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THE EFFECT OF MUSIC THERAPY ON ANXIETY LEVELS IN GENERAL SURGERY PREOPERATIVE PATIENTS: A SYSTEMATIC REVIEW

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ABSTRACT
Anxiety is a condition commonly experienced on the eve of surgery and has the potential to impact the condition and outcome of surgery negatively. Management strategies include pharmacological and non-pharmacological approaches, such as music therapy. Music The aim is to be a complementary alternative to pharmacological treatments to reduce patient anxiety. This systematic review analyzes nonpharmacological therapies used in the application of music therapy to general surgery patients with anxiety at the preoperative stage. The method uses articles published from 2014-2024 sourced from Science Direct, Pubmed, Cochrane Library, and Google Scholar databases. Article assessment was carried out using instruments from the Joana Briggs Institute. The result is based on seven articles that have been reviewed related to music therapy management to minimize anxiety scores owned by patients before undergoing surgical operations at the preoperative stage. Some articles explain that duration, type of music selection (natural sound), Turkish classical music, classical music from the West, jazz music, and religious music can reduce anxiety scores, maintain hemodynamic status, and maintain normal cortisol levels. In conclusion, music therapy is recommended as a nonpharmacologic method for anxiety management in preoperative patients.

Keywords: anxiety; hemodynamic status; music therapy; preoperative; surgery

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INTRODUCTION

Surgery is a medical specialty that involves manual and instrumental techniques to diagnose, treat, and prevent disability and complications. (Bachtiar & Purqan Nur, 2023). Although surgery usually requires large incisions, today's technological advances enable minimally invasive procedures with minimal incisions, specialized instruments, and cameras. Surgery is a critical medical procedure that aims to save lives, prevent disabilities, and treat various conditions. There are two classifications of surgery: minor and major surgery.Surgical procedures are divided into three phases: preoperative, intraoperative, and postoperative. (Putra et al., 2022). The preoperative phase includes patient preparation, patient medical condition assessment, and anxiety management. (Lestari & Kosim, 2024). Preoperative anxiety is a frequent condition that impacts 11-94% of patients undergoing surgery, with higher rates in cardiac surgery. (Hernández-Palazón et al., 2015) (Bansal & Joon, 2016). Patients generally feel worried about the success of the surgery, the possibility of surgery, and postoperative pain. (Hernández-Palazón et al., 2015) These anxieties can trigger physiological and psychological responses that affect postoperative outcomes and patient satisfaction. (Hernández-Palazón et al., 2015) (Bansal & Joon, 2016). The intraoperative phase includes surgery and patient monitoring, while the postoperative phase involves sterilization and recovery. (Putra et al., 2022).

Anxiety is a psychological condition marked by feelings of fear, discomfort, and restlessness, commonly arising from uncertainty and frequently experienced by patients facing upcoming surgery. Although anxiety can occur at all stages of surgery, the preoperative phase is the most anxiety-provoking, as expressed by (Eberhart et al., 2020), where more than 15,000 patients experience the most tremendous anxiety at this stage. Preoperative anxiety not only causes emotional discomfort but is also accompanied by biological and psychological symptoms. (Sugiartha et al., 2021) This condition often peaks one day before surgery due to physiological responses to internal and external stimuli that trigger emotions. Therefore, preoperative preparation is essential to maximize postoperative outcomes. (Salzmann et al., 2021)In addition to biological and psychological factors, preoperative anxiety is also influenced by the fear of pain or death, which has an impact on postoperative outcomes. (Abate et al., 2020). In this context, nurses play a vital role in addressing patient anxiety by demonstrating caring behaviors, such as providing comfort, engaging in therapeutic communication, and delivering health education. Nurses' caring attitudes are closely linked to significantly reducing patients' anxiety levels. (Awaludin et al., 2022). Several efforts can be made to treat preoperative anxiety, one of which is with non-pharmacological interventions that have been proven effective in reducing anxiety levels. (Agbayani et al., 2020)This systematic review evaluates the effects of music therapy on surgical patients at the preoperative stage. Thus, it is expected to provide new insights and innovations for clinical services, particularly in managing preoperative anxiety.

