

INHALATION OF ROSE AROMATHERAPY AGAINST ANXIETY OF HEART PATIENTS

Yeli Yulianti¹, Sidik Awaludin²

^{1,2} Master of Nursing, Faculty of Health Sciences, Universitas Jendral Soedirman, Indonesia

Email: yeliyuliant@gmail.com

ABSTRACT

Cardiovascular disease remains a serious global threat and the leading cause of death worldwide. Patients with heart problems face significant physical and emotional challenges. This article uses a systematic design review concerning PRISMA to investigate the effect of rose aromatherapy inhalation on anxiety of heart patients. Data were synthesized from the Quasy Experiment and RCT by formulating PICO (Heart patients, Rose aromatherapy inhalation, Control group, Decreased anxiety levels). The results of the analysis of the six articles showed that rose aromatherapy had a positive influence on reducing anxiety in heart patients. Despite variations in research methods, these results overall support the potential effectiveness of rose aromatherapy as an additional approach to relieve anxiety in heart patients.

KEYWORDS cardiovascular, anxiety, aromatherapy, roses, PRISMA, PICO



This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International

INTRODUCTION

Cardiovascular disease is still a serious global threat and remains the leading cause of death worldwide. According to data from the World Health Organization (WHO), more than 17 million people in various parts of the world die from heart disease and vascular disease, while diseases such as HIV/AIDS, malaria, and tuberculosis together cause the death of about 3 million people worldwide. Basic Health Research (Riskesdas) in 2018 also recorded an increase in the incidence of heart and blood vessel disease from year to year. In fact, about 2,784,064 individuals in Indonesia, or at least 15 out of 1000 people, suffer from heart disease (Firdaus 2019). Heart patients often face significant physical and emotional challenges. Conventional medical care is essential, but on the other hand, there is increasing recognition of the importance of holistic treatments involving the emotional and psychological

How to cite: Yeli Yulianti, Sidik Awaludin. (2024). Inhalation of Rose Aromatherapy Against Anxiety of Heart Patients. *Journal Eduvest*. 4 (3): 1310-1321
E-ISSN: 2775-3727
Published by: <https://greenpublisher.id/>

aspects of illness (AlMohammed et al., 2022). In this regard, holistic treatments through aromatherapy inhalation offer a natural approach that can help relieve anxiety symptoms (Nategh et al., 2022), so it is suitable for heart patients.

Complementary aromatherapy therapies are increasingly gaining attention in modern medical practice (Mahyuvu et al., 2021). This indicates a growing interest in alternative therapies and even substitutes for conventional medicine (Aćimović, 2021). Thus, scientific research trying to understand the effectiveness of aromatherapy in relieving anxiety in heart patients is a relevant step. A study conducted by (AlMohammed et al., 2022) A literature study has reported that aromatherapy on cardiovascular disease has been shown to be effective in reducing anxiety (59.6%).

The advantages of aromatherapy are often considered a safe therapy with minimal side effects, especially when compared to pharmaceutical drugs that may have more serious side effects (Lin et al., 2021). One type of aromatherapy herbal plant that is popularly used is roses. In this regard, rose aromatherapy is believed to have the potential to reduce anxiety on a physical and mental level. This pleasant aroma is believed to stimulate the production of neurotransmitters such as serotonin and dopamine, which have a role in improving mood and reducing anxiety levels (Bikmoradi et al., 2020).

In addition to the impact on the biological level, rose aromatherapy can also have an effect on the emotional level. A pleasant scent can create a more peaceful and pleasant environment, helping to relieve stress and emotional tension often associated with anxiety (Fazlollahpour-Rokni et al., 2019). Based on this explanation, aromatherapy from rose essential oil is believed to have positive benefits in reducing anxiety, especially in heart patients. Therefore, researchers are interested in raising this topic in systematic review This is with the title: "Rose Aromatherapy Inhalation against Heart Patient Anxiety".

RESEARCH METHOD

The article design used is a systematic review with reference to Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA). The disintegrated data was the effect of rose aromatherapy inhalation on anxiety of heart patients in the form of the Quasy Experiment and Randomized Control Trial (RCT). The search process begins with formulating PICO which is used to direct authors in clinical search articles. PICO is an acronym for P (patient, population, problem), I (intervention, prognostic factor, exposure), C (comparison, control), and O (outcome). The PICO formulation in this systematic review is P = Heart patient; I = Inhalation of rose aromatherapy; C = The existence of a control group comparable to the intervention group; O = Decreased level of anxiety.

