Music and Guided Imagery-Based Interventions for Psychological Outcomes in Breast Cancer Patients: A Systematic Review

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**Abstract*:*

Psychological stress, such as anxiety and depression, is commonly experienced by women battling breast cancer, and this can significantly interfere with treatment adherence and recovery. Mind-body therapies such as music therapy and guided visualization are increasingly being used to help, although their effectiveness can vary from person to person. This systematic review aims to examine the benefits of these therapies for breast cancer patients. We searched four major databases—PubMed, Scopus, ScienceDirect, and Wiley Library—for randomized controlled trials from 2015 to 2025. We looked for studies in adult patients using these methods, with anxiety and depression as the primary outcomes measured, and things like stress, quality of life, and overall well-being as additional outcomes. We assessed bias using RoB 2.0 and mapped it with ROBVIS. The entire process followed PRISMA guidelines and was registered in PROSPERO under number CRD420251021032. Due to the high variability in study results, we opted for a narrative summary rather than detailed data analysis. Ultimately, we collected 12 studies covering breast cancer patients in stages 1 to 4. Sessions lasted between 12 and 60 minutes, spread over one to six weeks, and most included several relaxation techniques. Overall, people experienced a steady decrease in anxiety, depression, stress, and other mental pressures, along with better ways to manage emotions and an improved quality of life. It appears that music therapy and guided visualization can indeed make a difference in improving psychological well-being for women with breast cancer. However, it is important to note that these results should be considered carefully due to the uniqueness of the studies and the variation in outcomes. Therefore, moving forward, we need more robust randomized trials with clear intervention methods and standardized outcome tracking to build a stronger case.

Keywords: Breast cancer, music, guided imagery, anxiety, depression, psychological outcomes
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INTRODUCTION

Breast cancer continues to be a prominent global health challenge, accounting for a significant proportion of cancer-related morbidity and mortality in women worldwide. This particular cancer impacts millions of women across the globe (Wilkinson & Gathani, 2022). As reported by the Global Cancer Observatory (GLOBOCAN) 2024 data, breast cancer is responsible for approximately 2.3 million new diagnoses annually, establishing it as the most frequently occurring cancer among the female population (Bray et al., 2024). According to the Global Cancer Observatory (GLOBOCAN) 2024 data, breast cancer accounts for approximately 2.3 million new diagnoses each year, making it the most

commonly diagnosed cancer among women (Bray et al., 2024). The global age-standardized incidence rate (ASIR) of female breast cancer experienced an increase of 14.31% from 1990 to 2019, with forecasts suggesting additional rises, especially within the demographic of women aged 35 to 60 years (Chen et al., 2023).

Individuals diagnosed with breast cancer frequently face psychological distress, including elevated levels of anxiety and depression (Hashemi et al., 2020) (Suarilah et al., 2023). This further diminishes the overall quality of life and hampers treatment adherence and recovery (Kugbey et al., 2020). Psychological distress can adversely affect treatment adherence, recovery outcomes, and long-term health (Azhari & Sukartini, 2021; Maisyaroh et al., 2022). It is essential to identify and implement effective therapies to alleviate psychological distress to enhance the overall well-being and clinical results of breast cancer patients.

Mind-body therapies have emerged in recent years as viable supplementary techniques to alleviate anxiety and depression across many clinical populations (Dwi Wulandari & Harmayetty, 2021). In addition to the physical effects of diagnosis and therapy, people with breast cancer often face major mental health problems, such as higher levels of anxiety and depression and a lower quality of life overall (Mulya & Kosassy, 2020). This mental turmoil might make it harder to stick to treatment, slow down recovery, and impair long-term health. Therefore, it is essential to find and execute effective interventions to address psychological distress.

Among modalities that aim to reduce psychological distress, guided imagery represents a technique that employs suggestive language to facilitate the generation of positive, tranquil mental imagery in individuals (Sinha et al., 2021). Guided imagery's relaxation and stress-relieving benefits may intensify when paired with soothing auditory stimuli, such as music (Pozhhan et al., 2023). Music, often recognized for its calming melodies and harmonious tones, has been shown to produce positive physiological and psychological effects, such as lowering blood pressure, slowing heart rate, and decreasing cortisol levels (Henneghan et al., 2020).