METHOD

Design

This study used the systematic review method. The first step in this method is to select articles based on PRISMA (Preferred Reporting Items for Literature Review and Meta-analysis).

Searching strategy

Data sources for article searches included resources such as Pubmed, Science Direct, Cochrane Library, and Google Scholar. A systematic review using keywords, namely "Surgery," AND "Preoperative," AND "Anxiety," AND "Music Therapy."

Eligibility criteria

The research questions were arranged based on PICOS, namely P (Patients who will undergo surgery), I (Intervention in the form of music therapy), C (The existence of a control group as a comparison), O (Decreased anxiety score), and S (Randomized Controlled Trial and Quasi Experiment). The inclusion criteria used in the systematic review include articles published ≤10 years ago in the range of 2014-2024, types of articles and original research journals, experimental research designs (Randomized Controlled Trial and Quasi-Experimental), and the language in the article is Indonesian and English, and studies discussing anxiety in adults.

Data extraction

We gathered study details, including author, publication year, purpose, design, population, sample, intervention, and outcomes. Primary outcomes were anxiety scores, duration, and type of music. At the same time, secondary outcomes included stabilizing diastolic blood pressure, heart rate, and serum cortisol levels.

Study selection

A systematic review focusing on interventions using music therapy to reduce anxiety in preoperative surgery patients in general surgery. From the search results in four databases, namely Google Scholar (n = 876), Science Direct (n = 28), Pubmed (n = 39), and Cochrane (n

= 2), a total of 945 articles were obtained. Before the screening began, 298 duplicate articles were removed, 63 were excluded for other reasons, and articles were found in a foreign language form other than English. Thus, 584 articles remained to be screened. Following the screening process, 365 articles were excluded because they did not meet the inclusion criteria. Of the 219 articles reviewed more deeply with abstract screening, 105 were excluded because the articles obtained were review articles. The screening process continued with 114 articles screened to review their eligibility through the full-text screening process. Of these, 89 articles were excluded because they discussed surgery in children, while 18 other articles were excluded because they discussed surgical procedures in pregnant women; both cases were not included in the inclusion criteria reviewed in the systematic review. Seven studies met the criteria and were included in the review. The process of selecting these studies is depicted in Fig. 1

