

Aromatherapy in childbirth*Aromaterapia en el parto**Aromaterapia no parto***Renata Reis Loureiro e Sá¹**

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Armada de Oliveira**Submission:** 12-16-2021**Approval:** 01-19-2022**Abstract**

The aim was to investigate the available scientific evidence on the effectiveness of aromatherapy for a better birth experience. This is an integrative review of the literature available on the VHL database platform and PubMed and Scopus databases, with studies published in the last 5 years. The studies were categorized according to the Oxford Center for Evidence-Based Medicine table and analyzed according to 5 thematic groups: Country, Methodology, Characteristics of pregnant women, Essential oils used and Results achieved. The studies are mostly from the Middle East and Asia. The pregnant women were, in general, primiparous. The most commonly used essential oils are lavender, rose and chamomile. Application methods are massage, inhalation and diffusion. The effects are a decrease in labor pain, anxiety and delivery time. Aromatherapy is an efficient technology as it allows women to go through the labor process with less anxiety, less pain and faster. New research needs to be carried out with essential oils produced in Brazil in order to identify those most suitable for the Brazilian parturient. Aromatherapy is part of the integral care model for childbirth, where continuous care occurs throughout the process.

Descriptors: Aromatherapy; Parturition; Labor Pain; Complementary Therapies; Nursing.**Resumén**

El objetivo fue investigar la evidencia científica disponible sobre la efectividad de la aromaterapia para una mejor experiencia de parto. Esta es una revisión integradora de la literatura disponible en la plataforma de base de datos de la BVS y en las bases de datos PubMed y Scopus, con estudios publicados en los últimos 5 años. Los estudios fueron categorizados según la tabla del Oxford Center for Evidence-Based Medicine y analizados según 5 grupos temáticos: País, Metodología, Características de las embarazadas, Aceites esenciales utilizados y Resultados obtenidos. Los estudios son en su mayoría de Oriente Medio y Asia. Las gestantes eran, en general, primíparas. Los aceites esenciales más utilizados son lavanda, rosa y manzanilla. Los métodos de aplicación son masaje, inhalación y difusión. Los efectos son una disminución del dolor de parto, la ansiedad y el tiempo de parto. La aromaterapia es una tecnología eficiente ya que permite a las mujeres pasar por el proceso de parto con menos ansiedad, menos dolor y más rápido. Es necesario realizar nuevas investigaciones con aceites esenciales producidos en Brasil para identificar los más adecuados para la parturienta brasileña. La aromaterapia forma parte del modelo de atención integral al parto, donde se da un cuidado continuo durante todo el proceso.

Descriptores: Aromaterapia; Parto; Dolor de Parto; Terapias Complementarias; Enfermería.**Resumo**

Objetivou-se investigar as evidências científicas disponíveis sobre a eficácia da aromaterapia para uma melhor experiência de parto. Trata-se de uma revisão integrativa da literatura disponível na plataforma de bases de dados BVS e nas bases de dados PubMed e Scopus, com estudos publicados nos últimos 5 anos. Os estudos foram categorizados segundo a tabela *Oxford Centre for Evidence-Based Medicine* e analisados segundo 5 grupos temáticos: País, Metodologia, Características das gestantes, Óleos essenciais utilizados e Resultados alcançados. Os estudos são majoritariamente do Oriente Médio e da Ásia. As gestantes eram, em geral, primíparas. Os óleos essenciais mais utilizados são lavanda, rosas e camomila. Os métodos de aplicação são massagem, inalação e difusão. Os efeitos são diminuição da dor do parto, da ansiedade e do tempo de parturição. A aromaterapia é uma tecnologia eficiente, pois permite que as mulheres atravessassem o processo de trabalho de parto com menos ansiedade, menos dor e mais rapidamente. Novas pesquisas precisam ser feitas com óleos essenciais produzidos no Brasil para que se identifiquem aqueles mais adequados à parturiente brasileira. A aromaterapia se insere no modelo de atenção integral ao parto, onde ocorre a assistência contínua durante todo o processo.

Descriptores: Aromaterapia; Parto; Dor do Parto; Terapias Complementares; Enfermagem.

Introduction

In Brazil, in 2005, with the need to legitimize and systematize the practices of natural and complementary or alternative medicine (MN/MCA), which were still in progress in many places in the country, through real experiences in the Unified Health System (SUS), the Ministry of Health (MS) launched the National Policy on Natural Medicine and Complementary Practices (PNMNPC), in line with the guidelines of the World Health Organization (WHO), established in the WHO Traditional Medicine Strategy 2014-2023 document, which values and recommends the use of non-allopathic therapies in health care¹. Ten years later, the PNMNPC was re-edited and became the current National Policy on Integrative and Complementary Practices in the SUS (PNPIC)^{2,3}.