Music combined with guided imagery, a mind-body technique that merges soothing sounds with organized mental picture, has demonstrated potential in alleviating psychological distress (McKinney et al., 2025). Despite anecdotal evidence and preliminary investigations indicating the potential advantages of music and guided imagery, for enhancing psychological well-being in breast cancer patients, a thorough comprehension of the efficacy of this intervention remains constrained (Henneghan et al., 2020). Existing literature has reported inconsistent findings, and the absence of a systematic synthesis of the evidence obstructs the capacity to draw robust conclusions and guide clinical practice (Killoran, 2023). The systematic review aims to objectively evaluate the existing data about the efficacy of therapy intended to enhance the psychological well-being of breast cancer patients. Specifically, the review will scrutinize the effects of intervention on anxiety, depression, quality of life, and other pertinent psychological outcomes (Guerra-Martín et al., 2021).

METHODS
Design Study
The review was conducted per the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) guidelines (Page et al., 2021). This study was registered in PROSPERO with the ID registration number CRD420251021032.

Eligibility criteria
This study establishes eligibility criteria that include inclusion and exclusion criteria. The search process was completed in March 2025 and carried out by WR to support the theoretical framework of her study. The inclusion criteria used are as follow : (1) Electronic sources for primary study search were from Scopus, Pubmed, Science direct and WILEY, (2) Article search on four databases in 10 years, namely 2015-2025, (3) Only studies published in English, (4) study design only randomized controlled trials (RCTs), (5) The studies must focus on Music or Guided Imagery as the primary intervention, (6) Primary outcomes were anxiety and depression; secondary outcomes

included stress, quality of life, and well-being. The exclusion criteria comprised studies that did not conform to the established PICOS framework, research for which the complete text was inaccessible, and breast cancer patients who are already in the terminal or palliative stage, who cannot follow therapy sessions effectively.

Table 1. PICOS

Category	Description
P (Population)	Aged 18 and above breast cancer patients (Patients undergoing active treatment (chemotherapy, radiotherapy) or in survivorship).
I (Intervention)	Music or guided imagery
C (Comparator)	Standard care
O (Outcomes)	Psychological outcomes, including anxiety, depression, stress, and well-being
S (Study Design)	Randomized Controlled Trials (RCT)

Study Selection Process

The study selection process for this systematic review followed the PRISMA guidelines and involved a multi-step procedure. WR conducted the literature search as the primary reviewer, who systematically performed database searches using predefined keywords and Boolean operators. Initially, a comprehensive search was conducted across four major databases: PubMed, Scopus, ScienceDirect, and Wiley. The search utilized speci c terms based on the PICOS framework (Population, Intervention, Comparator, Outcome, and Study Design), including keywords such as "Music," "Music Therapy," "Guided Imagery," and "Breast Cancer," along with terms related to psychological outcomes like "Anxiety," "Depression," and "Stress", with corresponding MeSH terms applicable.

All retrieved records were imported into Mendeley Reference Manager, and duplicate records were removed prior to screening using automated deduplication followed by manual verification. Identifying and selecting studies was based on the PRISMA flow diagram to identify studies from 4 databases. The total number of records identified from each source was Scopus (n=65), PubMed (n=42), Science Direct (n=35), and WILEY (n=40). After the screening process based on inclusion and exclusion criteria, 12 articles met the criteria.

Risk of Bias

The risk of bias of the included studies was independently assessed by three reviewers using the Risk of Bias 2.0 (RoB 2.0) tool, which evaluates five domains: randomization process, deviations from intended interventions, missing outcome data, measurement of the outcome, and selection of the reported result. Discrepancies between reviewers were resolved through discussion until consensus was achieved. Each study was rated as having low risk, some concerns, or high risk of bias for each domain.