Keywords used by the author in article search include: "Effect of rose aromatherapy inhalation on anxiety of cardiac patients, Journal, Pdf." The database search in this systematic review will be conducted in November 2023. Databases used include Google Scholar, PubMed, Science Direct, and Wiley Online Library. The article selection process is carried out according to inclusion and exclusion criteria.

The inclusion criteria in this systematic review are international articles, articles published or published from 2013-2023 and given ease of access (open access journals), the articles used are original full text research articles with rose

aromatherapy inhalation interventions, randomized control trial design methods, random clinical trials or quasy experimental with control group design. Exclusion criteria are criteria outside the inclusion criteria. The exclusion criteria in this systematic review are articles with problem topics not related to inhalation of rose aromatherapy on heart patient anxiety and literature review/systematic review/meta-analysis-based articles. Researchers obtained the titles of articles related to research topics online totaling 87 articles. After researchers identify eighty-four articles, it can be classified, articles obtained from Google Schooler as many as 77 articles, articles obtained from PubMed as many as 7 articles, articles obtained from Science Direct as many as 2 articles and articles obtained from Wiley Online Library as many as 1 article. This identification, screening and selection process resulted in a comprehensive series of articles according to the selected topic, which can be seen in the following diagram figure 1:

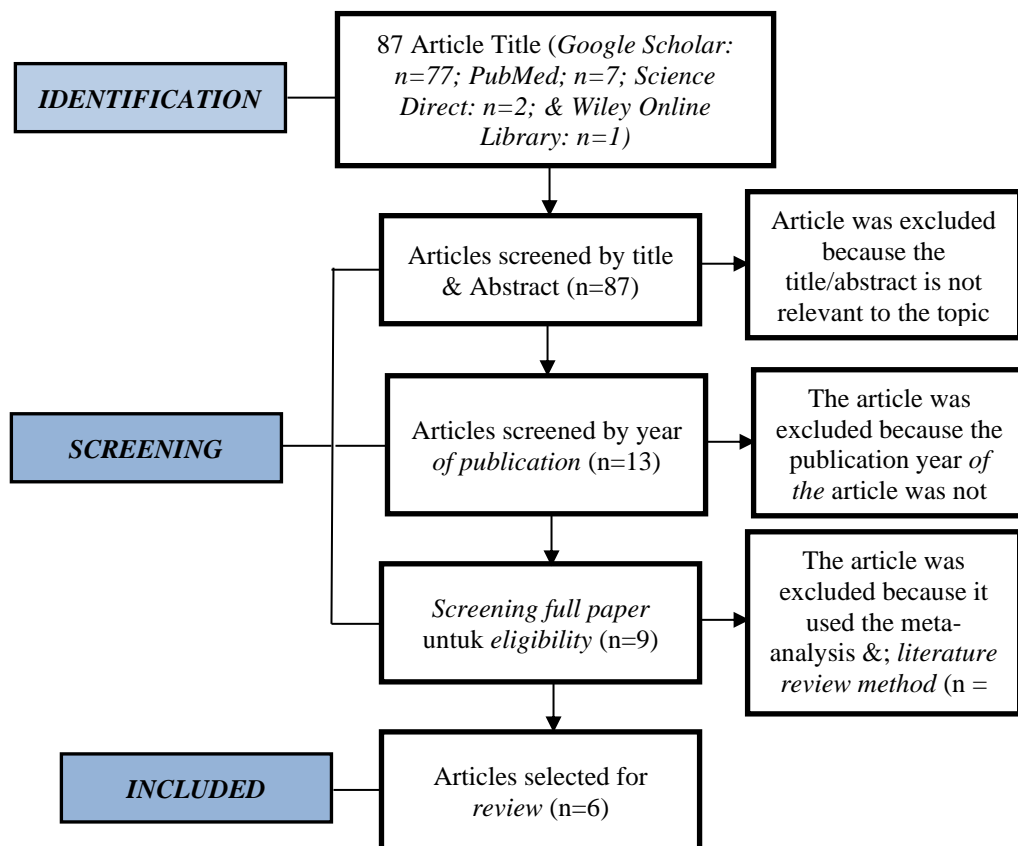


Figure 1 Article Search Results Diagram Based on PRISMA (prism 2020)