In 2018, with more than 5,000 units of the National Health Care Network offering therapeutic approaches defined as integrative and complementary health care practices, the MS, through Ordinance No. 702, of March 21, 2018, identified and assimilated 14 more complementary practices in the PNPIC, among them, aromatherapy⁴.

Non-drug practices have also been gaining ground in a very peculiar scenario of health care, childbirth. The intense and routine application of medical interventions without clear indications during labor (PT), to accelerate, regulate or monitor it, has negatively interfered in a process that is usually primarily uncomplicated. The consequences are negative impacts on the woman's physiology, making her unable to proceed without other interventions until the outcome of childbirth⁵. Aromatherapy is already recognized as a method of pain relief in labor and is even recommended by the Ministry of Health, as stated in its manual of care guidelines for normal childbirth:

“As these are non-invasive interventions and without description of side effects, women who wish to use audio-analgesia and aromatherapy during labor should not be restrained. Non-pharmacological methods of pain relief should be offered to the woman before using pharmacological methods”⁶.

Technocratic hegemonic assistance in childbirth care has been questioned around the world, because the experience of childbirth is a biopsychosocial event, since in addition to including the physiology of the process, it also covers the emotional, social and cultural aspects of the pregnant woman. That said, it is difficult to conceive a comprehensive approach to childbirth care considering only a mechanistic care, devoid of a holistic, more humanized view. Aromatherapy emerges as a Complementary Integrative Practice (PIC) capable of providing comfort and well-being to the parturient. It is a simple, relatively inexpensive, non-invasive and effective option in controlling pain, anxiety and improving the birth experience⁷.

Given the above, this study aims to gather information based on published scientific research, which deals with aromatherapy as a technology used in labor.

Methodology

This is an integrative literature review, where the construction of knowledge takes place through the gathering and analysis of experimental and non-experimental studies, in order to develop a new look at the theme, in a particular analysis, which also guides the practice⁸.

The research took place from September to November 2021, in addition the Boolean operator “AND” was used. The descriptors used were “Aromatherapy” AND “parto”, and the corresponding words in English “Aromatherapy” AND “Labor” for the international databases. Review articles, clinical trials and other works were those published in the last 5 years (2016-2021), in Portuguese and English. The databases used for the research were Medline, LILACS and BDEF, from the Virtual Health Library (BVS) database platform and from the PubMed and Scopus databases.

The inclusion criterion for the selection of publications was that the titles specifically mentioned the topic of applying essential oils to women in labor. Duplicate publications, those for which access to the full text was not possible, when reading was not free, and opinion letter were excluded. From the initial total of 49 articles, the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) were followed for reporting the review study, and 10 articles were selected for reading their abstracts, namely 05 from the VHL and 05 from Scopus (Figure 1).

The categorization of the scientific evidence of the studies was carried out using the recommendation table of the Oxford Center for Evidence-Based Medicine (Chart 1). The classification has 4 degrees of recommendation: A, B, C and D, and each of them with their respective levels of evidence, as follows: Degree of recommendation A: 1A for Systematic Review of Randomized Controlled Clinical Trials, 1B for Clinical Trial Randomized Controlled with Narrow Confidence Interval, 1C for All-or-Nothing Therapeutic Outcomes. Grade of recommendation B: 2A for Systematic Review of Cohort Studies, 2B for Cohort Study (including Lower Quality Randomized Clinical Trial), 2C for Observation of Therapeutic Studies (Outcomes Research), Ecological Study, 3A for Systematic Review of Case Studies -Control, 3B for Case-Control Study. Recommendation Grade C: 4 for Case Reporting (including cohort or lower quality case-control). Grade of recommendation D: 5 for Expert Opinion, devoid of critical evaluation or based on basic matters.

Research data were extracted according to 5 (five) information subgroups, which emerged after analyzing the studies: Study setting: country where the research took place and year of publication; research characteristic: methodology (systematic reviews and randomized clinical trials); characteristics of pregnant women: parity (primiparous or multiparous); aspects related to essential oil therapy: type of essential oil used and method of application; effects after intervention: duration of periods of labor and total time, decrease in pain, decrease in anxiety.