Overall, a high risk of bias was observed in several studies, particularly in domains related to measurement of the outcome, deviations from intended interventions, and selection of the reported results. In contrast, the domains of the randomization process and missing outcome data demonstrated a low risk of bias in most studies. The risk of bias assessments was visualized using the Robvis tool. A summary of the RoB assessments for each study is presented in Table 3

Data Extraction and Synthesis

The data was collected independently by two reviewers, TS and IS, to ensure accuracy and avoid bias during the collection process. They used a standard extraction form containing complete details about the characteristics of the study, such as the author's name, year of publication, country of origin, research design, and number of samples used. The form also recorded specific details about the intervention, including the type, duration, frequency, and procedures performed. The data collected also included psychological outcomes such as anxiety, depression, stress, quality of life, and other related indicators. If there were differences of opinion between the two reviewers, they discussed it

until they reached an agreement, and if necessary, a third reviewer acted as a referee to make the final decision.

RESULTS

Characteristics of included studies

This systematic analysis included 12 randomized controlled trials published between 2015 and 2025, with a total of 816 breast cancer patients. The research were conducted in multiple nations, including Brazil, the United States, Italy, Vietnam, Mexico, Turkey, Iran, and China. All of the studies looked at how music-based and guided imagery therapies altered psychological outcomes, even if the sample sizes, intervention methods, and outcome measures were different in each one.

The therapies consisted of guided imagery accompanied by music, music therapy integrated with progressive muscle relaxation, structured or patient-chosen music listening, and immersive virtual reality experiences. The therapies lasted between 12 and 60 minutes and were given in one to six sessions each week.
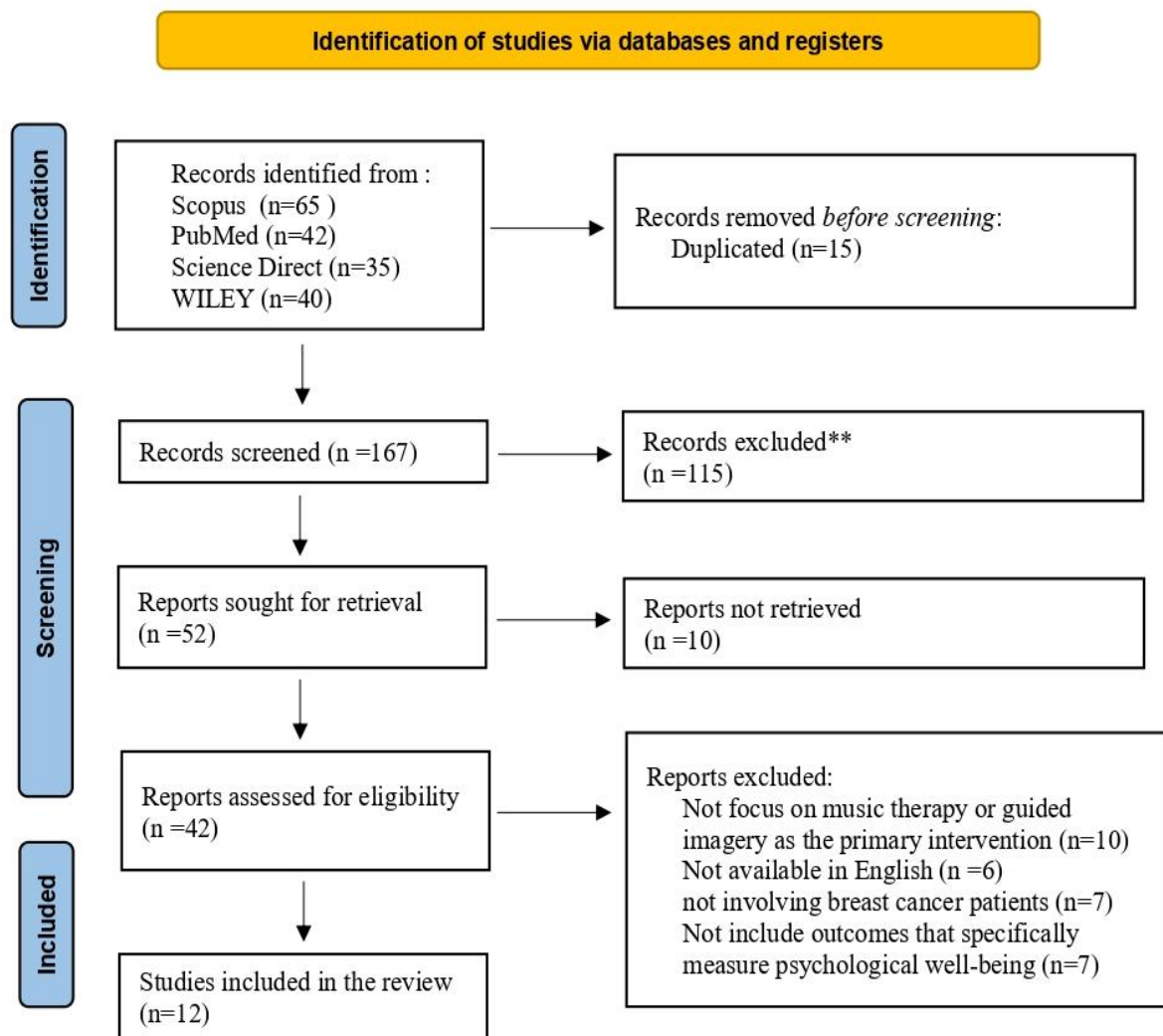