RESULT AND DISCUSSION

Selected articles are critically assessed which assesses the methodology of a research methodology. The instrument used is the CASP JBI 2020 (Critical

Appraisal Skills Program 2020) questionnaire. Assessment is focused on assessing the quality of the methodology, possible biases in design, behavior, and analysis. This questionnaire contains different question items for each research design. The list of questions for research with randomized controlled trial (RCT) design has 13 questions, while the list of questions for non-randomized research such as quasi-experiments there are 9 questions. Each question must be answered with a clear yes/no/no and no applies. The answer "yes" will get a score of 1 and the other answers get a score of 0, then the results are divided by the total number of questions and multiplied by 100%. Quality is good when the score is 100-80%, quality is enough 79-50%, and quality is less <50%.

A literature search found 6 articles that met the criteria in Google Scholar, Pubmed/NCBI, Wiley Online Library, and Alberta Health Services. Articles are from publications from 2013 to 2023. The research locations reported in these articles were all conducted in Indonesia (6 articles or 100%). The results of the assessment with Joanna Brighg Institute (JBI) CASP (Critical Appraisal Skills Programme, 2020) obtained 6 articles with good quality. Then the selected articles are extracted data in the form of tables in order to obtain information including titles, authors, research methods / designs, intervention techniques, samples and sample techniques, measured outputs and research results. This study conducted a review study on 6 articles that discussed and reported on the effect of rose aromatherapy inhalation on heart patient anxiety.

Table 1 Article Summary

Article Title	Researcher & Year Published	Method	Speakers	Samples & Sample Techniques	Measured Exterior	Result	Level of Evidence
<i>Effect of rose damascene aromatherapy on anxiety and sleep quality in cardiac patients: A randomized controlled trial.</i>	(Jodaki et al., 2021)	<i>Randomized controlled trial</i>	Patients in the experimental group inhaled five drops of 40% rose essential oil in distilled water every night for 3 consecutive nights. In the control group, patients inhaled five drops of distilled water as placebo every night for 3 consecutive nights. Rose	The study involved 60 patients using convenience sampling to select patients who met the inclusion criteria.	The measurements were taken before and after three consecutive nights using the <i>SpielBerger State-Trait Anxiety Inventory (STAI)</i> questionnaire, which is a <i>self-completed</i> questionnaire of 40 items that aims to separately assess anxiety, both transient anxiety (<i>state anxiety</i>) and	The use of rose fragrance significantly reduced anxiety in the experimental group compared to the control group ($P < 0.05$). The significance level for anxiety is ($P = 0.001$).	There was a significant effect of rose aromatherapy inhalation on anxiety of patients ($P = 0.001$) with heart problems between the intervention group and the control group ($P < 0.05$).

			essential oil is placed on an absorbent cloth tied to the collar of the patient's shirt. The study was conducted from 22:00 to 06:00 every night.		personality anxiety (<i>trait anxiety</i>), each consisting of 20 items.		
<i>The effect of aromatherapy with rose and lavender on anxiety, surgical site pain, and extubation time after open-heart surgery: A double-center randomized controlled trial.</i>	Darzi, H.B., Azimi, A.V., Ghasemi, S., Ebadi, A., Sathyapalan, T., & Sahebkar, A. (2020).	<i>Double-center Randomized Clinical Trial (RCT)</i>	The rose aromatherapy inhalation used, was given to the intervention group who received a cotton swab soaked in three drops of rose flower essential oil (0.2 ml). A cotton swab is placed on the patient's chest for 15 minutes after the first trigger of ventilation breath by the patient or spontaneous breathing by the patient.	The study involved a total of 160 patients, divided into four groups. <i>Convenience sampling</i> was used, followed by random assignment with octad blocks into four groups (two intervention groups, one control group, and one placebo group).	Anxiety levels were measured before surgery and immediately after admission to the operating room using <i>Spielberger's</i> anxiety questionnaire, which consisted of four Likert points with scores ranging from 4 to 80. Higher scores indicate more severe anxiety. The level of pain at the surgery site is measured with a visual analogue scale after the patient wakes up	Extubation time and surgery site pain levels were significantly lower in the group intervened with rose aromatherapy inhalation compared to the control group (p < 0.001) and placebo group (p = 0.029). Rose aromatherapy can reduce extubation time, surgical site pain severity, and anxiety in patients undergoing OHS.	There was a significant effect of rose aromatherapy inhalation on the anxiety of patients with heart problems in the control group (P < 0.001) and in the placebo group (P = 0.029).
<i>The effect of inhalation aromatherapy with rose essential oil on the anxiety of patients undergoing coronary</i>	(Fazlollahpour-Rokni et al., 2019)	<i>Single-blind Randomized Clinical Trial (RCT)</i>	Rose essential oil is diluted with propylene glycol (1:25 ratio) and applied to a cotton swab placed on the	The study involved a total of 66 patients undergoing CABG surgery, who were divided into two groups.	Measurements of anxiety levels were measured before and 30 minutes after the intervention using <i>Spielberger's</i>	Inhaled aromatherapy with rose essential oil did not significantly reduce anxiety in CABG patients. Future studies	Rose aromatherapy inhalation has no significant effect on the anxiety of patients with heart problems.