Figure 1. Flowchart of the PRISMA 2020/2021 model used in the selection of studies. Rio de Janeiro, RJ, Brazil, 2021

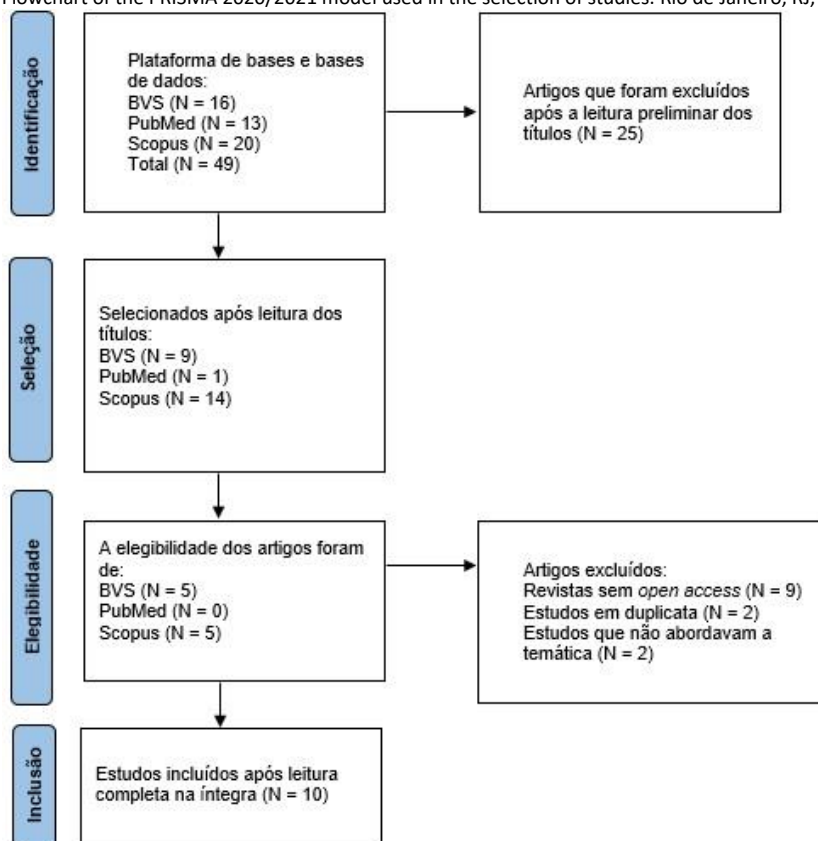


Chart 1. Evidence from studies according to the Oxford Framework. Rio de Janeiro, RJ, Brazil, 2021

Study	Year	Country	Objective	Research modality / level of evidence
Bertone e Dekker.	2021	USA	Get an overview of evidence on aromatherapy in the perinatal period.	Critical review of the literature / 2A.
Manaf et all.	2020	Indonesia	Labor pain.	Quasi-experimental / 2B.
Mortazavi & Tabatabaeichehr.	2020	Iran	Systematize the available evidence on the use of aromatherapy for the management of labor pain and anxiety in pregnant women in labor.	Systematic review of cohort studies / 2A.
Paviani et all.	2019	Brazil	Identify knowledge about essential oils in labor and delivery.	Scope review / 3A.
Sriasih et all.	2019	Indonesia	To observe the effect of Frangipani essential oil massage in reducing labor pain.	Quasi-experimental / 2B.
Silva et all.	2019	Brazil	Analyzing aromatherapy in pain relief during labor.	Integrative review /3A.

Chen et al.	2018	Taiwan	To verify the effectiveness of aromatherapy in reducing pain and duration of labor.	Meta-analysis of randomized clinical trials / 1A.
Tanvisut et al.	2018	Thailand	To determine the effectiveness of aromatherapy in reducing labor pain.	Randomized clinical trial / 1B.
Hamdamiam et al.	2018	Iran	To evaluate the effects of aromatherapy with Rosa damascena oil on pain and anxiety experienced by pregnant women in labor during the first period.	Randomized clinical trial / 1B.
Yazdkhasti & Pirak.	2016	Iran	Investigate the effects of lavender oil aromatherapy on labor pain and duration of labor.	Randomized clinical trial / 1B.

Results

The countries where the studies took place were mostly in the Middle East and Asia, with only 2 studies in Brazil and 1 in Italy. The study groups were almost all composed of primiparous women, only two also indicated the presence of multiparous women, and the last one also indicated a study with high and low risk pregnant women. Many did not report parity. The most frequently used essential oil is lavender, notably as the only one in which a decrease in the duration of labor has been observed^{9,10}.

Then comes the essential oil of roses, followed by chamomile and citrus, which are oranges, sweet and bitter and tangerine. The most used methods of use were massage and inhalation, with back massage notably reported to have

the best results. Inhalation occurred in some cases associated with gauze or paper, and using an inhaler mask. Diffusion methods and foot bath were mentioned once each, the latter being associated with essential oil massage.