Figure 1: PRISMA flow diagram for systematic review

The results are then grouped based on the type of intervention, namely (a) those that use music as a basis, (b) those that use guided imagery, and (c) those that combine or use several methods at once, to make it easier to understand the effects of various methods. Because these studies varied greatly, from the type of intervention, the group of people studied, to the size of the results, we chose to use narrative synthesis rather than meta-analysis. This method allowed us to summarize and compare the results of various studies with different designs and variables. Studies that combined music and guided imagery were categorized based on their main components and then discussed narratively in appropriate subgroups. To make the interpretation clearer, these findings were further grouped based on the type of intervention, namely music-based and guided imagery-based. With this grouped synthesis, we can better understand the effects and workings of each intervention category.

The main outcomes were anxiety and depression, whereas the secondary outcomes were stress, quality of life, and general well-being. We used validated methods such the Beck Depression Inventory (BDI), State-Trait Anxiety Inventory (STAI), Depression Anxiety Stress Scale (DASS-21), SF-36, and WHOQOL-BREF to measure these. Some studies also looked at physiological outcomes, such as grip strength, range of motion, and redox status. The findings indicated that breast cancer patients undergoing music and guided imagery therapies had reduced anxiety and sadness levels, along with an overall enhancement in quality of life.
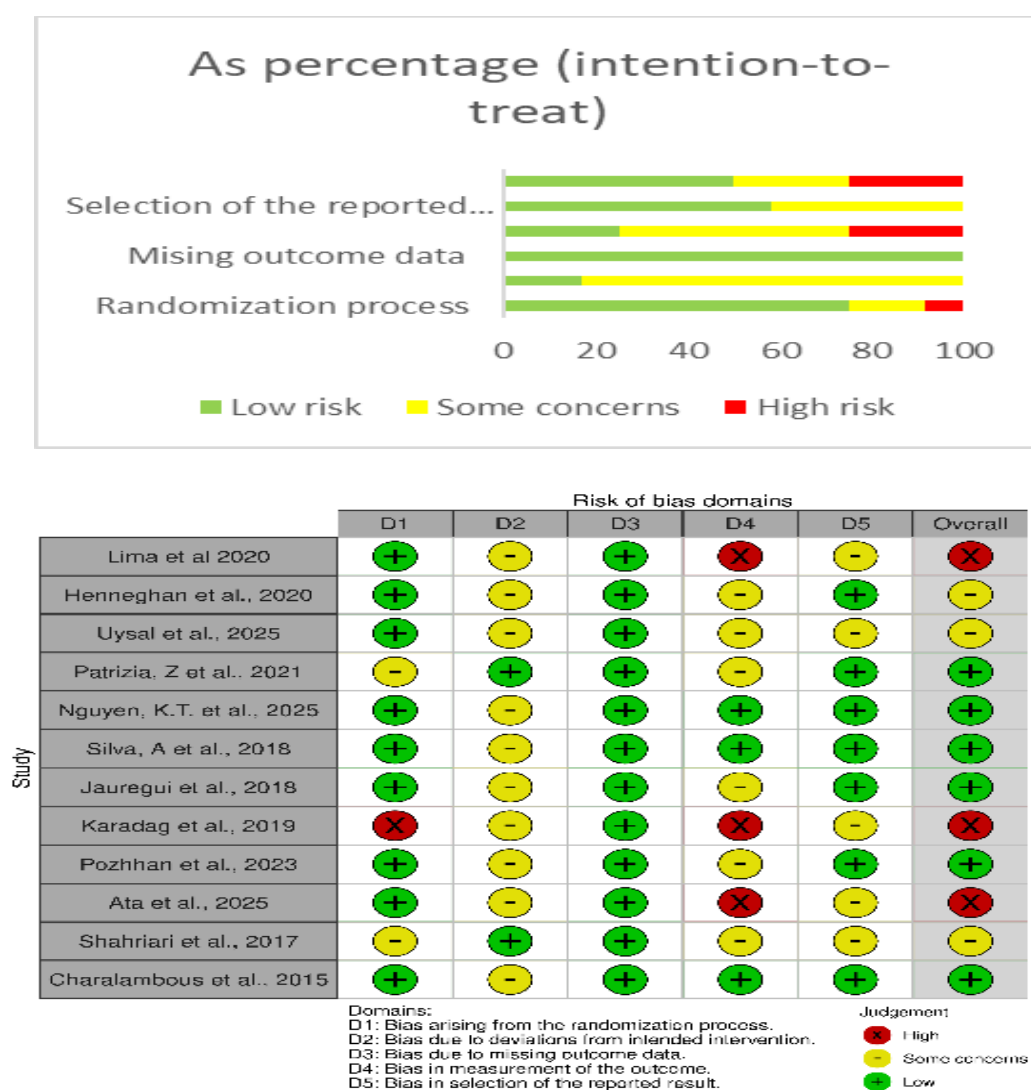
Figure 2. Risk of bias of the included studies using ROB 2.0 and ROBVIS

Table 2. Summary of Risk of Bias Assessment (RoB 2.0)

Author	D1	D2	D3	D4	D5	Overall	Key Justification
Lima et al. (2020), Brazil	Low	Some Concerns	Low	High	Some Concerns	High	High risk mainly due to outcome measurement issues (D4), as blinding of outcome assessors was not reported, and outcomes relied on subjective measures
