

Literature Review: Aromatherapy Methods for Overcoming Labor Pain

Gabriella Jessica Eriesti¹, Fitri Setyaningrum Azizah², Juinte Beanal³, Laila Chusna Hidayanti⁴, Nabila Intan Rizkiani⁵, Ida Sofiyanti⁶

¹Bachelor of Midwifery Program, Universitas Ngudi Waluyo, eriestijessica@gmail.com

²Bachelor of Midwifery Program, Universitas Ngudi Waluyo, fitriazizah443@gmail.com

³Bachelor of Midwifery Program, Universitas Ngudi Waluyo, beanaljuinte@gmail.com

⁴Bachelor of Midwifery Program, Universitas Ngudi Waluyo, lailasn422@gmail.com

⁵Bachelor of Midwifery Program, Universitas Ngudi Waluyo, nabilarizkiani06@gmail.com

⁶Bachelor of Midwifery Program, Universitas Ngudi Waluyo, idasofiyanti@gmail.com

Email Correspondence: eriestijessica@gmail.com

Article Info	Abstract
Article History Submitted, 2025-10-30 Accepted, 2025-11-30 Published, 2025-12-31	Childbirth is a highly anticipated moment for pregnant women, offering them joy and happiness. Labor pain is one of the most significant experiences a mother experiences during labor. Anxiety can influence pain intensity, as the more anxious a mother is during labor, the greater the pain she experiences. Anxiety can cause the brain to release substances that suppress endorphin release, making the pain even more intense and causing stress during labor, leading to increased pain impulses and weaker uterine muscle contractions. This pain can be managed with pharmacological and non-pharmacological methods, often used for its calming and safety effects. Aromatherapy is a complementary therapy that has been extensively studied for its ability to reduce labor pain through various methods, including inhalation, massage, and diffusers. These findings support the use of aromatherapy as an effective complementary intervention for labor management. While previous findings focused on a single aspect, specifically a single oil or method, this literature review provides new insights into several ways aromatherapy can be applied to reduce labor pain. This literature review aims to examine the effectiveness of aromatherapy in managing labor pain using various methods. Selected from the latest research from international and national journals published between 2020 and 2025, recent studies have shown that inhaling the aroma of oils such as lavender, neroli, and peppermint through inhalation and massage promotes calm and reduces pain. Various methods of aromatherapy application have been used in clinical studies, including essential oils, candles, and diffusers. Each method has unique characteristics in terms of concentration, duration, and intensity of essential oil exposure. The use of diffusers has also been shown to create a comfortable atmosphere that helps reduce stress and pain. Therefore, aromatherapy is a safe and drug-free way to relieve labor pain, with various methods that can be tailored to the needs of the laboring mother.
Keywords: Aromatherapy methods, pain labor	

Introduction

Childbirth is a highly anticipated moment for pregnant women, allowing them to experience the joy and happiness they have long desired. Pain during labor is a natural bodily process that arises from uterine muscle contractions. This pain can be managed through methods involving medication (pharmacological) or without medication (non-pharmacological). If the pain is too intense, it can cause anxiety, which triggers the production of prostaglandin hormones, thereby causing stress and impairing the body's ability to tolerate pain (Susiyanti & Dharmayanti, 2023). The intensity of pain during labor usually starts at a low level and increases over time: meaning, the greater the cervical dilation, the more severe the pain experienced by the mother (Ardela et al., 2022).

Corresponding author:
Gabriella Jessica Eriesti
eriestijessica@gmail.com

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Non-pharmacological interventions are often used because they have a calming effect, are relatively safe, and can be used in any labor technique, including aromatherapy with various methods. Maternal anxiety during labor is detrimental to the labor process and can even lead to fetal death (Andini et al., 2022). Several recent studies have evaluated the effectiveness of aromatherapy as a non-pharmacological method for reducing labor pain. Several studies, using aromatherapy through inhalation, massage, and diffusers, consistently demonstrated significant pain reduction. These findings support the use of aromatherapy as a complementary intervention, which has been shown to be effective in pain management during labor. Inhaling aromatherapy can reduce tension, especially in early labor. It can also be used to scent the delivery room because of its calming effect.

This paper bridges the current literature by providing a roadmap of various aromatherapy methods used in clinical studies to reduce labor pain while evaluating the effectiveness of various methods, such as candles, oils, diffusers, and others. While previous findings have focused on a single aspect, such as a specific oil or method, this literature review provides new insights into various methods of applying aromatherapy to reduce labor pain. Therefore, because it focuses on the primary outcome of labor pain, rather than just anxiety or relaxation, this review has significant clinical relevance in the provision of obstetric care. Furthermore, the analysis highlights the importance of inexpensive and effective non-pharmacological interventions. Researchers are increasingly interested in aromatherapy because it is easy to administer, safe, and inexpensive, and has a clear biological mechanism of action, allowing for accurate measurement of its effects on pain, anxiety, and relaxation. Therefore, aromatherapy is more practical and relevant for research and healthcare than other non-pharmacological methods.

