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Music Therapy and Aromatherapy Intervention on Anxiety in Preoperative Laparotomy Digestive Surgery Patients: A Systematic Review

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Abstract:
Laparotomy is a surgical procedure to open the abdominal cavity, with an incision in the abdominal wall to access the organs. Laparotomy can cause anxiety in the patient. Management that may be given to reduce anxiety is music therapy and aroma therapy. Both of these therapies stimulate the brain to change emotions. Anxiety before surgery has an impact on the results of surgery which can cause hypertension, increase heart rate, and can cause bleeding. This study aims to explain the effect of music therapy and aromatherapy interventions on anxiety in digestive surgery patients before laparotomy surgery. The research design used the Preferred Reporting Items for Systemic Review guidelines with an online literature search strategy using the Scopus, Science Direct, PubMed and ProQuest databases. The years of literature sources taken are 2014 to 2023. Research from 19 journals reviewed showed that there was an effect of a combination of music therapy and aromatherapy on anxiety in preoperative laparotomy digestive surgery patients. The articles reviewed were based on inclusion criteria. The results of the review of all articles showed that music therapy and aromatherapy were effective in overcoming anxiety in patients who were going to undergo laparotomy surgery. This intervention can reduce the impact or complications that may occur after laparotomy surgery. Music therapy and aromatherapy are effective interventions used as therapy to reduce anxiety levels before laparotomy surgery and can be used as independent nursing interventions that are easy and cheap to implement and have excellent benefits for patients.

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INTRODUCTION

Anxiety before surgery is a common finding that often occurs in patients who will undergo or undergo surgery (Oteri et al., 2021). Data on patients undergoing surgery, 25-80% of whom experience anxiety before surgery (Oteri et al., 2021). Laparotomy is a procedure to treat various disorders of the organs in the human abdominal cavity. This procedure is carried out by making a large incision around the patient's stomach area. (Sjamsuhidajat & De Jong, 2010). This procedure is recommended for patients who experience unexplained abdominal pain or patients who have experienced abdominal trauma, besides that it can be performed in digestive and obstetric gynecological surgery (Smeltzer, 2014). WHO stated that for more than a century surgical care has been an important component of health care in the world. An estimated 230 million surgical procedures are performed worldwide. The report from the Ministry of the Republic of Indonesia states that the number of laparotomy cases in Indonesia increased from 3281 cases in 2011 and

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3625 cases in 2014. The percentage of laparotomy cases handled in government hospitals was 38.5% while in private hospitals it was 60.5% (Kemenkes RI, 2014). Anxiety must be given intervention so that it does not have a negative impact on health (Afandi et al, 2023).

Physical or emotional stress due to this surgical procedure will activate the amygdala which is the limbic system which is related to the emotional component of the brain. This neurological response from the amygdala is transmitted and stimulates a hormonal response from the hypothalamus (Liang et al., 2021). The hypothalamus releases the hormone CRF (corticotropin-releasing factor) which stimulates the pituitary to release the hormone ACTH (adrenocorticotropic hormone) into the blood. ACTH stimulates the adrenal glands to produce cortisol. The more severe the stress, the adrenal glands will produce cortisol which results in suppression of the immune system (Guyton and J.E. Hall, 2007). Anxiety is very common in patients before surgery. High levels of anxiety negatively affect postoperative outcomes, for example high preoperative anxiety in women undergoing surgical delivery has been associated with greater reductions in systolic arterial pressure. Additionally, preoperative anxiety has been found to be associated with increased postoperative pain (Franco et al., 2016). Patients with anxiety tend to have longer hospital stays, decreased postoperative satisfaction, and less compliance with rehabilitation (Oteri et al., 2021).

Anxiety is a problem that nurses need to handle, considering the negative effects that can be caused by feelings of anxiety itself. Apart from pharmacological therapy, complementary therapy is often an option to treat anxiety-related problems. Complementary therapy that has been developed to reduce post-surgical anxiety is a of aromatherapy and music. Music can affect the body's biological conditions such as emotions and memory. A steady, calm tap has a strong influence on the patient, creating a relaxed state. The combination of sound stimuli that form vibrations in music stimulates the senses, body organs and emotions. This means that individuals who listen to music will respond physically and psychologically, which stimulates the body system, including the activity of the glands within it. Meanwhile, the use of aromatherapy by inhalation triggers changes in the limbic system, the part of the brain associated with memory and emotions (Hongratanaworakit, 2004). According to Kozier, Erb, Berman, and Snyder (2010) when essential oils are inhaled, the aroma is detected by the olfactory receptor cells in the nostrils, the stimulus travels along the olfactory nerve (cranial nerve I) to the olfactory bulb and then to the brain where the stimulus is perceived. plays a role in emotions, memory, and various body functions including heart rate, blood pressure, breathing, and the immune system. The use of complementary therapy is beneficial for patients, based on the fact that the complementary therapy approach is non-invasive, low risk, does not cost a lot, and is easy to apply to patients.This study aims to determine the intervention of aromatherapy and music on anxiety in digestive surgery patients before laparotomy surgery based on research in the last 10 years.

