improvement: Alcantara-Silva et al. (2018); Chen et al. (2018). Other RCT studies had findings of significant anxiety reduction: Bradt et al. (2016) Lin et al. (2018); Rosetti, et al. (2017). A double-blinded RCT study conducted by Chou (2020) with 60 participants with cancer that diminished anxiety with increased music therapy time in the experimental group ( $p < .05$ ) with maximum anxiety improvement after 24 weeks found similar results. Unfortunately, within that same study, there were no significant positive effects observed in improving depression.

The first non-RCT is the Jasemi et al. (2016) Level III, a quasi-experimental study with 60 participants each receiving 20 minutes of therapeutic music per day over a 3-day course revealing a significant decrease in depression in cancer patients. The majority of subjects had stage III cancers and demonstrated a substantial reduction of anxiety and depression scores ( $p < 0.001$ ) in the music intervention group compared to the control group with ( $p = 0.67$ ). While the researchers admit the sample size was small, its effectiveness in decreasing depression and anxiety is highly recommended for cancer patients (Jasemi et al., 2016).

The final non-RCT is the Domingo et al. (2015), Polit & Beck (2008) Level IV study in a palliative unit with 68 advanced terminal cancer patients. The study intervention was composed of 4 sessions of music therapy in an 8-10-day period between 2011 and 2012. Thirty-four participants received therapeutic music, and the other half that comprised the control group received standard care. The participants that received four music interventions, each lasting 30-40 minutes, utilized the 14-item questionnaire Hospital Anxiety and Depression Scale (HADS). The researchers concluded that anxiety and depression after music therapy intervention yielded significantly lower depression and anxiety scores.

Similar to Zhang et al. (2017) and Wang et al. (2018) findings, Domingo et al. (2015) also demonstrated improved depression and anxiety. Their study had limitations and risk for bias secondary to lack of randomization. It was a descriptive study that had marked depth with increased reliability of findings and fewer participants. No additional study designs met Polit & Beck's (2008) levels VI and VII of evidence.

### **Analysis & Synthesis Findings Summary**

Analysis and synthesis examined RCT studies predominantly. The findings from analysis and synthesis indicated that while therapeutic music is a possible non-invasive alternative for treating mood disorders, the amount of recent supporting literature of long-term positive effects is minimal (Lima et al., 2020; Li, 2020). Additional clinical priority is needed to prevent co-morbid anxiety and depression in oncology patients (Mondanaro, 2021; Zhou, 2015).

In the Jasemi et al. (2016) study, the researchers noted that there was a strong correlation in the exacerbated manifestation of mood disorders, such as anxiety and depression, arising in cancer patients ( $p < 0.001$ ,  $r = 0.37$ ). Similar findings were established by Boehm et al. (2014), attributing displayed mood disorders as secondary to cancer prognosis, potential mortality, side effects of invasive treatment regimens, and personal life disruption. The researcher's findings indicated that music therapy positively improved patients' anxiety, standard mean difference: -1.10, with a 95% confidence interval.

In a randomized controlled trial (RCT), Alcantara-Silva et al. (2018) performed an intervention of music listening with ten sessions of 35 minutes each and noted a decrease in depression and increase in quality of life in gynecological cancer patients. Chen et al. (2018) conducted an RCT trial of breast cancer patients involving eight music imagery sessions lasting 60 minutes each and showed strong evidence of decreased depression. Results were significant for a trial outcome index of ( $p = .011$ ) Fact-F and Fact-G ( $p = .005$ ) in music therapy group (MTG) as compared to control group.

Domingo et al. (2015) clinical trial yielded significant satisfaction post music therapy based on Likert scale (0-4) in sessions 1-3 score was 3.8 and in final session 3.9 higher than control group. The researchers have pointed out that medicinal treatment is insufficient to treat depression and anxiety in cancer patients. Alternative cost-effective non-pharmacological interventions such as music therapy should be implemented to

improve emotional comfort (Jasemi et al., 2016; Domingo et al., 2015; Rossetti et al., 2021). Music therapy as a clinical intervention in cancer patients positively impacts mood (Lin, 2020., 2018; Spioloti, 2017., Yates, 2015). If mood disorders are left untreated, cancer complications such as decreased quality of life and cancer and behavioral health treatment-adherence can result (Jasemi et al., 2016; Zhou et al., 2011; Boehm et al., 2018).

Music therapy is considered an effective non-pharmacological intervention that works effectively in patients with depression and anxiety (Jasemi et al., 2016). The positive benefit of music therapy in improving mood disorders as a result of reducing stress, increasing motivation, and socialization is supported by multiple researchers (Bro et al., 2018; Chou, 2020; Lin et al, 2011; Jasemi et al., 2016; and Valero-Cantero, 2020).

### **Limitations**

While most studies (n=14) demonstrated substantial depression and anxiety symptom improvement in cancer patients after music therapy intervention, other studies such as Jasemi et al. (2016) concluded insufficient evidence of significant mood improvement. Ramirez et al. (2018) and Yates & Silverman (2015) noted the unanticipated limitations. They assessed interventions with patients that attended at least one music therapy session and concluded that there was evidence of short-term positive effects but no proven long-term benefits of this intervention.

### **Individual and Institutional Implications**

The implications resulting from these positive outcomes in terms of the individual patient, community, and institutional and system policy are that multiple studies demonstrated music therapy effectiveness in decreasing depression and anxiety in cancer patients. Music therapy should be considered an adjunct treatment in individual and institutional policies. While 20 studies were evaluated in a systematic review of literature, study participants varied on types of cancer. The potential impact of these findings is that while positive benefits were identified, there were variations in study research designs, the intensity and length of music therapy interventions limited consistent effectiveness findings (Yates, 2015; Wang et al., 2018).

### **Positive Social Change Implications**

The potential implication to positive social change is that this systematic review of literature supported the necessity to incorporate therapeutic music as an adjunct therapy into clinical practice to guide EBP guidelines for nurses and other disciplines. This literature review examined and synthesized available findings of the therapeutic effects of music therapy in decreasing depression and anxiety in cancer patients. The findings of this systematic review support the necessity for further examination of alternate holistic treatment adjuncts such as therapeutic music to facilitate positive social change (Jasemi et al., 2016).