According to the study, inhalation with chamomile essential oil brought less intensity to contractions, without, however, changing their frequency and quantity, without specifying whether there was less pain sensation, or decreased anxiety, as in the other studies. Still in relation to chamomile essential oil, according to the studies, which was reported by pregnant women, the occurrence of a better experience in childbirth was identified¹¹⁻¹³.

The characteristics of the analyzed studies are summarized in Chart 2.

Chart 2. Characteristics of the studies. Rio de Janeiro, RJ, Brazil, 2021

Sample characteristics	Pregnant women in labor, primiparous, multiparous, high and low risk.
Intervention	Aromatherapy.
Results	Decreased pain, reduced anxiety, shortened labor time, improved birth experience, and decreased intensity of contractions.

Pain and anxiety

Interventions to reduce PD pain and anxiety, with the types of essential oils chosen and methods used, and the periods in which the effects were observed, are summarized in Table 3. The essential oils that stood out in research for

their effects on pain were geranium, sweet orange, carnation, peppermint, lavender and damask rose, and on anxiety were peppermint, lavender, geranium and damask rose.

Chart 3. Pain and anxiety. Intervention periods, essential oils and methods used. Acronym: NE: Not Specified. Rio de Janeiro, RJ, Brazil, 2021

Symptom	Period	Essential oil	Method
Pain	NE	Lavender, Geranium, Sweet Orange, Clove, Peppermint, Lavender, Rose, Roman Chamomile, Sage, Frankincense, Ginger, Lemon Balm and Lavender.	Massage



	1st period (latency, active, transition).	Peppermint, Lavender, Geranium, Citrus, Jasmine, Frangipani, Damask Rose, Sour Orange, Clove, Chamomile, Chamomile, and Blends of Clove and Peppermint, Tangerine and Lavender, Tangerine and Chamomile, Tangerine and Frankincense and Tangerine and sage.	Massage, inhalation
	Transition (8-10 cm).	Sour orange, rose, lavender, jasmine.	Massage, inhalation
	Latent and active.	Lavender, Geranium, Citrus and Jasmine.	Diffusion
Ansiedade	1st period.	Hortelã-pimenta, lavanda, gerânio, cravo, camomila, rosa damascena, e os <i>blends</i> de cravo e hortelã-pimenta, tangerina e lavanda, tangerina e camomila, tangerina e olíbano e tangerina e sálvia.	NE
	Active phase (5-7 cm).	Lavender and rose.	NE
	Transição (8-10cm).	Frankincense and Lavender Blend.	Massage

Duration of labor

Duration of PT periods after aromatherapy intervention, and total duration, are summarized in Chart 4.

Chart 4. PT time. Duration of PT periods after aromatherapy. Rio de Janeiro, RJ, Brazil, 2021

Decreased PT time	Types of essential oils	Methods	Time of application of therapy
2nd period (expulsive).	Lavender and rose.	Back massage.	Active and transitional phases.
		Steam inhalation in nebulizer mask.	
		Foot scalding.	
3rd period (delivery of the placenta).	Lavender.	Back massage every 20 min.	Active and transitional phases.
Total time (1st, 2nd and 3rd periods).	Lavender.	Back massage.	Latent, active and transitional phases.

Total time to therapeutic effect

The waiting time until the effects produced by aromatherapy are observed (decreased sensation of pain and decreased anxiety) is, on average, 30 to 60 minutes. In

an experiment reported in studies, the action of lavender essential oil was shown to start instantly after inhalation^{12,13}.

The summary of the time elapsed until the onset of the expected effects is shown in the Chart 5.



Chart 5. Time elapsed until onset of therapeutic effects. Acronym: NE: Not specified. Rio de Janeiro, RJ, Brazil, 2021

Observed results	Period in which the observed results occur	Total time
Decreased pain	NE	30 to 60 min.
	1st period	30 to 40 min.
Decreased anxiety	1st period	30 to 40 min.

Detailing the methods

The methods used in essential oil therapy to reduce labor pain, decrease anxiety and reduce labor time follow some specifications according to clinical studies and reviews

of clinical studies analyzed. Not all studies contained this information. Chart 6 brings the available content on the methods of interventions in a summarized way.