This literature review focuses on answering the primary question: "What methods of aromatherapy administration are effective in reducing labor pain in women in labor?" This paper is expected to enrich the midwifery literature on complementary non-pharmacological pain management and serve as a reference in developing operational standards for the use of aromatherapy in labor services based on scientific evidence and local practices.

Methods

This type of research uses a literature review method that is structured in stages to identify, evaluate, and synthesize previous research findings regarding aromatherapy methods in reducing labor pain. The unit of analysis for this research is national & international journals that discuss aromatherapy methods for labor pain. Contains a description of the participants/subjects involved in the research search, the research location and the time of the research conducted. This Literature Review uses a systematic search. From relevant journals on Google Scholar, PubMed, IJM and so on, which meet the inclusion and exclusion criteria. Inclusion criteria: national journals and international journals with keywords method, aromatherapy and labor pain, published within a 5-year period (2020 - 2025). Exclusion criteria: journals using foreign languages other than English and Indonesian We used the thematic synthesis method to extract related evidence and systematically convert it to a descriptive review using a narrative approach.

Results and Discussion

Based on the inclusion criteria, six published and highly relevant articles were included in this review. The following table presents the results of the literature review of journals related to aromatherapy methods for labor pain.

Table 1. Result

No	Author Title	Research methods	Results
1.	The Combination of Olive Oil Effleurage Massage and Lavender Diffuser Aromatherapy on Pain Levels and Comfort in the First Stage of Labor (Y. Sumiati et al., 2025)	The study used a quantitative method with a quasi-experiential pre-test post-test non-equivalent control group design with 54 respondents suffering from labor pain at Karawang Regional Hospital. Researchers divided the sample into two groups: the olive oil effleurage group and lavender diffuser aromatherapy, while the control group received the pursed lip breathing	Results showed that the combination of effleurage massage with olive oil and lavender aromatherapy diffuser significantly reduced first-stage labor pain and increased maternal comfort compared to the control method. Lavender aromatherapy stimulates the nervous system and releases hormones like endorphins, providing a relaxing effect. Effleurage massage improves circulation and reduces muscle tension, supporting pain reduction. This combination optimizes the analgesic and psychological effects, making it an effective non-pharmacological intervention.

	technique and lavender diffuser aromatherapy.	
2. The Effectiveness of Lavender Aromatherapy Oil and Candle to Reduce The Pain in The Active Phase of 1st Stage of Labor (Karningsih et al., 2022)	The study used a quantitative method with a quasi-experimental design with a pretest-posttest control group design. A sample of 60 mothers in labor with specific inclusion criteria was selected purposively, then randomly divided into three groups: lavender oil aromatherapy, lavender candle aromatherapy, and a control group without aromatherapy.	Results showed that the combination of olive oil effleurage massage and lavender diffuser aromatherapy significantly reduced first-stage labor pain and increased maternal comfort compared to the control method. Lavender aromatherapy works by stimulating the nervous system and releasing hormones like endorphins, providing a relaxing effect. Effleurage massage improves circulation and reduces muscle tension, supporting pain reduction. This combination optimizes both analgesic and psychological effects, making it an effective non-pharmacological intervention.
3. Inhalation Aromatherapy Using Lavender Essential Oil to Decrease the Intensity of Labor Pain in Active Phase of First Stage Among Primiparous (Ardela et al., 2022)	In terms of design and sample, this study focused on an experimental design with a one-group pretest-posttest without a control group. Furthermore, the authors selected 20 respondents for analysis.	This study presents the results in a table explaining the comparison between before and after the lavender aromatherapy intervention. This discussion also emphasizes the identity, benefits, and composition of lavender aromatherapy, which indicates a significant reduction in labor pain intensity in mothers in the intervention group using aromatherapy with lavender essential oil inhalation.
4. The Effectiveness of Lavender Essential Oil Aromatherapy in Reducing Pain Levels in Women During Labor (Susiyanti & Dharmayanti, 2023)	The method used was an experimental study with a pre-test and post-test control group design. The sampling technique was carried out by taking all members who were used as samples.	The results of this study describe a table containing the characteristics of respondents in terms of age, education, occupation, and the effectiveness of lavender essential oil aromatherapy. The author's complete discussion compares respondents who received lavender essential oil aromatherapy with those who did not. Furthermore, this discussion emphasizes the content of lavender oil and its benefits, not only for managing labor pain but also for anxiety in respondents.
5. The Effectiveness of Neroli Essential Oil in Relieving Anxiety and Perceived Pain in Women during Labor: A Randomized Controlled Trial (Scandurra et al., 2022)	This study used a quantitative repeated measures design with 88 women who gave birth at term (aged 18–40 years, without complications),	The results showed no significant differences between the intervention and control groups in age, parity, labor duration, and infant Apgar scores, indicating that both groups were comparable. Pain levels in the neroli aromatherapy group were significantly lower in all phases: latent (5.70 vs. 7.44), early active (6.50 vs. 8.44), and late active (8.00 vs. 9.33; $p < 0.05$ for all). ANOVA confirmed the intervention effect ($F=7.55$; $p=0.01$; $\eta^2=0.32$), indicating significant pain reduction.
6. The Effect of Lavender Aromatherapy Candles on the Intensity of	This study uses a quantitative approach with a quasi-experimental design and a non-equivalent	The results of the study showed that from the results of the univariate analysis, it was seen that in the group intervention, before the administration of aromatherapy,