Henneghan et al., 2020, USA	Low	Some Concerns	Low	Some Concerns	Low	Some Concerns	Some concerns related to deviations from intended interventions and unclear reporting of outcome assessment procedures.
Uysal et al., 2025,	Low	Some Concerns	Low	Some Concerns	Some Concerns	Some Concerns	Some concerns due to deviations from intended interventions and potential selective reporting.
Patrizia, Z et al., 2021, Italy	Some Concerns	Low	Low	Some Concerns	Low	Low	Minor concerns in randomization reporting; no evidence of bias affecting outcome validity.
Nguyen, K.T. et al., 2025 Vietnam	Low	Some Concerns	Low	Low	Low	Low	Some concerns in intervention adherence reporting, but overall methodological quality was robust.
Silva, A et al., 2018 Brazil	Low	Some Concerns	Low	Low	Low	Low	Limited reporting of intervention deviations; outcome data were complete and objectively measured.
Jauregui et al., 2018 Mexico	Low	Some Concerns	Low	Some concerns	Low	Low	Some concerns related to intervention deviations; randomization and outcome measurement were adequately described.
Karadag et al., 2019. Turkey	High	Some Concerns	Low	High	Some Concerns	High	High risk due to problems in the randomization process and lack of blinding in outcome measurement.
Pozhhan et al., 2023, Iran	Low	Some Concerns	Low	Some Concerns	Low	Low	Some concerns in deviations from intended interventions, with no substantial risk across domains.
Ata et al. (2025), Turkey	Low	Some Concerns	Low	high	Some Concerns	high	High risk driven by outcome measurement bias and insufficient blinding, potentially influencing subjective outcomes.
Shahriari et al., 2017, Iran	Some Concerns	Low	Low	Some Concerns	Some Concerns	Some Concerns	Some concerns across multiple domains due to insufficient methodological reporting.
Charalambous et al., 2015	Low	Some Concerns	Low	Low	Low	Low	Minor concerns related to intervention deviation reporting; overall study design was sound.

