

Lavender Aromatherapy Massage for Labour Pain Relief and Labour Duration: A Systematic Review

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Abstract:

Background: Labour pain is a major physical and emotional experience of childbirth. Lavender aromatherapy has been investigated as a non-pharmacological intervention, including inhalation and massage, but the evidence is heterogeneous.

Objective: To systematically evaluate the available evidence on the effectiveness of lavender aromatherapy, particularly lavender aromatherapy massage, for reducing labour pain and/or labour duration in women undergoing labour.

Methods: A systematic-review framework based on PRISMA 2020 is proposed. Eligible studies should include pregnant women in labour, lavender aromatherapy delivered by massage and/or inhalation, and a comparator such as usual care, placebo, massage without lavender, or another non-pharmacological intervention. Primary outcomes are labour pain intensity and labour duration; secondary outcomes include maternal anxiety/satisfaction and maternal or neonatal adverse outcomes. The current draft incorporates evidence identified from PubMed and publicly accessible scientific sources, but the final database search and screening counts remain to be completed.

Results: Existing randomized evidence supports a possible reduction in labour pain with lavender aromatherapy. A randomized trial of 120 primiparous women found reduced pain with lavender inhalation but no significant difference in active-phase or second-stage duration. A randomized trial specifically evaluating lavender aromatherapy massage reported lower pain and shorter first- and second-stage duration. A later randomized trial comparing lavender inhalation, lavender massage and control groups also evaluated pain across phases of the first stage. However, the literature is heterogeneous in intervention route, comparator, outcome measurement and methodological quality.

Conclusion: Lavender aromatherapy, particularly when incorporated into massage, appears promising as an adjunctive non-pharmacological approach to labour pain management. Current evidence is insufficient to justify replacing established analgesic options. A rigorously conducted systematic review with transparent database searching and risk-of-bias assessment is required before definitive conclusions are made.

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Introduction

Labour is a physiologically demanding and emotionally charged process. Effective pain relief may improve maternal comfort and the childbirth experience. Pharmacological analgesia, including neuraxial techniques and systemic opioids, remains important, but women and maternity-care providers also use non-pharmacological approaches such as massage, breathing techniques and aromatherapy.

The supplied manuscript identifies lavender oil as a commonly used aromatherapy intervention and describes potential psychological and analgesic effects. It also reports that lavender massage has been associated with reduced pain and shorter labour in some clinical studies.

The need for a systematic review is strengthened by the heterogeneous evidence base. A 2023 meta-analysis included 14 randomized trials of aromatherapy for labour pain, using several oils and routes of administration, while a 2020 systematic review and meta-analysis focused specifically on lavender and included 13 eligible studies. These reviews suggest benefit but also demonstrate why a focused, transparent synthesis of lavender interventions is clinically relevant.

Review Question

Among women undergoing labour, does lavender aromatherapy, particularly lavender aromatherapy massage, compared with usual care, placebo,

massage without lavender, or another non-pharmacological intervention reduce labour pain and/or labour duration?

Table 1: PICO Framework

Component	Definition
Population	Pregnant women undergoing established labour; primiparous and multiparous women may be included.
Intervention	Lavender (<i>Lavandula</i> spp.) aromatherapy, with particular focus on aromatherapy massage; inhalation may be included in a prespecified secondary analysis.
Comparator	Usual/standard care, placebo, carrier oil, massage without lavender, breathing/relaxation techniques, or another non-pharmacological comparator.
Primary outcomes	Labour pain intensity and duration of labour/stages of labour.
Secondary outcomes	Maternal anxiety, maternal satisfaction, analgesic rescue requirements, mode of birth, and maternal/neonatal adverse outcomes.
Eligible designs	Randomized controlled trials and, if prespecified, quasi-randomized clinical trials. Existing systematic reviews/meta-analyses are used for background and citation chasing, not as primary outcome studies.