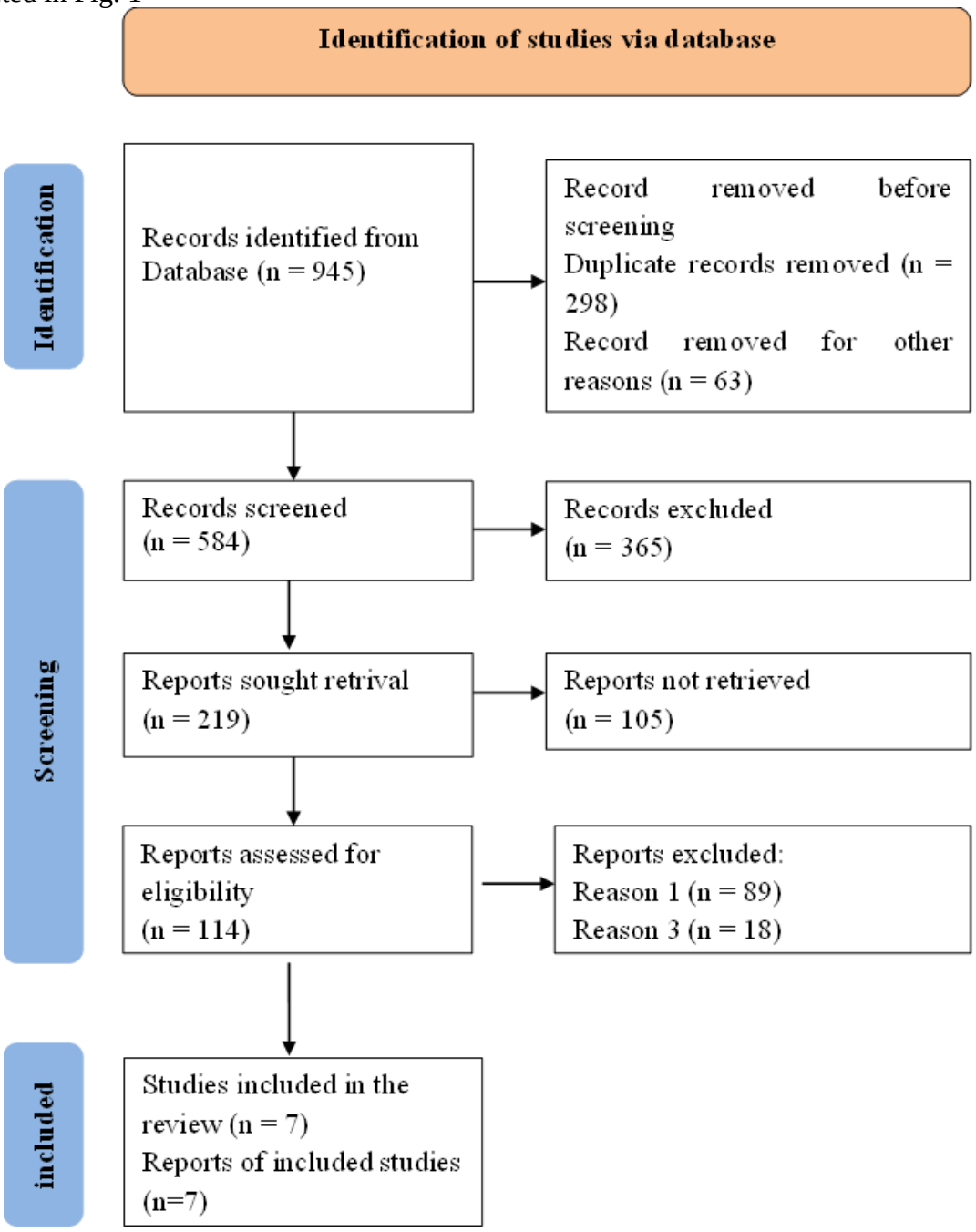

Figure. 1. Diagram PRISMA

RESULT

Table 1.
Characteristics of Eligible Literature

Author	Design	Population	Sample	Intervention	Outcome
(Thompson et al., 2014)	Quasi-experiment	Respondents must be at least 18 years old, able to communicate using English, and will undergo surgery.	137	Both groups completed a VAS questionnaire pre and post-intervention. The intervention consisted of two groups, namely: 1. Patients in group A (music room) listened to instrumental music played over the hospital network for 30-60 minutes. 2. Patients in group B (non-music room) were in a room without music.	Respondents who listened to music experienced a significant decrease in anxiety influenced by the level of anxiety at baseline.
(Ezepue et al., 2023)	RCT	Respondents aged 50 years and above will undergo cataract surgery and regional anesthesia.	98	Respondent Group A (with music) and Respondent Group B (without music) cataract surgery completed the STAI questionnaire before the intervention. Group A used earphones, and music was played for 5 minutes. Meanwhile, group B used earphones without music for 5 minutes. Then, each group completed the STAI questionnaire again post-intervention.	Anxiety scores rose in both groups upon entering the preoperative room. Five minutes post-intervention, the music group significantly decreased, while the control group's score rose.
(McClurkin & Smith, 2016)	RCT	Respondents who will undergo surgery, aged 18-75, capable of speaking, understanding, and writing in English without hearing impairments, have no difficulty wearing a mobile phone, and do not receive sedation before surgery.	134	Each group completed the STAI and NVAAS questionnaires before and after the intervention to assess anxiety levels. 1. Group A listened to music for 30 minutes and chose one of the music genres: Classical, jazz, religious, or nature sounds. 2. Group B received a 15-minute music intervention and chose one of the music genres: Classical, jazz, religious, or nature sounds. 3. Group C (control)	Listening to 15 minutes of music before surgery effectively reduces anxiety.