Table 3. Classification of Interventions

Included Studies	Study Design	Intervention group	Control group	Frequency and duration of int	Psychological Outcomes and Measurements
Music-based intervention					
Lima et al. (2020), Brazil	RCT	Music	Routine care	30 minutes before each of the first three chemotherapy cycles.	Anxiety and Quality of Life. Beck Anxiety Inventory (BAI), World Health Organization Quality of Life (WHOQOL)-BREF questionnaire.
Henneghan et al., 2020, USA	RCT	Music and meditation	Routine care	12 minutes once a day, for 7 days	Anxiety and quality of life. Hopkins Verbal Learning Test, Beck Depression Inventory, FACT-Cog
Uysal et al., 2025,	RCT	Music therapy and affirmation.	Routine care	15 minutes for 3 days a week	pain, fatigue, nausea, depression, anxiety, and well-being. The Edmonton Symptom Assessment, The Beck Anxiety Inventory
Patrizia, Z et al., 2021, Italy	RCT	Music and psychotherapy	Routine care	One hour once a day, 6 weeks	Anxiety. Beck Depression Inventory, Glutathione, TBARS
Nguyen, K.T. et al., 2025 Vietnam	RCT	Music and progressive muscle relaxation	Routine care	20 minutes once a day for 7 days	Anxiety, stress, depression, and quality of life. DASS-21, Vietnamese Functional Assessment of Cancer Therapy-General (FACT-G), Brief-Cope Orientation to Problems Experienced Inventory Brief-COPE
Silva, A et al., 2018 Brazil	RCT	Music	Routine care	30-40 minutes in 2 times a week	Anxiety and quality of life. FACT-F, FACT-G, Beck Depression Inventory
Jauregui et al., 2018 Mexico	RCT	Music and hypnosis	Routine care	30 minutes once a day for 3 weeks	Anxiety, stress, and depression. Hospital Anxiety and Depression scale (HADS), PSS-14,
Karadag et al., 2019. Turkey	RCT	Music	Routine care	20–40 minutes five times a week for 5 weeks.	Anxiety and Depression. Hospital anxiety and depression Scale (HADS), Radiation therapy comfort questionnaire (RTCQ)
Pozhhan et al., 2023, Iran	RCT	Music therapy	Routine care	25 minutes (1 session per week, 8 weeks)	Visual Analog Scale (VAS), Likert Scale
Guided Imagery Intervention (GI), Counselling (CS), Progressive muscle Relaxation (PMR), deep diaphragmatic breathing (DDB)					
Ata et al. (2025), Turkey	RCT	Guided imagery (GI) and counselling (CS)	Routine care	GI: Once daily, 6 weeks. Six weekly sessions (50–60 minutes each). CS: 3 sessions (15-day intervals, 30–45 minutes each).	Quality of life. Healthy Lifestyle Behaviors Scale, SF-36 quality of life questionnaire, Body mass index (BMI).
Shahriari et al., 2017, Iran	RCT	GI, PMR and DDB	Routine care	8 sessions for 45 min (4 weeks)	Quality of Life (QoL), assessed using the *EORTC QLQ-C30*. Significant improvement in functional and overall QoL domains (p < 0.001).
Charalambous et al., 2015	RCT	PMR and GI	Routine care	Once daily for fifty minutes and 3 weeks.	Anxiety and depression. *Zung Self-Rating Anxiety Scale* (SAS), *Beck Depression Inventory II* (BDI-II).