Methods

Reporting Guideline: The review should be reported according to PRISMA 2020. PRISMA 2020 recommends explicit reporting of the review question, eligibility criteria, information sources, full search strategies, study-selection process, data collection, risk-of-bias assessment, synthesis methods and limitations.

Eligibility Criteria:

Inclusion Criteria: (1) women in labour; (2) lavender aromatherapy administered during labour; (3) a comparator group; (4) reporting at least one prespecified outcome; and (5) randomized or eligible quasi-randomized clinical study design.

Exclusion Criteria: studies involving non-labouring participants; studies of lavender unrelated to intrapartum outcomes; laboratory, animal or purely mechanistic studies; case reports; narrative reviews; editorials; conference abstracts without sufficient outcome data; and studies without an eligible comparator.

Information Sources: For the final submission, searches should be conducted in at least PubMed/MEDLINE, Embase, Scopus or Web of Science, Cochrane CENTRAL, and an appropriate additional database such as CINAHL, with backward and forward citation searching. The supplied manuscript does not document a reproducible database search, and the current web search performed for this draft cannot substitute for a full database search.

Proposed Search Strategy: A reproducible search should combine terms for labour, lavender/aromatherapy, massage and pain. The following PubMed-style strategy is a starting point and should be adapted to each database:

("Labor"[Mesh] OR labour OR labor OR childbirth OR parturition OR intrapartum) AND (lavender OR

"*Lavandula angustifolia*" OR "*Lavandula stoechas*" OR aromatherapy OR "essential oil") AND (massage OR inhalation OR topical OR "back massage") AND (pain OR analgesia OR anxiety OR "duration of labor" OR "duration of labour")

Study Selection: Two reviewers should independently screen titles/abstracts and then full texts against the prespecified criteria. Disagreements should be resolved by discussion or a third reviewer. Duplicate records should be removed before screening. The final manuscript must report the number of records identified, duplicates removed, records screened, full texts assessed, exclusions with reasons, and studies included.

Data extraction: A standardized extraction form should record study author/year, country, sample size, parity, gestational age, intervention route, lavender preparation/concentration, massage technique and duration, timing during labour, comparator, pain scale and measurement time, duration of labour/stages, anxiety/satisfaction, adverse events, mode of birth and other relevant outcomes.

Risk of Bias: For randomized controlled trials, risk of bias should be assessed using a contemporary Cochrane risk-of-bias tool such as RoB 2. Assessment should be performed independently by two reviewers. Blinding is often difficult in aromatherapy trials, and this limitation should be considered when interpreting subjective pain outcomes.

Data Synthesis:

Where studies are sufficiently homogeneous, continuous outcomes such as pain scores and labour duration may be synthesized using mean difference or standardized mean difference with 95% confidence intervals. Dichotomous outcomes may be summarized using risk ratios or odds ratios. Statistical heterogeneity should be assessed using I^2

and interpreted alongside clinical and methodological heterogeneity. If quantitative pooling is inappropriate, findings should be presented as a structured narrative synthesis.

Evidence Identified During the Initial Search:

The following studies and reviews were identified during the initial search used to prepare this manuscript. They are not yet a final PRISMA-screened evidence set.