METHOD

This research was conducted by searching for literature published in the last 10 years (2014-2023). literature search using English. The articles obtained were selected from several indexed electronic databases such as Scopus, Sage, Science direct, PubMed, and Proquest. Each article must comply with existing protocols and rules, namely the Preferred Reporting Items for Systematic Reviews (PRISMA) flow diagram.

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Search Strategy

Article review will be carried out in September 2023. The strategy for reviewing articles uses the PICOS framework. Articles were identified based on keywords, namely "Music Therapy" AND "Aromatherapy" AND "Anxiety" AND "Pre-Laparotomy" OR "Abdominal Surgery" with the criteria of articles published 2014-2023 using English.

Inclusion and Exclusion Criteria

The inclusion criteria for this article are music and aromatherapy interventions given to overcome anxiety in patients before laparotomy. Inclusion criteria for reviewing articles are limited to publication between 2014-2023 and in English. The articles taken come from the last 10 years with a Randomized Control Trial, Quasy Experimental, A Pilot Study research design except qualitative research. There were 19 articles that met the inclusion and exclusion criteria from 575 articles found in the database.

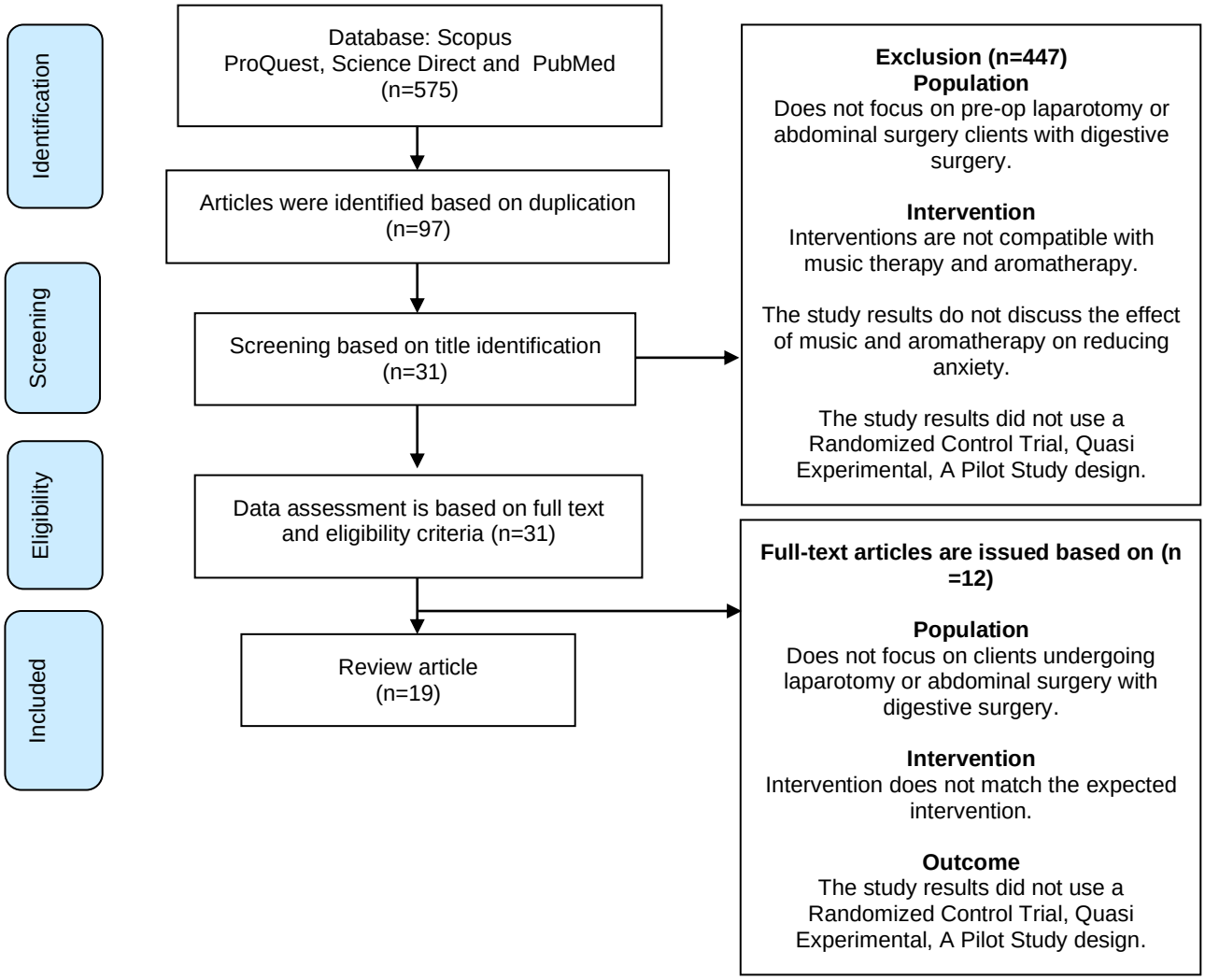

Figure 1. Flowchart of the Articles Selected for the Systematic Review and the Selection Process Using PRISMA.

RESULT

Study Selection

The total number of articles identified was 575 articles. Then, the articles were checked for duplicates and screening, resulting in 97 articles. Articles were filtered based on title identification, resulting in 31 articles. To test the suitability of full-text articles, an assessment was carried out, and there were 19 research articles remaining for review. After identification, all articles used RCTs, Quasi experiments and Pilot studies. The databases used were Scopus, Science Direct, PubMed and ProQuest, with search results for Scopus as many as 105 articles, Science Direct as many as 200 articles, PubMed as many as 200 articles and ProQuest as many as 70 articles.

Table.1 Article Characteristics

No	Author, Year	Research design	Respondents
1	(Zamanifar et al., 2020)	Randomized Control Trial	120 patients
2	(Goli et al., 2020)	Randomized Control Trial	150 patients
3	(Yangfan et al., 2018)	Randomized Control Trial	100 patients
4	(Buston, 2018)	Quasi-Experimental	36 patients
5	(Lee et al., 2017)	Randomized Control Trial	132 patients
6	(DJamuna et al., 2020)	Quasi-Experimental	104 patients
7	(Kumala et al., 2018)	Quasi-Experimental	15 patients
8	(Deng et al., 2021)	Randomized Control Trial	160 patients
9	(Dagli et al., 2019)	Randomized Control Trial	99 patients