Guided Imagery Outcomes

Guided imagery-based interventions demonstrated beneficial effects on primary psychological outcomes, particularly anxiety and depression, among breast cancer patients. Included randomized controlled trials consistently reported significant reductions in anxiety levels in intervention groups compared with standard care. Studies by Ata et al (2025) conducted a study showing a significant reduction in anxiety levels ($p < 0.001$), using measurement tools such as the Beck Anxiety Inventory (BAI) and the State-Trait Anxiety Inventory (STAI). Additionally, there were indications of a significant reduction in anxiety and depression symptoms after three weeks of daily guided imagery therapy combined with progressive muscle relaxation (Nguyen et al., 2025).

For instance, Ata et al. (2025) conducted a study showing how guided imagery therapy can improve emotional well-being and alleviate psychological distress. Guided imagery is often associated with additional beneficial effects, including significant improvements in physical and mental aspects of quality of life (Ata et al., 2025). Some individuals reported improved quality of life and better lifestyle behaviors after six weeks of guided imagery training. Shahriari et al. (2017) observed improvements in overall quality of life and functional domains as assessed by the EORTC QLQ-C30. Collectively, these findings indicate that guided imagery may provide both psychological and broader well-being benefits for breast cancer patients.

Music Outcomes

Music-based interventions demonstrated beneficial effects on primary psychological outcomes, particularly anxiety and depression, among breast cancer patients. Several randomized controlled trials reported significant reductions in anxiety levels following music interventions compared with standard care. Henneghan et al., (2020) noted a significant reduction in anxiety and psychological distress ($p < 0.001$) among patients who listened to structured music, which significantly enhanced their comfort during radiation (Karadag et al., 2019). Along with anxiety, music therapy is also linked to a decrease in depressive symptoms, especially when used regularly during treatment (Zeppegno et al., 2021).

Beyond these primary outcomes, music-based interventions demonstrated favorable secondary effects. Zeppegno et al. (2021) observed notable physiologic advantages, including a reduction in oxidative stress, evidenced by a decrease in thiobarbituric acid reactive substances (TBARS), and an enhancement in antioxidant activity, indicated by an increase in glutathione (GSH) levels ($p < 0.05$). Furthermore, music treatments can alleviate treatment-related symptoms and enhance quality of life. Music therapy combined with aerobic exercise significantly improved the sleep quality of breast cancer patients (Uysal et al., 2025). Furthermore, there was a notable reduction in the frequency and intensity of nausea and vomiting attributable to chemotherapy ($p < 0.001$) (Pozhhan et al., 2023).

DISCUSSION

This systematic review synthesized evidence from randomized controlled trials evaluating music-based and guided imagery–based interventions on psychological outcomes in breast cancer patients. Overall, the included studies generally demonstrated beneficial effects in reducing anxiety, depression, and psychological distress, alongside improvements in quality of life (Charalambous et al., 2015; Zeppegno et al., 2021). These findings are clinically relevant, considering that psychological distress is highly prevalent among breast cancer patients due to disease burden, uncertainty regarding prognosis, treatment side effects, and long-term survivorship challenges. In this context, nonpharmacological mind–body interventions represent important supportive strategies within comprehensive oncology care.

This review's most significant strength is its decade-long focus on randomized controlled trials, which presents an updated and more methodologically sound overview of the evidence. This updated review has focused specifically on breast cancer and highlighted anxiety and depression as the primary outcomes. In that respect, the present review offers up-to-date evidence more specific to psychosocial oncology and nursing practice. However, a central result that could be concluded from this review is that considerable intervention heterogeneity exists under the common term 'music and guided imagery' in

the included studies (Lima et al., 2020). Some studies investigated music listening or guided imagery in isolation, while others examined multimodal interventions that combined music with relaxation techniques, counseling, physical exercise, or even VR-based relaxation (Ata et al., 2025; Henneghan et al., 2020). Because of this, one cannot attribute any psychological improvement to one standard protocol. As a result, this review results were narratively stratified by intervention type rather than considered to demonstrate some unitary intervention effect. Acknowledgment of such heterogeneity is necessary to not overstate causal interpretation but also bear witness to transparency in methodology.