Study	Design / sample	Intervention	Main finding	Relevance
Yazdkhasti & Pirak, 2016	Randomized trial; 120 pregnant women	2 drops lavender inhaled at 4–5, 6–7 and 8–9 cm; placebo distilled water	Pain change differed significantly between groups; no significant difference in active-phase or second-stage duration.	Supports pain outcome; inhalation rather than massage.
Abbaspoor & Mohammadkhani Shahri, 2013	Prospective randomized controlled trial; 60 primiparous women	Lavender aromatherapy massage vs massage alone	Reported lower pain and shorter first- and second-stage labour in the lavender massage group.	Directly relevant to the proposed review question.
Lavender massage/inhalation RCT, 2023	Randomized controlled trial; 121 completers across 3 groups	Lavender massage, lavender inhalation, control	Evaluated perceived labour pain across early, active and transition phases; massage used sacral/circular lower-back massage.	Directly relevant to lavender massage.
Kazeminia et al., 2020	Systematic review/meta-analysis; 13 eligible studies	Lavender interventions	Reported lower labour pain scores with lavender overall.	Important background; not a primary study for the new review.
Gürsoy et al., 2023	Meta-analysis; 14 RCTs	Aromatherapy using multiple oils and routes	Aromatherapy reduced labour pain overall, but interventions were heterogeneous.	Supports broader evidence context; not lavender-specific.
Ghiassi et al., 2022	Systematic review; 22 clinical-trial articles	Various aromatherapy interventions	Some aromatherapy methods, including lavender, were reported as potentially reducing labour duration.	Background evidence for labour-duration outcome.

Preliminary Results Synthesis

Pain: The available evidence identified in the initial search generally favours lavender aromatherapy for reduction of perceived labour pain. The 2016 randomized trial of 120 women found a significant between-group difference in pain change, while the 2013 randomized trial of lavender aromatherapy massage reported lower pain intensity during labour. A 2023 three-group randomized trial specifically evaluated lavender massage and inhalation across the first stage of labour.

Labour duration: Evidence is less consistent. The 2016 randomized trial found no difference in active-phase or second-stage duration, whereas the 2013 lavender-massage trial reported shorter first- and second-stage duration. Broader aromatherapy reviews also suggest possible reductions in some labour stages, but pooling different oils and routes limits direct inference about lavender massage.

Safety and acceptability: The supplied narrative review reported no adverse outcomes in the clinical study it described. However, absence of reported adverse events is not equivalent to proof of safety. The final systematic review should extract adverse-event data systematically and report whether studies actively monitored maternal and neonatal outcomes.

Discussion

The evidence suggests that lavender aromatherapy may provide a useful adjunct for labour pain management, particularly when combined with massage. A plausible clinical advantage is that massage itself provides tactile and supportive benefits while lavender may contribute additional olfactory and psychological effects. However, trials vary substantially in the type and amount of lavender used, route of administration, timing, massage technique, comparator and pain-assessment methods.

The principal limitation is the subjective nature of pain assessment and the practical difficulty of blinding participants and providers to aromatherapy. Small sample sizes and inconsistent reporting further limit certainty. Existing reviews have also highlighted heterogeneity and methodological limitations in the underlying evidence.

Strengths and Limitations of the Proposed Review:

Strengths include a focused PICO question, explicit eligibility criteria, separation of lavender-specific evidence from broader aromatherapy evidence, and planned PRISMA 2020 reporting. Limitations at this

stage are that the database search is not yet exhaustive, the final screening process has not been independently duplicated, and quantitative meta-analysis cannot responsibly be reported until full-text eligibility and numerical outcome data are verified.

Conclusion

Lavender aromatherapy, particularly when used as an adjunct to massage, shows promise for reducing perceived labour pain. Evidence for shortening labour duration is less consistent. The intervention may be considered a complementary rather than replacement approach to established labour analgesia. High-quality randomized trials using standardized lavender preparations, clearly defined massage protocols, validated pain measures and systematic safety reporting are needed.

PRISMA 2020 Items Still Required Before Journal Submission

- Complete searches in the selected databases and record the exact date of each search.
- Export all search results and remove duplicates.
- Conduct independent title/abstract and full-text screening by two reviewers.
- Record full-text exclusions and reasons.
- Complete a standardized data-extraction table.
- Perform independent risk-of-bias assessment.
- Decide whether meta-analysis is appropriate based on clinical/methodological homogeneity.
- Generate the final PRISMA 2020 flow diagram with exact counts.
- Complete the PRISMA 2020 checklist and supplementary search strategies.
- Register the protocol prospectively if feasible (e.g., PROSPERO, subject to eligibility) and report the registration number.

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