<p>artery bypass graft surgery.</p>			<p>patient's clothing 20 cm from the patient's nose. The intervention was carried out in a separate, ventilated room with a temperature of 25 °C for 10 minutes. The control group received no intervention from the research team.</p>	<p><i>Convenience sampling</i> is used, patients are taken from hospitals affiliated with the University of Medical Sciences, Sari, Iran</p>	<p><i>Anxiety Inventory</i>, which consisted of 40 items, with the first 20 measuring <i>state</i> anxiety, and the next 20 evaluating trait <i>anxiety</i>. Scores of 20–31 reflect mild anxiety, 32–42 under moderate anxiety, 43–53 above moderate anxiety, 54–64 relative severe anxiety, and 65–75 severe anxiety. Scores can range from a minimum of 20 to a maximum of 80.</p>	<p>with larger samples and different concentrations of rose essential oil may be needed to derive more definitive conclusions.</p>	
<p><i>Impact of inhalation aromatherapy with damask rose on anxiety of patients undergoing coronary angiography: A single-blind randomized controlled clinical trial.</i></p>	<p>(Bikmoradi et al., 2020)</p>	<p><i>Single-blinded Randomized Controlled Trial (RCT)</i>,</p>	<p>Patients in the control group inhaled 5 drops of distilled water for 20 minutes before undergoing coronary angiography. The study was single-blinded, meaning participants did not know whether the patients were in the aromatherapy group or the control group.</p>	<p>The study involved a total of 98 patients undergoing <i>coronary angiography</i>, who were divided into two groups. RCT was conducted at <i>Besat Educational Hospital</i>, Hamadan, Iran, in 2017.</p>	<p>Anxiety measurements were measured before and 2 minutes after the intervention using the state portion of the <i>State-Trait Anxiety Inventory (STAI)</i> questionnaire, consisting of 40 items, with the first 20 measuring <i>current anxiety (state anxiety)</i>, and the next 20</p>	<p>There was no significant difference between the average anxiety of patients before the intervention in the aromatherapy group and the control group. There was a significant difference between the average anxiety of patients before and after the intervention in the</p>	<p>There was a significant difference between the average anxiety of patients before and after the intervention in the aromatherapy group ($P < 0.001$), which showed a decrease in anxiety. In contrast, there was no significant difference between the mean anxiety of patients</p>