				received the current standard treatment without music.	
(Wang et al., 2024)	RCT	Participants were 18 to 65 years old, with no hearing loss, at least secondary education, classified as physical status class 1 or 2 by the American Society of Anesthesiologists, and scheduled to undergo elective surgery for elective surgery under general anesthesia lasting 1 to 4 hours.	184	1. Patients completed STAI questionnaires (before and after intervention) consisting of SAI and TAI and hemodynamic status (BP, HR, and RR), which was recorded every 10 minutes. 2. The intervention group used earphones and an iPod Touch containing 2000 songs from various genres. 3. The control group received earphones for noise cancellation without any intervention. 4. The treatment was given for thirty minutes for both the intervention and control groups.	Statistically, the mean STAI score of the MI group after the intervention was lower (8.01) than that of the control group. Music effectively helps reduce preoperative anxiety and stabilize hemodynamics in women undergoing non-cardiac surgery.
(Casarin et al., 2021)	RCT	Participants undergo gynecologic surgery, have no hearing impairment or neuropathic pain, require regular anti-inflammatory medication, and communicate in Italian.	100	The intervention was conducted with three stages in the intervention group (music therapy), namely: 1. The patient undergoes active music therapy through the improvisational side of music with the therapist 2. The therapist uses live playback, autogenic training, and breathing exercises to relax the patient. 3. The patient listens to an MP3 music list with earphones for one hour at a volume of 60 Db.	The level of pathological anxiety during the preoperative period was significantly different, with 16.7% in the treatment group and 37.2% in the control group.
(Reynaud et al., 2021)	RCT	Women aged 18-70 years will receive preoperative gynecological surgery using general or spinal	174	The intervention was conducted in 2 ways, namely: 1. The treatment group can use a device of their choice, such as a smartphone, tablet,	Before the intervention, the anxiety scores of the intervention (M = 39.0, SD = 13.1) control

	anesthesia at South Reunion Island University Hospital without prior anti-anxiety medication.		computer, or CD player, to play the prepared music list. 2. The control group listened to the MUSIC CARE® therapy app playlist using the "U Sequence," a hypnosis-analgesia relaxation technique consisting of three phases: sleep indicator, relaxation with a slow beat, and waking the respondent with a medium beat. 3. Each group listened to music one hour before surgery for 20 minutes.	(M = 38.8, SD = 11.9). After the intervention, there was no significant difference between the post-intervention anxiety scores of the two groups (intervention: M = 5.5, SD = 6.6; control M = 7.2, SD—9.9).
(Uğraş et al., 2018)	RCT	First-time elective surgery patients aged 18 to 65, literate in Turkish, willing to participate, and without cognitive, emotional, or communication impairments	180	The intervention was carried out on the intervention group (3 groups were given different music) and the control group (without music), namely: 1. The first group listened to relaxation music consisting of nature sounds from the CD "Relaxation Exercises." 2. The second group listened to the Turkish classical flute in *Hüseyni* tones. 3. The third group listened to Western classical music, such as *Vivaldi*'s *Four Seasons* 4. The control group was not given the music intervention.	Natural Sound, Turkish classical, and Western classical music effectively reduced preoperative anxiety and maintained systolic blood pressure, heart rate, and serum cortisol levels within normal limits. Turkish classical music was the most effective of the three.