### **Recommendations**

Based on the findings discussed, the proposed solution to address the gap-in-practice after analysis and synthesis of current evidence, is to apply these findings to other chronic conditions. In the twenty studies evaluated literature review, study participants varied on types of cancer, stages of cancer, length of music intervention therapy, anxiety and depression were not always simultaneously evaluated in all studies.

The potential impact of these findings is that identified positive benefits were variations in study research designs, the length of music therapy intervention, and most researchers recommended additional research (Jasemi et al., 2016, Wang et al., 2018). Other recommendations from this systematic review is that future studies have prolonged music therapy intervention to address the effectiveness of decreasing both anxiety and depression.

### **Strength and Limitations of the DNP Project**

The strength of the doctoral project was to perform a rigorous low-cost systematic review of literature that identified and summarized the relevant evidence derived from multiple research studies. This selected project method allowed for no direct use of human subjects, avoiding the risk of subject harm. This literature review led to a strategic research question search of relevant studies meeting an outlined criterion and detailed analysis of bias reduction. Studies were selected using recommendations from the PRISMA (2009) systematic method.



The limitations of the doctoral project as a systematic review was the selected conduction format. It was very time-consuming to accumulate the research articles that met outlined criteria. As time lapsed, some of the articles became outdated and had to be replaced, further delaying project completion.

Recommendations for future projects to address the gaps-in-practice is for my peers to explore similar topics and apply similar methods based on multiple studies analyzed as further research is needed. There is a need for more comprehensive clinical guideline development, and the most effective methods for therapeutic music use in varied clinical settings.

### **Summary**

Failure to treat depression and anxiety manifestations in cancer patients can lead to detrimental complications such as decreased quality of life and increased mortality (Jasemi et al., 2016; Domingo et al., 2015; Alcantara et al., 2018). An extensive review of literature analysis and synthesis of evidence-supported study data was the focus of this DNP project. The majority of studies based on GRADE and Polit & Beck's (2008) quality of evidence criteria were either of moderate or high-level qualities of evidence. The identified limitations of quality of evidence were associated with sample size, study designs, and study length of time.

Section 5 includes the systematic review plan that would be appropriate to disseminate the DNP project findings to the venues or settings such as cancer treatment units, to the broader nursing profession, and to behavioral health facilities that service

cancer patients. Section 5 will also contain an analysis of self with a reflection of challenges faced in completing the project and conclude with a summary of DNP project future goals.

### **Section 5: Dissemination Plan**

The dissemination plan for this DNP project involved obtaining current research supporting the effectiveness of therapeutic music use in decreasing anxiety and depression in cancer patients. This DNP project aims to share collected evidence with local institutions experiencing problems in health care practices managing the identified population. This dissemination plan seeks to create clinical guidelines based on evidence-based practice findings to improve the quality of care and positively improve outcomes of oncology patients with depression and anxiety.

Effectively disseminating these project findings into clinical practice is based on multiple supporting research data obtained from this literature review. It is vital to implement and incorporate supporting evidence to guide institutional protocols. Evidence-based care can recommend the appropriate integration from this systematic review of literature's research findings into health care policies. This integration can help modify practice patterns adopted by the target audience, who are the stakeholders (Derman & Jaegar, 2018). The identified stakeholders are oncology and palliative care nurses, behavioral health care professionals, general advanced practice nurses, physicians, and patients.

The most effective way to disseminate the findings derived from this literature review is to provide recent evidence to aid venues such as oncology and general internal medicine health care institutions with developing practice guidelines and protocols for therapeutic music as an interventional clinical tool. The limited awareness of adequate non-pharmacological interventions such as music therapy among health care providers

was the stimulus for reviewing literature examining therapeutic music effectiveness (Alcantara-Silva et al., 2018; Wang et al., 2018). An improvement in safer training educational resources can facilitate healthier behavioral responses in cancer-afflicted patients.

The Cochrane Collaboration (2016) presented systematic reviews of randomized controlled studies with 1028 cancer participants, including 13 RCTs. Assessed available evidence demonstrating anxiety improvement outcomes with the Spielberger State Anxiety Index Scale with unit scores from 0-40. Post therapeutic music intervention, the mean anxiety was 8.54 units lower than in the control group. The mean depression score for the intervention group was 0.40 standard deviation less than in the control group, involving 723 participants involving 7 RCTs.

### **Analysis of Self**

During this DNP project's development and final elements, the knowledge I acquired as an advanced care provider promoted improved health care outcomes for the identified population utilizing the most current evidence. A scholar will aspire to create an evidence-based clinical practice model and guidelines adapted in multiple practice settings based on literature review.

This project experience further developed critical thinking skills to enhance personal leadership abilities in advanced nursing practice. The aim is to apply these findings to clinical institutions servicing cancer patients across varied health care local institutions with the hope of eventual national and global dissemination. A significant skill obtained was locating, analyzing, and synthesizing current research to present the findings in this systematic review of the literature.

My long-term professional goal is to help develop additional EBP projects in collaboration with other advanced practice nurses within my current practice facility and reach out to other interested professionals in similar settings. This goal aims to propel additional research inquiry to promote optimal patient care guidelines to implement therapeutic music interventions for cancer patients. It is the hope that other DNP students will conduct additional systematic reviews and DNP-prepared scholars to analyze further and synthesize other medical conditions that can benefit from therapeutic music aside from cancer patients.

Another goal is to mentor for DNP students to share acquired knowledge and experiences to guide additional research projects that benefit identified stakeholders. I hope to instill confidence and leadership skills in future doctoral candidates to improve patient outcomes and organizational quality care goal obtainment.

### **Completion of Project**

The completion of this project left me with a sense of professional fulfillment and perseverance. While attending Walden University, I acquired many leadership skills that empowered me to reach this stage of professional growth, and I hope to motivate other students to follow suit.

