



Effectiveness of Lavender Aromatherapy on Anxiety in SMK Prima Indonesia Girls During PMS

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ABSTRACT

Around 30–80% of women of reproductive age experience physical and psychological Premenstrual Syndrome (PMS) symptoms, including anxiety, for which lavender aromatherapy is a recommended complementary treatment. The purpose of this study is to determine the effect of aromatherapy on the anxiety levels of female students during PMS. Methods this research employed a quantitative method with a quasi-experimental approach using a Pretest-Posttest design without a control group. The study was conducted at SMK from August 1 to October 25, 2022. The population consisted of all female students in grade X who had experienced menarche, totaling 85 students aged 13-17 years old. Data collection was done using the Hamilton Anxiety Rating Scale (HARS) questionnaire, comprising 14 standard questions. Univariate and bivariate analyses were conducted using the T-Test. The results revealed a p-value of 0.000, which is less than α (0.05), indicating that lavender aromatherapy had a significant effect on reducing anxiety levels in female students during PMS. Before the treatment, most respondents experienced moderate anxiety, but after the aromatherapy, more respondents shifted to experiencing mild anxiety. Lavender aromatherapy is significantly effective in reducing anxiety levels in female students during premenstrual syndrome (PMS).

Keywords: Lavender Aromatherapy, Anxiety, PMS

ABSTRAK

Sekitar 30-80% wanita usia reproduksi mengalami gejala fisik dan psikologis dari sindrom pramenstruasi (PMS), termasuk kecemasan, di mana aromaterapi lavender direkomendasikan sebagai pengobatan komplementer. Tujuan penelitian ini adalah untuk mengetahui pengaruh aromaterapi terhadap tingkat kecemasan siswi selama PMS. Metode: Penelitian ini menggunakan metode kuantitatif dengan pendekatan quasi-experimental menggunakan desain Pretest-Posttest tanpa kelompok kontrol. Penelitian dilakukan di SMK dari tanggal 1 Agustus hingga 25 Oktober 2022. Populasi terdiri dari seluruh siswi kelas X yang telah mengalami menarche, dengan total 85 siswa berusia 13-17 tahun. Pengumpulan data dilakukan menggunakan kuesioner Hamilton Anxiety Rating Scale (HARS), yang terdiri dari 14 pertanyaan standar. Analisis univariat dan bivariat dilakukan menggunakan Uji T. Hasil: Hasil menunjukkan nilai p sebesar 0,000, yang lebih kecil dari α (0,05), menunjukkan bahwa aromaterapi lavender memiliki pengaruh signifikan dalam mengurangi tingkat kecemasan siswi selama PMS. Sebelum pengobatan, sebagian besar responden mengalami kecemasan sedang, tetapi setelah aromaterapi, lebih banyak responden yang mengalami kecemasan ringan. Aromaterapi lavender secara signifikan efektif dalam mengurangi tingkat kecemasan pada siswi selama sindrom pramenstruasi (PMS).

Kata kunci: Aromaterapi Lavender, Kecemasan, PMS

INTRODUCTION

Around 30-80% of reproductive-age women experience a series of physical and mental symptoms during the premenstrual period, known as premenstrual syndrome (PMS) (Heydari et al., 2019). Approximately 20% of women experience PMS symptoms that are severe enough to disrupt daily activities, while the rest experience mild to moderate symptoms (Saglam & Orsal, 2020). PMS is a significant clinical manifestation of somatic and psychological symptoms during the luteal phase of the menstrual cycle, causing significant stress and functional capacity decline (Gudipally & Sharma, 2024). PMS typically occurs around 2-10 days before menstruation and disappears shortly before or after menstruation begins (Kanathi, 2020).

The exact cause of PMS is currently unknown, but Progesterone, the primary ovarian hormone, plays a crucial role in PMS. Its fluctuations throughout the menstrual cycle are closely linked to mood-related symptoms associated with PMS (Stefaniak et al., 2023). Other studies have also shown several other factors such as hormonal changes, neurotransmitters, prostaglandins, diet, lifestyle, obesity, hypothalamic-pituitary-adrenal axis disorders, adrenal gland hormone secretion, and environmental factors (Yi et al., 2023). PMS can affect not only the individual but also the family, and its causes include changes in women's behavior (Shariati et al., 2019).

PMS symptoms are categorized into physical and psychological. Physical symptoms include swelling, breast pain, headaches, increased appetite, and palpitations (Shariati et al., 2019). Negative psychological symptoms of PMS

include anxiety, depression, fatigue, mood swings, and behavioral changes such as irritability, stress, fatigue, and cravings for food (Iqbal et al., 2021). Anxiety or fear is strengthened by the desire to resist physiological processes of menstruation (Andriani, 2021).