10	(Casarin et al., 2021)	Randomized Control Trial	100 patients
11	(Giordano et al., 2020)	A Randomized Controlled	48 patients
12	(Jaruzel et al., 2019)	A Pilot Study	30 patients
13	(Franco et al., 2016)	A Randomized Controlled	93 patients
14	(Pasyar et al., 2020)	A Randomized Clinical Trial	60 patients
15	(Koehler, 2021)	A Quasi-Experimental	44 patients
16	(Ugras et al., 2018)	A Randomized Control Trial	130 patients
17	(Wotman et al., 2017).	A Quasi-Experimental	100 patients
18	(Anita Padam, 2017)	A Randomized Control Trial	199 patients
19	(Esmaeili, 2019)	A Randomised Controlled Trial	66 patients

The design used was quasi experimental by the researcher (Buston, 2018), (DJamuna et al., 2020), (Kumala et al., 2018) dan (Koehler, 2021). Quasi-experimental research aims to reveal causal relationships by involving 2 groups, namely the control and intervention groups. In this type of design, the experimental group is given treatment or intervention, while the control group is not given treatment. At the beginning, both groups were given a pre-test and after treatment or a post-test (Nursalam, 2017). Research by (Kumala et al., 2018) where This study was a pseudo-experimental study with a non-equivalent group. The experimental group had music and aromatherapy interventions, while the control group only had music therapy. Respondents were randomly assigned to the music group and the combination group. to assess the level of anxiety using the HARS Scale instrument. Paired t-test and one-way ANOVA were used for data analysis. There is a significant effect of combination therapy on anxiety.

This research design uses randomized controlled trial (RCT) design, which is the most powerful design for evaluating interventions used to show that the interventions used are actually feasible (Monsen &; Van Horn, 2008, p. 14). Based on the characteristics of respondents from each article, in research on researchers, (Zamanifar et al., 2020), (Goli et al., 2020), (Yangfan et al., 2018), (Lee et al., 2017), (Deng et al., 2021), (Dagli et al., 2019), (Casarin et al., 2021), (Giordano et al., 2020), (Franco et al., 2016), (Pasyar et al., 2020)and (Ugras et al., 2018). The

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use of a sample of 10 – 20% for subjects with more than 30 is considered sufficient (Nursalam, 2017). According to (Zamanifar et al., 2020), Music and aromatherapy interventions can reduce anxiety, so this combination can be recommended as a cheap and safe non-pharmacological treatment. This method is an effective strategy to help patients manage anxiety before surgery and will have the impact of reducing post-operative complications for patients and shortening the patient's surgical recovery time, especially in patients undergoing laparotomy.