During this DNP project in 2017- 2019, the challenges encountered were that I faced personal problems with my son having health care complications that required multiple hospitalizations. Covid 19 brought additional challenges of an increased employment site workload during the 2020 global pandemic. When Covid 19 reached the United States, this limited the time to complete this doctoral project sooner than initially

anticipated. As this pandemic consumed the world, like many other health care providers, faced it with the vital responsibility of maintaining patients safe and preventing deaths in an urban high-risk patient population.

The solution and insight gained in this scholarly journal helped to learn how to be resilient despite facing obstacles to persevere. I hope that completing this DNP project inspires other DNP scholars and DNP-prepared nurses to conduct similar papers published to help develop more EBP clinical practice guidelines to incorporate therapeutic music in varied settings.

### **Summary**

In conclusion, cancer patients face emotional challenges such as depression and cancer, and it is crucial that health care workers obtain additional education on non-pharmacological treatment interventions such as therapeutic music as an adjunct treatment to prevent complications (Jasemi et al, 2016). Developed this DNP project to share available evidence from a systematic review of the literature examining research from the last ten years. The goal was to demonstrate the efficacy of this alternative treatment effectiveness in improving the health care outcomes of cancer patients.

Cancer is a complex condition to manage, with potential complications if symptoms are not effectively treated (Spilioti, 2017), developed this project to increase the knowledge base of health care professionals treating the identified population. The aim of providing evidence of music therapy efficacy, in decreasing depression and

anxiety, was to assist health care facilities in developing clinical guidelines and protocols promoting the use of this intervention to increase patient quality of care. My aspiration is that this project will eventually be published in a scholarly journal to disseminate this evidence globally to improve implemented music therapy practice guidelines for cancer patients experiencing depression and anxiety.

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## Appendix A: Review of Literature Matrix

Author(s) Publication Date	Study Design	Research Hy- pothesis	Population and Methodol- ogy	Analysis/ Results	Study Find- ings	Addi- tional Re- search and Prac- tice Impli- ca- tions	GRADE Evalua- tion
Alcantara- Silva, T., De- Freitas, N., De- Paula-Junior, W., DaSilva, D., Machado, G., et al. (2018). Music therapy reduces radiotherapy induced fatigue in patients with	RCT	Approxi- mately 41% of newly diag- nosed female cancer patients presented with breast or gy- necological cancer in 2012. The im- plementation of music ther- apy in cancer	164 subjects with breast and gynecol- ogical can- cers with mean age 52.90 in an outpatient hospital on- cology unit. Subjects had average of 10 music	FACT-F results were sig- nificant for the MTG with a Trial Outcome Index (P=.011), FACT-G (P=.005). and	Study con- cluded that there was sub- stantial evi- dence of de- creased	More struc- tured re- search stud- ies are neede d to suffi- cientl y	Re- search- ers pro- vided substan- tial data that the best true positive effect meas- urement was



<p>breast or gynecological cancer: A randomized trial. <i>Integrated Cancer Therapy</i>, 17 (3), 628-635</p>		<p>treatment is indicated to treat anxiety, depression, and fatigue. Can music therapy reduce radiotherapy induced depression, and increase quality of life?</p>	<p>therapy session each (30-40 minutes long) while receiving radiotherapy. The RCT group and Music therapy group were assessed for fatigue, quality of life, and symptoms of depression the Functional Assessment of Cancer Therapy: Fatigue</p>	<p>FACT-F (P=.001) compared with control group.</p>	<p>depression based on Beck Depression scale data</p>	<p>evaluate how fatigue correlates with emotional manifestations.</p>	<p>similar to estimate positive effect derived from utilizing music therapy intervention. GRADE quality of Evidence: High evidence of recommendation, Strong.</p>
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			(FACT-F) version 4, Functional Assessment of Cancer Therapy - General (FACT-G) version 4, and Beck Depression Inventory 3 in 1 <sup>st</sup> week of radiother- apy, on week of in- termediary phase and in final week of radiother- apy.				
Boehm, K., Cramer, H.,	Sys- tematic review	Breast cancer diagnosis may	Meta-analy- sis per- formed of	Data pooled	Review con- cluded	There are	Alt- hough

Staroszinski, T., Ostermann, T. (2014). Arts therapies for anxiety, and quality in breast cancer patients: A systematic review and meta-analysis. <i>Evidence-based Complementary and Alternative Medicine</i> , Vol 2014. doi:10.1155/2014/103297	including RCTs, Quasi-randomized and controlled clinical trials	result in devastating emotional, physical, and social suffering. Many cancer patients are seeking complementary and alternative therapies to decrease symptoms and improve quality of life. Art therapy includes music, and movement. Will a systematic review provide current evidence supporting the use of	13 trials involving 606 study participants utilizing standardized mean differences. Arts therapies comprise music therapy, dance, and art therapy methodologically from poor to high quality with a Jahad scale	with a fixed effects model suggested that arts therapy positively improved patients anxiety (standardized mean difference: -1.10; 95% confidence interval: -1.40 to -0.80) with insufficient supporting data	that music arts intervention provided sufficient evidence of efficacy in improving anxiety in breast cancer patient. The efficacy	limited empirical studies evaluating the effects of art therapy on psychiatric parameters after breast cancer diagnosis.	researchers analyzed varied studies there was a small number of studies per outcome limiting applicability and validity of evidence. GRADE Quality of Evidence:
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		arts therapy to improve psychological outcomes?		yielded for decreased effects on depression and improved quality of life.	of music interventions in 3 of the studies with similar populations yielded differed outcomes.		Moderate strength of recommendations
Bradt, J., Dileo, C., Grocke, D., Magill, L. (2016). Music interventions for improving psychological and physical outcomes in	A systematic review of RCTs and Quasi-ran-	Cancer diagnosis may lead to social, emotional, and physical distress. Can assessing and comparing the	The authors excluded studies that included participants having biopsy or aspiration diagnostic	The results reported an average anxiety reduction of 8.54 units (95% con-	Data con-cluded a moderate to strong positive effect on	Re-sults of single studies provide	Despite moderate to strong evidence of anxiety and depression