DISCUSSION

The review's results show that six experimental research articles using a randomized controlled trial design and one article of quasi-experimental research were conducted between 2014 and 2024. All research articles contain the same intervention related to nonpharmacological preoperative anxiety treatment using music therapy.Preoperative anxiety is discomfort causing fear, often with biological, psychological, social, and spiritual symptoms. Preoperative anxiety not only causes emotional pain but is also accompanied by biological symptoms such as dizziness, palpitations, loss of appetite, shortness of breath, and trembling. Psychologically, these symptoms can include withdrawal, fear, anxiety, sleep

disturbances, and brooding. (Akbar et al., 2022). Preoperative anxiety is believed to be related to fears about medical conditions, the hospitalization process, anesthesia procedures, and surgery. (Lemos et al., 2019). Anxiety arises as an emotional response to self-evaluations that are not objective, formed by unconscious thoughts, and not always realized in detail. (Hatimah et al., 2022)

Preoperative anxiety can be reduced using music therapy. It is an effective, safe, simple, and harmless strategy to reduce stress in healthcare facilities or hospitals. (Ashok et al., 2019). Music therapy can be heard by the ears and felt through the nerves in the skin. It is believed to have a calming effect. The sound of music the auditory nerve receives is converted into vibrations, and then the limbic system stimulates the central nervous system, especially the amygdala and hypothalamus. This stimulation affects the autonomic nervous system, regulates psychological responses, provides a relaxing effect, and improves mood. (Ma'rifah et al., 2023). This is based on research findings from (Wang et al., 2024). A 30-minute music intervention can stabilize hemodynamics and significantly reduce pre-operative anxiety in women who will undergo non-cardiac surgery.Providing music therapy to patients must consider choosing the right type of music. The selected music should have a slow tempo and soft voice, a tempo of 60-80 beats/minute, and regularity and stability of tone. Patients should choose music with the therapist's direction, a maximum volume of 60 dB, and harmonization in harmony with the music. (Elliott et al., 2011). This is made clear by the research conducted by (Casarin et al., 2021), which reinforces the statement that patients listening to MP3 music lists with earphones for one hour, with a volume of 60 dB, can reduce anxiety levels at the preoperative stage. The suitability of the tone and rhythm of the music affects psychological balance. Music can affect hemodynamic status according to frequency, tempo, and volume. Music with a slower tempo can stimulate relaxation. Meanwhile, a faster rhythm can stimulate the sympathetic nervous system. According to research by (Janthasila & Keeratisiroj, 2023), music with a tempo of 60 bpm has proven effective in lowering anxiety levels in dental treatment patients.

Patients who experience preoperative anxiety need to be treated immediately because it can affect postoperative outcomes, such as longer anesthesia recovery, postoperative pain that can increase analgesic requirements, increased need for intraoperative anesthesia, and increased incidence of postoperative nausea and vomiting (Izzati et al., 2024). Music therapy has long been used in the healing process in various cultures. Florence Nightingale was the first to recognize the positive effects of music therapy (Novitasari et al., 2023). Research results from Marsono & Ismerini, (2022) Shows that music therapy can reduce anxiety, improve sleep quality, and put patients in a relaxed state when listening to music that they like. Research from Ganesan et al., (2022) Music intervention can be used as one of the complementary therapies to overcome symptoms such as anxiety and pain and is recommended to be applied before increasing the sedation of patients with mechanical ventilation.Several studies have shown that music intervention significantly reduces patient anxiety at the preoperative stage. Research by (Waryanuarita et al., 2018) General anesthesia patients showed patients who previously had anxiety from severe to mild to have no anxiety after getting music therapy. In addition, research by (Savitri et al., 2016) Music therapy reduces anxiety in pre-operative patients by stimulating the release of endorphins, increasing dopamine, and creating a sense of security. This therapy also helps suppress the sympathetic nervous system, reducing the physiological stress response. (Waryanuarita et al., 2018) These findings indicate that music therapy serves as a proper complementary intervention in managing preoperative anxiety, offering a non-pharmacological approach to improve patient comfort and well-being before surgical procedures.

CONCLUSION

A review of seven articles on music therapy management in general surgery patients showed that it is statistically proven effective in lowering preoperative anxiety and helps maintain diastolic blood pressure, heart rate, and serum cortisol levels within normal limits.

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