Teenagers who are too anxious tend to withdraw from activities because they fear (Campbell et al., 2021). Teenage girls usually ignore PMS symptoms, therefore, PMS affects their quality of life more than expected (Al-Shahrani et al., 2021). In other case PMS encompassing mood swings and diminished concentration, can be severe enough to necessitate rest and recovery, potentially reducing learning quality by up to 50% in some cases (Angrainy et al., 2023). There is a need for health support services to reduce anxiety related to PMS in teenagers (Thakrar et al., 2021).

One of several therapeutic methods recommended to alleviate anxiety symptoms associated with PMS is complementary and alternative therapy (Machała-Ćwikła et al., 2024). Aromatherapy is a component of complementary and alternative therapy that involves inhaling plant extracts as essential oils (Es-haghee et al., 2020). Inhalation aromatherapy, delivered through the nose and targeting the brain, is one of the most frequently used methods in aromatherapy trials. This technique has developed from the practice of inhaling essential oils, where simple inhalation can enhance emotional well-being, promote calmness, relaxation, and rejuvenation of the body (Cui et al., 2022).

The main components of lavender essential oil are linalool, linalyl acetate, 1,8-cineole, β -ocimene, terpinen-4-ol, and

camphor (Yoo & Park, 2023), which have a calming effect (Fung et al., 2021). Other studies have shown that lavender aromatherapy is hypnotic, anticonvulsant, antidepressant, anxiolytic, and analgesic. The effects caused by strong depression on the central nervous system and, so far, no side effects have been reported (Heydari et al., 2019). Other studies have shown that

there is lavender aromatherapy has been found to be effective in reducing anxiety in patients undergoing preoperative procedures such as cesarean sections (Motulo et al., 2023). Considering the significant impact caused by women with PMS, lavender aromatherapy is expected to become a strategy in managing anxiety during PMS.

METHOD

This study employs a quantitative method with a quasi-experimental approach using a Pretest-Posttest without control group design. This involves conducting a pretest on the experimental group without a control group, followed by a posttest immediately after the experiment.

The study was conducted at SMK Prima Indonesia from August 1 to October 25, 2022. The population of the study consisted of all female students in class X who had reached menarche, numbering 85 students, aged 13-17 years. Respondents were seated in a comfortable and quiet room, and lavender aromatherapy in the form of candles was lit in the room. When the candle was lit, the aroma of the aromatherapy from the candle spread throughout the room, and it was turned off after one hour, repeated about one week before menstruation (for five days). The

study has received approval from the Health Research Ethics Committee of STIKes Prima Indonesia with approval No. 202/EC/KEPK/STIKES-PI/VII/2022.

Data collection used the standardized Hamilton Anxiety Rating Scale (HARS) questionnaire consisting of 14 questions. The results of the question item total can determine the level of anxiety of an individual, which is less than 14 (no anxiety), 14-20 (mild anxiety), 21-27 (moderate anxiety), 28-41 (severe anxiety), and 42-56 (very severe anxiety). The study's data analysis was conducted using univariate and bivariate analysis. Univariate analysis was performed to describe the level of anxiety of respondents before and after receiving aromatherapy. Bivariate data analysis used the T-Test.

RESULTS AND DISCUSSIONS

Result

Table 1. Anxiety Level Before and After Aromatherapy During PMS in Female Students at SMK Prima Indonesia

Anxiety Level	Before Aromatherapy Treatment		After Aromatherapy Treatment	
	f	%	f	%
No Anxiety	5	5,9	10	11,8
Mild Anxiety	13	15,3	37	43,5
Moderate Anxiety	41	48,2	35	41,2
Severe Anxiety	26	30,6	3	3,5
Very Severe Anxiety	0	0	0	0
Total	85	100%	85	100%

Table 1 shows a change in the level of anxiety between before and after aromatherapy. The majority of respondents experienced moderate anxiety (before

aromatherapy) at 48,2%, and after receiving aromatherapy, more experienced mild anxiety at 43,5%.

Univariate Analysis

Table 2. The Effect of Lavender Aromatherapy on Anxiety Levels during PMS in Female Students at SMK Prima Indonesia

Variabel	N	Mean	SD	SE	P Value
Before	85	23,52	5,738	0,622	0,000
After	85	18,29	4,358	0,473	

Based on Table 2, the t-test results yielded a p-value of $0.000 < \alpha (0.05)$, indicating that H_0 is rejected and H_a is accepted, meaning there is an influence of lavender

aromatherapy on the anxiety levels of female teenagers during PMS at SMK Prima Indonesia.