<p>cancer patients. <i>Cochrane Data Base Systematic Review</i>, doi:10.1002/14651858</p>	<p>dom- inized trials</p>	<p>effects of mu- sic therapy and music medicine in- terventions improve psy- chological and physical out- comes in can- cer patients?</p>	<p>procedures that resulted in 52 trials with 3731 participants. Two review authors re- trieved the data and data was presented as mean differ- ences and standardized mean differ- ences com- paring post- test scores. In instances of signifi- cant differ- ences in baseline, change</p>	<p>confidence in- terval (CL) - 12.04 to - 5.05, P &lt; 0.0001) in Spiel- berger State Anx- iety In- ventory (STAi-S) scale (range 20- 80) and - 0.71 standard- ized units (13 stud- ies, 1028 subjects. 95% CI- 0.98 to - 0.43, P &lt;</p>	<p>both depres- sion and anxi- ety.</p>	<p>evid- ence that thera- peutic music de- crease s re- cov- ery time, but more re- search is needed to better vali- date these</p>	<p>reduc- tion the majority of stud- ies ana- lyzed by authors had high risk of bias, re- sults need to be re- viewed with caution. GRADE Quality of Evi- dence moder- ate</p>
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			scores were used.	0.00001) and on other anxiety scales moderate to strong effect. There was a moderate strong depression impact (7 studies with 723 participants) Standard mean difference: -0.40, 95% CI		outcomes	
Bro, M., Jespersen, K., Hansen, J.,	Systematic review	Music therapy may offer an affordable	Meta-analysis included	The results concluded	The majority of	Further	There was a lack of

<p>Vaust, P., Abilgaard, N., Gram, J., Johansen, C. (2018). Kind of blue: A systematic review and meta-analysis of music interventions in cancer treatment. <i>Psychooncology</i>, 27(2), 386-400. Doi:10.1002/po.n.4470</p>	<p>with RCTs</p>	<p>copied strategy for minimizing cancer patient symptoms. Can the conduction of a systematic review and meta-analysis identify the psychological and physical effects of therapeutic music use in cancer patients?</p>	<p>only quantitative RCT studies (N=20) after 2 systematic searches using Review Manager (Version 5.3)</p>	<p>that music reduced anxiety (SMD-0.80 [95% CI, -1.35 to -0.25], and improved mood (SMD -0.55 [95% CI. -0.98 to -0.13]. The most effective mode of music intervention was passive self-selected recorder music in</p>	<p>studies demonstrated evidence that music therapy can be utilized as tool to reduce anxiety and improve mood.</p>	<p>studies need to be analyzed as there were methodological limitations to reach firm conclusions. In clinical</p>	<p>participant heterogeneity mildly decreasing general applicability and validity of findings but selection and presentation of evidence was clearly presented.</p>
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				single session.		settings passive music choices may be beneficial in mood improvement.	GRADE High level of Recommendation- Strong
Chen, S., Chou, C., Chang, H., Lin, M. (2018). Comparison RCT of group vs. self-directed music interventions to reduce chemotherapy	Quasi Experimental	Women become distressed upon receiving breast cancer diagnosis resulting in psychological dis-	Study with 60 (52 completed the study) randomly assigned 20 yr. and older women with	Results demonstrated that group music group had a significant rapid reduction	Study finding revealed evidence that music therapy	Further research is needed to examine	The strength of study was that the inclusion of group appraisal



<p>related distress and cognitive appraisal: An exploratory story. <i>Supportive Care in cancer</i>, 26 (2), 461-469</p>		<p>tress that includes depression and anxiety feelings. Can group and self-directed music interventions reduce anxiety and depression, and improve cognitive appraisal in women with breast cancer?</p>	<p>breast cancer receiving chemotherapy into 3 groups: group music intervention, self-directed music intervention, or a control group. Participant mood levels were assessed with HAD scale and Mini-Mental adjustment scales before, after 8-week intervention, and</p>	<p>in depression (<math>p = .007</math>), anxiety (<math>p = .001</math>), and hopelessness (<math>p &lt; .01</math>) compared to the other groups by the 3 month follow up session.</p>	<p>is a supportive care that is effective in decreasing emotional distress in cancer patient receiving chemotherapy.</p>	<p>the role of including cognitive appraisal with illness management in future studies. The clinical significance of</p>	<p>and study 3 arm design validate evidence. A limitation of study was that it failed to achieve study power size there was a 20% dropout rate at beginning of study,</p>
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			at 3 months follow up.			study evidence is that music therapy decrease chemotherapy related distress as an alternative	decreasing generalizability of results. GRADE Moderate level Recommendation
Chou, K. (2020).CN35 Effects of music therapy on	RCT Double-	Cancer is leading cause of deaths in 2018. Cancer	A total of 60 patients with breast cancer were	The experimental group re-	The study re-	Further search	There was insuffi-