DISCUSSION

The results of a review of all articles show that music therapy and aromatherapy are effective in overcoming anxiety in patients who will undergo laparotomy surgery. This intervention can reduce the impact or complications that may occur after laparotomy surgery. Results from the review of the above articles (Zamanifar et al., 2020), (Goli et al., 2020) (Yangfan et al., 2018), Before and after this surgical procedure, patients who listened to music had lower levels of anxiety than those who did not listen to music. This is in line with the results of the review in the article, the average anxiety measured after the surgical procedure was lower than before. Music reduces anxiety and as a result can reduce costs and side effects (Huang et al., 2021). The musical intervention significantly reduced anxiety in adult surgical patients. Music therapy supports the use of music in medicine which suggests that music is soft, which can make a person feel relaxed. Someone who listens to classical music will easily achieve a relaxed and calm state, so it is very easy to reduce the degree of anxiety and immune levels (Mangoenprasodjo &; Hidayati, 2005).

Music and aromatherapy when combined are recommended as a cheap and safe complementary treatment. This method is an effective strategy to help patients manage anxiety before surgery, thereby reducing the patient's post-operative complications. According to (Kumala et al., 2018), Music and aromatherapy interventions have a greater effect than using music therapy interventions without a combination, in reducing the level of anxiety in someone who is about to undergo surgery and can stabilize diastolic blood pressure and heart rate (Zamanifar et al., 2020). This combination therapy can be used as an alternative in nursing interventions and can be used to develop operational standards (SOP) to reduce a person's anxiety level before surgery. Music interventions and All types of music have an effect in reducing the patient's anxiety before surgery, and listening to Turkish Classical Music is the most effective. This study provides an evidence-based picture of how music therapy and aromatherapy impact postoperative laparatomy patients on reducing anxiety felt by patients.

The working mechanism of aromatherapy can reduce anxiety levels, namely due to the aroma that is smelled through a person's sense of smell which is captured by receptors in the nose which then provides further information to the area of the brain that controls emotions and memory as well as providing information to the hypothalamus (Son et al., 2019). Music intervention can reduce anxiety because musical stimulation appears to activate specific pathways in several areas of a person's brain, such as the Limbic system which is related to emotional behavior. By listening to music, this limbic system is activated, and the patient will become relaxed. When the state is relaxed, the patient's anxiety decreases (Son et al., 2019). First patient experience undergoing surgery would be very important for someone going through the same thing the second time, success someone is having a first experience will be a coping mechanism positive but that also applies vice versa if there is a failure in previous operating experience will be an emotional reaction leading to coping mechanisms maladaptive. In line with the results of research related to respondents' surgical experience, it was found that respondents who had never undergone surgery before experienced higher anxiety compared to respondents who had undergone surgery previous

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operation. Regarding minor and major types of surgery, it also has an impact on pre-operative patients due to the perception of fear of the operation, this causes the majority of 50% of patients who undergo major surgery to experience severe levels of anxiety.

NURSING IMPLICATIONS

One of the medical procedures that causes a lot of anxiety is surgery. Until now, most people think that all surgery is major surgery. Surgery is a potential and actual threat to a person that can cause a stress reaction that disrupts psychological and physiological conditions. One non-pharmacological method that can reduce patient anxiety facing surgery is aromatherapy which can be used to reduce anxiety. Aromatherapy has a positive effect that stimulates sensory, receptors which ultimately influence the hypothalamus to cause a strong emotional change effect. The aroma captured by the nasal receptors will be continued as information to the brain area that controls emotions and memory, then continued to the hypothalamus which is the regulator of the body's internal systems including the sexual system, body temperature and reactions to stress.

Another therapy to reduce patient anxiety is providing music therapy which will help express feelings, reduce muscle tension, and reduce anxiety. This biologically increases muscle energy, causes respiratory frequency and pulse to become regular, blood pressure becomes stable. Providing these two therapies can make nursing management more varied, not monotonous, cheap, and easy to apply in daily nursing care activities. Achieving good nursing care increases the quality and intensity of nursing interventions for anxiety for the better in the future.

CONCLUSION

Music therapy intervention combined with aromatherapy can be done to reduce anxiety in laparotomy surgery patients. This has been proven to reduce anxiety and influence changes in physiological parameters in patients. Both of these therapies influence the brain's response and impact emotional changes. This reduces patient anxiety. This combination therapy is an alternative non-pharmacological treatment that can be accepted by patients.

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CONFLICT OF INTEREST

There are no conflicts of interest in the article review process.

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