Although many studies show a reduction in anxiety and depression, some clinical trials produce inconsistent or insignificant results, especially when music and imagery interventions are brief or applied unevenly (Lima et al., 2020).Differences in how outcomes are measured, when assessments are conducted, and participant characteristics such as stage of treatment, cancer progression, and baseline stress levels—may contribute to these findings (Sanchez-Jauregui et al., 2018).Cultural background and personal preferences may also influence how well these interventions are accepted and their mental health benefits. Furthermore, some studies lack clear guidelines for intervention implementation or therapist skill verification, which may compromise the reliability of results.

Evidence from the included studies also suggests that the frequency and duration of intervention may influence psychological benefits. Guided imagery and music sessions delivered for approximately 12–60 minutes per session, administered once daily to once weekly, over a period of 2–6 weeks, were more likely to yield positive outcomes (Ata et al., 2025; Charalambous et al., 2015; Shahriari et al., 2017). In addition to duration, the type of music used also appeared to play an important role in therapeutic effectiveness. Many studies use classical or instrumental music, particularly those with slow tempos, gentle rhythms, and soothing melodies, which are believed to aid relaxation and emotion management (Henneghan et al., 2020; Lima et al., 2020; Uysal et al., 2025). Some use natural sounds such as ocean waves, birdsong, or flowing water, or even specially created calming tracks. Some trials allow patients to choose their favorite songs from calming options, recognizing that personal preferences can make a big difference in emotional engagement (Zeppegno et al., 2021). These musical elements, when combined with guided imagery scripts that encouraged visualization of calming environments, appeared to enhance attentional focus, emotional comfort, and overall psychological relief (Chirico et al., 2020). However, these observations should still be interpreted with caution, as music protocols were not standardized and differed across studies.

Beyond the primary mental health improvements, several studies note additional pleasant benefits, such as improved quality of life, fewer symptoms, better sleep, and even positive changes in physical indicators (Charalambous et al., 2015). While encouraging, these outcomes were not consistently assessed and were often secondary endpoints. Nevertheless, because these music and guided visualization approaches are inexpensive, easy, and non-invasive, they can be easily integrated into everyday cancer care, especially in nursing care, where such supportive measures are crucial.

This review really highlights a major gap in research, there is no solid, agreed-upon way to define or implement music and guided visualization interventions for breast cancer patients. Without such consistency, it is difficult to compare studies or build a strong evidence base. Moving forward, we need research that clearly describes the details of the intervention, uses the same outcome measurement methods, and conducts sufficiently large randomized clinical trials. It would be helpful to compare music alone, visualization alone, or both together to see which is most effective. By highlighting these issues, this review provides a solid roadmap for advancing supportive cancer care.

CONCLUSION

This systematic review shows that music- and guided imagery–based interventions may help reduce anxiety, depression, psychological distress, and improve psychological well-being among breast cancer patients. However, we must approach these results with caution because the studies conducted are quite diverse, the intervention methods used vary, and some of them have issues with their research methods. Nevertheless, the fact that these approaches are easy, non-invasive, and inexpensive suggests that they could be a solid option as additional support in cancer care. To truly develop this further, we need more

carefully designed randomized controlled trials that clearly define the interventions and use consistent methods to measure outcomes.

AUTHOR CONTRIBUTIONS
WR, as the first author, conducted the literature search and study selection, whereas TS and IS independently screened the studies and verified the data extraction process.

DECLARATION OF CONFLICTING INTEREST
The authors declare no potential conflicts of interest regarding the research, authorship, and/or publication.

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