<p>anxiety and depression in cancer patients undergoing chemotherapy. <i>Annals of Oncology</i>, 31, Supplement 4, S1137</p>	<p>blind Study</p>	<p>patients that receive chemotherapy have to endure side effects that impact their psychological being. Can music therapy have a positive effect in decreasing depression and anxiety in cancer patients receiving chemotherapy?</p>	<p>randomly assigned equally to either the experimental group that received 24 weeks of music therapy (Five 30-minute sessions per week) or the control group. A general estimation was evaluated at 6, 12, and 24 weeks of intervention</p>	<p>positive interaction effect in decreasing anxiety (<math>p &lt; .05</math>). With increased music therapy time, there was more notable effects of anxiety alleviation at 6 weeks (<math>p = 0.007</math>), at 12 weeks (<math>p = 0.001</math>) and at 24 weeks (<math>p =</math></p>	<p>that music therapy use displayed evidence of reduced anxiety at 6, 12, and 24 study marks, despite no significant evidence of depression re-</p>	<p>with longer intervals of music therapy sessions are necessary. The clinical significance is that the noted anxiety</p>	<p>cient evidence of depression improved symptoms. GRADE Moderate recommendations strength</p>
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			within the 2 groups.	0.001). But music therapy results for depression was not significant ( p > .05).	duction. The clinical significance is to adapt clinical treatment that can improve physical and psychological change in cancer patients	positive effects of music therapy use can help develop best practices for oncology care	
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<p>Domingo, J., Matamoros Danes, C., Abello, H., Mercade, J., Ripoll, A. (2015). <i>Music &amp; Medicine</i>, 7 (1), 23-31</p>	<p>Non-RCT</p>	<p>Advanced cancer patients secondary to limited treatment options, and disease progression may present with increased emotional symptoms. At present this poses a need for alternative, cost-efficient, medicine integration of therapeutic music. How effective can music therapy, as an intervention for advanced cancer</p>	<p>Clinical trial was conducted on 68 participants in a hospital oncology palliative care unit over a 1 yr. period. Sessions were divided into 4 thirty-minute live music sessions on alternate days. 34 subjects were in MTG and the other 34 in control group. A</p>	<p>Subject satisfaction post music therapy sessions in Likert scale (0-4) in sessions 1-3 was 3.8+ .04 and in final session 3.9+ .02. Regarding music therapy scales (score range 0-12). For listening-relaxation</p>	<p>There was a significant improvement of anxiety and depression symptoms and decline in emotional distress compared to control group.</p>	<p>Future research studies would benefit from having a well-integrated interdisciplinary team conduct additional</p>	<p>Despite limitation of lack of blinding and randomization, the study design provided increase depth and descriptively compared standard care with music therapy</p>
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		patients in a palliative care unit, improve depression, anxiety, and physical symptoms?	Likert scale was used to assess physical and emotional symptoms, and music therapy satisfaction. The 14-item Hospital Anxiety and Depression Scale (HADS)	mean score 11.1+ <sub>-</sub> 1.6, singing-vocal expression 11.2+ <sub>-</sub> 1.3, and emotional expression mean 11.7+ <sub>-</sub> 0.9. A total score of 28.7+ <sub>-</sub> 7.1. There was significant difference in emotional expression between 1 <sup>st</sup> and 3 <sup>rd</sup>		studies with standardized measurement tools that also include qualitative methodology.	care enhancing study data reliability of outcome with standardized scales. GRADE Moderate Strength of recommendation
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				music sessions ( $p < 0.04$ ) of high satisfaction scores post therapy.			
Jasemi, M., Aazami, S., Zabihi, E. (2016). <i>Indian Journal of Palliative Care</i> , 22, 455-458	Quasi-experimental study	Cancer patients frequently suffer from depression and anxiety. Many treatments used to treat these symptoms may have side effects. What is the effect of music therapy in reducing anxiety and	Study was performed at a hospital with 60 cancer participants age 18-65 with depression and anxiety. The study utilized random sampling and divided into 2 groups. The intervention	Findings indicated a significant reduction in anxiety and depression levels in cancer patients. There was an associated relationship between	The study demonstrated music therapy positive effects incorporated into nursing care.	Additional studies exploring relationship of age, gender, cancer and mood	Study participants received highly sensitive questionnaires, and the validity and reliability of used ques-

		depression in cancer patients?	group received Hospital Anxiety and Depression Scale assessments at baseline and 3 days after light music therapy initiation with a Walkman and headphones (20 min daily x 3 days). Data was analyzed with SPSS version 13 utilizing t-test, Pearson and	age, anxiety, and depression (p, 0.001, r = 0.42). Music therapy group anxiety pre-intervention 14.46_+ 2.13 and by third day 8.63_+ 2.57. In control group anxiety baseline 14.72+_ and on final third day		disorders with larger sample size are vital. In clinical setting music use can serve as safe, simple, inexpensive	tionnaires had confidence interval of 95%. GRADE level of evidence High Recommendations- Strong
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			ANOVA tests	14.34_+ 2.48. Anxiety was higher in women but there was no relation to age.		inter-ven-tion.	
Li, Y., Xing, X., Shi, X., Yan, P., Chen, Y., Li, M. et al. (2020). The effectiveness of music therapy for patients with cancer: A systematic review and meta-analysis. <i>Journal of Ad-</i>	Sys-tematic Review	Patients with cancer develop increased emotional distress and decreased quality of life. Approximately 15-40% of patients exhibit depression and anxiety	A total of 19 trials that included 1548 patients with cancer. The control group contained 765, and experimental group 783.	For depression and anxiety there was overall significant effect for improvement of both of $p < .05$ 95% and CL post music intervention.	Music therapy compared to standard care can markedly improve the quality	High quality studies are necessary to examine the effects of music inter-	The authors meta-analysis included adequate random sequence of studies with sealed envelopes

<p><i>vanced Nursing, 76 (5), 1111-1123</i></p>		<p>Can music therapy effectively improve the quality of life in cancer patients with depression and anxiety?</p>			<p>of life of cancer patient within 2 months and significantly decrease depression and anxiety.</p>	<p>vention in supportive cancer care.</p>	<p>that decreased bias. But there was significant statistical heterogeneity of selected articles that posed risk of false-positive study results. GRADE Moder-</p>
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							ate Rec- ommen- dations
Lima, U., Rey Moura, C., Barros de Oliveira, C., Cosetti, J., Neto, J., Pe- reira, E., Nasci- miento, R., Gomes de Oliveira, E., Leal, P. (2020). Impact of mu- sic RCT a mu- sic intervention on quality of life in breast cancer patients undergoing chemotherapy: A randomized clinical trial.	RCT	Inappropriate control of ad- verse events in cancer patients can reduce the quality of life. Coupled with a cancer diag- nosis, the treatment course can af- fect mental status of these patients. Can a music inter- vention have an impact in improving the quality of life in breast can-	A prospec- tive study with 33 fe- male sub- jects 18 years and older with breast can- cer receiv- ing chemo- therapy were evalu- ated with 30-minute interviews after each chemother- apy session to assess anxiety, de- pression,	Depres- sion ( $p <$ .001) and anxiety ( $p <$ .001) scores were lower for MG by the third ses- sion. All of the sub- jects re- ported positive quality of life changes on SIS question- naire with	Music inter- vention was as- soci- ated with im- proved quality of life, and de- creased anxiety and de- pres- sion. effect and longer fol- low-	Future stud- ies should in- clude base- line ques- tion- naires to im- prove inter- ven- tion effect and longer fol- low-	The strength s of study was the applica- tion of multiple sensitive instru- ments to assess depres- sion, anxiety, and quality of life. Study was lim- ited as