					evaluating trait <i>anxiety</i> .	aromatherapy group (P<0.001), which showed a decrease in anxiety. In contrast, there was no significant difference between the mean anxiety of patients before and after the intervention in the control group (P = 0.067).	before and after the intervention in the control group (P = 0.067).
<i>Comparison of the effects of aromatherapy with rose and lavender on physiological parameters of patients undergoing open heart surgery: A clinical trial.</i>	(Ghasemi et al., 2017)	<i>Randomized Controlled Clinical Trial (RCT)</i>	Patients were divided into 4 groups: 2 intervention groups (rose and lavender essential oils), 1 control group, and 1 placebo group. Each patient in the intervention group received a cotton cloth that had been soaked with 3 drops of rose or lavender essential oil after the patient made the first breath attempt after surgery. The placebo group received the intervention with a cotton cloth soaked with water, and the	The study involved a total of 160 patients who underwent open <i>heart surgery</i> . The study was conducted on patients admitted to the cardiovascular ICU at Baqiyatallah Teaching Hospital.	The measurement uses a vital signs monitoring system, where vital signs are controlled and documented every 30 minutes until the endotracheal tube is removed. After removal of the endotracheal tube, vital signs are assessed every 15 minutes. Physiological indicators involve heart rate, respiratory rate, systolic and diastolic blood pressure, and peripheral oxygen levels, which are measured using vital	Aromatherapy with rose and lavender essential oils showed no significant differences in physiological parameters. There were significant reductions in systolic blood pressure within 15, 45, and 60 minutes after endotracheal tube extraction in the intervention group, but the difference did not have a clinically significant impact.	Aromatherapy with rose oil significantly reduced patients' anxiety, but the findings showed that there was no significant difference between aromatherapy with rose and lavender essential oils on physiological parameters.

			control group did not receive the intervention.		signs monitoring systems and monitoring devices (Dats, General Electric Co., USA).		
<i>The effect of rose water on the anxiety level of aged admitted to cardiac intensive care units.</i>	Siyavoshani, H.M., Arezodar, F.F., Pishgooei, S.A., & Milani, J.M. (2020).	<i>Semi-experimental</i>	The intervention group received aromatherapy using rose water for three consecutive nights.	The study involved 60 elderly patients in cardiac intensive care units. Samples are taken in the order of admission to the care unit.	Anxiety measurements were made using the Hamilton Anxiety Assessment (HAM-A) scale, which consists of 14 items designed to measure anxiety levels in individuals.	Prior to the intervention, there were significant differences in anxiety levels between the intervention and control groups. After the intervention, there was a significant reduction in anxiety levels in both groups. This study showed that rose aromatherapy was effective at reducing anxiety levels in elderly patients in cardiac intensive care units.	There were significant differences in anxiety levels between the intervention and control groups. After the intervention, there was a significant reduction in anxiety levels in both groups

Discussion

Based on the results of literature analysis of 6 articles on the effect of rose aromatherapy inhalation on anxiety of heart patients, it can be found that intervention techniques in studies on rose aromatherapy show variations in application approach and duration of intervention. Jodaki et al., (2021) applied inhalation through patients in an experimental group who inhaled rose essential oil, while the control group inhaled distilled water as a placebo. The essential oil is placed on an absorbent fabric on the patient's collar, with the intervention carried out for three consecutive nights from 22:00 to 06:00. In the study of Darzi et al. (2020), aromatherapy inhalation was done by soaking a cotton swab in rose essential oil, placed on the patient's chest for 15 minutes after triggering ventilation breath or spontaneous breathing. Fazlollahpour-Rokni et al., (2019) used essential oils diluted and applied

to cotton in patients' clothing, with the intervention carried out for 10 minutes in a separate room. Bimokradi et al. (2020) gave rose inhalation by inhaling distilled water for 20 minutes before undergoing coronary angiography. Ghasemi et al., (2017) divided patients into intervention, control, and placebo groups, with the intervention using a cotton cloth soaked with rose or lavender essential oil after the first breath attempt after surgery. Finally, Siyavoshani et al. (2020) provided rose aromatherapy through rose water for three consecutive nights.

An identifiable similarity between these studies is the use of rose fragrance as the main agent in relieving anxiety. Although the method of application and duration of intervention varied, the basic principles of using rose essential oil as an element of relaxation remained consistent. The differences in intervention techniques reflect research efforts to adapt methods to patient characteristics and specific clinical needs, as well as the complexity of the interaction between aromatherapy and physiological responses. Thus, the selection of appropriate intervention techniques must take into account the patient's specific context and desired clinical goals.

The timing and duration of interventions in rose aromatherapy studies vary according to the research context and the characteristics of the patients observed. In the study of Jodaki et al., (2021), the intervention began 24 hours after the patient was hospitalized, and was carried out for three consecutive nights from 22:00 to 06:00. In contrast, Darzi et al. (2020) intervened after the patient was transferred to the CCU, focusing on the extubation time measured after the use of rose essential oil.