First Stage Labor Pain in PMB Tri Jayanti Turen, Malang Regency, 2024 (Pitaloka et al., 2024)	control group pretest and posttest design.	most participants experienced severe pain which was still under control (73.3%), but afterward, the majority shifted to moderate pain (80%). Meanwhile, in the control group, the majority of participants still experienced severe pain after delivery (80%).
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The results of an analysis of 6 journals identified various aromatherapy methods for labor pain that will reduce pain during the first stage of labor. Aromatherapy is always used for patients with moderate labor pain. Biologically, aromatherapy reduces pain by controlling the central nervous system and restoring hormonal balance. Various methods of aromatherapy application have been used in clinical studies, including oils, candles, and diffusers. Each method has unique characteristics in terms of concentration, duration, and intensity of essential exposure (Ardela et al., 2022; Karningsih et al., 2022; Pitaloka et al., 2024; Scandurra et al., 2022; Y. Sumiati et al., 2025; Susiyanti & Dharmayanti, 2023).

Oil: For example, a study of oil aromatherapy (Karningsih et al., 2022) evaluated the effectiveness of lavender oil aromatherapy as more effective than lavender aromatherapy candles in affecting pain during the active phase of the first stage of labor. The results showed a significant reduction in pain during active labor. According to (Susiyanti & Dharmayanti, 2023), the intensity of labor pain in women given lavender essential oil aromatherapy was categorized as mild, while those not given aromatherapy were categorized as moderate. The use of oil aromatherapy other than lavender, namely neroli oil, according to (Scandurra et al., 2022), aromatherapy using neroli oil has been proven effective in reducing pain perception and anxiety levels in women throughout all phases of labor. In fact, neroli oil helps labor progress by reducing pain and anxiety, thus making labor and delivery easier and less problematic.

Inhalation: According to (Ardela et al., 2022) the use of lavender aromatherapy stated that there was a significant decrease in the intensity of labor pain in mothers in the intervention group using aromatherapy with lavender essential inhalation, because inhalation provides a fast and focused effect.

Diffuser: As used in a study by (Sumiati, 2025) the combination of effleurage olive oil and lavender diffuser aromatherapy significantly reduced the level of pain in the first stage of labor. Lavender diffuser aromatherapy effectively reduced pain in the first stage of labor and increased maternal comfort.

Candles: As research (Pitaloka et al., 2024) stated before the administration of aromatherapy, most participants experienced severe pain that was still under control (73.3%), but afterward, the majority switched to moderate pain (80%). Meanwhile, in the control group, most participants still felt severe pain after the delivery process (80%). Bivariate analysis indicated that there was no significant difference in pain intensity levels between the control and intervention groups before the intervention was carried out ($p = 0.054$), but after the intervention, there was a very significant difference ($p = 0.000$), where the mean rank value in the intervention group was lower (9.63) than the control group (21.37).



Picture 1. Aromatherapy Inhalation



Picture 2. Aromatherapy Diffuser



Picture 3. Aromatherapy Candle



Picture 4. Aromatherapy Oil



Picture 5. Aromatherapy Methods

Conclusion and Suggestion

Based on the literature, it can be concluded that various aromatherapy methods reduce labor pain. Aromatherapy can increase self-efficacy for having a positive labor experience. The benefits of aromatherapy include reducing labor pain and providing comfort to the mother. Based on findings from six recent studies, research shows that aromatherapy consistently provides analgesic effects during labor, primarily through its effects on the brain system and the release of hormones such as endorphins and serotonin. The most widely studied aromatherapy oils are lavender and neroli. Diffuser and inhalation methods have shown the highest level of effectiveness in reducing pain intensity, especially during the active phase of labor. Inhalation provides a rapid and focused effect, while diffusers play a more holistic role in creating a therapeutic environment. In contrast, the candle method offers ease of use and flexibility, although its effectiveness remains relatively low and varies across studies. Researchers often recommend diffusers and inhalation as the two most powerful aromatherapy ways to alleviate labor pain, as both methods allow essential oil molecules—particularly lavender—to enter the olfactory system fast and thereby act directly on the brain's emotional and pain-regulating centers. Diffusers provide a steady, comprehensive aroma exposure that helps create a feeling of calm and reduces anxiety, while inhalation has a more immediate effect because the scent is inhaled directly, triggering the release of endorphins and thereby helping significantly to reduce pain perception.

Aromatherapy is expected to be used by mothers giving birth in primary and secondary care facilities as a supportive maternal care tool for non-invasive and non-pharmacological labor pain management. A literature review using complex journals from various countries using a randomized controlled trial design is needed to reduce bias.

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