<p><i>Integrative Cancer Thera- pies, 19, 1-9</i></p>		<p>cer patients re- ceiving chem- otherapy?</p>	<p>and quality of life. The instruments used were The Beck Anxiety In- ventory, Beck De- pression In- ventory and World Health Or- ganization Quality of Life. The Chemother- apy Toxicity Scale was used to measure chemother- apy adverse effects. The Subjective</p>	<p>reduced stress lev- els.</p>		<p>up post treat- ment. These find- ings can be clini- cally ap- plied with simple inter- ven- tions like music ther- apy</p>	<p>lacked a subject baseline assess- ment prior to chemo- therapy, and there was a lack of long term follow up. GRADE High level of recom- menda- tion- Strong</p>
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			Impression of the Subject (SIS) questionnaire was used to obtain qualitative subject data of music therapy effectiveness. Music therapy was transmitted with MP3 headphone device.				
Lin, M., Hsieh, Y., Hsu, Y., Fetzer, S., Hsu, M. (2011). A randomized controlled trial of the effect of	RCT	Cancer presents emotional challenges such as anxiety, and music therapy has reported	Study with 98 patients with music therapy group receiving a single 1-	Pre music therapy had the highest anxiety positive response	Music therapy had a larger positive effect on	Future research is needed to	The study researchers selected

<p>music therapy and verbal relaxation chemotherapy induced anxiety.</p> <p><i>Journal of Clinical Nursing</i>, 20 (7-8), 988-999</p>		<p>anxiety reduction. Can music therapy have a greater effect in reducing anxiety in post chemotherapy cancer patients than verbal therapy?</p>	<p>hour music session and a verbal relaxation group receiving 30 minutes of guided relaxation. The instrument used to measure anxiety is the Spielberger state-trait anxiety instrument, Emotional Visual analog scale</p>	<p>at 39.18, post music therapy anxiety decreased to 29.76 with state anxiety scale (20-89) The control group pre therapy 39.53 and post intervention 35.15</p>	<p>decreasing anxiety in cancer patient post chemotherapy than verbal relaxation group.</p>	<p>evaluate music therapy in comparison to verbal therapy. The clinical significance is</p>	<p>the music for the patients possibly affecting results. While study time of 30 minutes was limited resulted in significant positive results.</p>
<p>Mondanaro, J., Sara, J., Thachil, R., Pran-</p>	<p>RCT</p>	<p>Newly diagnosed cancer diagnosis can</p>	<p>Study with 87 participants with</p>	<p>Significant increase in Resilience</p>	<p>Study demonstrated strong</p>	<p>Further studies</p>	<p>The study size and number</p>

<p>       jic, M., Rossetti, A., Sim, G., et al. (2021). The effects of clinical music therapy on resiliency in adults undergoing infusion: A randomized controlled trial. <i>Journal of Pain Symptom Management</i>, 61(6), 1099-1108     </p>		<p>       have a psychosocial impact. Do the effects of clinical music therapy have an impact on improving resiliency in adults receiving infusion?     </p>	<p>       newly diagnosed lung, breast, or gastrointestinal cancer receiving chemotherapy in a hospital. Participants were at random assigned to three groupings: clinical instrumental improvisation or clinical vocal improvisation ( n = 43), or control group (n= 44).        Subjects     </p>	<p>       scale after treatment positive change 3.4 and 4.83 (p = 0.6250. HADS had minimal positive impact on decreasing anxiety and depression.     </p>	<p>       resiliency increase but failed to demonstrate significant anxiety and depression decrease.     </p>	<p>       should be conducted to examine the role of music therapy in improving resilience and its effect on decreasing anxiety and     </p>	<p>       of assessment scales was adequate was adequate but study sessions limited. GRADE Moderate strength recommendations.     </p>
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			were assessed: Resilience Scale, HADS scale, Visual Analogue Scale (VAS)/ Faces Scale, and Pain Color Analysis Scale (PCAS) . Music sessions over 20 minutes.			depression. Clinical integration of study data can promote coping adaptation in newly diagnosed cancer patients.	
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<p>O'Steen, L., Lockney, N., Morris, C., Johnson-Mallard, V., Pereira, D., Amdur, R. (2021). A prospective randomized trial of music on anxiety in patients starting radiation therapy for cancer. <i>Clinical Investigation</i>, 109(3), 670-674</p>	<p>RCT</p>	<p>Radiation therapy is associated with new-onset anxiety in 25% of female cancer patients. Can gender specific music selected by cancer patients significantly decrease anxiety during the initiation of radiation therapy?</p>	<p>Study involving 102 females (51 received self-selected, web-based music therapy and 51 control group) pre and post radiation therapy. Baseline anxiety scoring was assessed before radiation therapy and after the first radiation therapy. The State-Trait Anxi-</p>	<p>The mean percent STAI decreased anxiety score was 16% with music, and only 10% without music. The mean SDT percent change was a 13% decrease post music therapy, and a 2% increase without music treatment</p>	<p>This study provided evidence that a high level of anxiety is frequently seen in females with cancer undergoing radiation. There was no</p>	<p>Additional studies are necessary to identify alternate methods to decrease anxiety in women with cancer receiving ra-</p>	<p>The study was limited as the music therapy response was analyzed only pre-radiation and after only one radiation treatment session. The music response</p>
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			<p>ety Inven- tory (STAI) 40 question self-report- ing tool was used to rate anxiety and the Symp- tom Distress Thermome- ter (SDT). STAI scale was used for 48% of par- ticipants, and SDT re- cording was used for the remaining 58%.</p>	<p>(p = .3298).</p>	<p>signifi- cantly higher differ- ence pre and post ra- diation. Despite there being an anx- iety re- duction within the mu- sic group, this was a minor magni- tude re- action</p>	<p>dia- tion ther- apy. The clini- cal impli- cation is that SDT are and RT in- stru- ments that can easily be ad- minis- tered in</p>	<p>evid- ence might have been higher if con- ducted over a longer timefra- me. GRADE Moder- ate Level Recom- menda- tions.</p>
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					than the study pre- dicted (A 20% reduc- tion with music vs a 0% re- duction with no music. The re- sulting STAI score with music was not	rou- tine radia- tion prac- tice and may be use- ful.	
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					statistically significant using t test (P=.2197).		
Ramirez, R., Planas, J., Escude, N., Mercade, J., Farriols, C. (2018). EEG-based analysis of the emotional effect of music therapy on palliative cancer patients. <i>Frontiers in Psychology, 9:254. Doi:</i>	RCT	Music is associated with the power of invoking emotional responses. Assisting cancer patients in palliative settings to cope with emotional burdens is a challenge. Music is associated with the	Forty adults (13 females and 27 males) in the mean age of 69 with cancer at a palliative care unit were randomly selected. Twenty participants received instrumental	ESAS assessment noted statistically significant reduction in anxiety (p = 0.002) also consistent with EEG positive emotional state levels (p =	In regards to the music interventions both active and receptive music techniques were proven		Researchers combined several music therapy treatments with EEG measurements for validity.