Discussions

Based on the results of the study, it was found that prior to aromatherapy administration, the highest level of anxiety among students during PMS was moderate anxiety. Anxiety is characterized as a pervasive fear of potential threats, often detached from concrete situations and projected into the future. It is marked by psychomotor agitation and neurovegetative responses, leading to significant discomfort (Manea et al., 2023). Premenstrual Syndrome (PMS) frequently presents with somatic symptoms such as chest pain, headaches, palpitations, and bloating. In cases of comorbidity with panic disorder (PD), these somatic symptoms are more prevalent than psychological symptoms (Iakimova et al., 2019).

Anxiety in women is a typical symptom of stress, with hormonal changes occurring in various phases of the menstrual cycle, especially during the luteal phase, which can act as neuromodulators that may induce anxiety in women (Lumingkewas et al., 2021). When someone experiences prolonged stress and anxiety, there will be a decrease in serotonin levels. If serotonin levels are low, it can trigger changes in estrogen and progesterone hormone patterns, which can lead to the emergence of several physical symptoms of premenstrual syndrome such as breast pain and bloating, and these symptoms will be exacerbated in women experiencing ongoing psychological pressure (Agustin & Zulala, 2023).

The level of stress and anxiety is one of the factors that cause and exacerbate

premenstrual syndrome symptoms (Agustin & Zulala, 2023). High levels of anxiety can disrupt an individual's behavior, thought processes, and mood, impacting their cognitive function (Ahmad et al., 2019). At the beginning of the menstrual cycle, adolescents become more vulnerable to experiencing PMS. This vulnerability may be reinforced by a decrease in serotonin during the luteal phase, which can stimulate mood disturbances (Chandra & Hendrati, 2023). Anxiety and stress disorders are the most common mental disorders, resulting in health-related burdens. With increasing demand and interest in safe and acceptable anxiolytics, some studies have reported the anxiolytic effects of lavender aromatherapy, providing evidence of physiological and psychological effects (Yoo & Park, 2023).

The research findings revealed that after administering lavender aromatherapy to students, the level of anxiety during PMS decreased, ranging from moderate to mild anxiety levels. The effect of lavender aromatherapy administration influenced the overall scores of psychological symptoms of premenstrual syndrome (Es-haghee et al., 2020). Aromatherapy is a therapeutic action that uses essential oils beneficial for enhancing an individual's physical and psychological well-being. The main components of lavender

aromatherapy are linalyl acetate and linalool (C₁₀H₁₈O), which have anti-anxiety or relaxation effects (Kumalasari et al., 2022).

Lavender aroma, when inhaled, affects the olfactory and respiratory systems. The shortest connection between the central nervous system and the external environment is the olfactory nerve. Odor molecules interact with olfactory receptor neurons, producing unique electrical signals sent to the brain and having a regulatory effect on mood (Fung et al., 2021) behavior, and physiology. Through inhalation, essential oils affect neurotransmitter pathways that influence emotions (Aponso et al., 2021). It also stimulates the brain to release chemicals such as serotonin and dopamine, which are safe and viable anxiolytic interventions for treating individuals with various types of anxiety (Yoo & Park, 2023).

In other research findings also indicate that lavender aromatherapy is effective in addressing anxiety, depression, nervousness, pain, and bloating. Lavender aromatherapy operates in the same manner, providing a relaxation effect on the body (Pasaribu, 2023)(Es-haghee et al., 2020). Non-pharmacological treatment methods are often applied to treat mild symptoms of this syndrome. The most important non-pharmacological treatments include lifestyle changes, such as regular

exercise, proper nutrition, regular sleep, hot baths, and the use of multivitamins (Daneshvar et al., 2023).

Premenstrual syndrome (PMS) experienced during adolescence affects the self-confidence of teenage girls, their attendance at school, academic performance, and quality of life. Women with PMS complaints generally prefer analgesic treatment to alleviate PMS symptoms (Elkoca et al., 2021). The role of healthcare professionals in adolescents is crucial as it influences mental health status, which can be associated with anxiety and depression symptoms during PMS. Poor menstrual health has been linked to serious illnesses, including reproductive and urinary tract infections, and its impact on quality of life cannot be ignored (Mann & TS, 2023). Adolescents who have little knowledge about PMS tend to feel more anxious. This is due to the fact that not understanding the symptoms and how to manage PMS can create

feelings of uncertainty and stress.(Chandra & Hendrati, 2023). Adolescents with good knowledge will exhibit good behavior during PMS, while those with poor knowledge will exhibit poor PMS behavior. Lack of knowledge about PMS prevents teenage girls from treating it, and they are unaware of it (Chandra & Hendrati, 2023).

The limitations of this study include, firstly, having a limited sample size, so the results may not be widely applicable to a larger population. Secondly, not measuring the severity of PMS symptoms, thus affecting the level of anxiety in adolescents during PMS. Research on lavender aromatherapy administration yields potentially beneficial results in reducing anxiety in adolescents experiencing premenstrual syndrome. Combination with other treatment approaches and further research can help clarify its effectiveness.

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