Fazlollahpour-Rokni et al., (2019) intervened one night before surgery at 9 pm and one hour before surgery by nurses. Bimokradi et al. (2020) applied the intervention for 20 minutes before the patient underwent coronary angiography. Ghasemi et al., (2017) focused the intervention after the patient was transferred to the open-heart postoperative cardiovascular ICU, with vital sign monitoring every 30 minutes until endotracheal tube extraction, followed by monitoring every 15 minutes for 1 hour post-extraction. Meanwhile, Siyavoshani et al. (2020) provided aromatherapy intervention for three consecutive nights.

The similarity between studies is the use of interventions in the form of aromatherapy for several consecutive nights, demonstrating a continuous approach to obtaining therapeutic benefits. The difference lies in the specific time of application, some focused on the time before surgery or specific medical interventions, whereas others are more oriented towards postoperative recovery or intensive care. The timing and duration of the intervention should take into account the clinical objectives and overall needs of the patient, ensuring that the approach taken is appropriate to the specific conditions and context of the treatment.

Approaches to control groups in rose aromatherapy studies vary, but in general, the control group's goal is to provide adequate comparator to evaluate the effects of the intervention. In the study of Jodaki et al., (2021), the control group received regular care with a focus on environmental noise and light reduction, as well as daytime nursing care to minimize patient sleep disturbances. The group inhaled five drops of distilled water as placebo for three consecutive nights, creating control conditions to distinguish the aromatherapy effects of roses.

(Babatabar Darzi et al., 2020) noted that their control group received routine care without additional intervention, while the placebo group received cotton swabs soaked in water. A similar approach was applied by Ghasemi et al., (2017), in which the control group received no additional intervention after open-heart surgery. Fazlollahpour-Rokni et al., (2019) did not intervene in their control group, making it a group that did not receive treatment from the research team.

In summary, reviewed studies consistently show that aromatherapy with rose essential oil, lavender, or rose water has a positive impact in reducing anxiety levels in heart patients. The intervention resulted in significant improvements in psychological and physiological parameters, demonstrating the potential of aromatherapy as a complementary approach in managing anxiety in cardiac care settings. However, further studies with larger sample sizes and diverse populations are recommended for a more comprehensive understanding of the therapeutic effects of aromatherapy on cardiac patients.

CONCLUSION

Based on the description and explanation in this literature review, it can be concluded that aromatherapy inhalation using rose essential oil has a positive influence on the anxiety of patients with heart problems. Several studies have shown significant results in reducing anxiety, in line with the application of intervention techniques involving inhalation of rose essential oil. Despite variations in research methods and results found, these findings collectively lend support to the potential effectiveness of rose aromatherapy as an additional approach in relieving anxiety in heart patients. These results drive the need for further studies with larger samples, uniform study designs, and tighter controls to validate these findings and provide a solid foundation for integrating aromatherapy in the clinical practice of patients with heart health problems.

Results from a number of studies on the effects of rose aromatherapy on patient anxiety show mixed findings. (Jodaki et al., 2021) stated that the use of rose fragrance significantly reduced anxiety levels in the experimental group compared to the control group, with significance levels of ($P < 0.05$) and ($P = 0.001$) for anxiety. (Babatabar Darzi et al., 2020) reported that aromatherapy with rose essence significantly reduced anxiety in heart surgery patients, while there was no significant difference in pain levels between the control group and placebo.

In contrast, Fazlollahpour-Rokni et al., (2019) found that rose inhalation aromatherapy did not provide a significant reduction in anxiety in CABG patients. Further research recommendations with larger samples and different oil concentrations were submitted. The study of Ghasemi et al., (2017) showed that aromatherapy with rose and lavender essential oils had no significant impact on physiological parameters, despite a significant reduction in systolic blood pressure in some time after endotracheal tube extraction in the intervention group. Finally, the study of Siyavoshani et al. (2020) showed significant differences in anxiety levels before intervention between the intervention and control groups, with significant decreases after intervention in both groups. Overall, the results provide mixed insights into the effectiveness of rose aromatherapy in reducing anxiety in patients. Further research

is needed to gain a deeper understanding, given variations in methodology and findings. (Haddadi et al., 2021) (Jodaki et al., 2021) (Babatabar Darzi et al., 2020) (Ghasemi et al., 2017) (Bikmoradi et al., 2021)

Recommendations

The recommendations in this study are:

1. Further studies with larger sample groups: To more accurately measure the effectiveness of aromatherapy in reducing anxiety in patients, it is recommended to conduct follow-up studies with a larger number of participants.
2. Deeper understanding of the mechanism of action of aromatherapy: A more detailed study of the mechanism of action of aromatherapy can provide deeper insight into how rose essential oil can affect a patient's nervous and emotional systems.
3. Comparative research with other types of aromatherapy: To provide a more comprehensive understanding of the effects of aromatherapy, it is recommended to conduct studies that compare rose essential oil with other types of aromatherapy, such as lavender or citrus.