<p>10:3389/fpsyg. 2018.00254</p>		<p>power of invoking emotional responses. Can music therapy result in an improved emotional effect in palliative care cancer patients as evidenced by EEG-based analysis?</p>	<p>and vocal music therapy, and the other 20 no music. Each music session lasted 30 minutes with EEG recording. Pre- and post-music therapy session self-assessed quality variables were completed by participants with the Edmonton Symptom Assessment System</p>	<p>0.003). Eleven out of twenty music therapy recipients reported feeling less anxiety and 12 were in a better mood post music therapy (<math>p = 0.0019</math>) as compared to pre-music state.</p>	<p>to be useful tools for mood improvement in cancer patient as validated by EEG recordings.</p>	<p>Experimental time was short limiting reliability of study findings. GRADE moderate recommendations.</p>
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			(ESAS). This system assessed 9 activations of cortical cerebral hemispheres.				
Rosetti, A., Chadha, M., Torres, N., Lee, J., Hylton, D., Loewy, J., Harrison, L. (2017). The impact of music therapy on anxiety in cancer patients undergoing stimulation for radiation therapy. <i>International</i>	RCT	Radiation therapy is linked to increased stress levels. What is the impact of music therapy on anxiety and distress in patients recently diagnosed with breast cancer?	Participants with breast or head and neck cancer, N=78 received self-selected music therapy (MT) of 60 minutes per session utilizing pre-State-Trait anxiety inventory	Overall mean pre- and post-simulation STAI-S scores were 38.7 and 35.2 respectively. The overall mean pre- and post-simulation SDT scores	Music therapy use demonstrated a significant decrease in subjects' anxiety and distress based	Additional research is needed to better define the role of MT interventions in	Benefits of decreased anxiety and distress were clearly evaluated and demonstrated with several scales

<p><i>Journal of Radiation Oncology Biology Physics</i>, 99 (1), 103-110</p>			<p>questionnaire (STAI-S Anxiety) and symptom distress thermometer (SDT)</p>	<p>were 3.2 2.5. The MT group had mean pre-and post-simulation STAI-S scores of 39.1 and 31.0. respectively (p&lt;.0001). The no-MT group mean pre-and post - simulation STAI-S scores were 38.3 and 39.5 respectively</p>	<p>on results of STA i-S questionnaire and SDT. MT can be an effective treatment.</p>	<p>ameliorating patient experience of reduced anxiety</p>	<p>decreased anxiety. Researcher's study design was limited by 1-hour sessions. GRADE quality of Evidence: Moderate strength</p>
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				(P=.46) and mean SDT scores were 3 and 3.2, respec- tively (P= >.51)			
Spilioti, E., Galani, P., Kon- stantankopou- lou, O., Kalo- kairinou, A. (2017). The ef- fects of music on cancer pa- tients submitted to chemother- apy treatment. <i>International Journal of Car- ing Sciences,</i>	Non- RCT	According to World Health Organization 2015 data can- cer rates are increasing, as well as associ- ated psycho- logical issues. In the last 10 years music therapy has been identified as a comple-	Study con- ducted with 34 partici- pants (17 re- ceiving mu- sic therapy and 17 con- trol group who didn't like music. Study was based on pre-and post-test de- sign in a	Music therapy interven- tion re- sulted in increased MCHS score (p = .031), emotional score (p = .009) and Mental Health	Thera- peutic music may im- prove quality of life and mental health of can- cer pa- tient.	Future stud- ies may bene- fit from larger sam- ple size, longer study, and	The re- search- ers' study was lim- ited sec- ondary to small sample size, and varia- tions in chemo- therapy



10 (3), 1465-1477		mentary therapy. Theoretical framework was based on Florence Nightingale multi-dimensional care needs being met and Vassiliki Lannara theoretical elements. What are the beneficial effects of music on cancer patients submitted to chemotherapy treatment?	chemotherapy day unit with pre-recorded music over 20 minutes during 2 sessions. The Mental Health Component summary questionnaire soring was a tool used.	Score (p = .038).		ranked. The clinical implications of music therapy use is utilizing self-selected music to increase	received. GRADE Moderate recommendation.
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						pa- tient auton- omy to fos- ter qual- ity of life im- prove- ments.	
Valero-Can- tero, I., Marinez- Valero, F., Es- pinar-Toledo, M., Casals, C., Baron-Lopez, F., Vasquez- Sanchez, M. (2020). Com- plete comple- mentary music	RCT- double blind trial	Patients with advanced can- cer receiving home pallia- tive care are at risk for dis- playing many symptoms. Music compli- mentary ther- apy use may benefit both	Study in- cluded two samples of 40 patients and two samples of 41 caregiv- ers ran- domly as- signed to ei- ther the in- tervention		The re- search- ers pre- sented new evi- dence of the cost-ef- fective- ness of	Clini- cal signif- icance is that results are appli- cable to usual	The re- search- ers use of a double- blind study design reduced bias and sup- ported

<p>therapy for cancer patients in at home palliative care patients and their caregivers: Protocol for a multicenter randomized controlled trial.</p> <p><i>BMC Palliative Care</i>, 19, 61.</p> <p>Doi:10.1186/s12904-020-00570-9</p>		<p>patients and their caregivers. What is the efficacy of implementing a complementary music therapy to treat cancer patients in at home palliative care setting as opposed to usual treatment?</p>	<p>group or control group over 7 sessions.</p> <p>The ESAS system was used for patient symptoms, and Caregiver Strain Index (CSI) for caregivers.</p>		<p>therapeutic self-directed music use.</p>	<p>practice for patients at home receiving palliative care as an additional therapeutic source .</p> <p>Since this inter-</p>	<p>the reliability of obtained evidence. GRADE evidence high recommendations- Strong.</p>
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						ven- tion has no side effects can be ap- plied with short- term clini- cal proto- col. This would in- crease health qual- ity of life. Also	
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						to serve as a cost- effec- tive deci- sion mak- ing sup- pose sys- tem.	
Wang, X., Zhang, Y., Fan, Y., Tan, X., Lei, X. (2018). Effects of mu- sic intervention on the physical and mental sta- tus of patients	Sys- tematic review	Breast cancer patients is be- coming a so- cial health problem re- sulting in psy- chological trauma such as depression and	After 9 data- base searches, 30 randomized controlled trials com- pared the ef- fects of mu- sic therapy to standard	Results of meta-anal- ysis im- plied that music therapy signifi- cantly im- proved	Music therapy use data sup- ported the use of mu- sic therapy	Based on lim- ited infor- matio n fur- ther re- search	Was an exten- sive meta- analysis with multiple partici- pants. With

<p>with breast cancer: A systematic review and meta-analysis. <i>Breast Care</i>,13, 183-190</p>		<p>anxiety. Surgery and medications can lead to side effects. Can a systematic review evaluating music intervention effects make an important contribution to treatment guidelines for breast cancer patients?</p>	<p>care, and standard care alone in breast cancer patients (n=2559) age 18-75 with the methodological quality assessed with Jahad scale. Most were considered high quality studies. Anxiety was rated with Hamilton Anxiety- Rating Scale and depression with</p>	<p>psychological health state in breast cancer patients. Anxiety Hamilton Scale: Mean difference: -7.04, 95% CI -9.31 to -4.78: p, 0.00001: State Anxiety Inventory, depression (MD - 7.39. 95% Ci-8.35 to</p>	<p>effective-ness in improving psychologi- cal symp- toms.</p>	<p>is needed to improve therapy strategies based on patient music preference. This would help standardize the application</p>	<p>high clinical applicability. GRADE High level recommendations - Strong quality.</p>
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			the Self-Rating Depression scale.	-6.43; p<0.00001)		of randomized grouping, and effectiveness of professional music therapists. The results suppose the use of music	
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						ther- apy in clini- cal set- ting.	
Yates, G., Silverman, M. (2015). Immediate effects of single session music therapy on the affective state in patients on a postsurgical unit: A randomized effectiveness study. <i>Arts in Psychotherapy</i> , 44, 57-61	RCT	After initial cancer diagnosis, surgery treatment can elevate affective states. Music therapy engagement may distract these patients from maintain negative feelings. What are the immediate effects of a single music therapy session of patient	A study with cancer patients (N= 220 receiving 20-30 minutes of patient selected live music. Participants were randomly assigned to music therapy and control groups. Affective	There were no significant differences between intervention and control groups in any pre-test measurement. But pre- and post-data correlational test results	Findings are consistent with previous research that music therapy may decrease anxiety and	Future studies should account for appropriate study sample size included	The study had a small sample size limiting validity and relevance. GRADE Moderate recommendations.



		<p>preferred live music therapeutic interaction of patients on a post-surgical oncology unit?</p>	<p>states were measured pre-music therapy and post therapy with a mood scale.</p>	<p>were significant (p = .05). Relaxation results were also significant (p = .009) with experimental group demonstrating higher scores than control group.</p>	<p>promote relaxation.</p>	<p>of music therapy. This study is clinically significant as implemented findings may positively affect treatment</p>	
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						out-comes	
Zhou, K., Li, X., Yan, H., Dang, S., Wang, D. (2011). Effects of music therapy on depression and duration of hospital stay of breast cancer patients with radical mastectomy. <i>Chinese Medical Journal</i> , 124 (15), 2321-2327	RCT	Breast cancer may have a deep impact on patients' psychological health and quality of life. This may commonly lead to depression.	Study with 120 participants (60 receiving music therapy in experimental group and 60 in control group) . Music therapy started on first day after mastectomy until third admission for chemotherapy. Data was collected with a General	The mean depression score of all subjects was 37.19 $\pm$ 6.30. After intervention music therapy group depression scores were less than control group (p < 0.001) with improved	Music therapy has beneficial effects in decreasing depression in female patient with cancer.	Future research is needed with mixed genders with similar cancer diagnosis. Clinically music therapy has	The study had a large sample size, and multiple assessment sessions increasing data validity. GRADE High recommendations: Strong.

			Questionnaire and Zung Self-Rating Depression Scale (ZSDS) .	quality of life		significant evidence of being an effective alternative nursing intervention in breast cancer clinical care process.	
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Note: RCT= randomized controlled trial, Non-RCT= non-randomized controlled trial