REFERENCES

- Aćimović, M. (2021). Essential oils: Inhalation aromatherapy—a comprehensive review. *J. Agron. Technol. Eng. Manag*, 4, 547–557.
- AlMohammed, H. I., Alanazi, N., Maghrabi, E. F., & Alotaibi, M. (2022). Role of Aromatherapy as a Natural Complementary and Alternative Therapy in Cardiovascular Disease: A Comprehensive Systematic Review. *Evidence-Based Complementary and Alternative Medicine*, 2022.
- Babatabar Darzi, H., Vahedian-Azimi, A., Ghasemi, S., Ebadi, A., Sathyapalan, T., & Sahebkar, A. (2020). The effect of aromatherapy with rose and lavender on anxiety, surgical site pain, and extubation time after open-heart surgery: A double-center randomized controlled trial. *Phytotherapy Research*, 34(10), 2675–2684.
- Bikmoradi, A., Roshanaei, G., Moradkhani, S., & Fatahi, A. (2020). Impact of inhalation aromatherapy with damask rose on anxiety of patients undergoing coronary angiography: A single-blind randomized controlled clinical trial. *Avicenna Journal of Nursing and Midwifery Care*, 28(2), 93–102.
- Bikmoradi, A., Roshanaei, G., Moradkhani, S., & Fatahi, A. (2021). Impact of inhalation aromatherapy with Damask Rose (*Rosa damascena*) on stress, anxiety and hemodynamic parameters of patients undergoing coronary angiography: a single blind randomized clinical trial. *Journal of Complementary and Integrative Medicine*, 19(3), 753–761.
- Fazlollahpour-Rokni, F., Shorofi, S. A., Mousavinasab, N., Ghafari, R., & Esmaeili, R. (2019). The effect of inhalation aromatherapy with rose essential oil on the anxiety of patients undergoing coronary artery bypass graft surgery. *Complementary Therapies in Clinical Practice*, 34, 201–207.
- Ghasemi, S., Babatabar Darzi, H., & Ebadi, A. (2017). Comparison of the effects of aromatherapy with rose and lavender on physiological parameters of patients undergoing open heart surgery: A clinical trial. *Journal of Critical*

Care Nursing, 10(2), 0.

- Haddadi, M., Robot Sarpooshi, H., Jaghouri, E., & Dehnabi, A. (2021). The effect of aromatherapy with rose essential oil on apparent anxiety in patients with myocardial infarction. *Journal of Complementary and Integrative Medicine*, 19(4), 1007–1012.
- Jodaki, K., Mousavi, M.-S., Mokhtari, R., Asayesh, H., Vandali, V., & Golitaleb, M. (2021). Effect of rosa damascene aromatherapy on anxiety and sleep quality in cardiac patients: A randomized controlled trial. *Complementary Therapies in Clinical Practice*, 42, 101299.
- Lin, P.-H., Lin, Y.-P., Chen, K.-L., Yang, S.-Y., Shih, Y.-H., & Wang, P.-Y. (2021). Effect of aromatherapy on autonomic nervous system regulation with treadmill exercise-induced stress among adolescents. *PloS One*, 16(4), e0249795.
- Mahyuvi, T., Perbawani, D. R., & Suwardianto, H. (2021). The Effect Of Breathing Relaxation And Lavender Aromatherapy On Insomnia In The Elderly. *Interest: Jurnal Ilmu Kesehatan*, 38–45.
- Nategh, M., Heidari, M. R., Ebadi, A., Norouzadeh, R., Mohebbinia, Z., & Aghaie, B. (2022). Lavender aromatherapy on anxiety and depression in patients with Acute Coronary Syndrome: a single-blind randomized clinical trial. *Frontiers of Nursing*, 9(2), 233–239.