Chart 6. Detailing the application of essential oils. NE: Not Specified. Rio de Janeiro, RJ, Brazil, 2021

Symptom	Method	Specification	Intervention time
Pain	Massage	Back massage, for 5 to 6 hours.	NE
		Back massage, for 10 minutes - every 30 minutes - for 3 times.	NE
		Massage every 20 min.	In the 3 phases of the 1st period of the PT or only in the active and transitional phases.
		Massage with coconut vegetable oil in the posterior thoracic region (vertebrae T 10, 11 and 12) and lumbar (vertebra L1), firmly, constantly, gently and slowly forming two small collateral circles, for 5 to 6 hours.	NE
		Back massage with almond carrier oil.	NE
	Inhalation	Gauze soaked in essential oil associated with breathing techniques, placed close to the nostrils, on the collar of the garment.	NE
		Apply the solution of 2 drops (10%) of the essential oil in H ₂ O (1:10) in the palm of the hands, rub them together and inhale for 3 minutes at a distance of 2.5 to 5 cm from the nostrils.	NE
		Inhalation of essential oil diluted in tissue paper.	NE
		Inhalation of oil vapor diluted in a nebulizer mask.	NE
		Associated with foot bath.	Active and transitional phases.
		Inhalation with 2 drops in a gauze 7 to 10 cm from the nostrils, every 30 minutes, 3 times, between contractions.	NE



		Inhalation every 30 minutes of the essential oil diluted in sesame vegetable oil.	1st period.
	Diffusion	4 drops of essential oil diluted in 300 ml of H ₂ O.	In the 3 phases of PT.
Anxiety	Inhalation	Inhalation of 0.08 ml of essential oil diluted in sesame oil (2%), every 30 minutes.	NE

Discussion

Pain and anxiety

The actions of essential oils in therapies with pregnant women in labor translated in general a decrease in anxiety and pain, and in some cases, a decrease in the duration of the periods of labor. These results are related to the connection between the sense of smell and the Central Nervous System (CNS), because olfactory sensations occur after sensory stimuli by aromatic molecules that reach sensory neurons.

Smell is the only one of the 5 senses that has a direct connection with the CNS, because the cells responsible for smell are the olfactory receptor cells, which are neurons whose axons extend to the CNS, more specifically the limbic system, which is the of the brain that manages our emotions¹⁴.

Emotions result from good or bad stimuli, threat or pleasantness, and then change the state of the body, reconfiguring the functioning of the organism. Then the mental interpretation of these sensations results in what we know as feeling¹⁴.

Thus, aromatherapy is able to influence the physiology of childbirth, because an aroma that awakens good sensations and positive feelings, such as security and tranquility, is able to cooperate for the rebalancing of the organism.

Duration of labor

The results of decreased PT periods may be related to the fact that the limbic system, which receives stimuli from aromatic molecules, encompasses the hypothalamus, which is a gland of great importance in PT physiology. The hypothalamus is the part of the brain responsible for the production of oxytocin, the hormone responsible for uterine contractions during the three PT periods. After being produced, it migrates to the neurohypophysis, which secretes this hormone¹⁵.

However, it is the hypothalamus that produces corticotropin-releasing hormone (CRH). This hormone stimulates the pituitary gland to secrete adrenocorticotrophic hormone (ACTH), and the latter stimulates the adrenal glands to produce corticosteroids, cortisol, and catecholamines, adrenaline and noradrenaline, known as the stress hormones, in a system known as the hypothalamic-pituitary-adrenal axis (HA)¹⁶.

Studies show that plasma levels of oxytocin are inversely proportional to those of corticosteroids. This brings more importance to therapy with essential oils, because the aromas reduce the feeling of stress and bring less sensation

of pain, which allow the woman to experience childbirth with less anxiety, reducing the discharge of catecholamines, and consequently, allowing the elevation of the plasma levels of oxytocin¹⁷.

Aromatherapy, culture and society

The genes responsible for encoding the olfactory receptors in the genome play an important role in the constitution of the olfactory tissue, also influencing the number and arrangement of olfactory cells. For this reason alone, women from the same country tend to have more sensitive affinities when it comes to olfactory memory. But, the different odors that we come into contact with throughout our existence also contribute to the modulation of the number of cells appropriate for the identification of each odor¹⁸.

This means that we have many more olfactory cells capable of identifying the scents we are exposed to throughout our lives, than olfactory cells capable of identifying scents common in other social contexts.

The studies analyzed in this work mostly include aromatherapy applied to women undergoing PT in other countries, mainly the Middle East. Although the physiology of childbirth is universal as female bodies are biologically similar. Life experiences can differ greatly when it comes to different cultures.

Thus, limitations in the application of the work may arise, as olfactory memories in Brazilian women are influenced by the environment in which they live, and emotional and physical reactions when in contact with aromas can differ depending on where the woman spent most of her time life. This fact suggests that more studies in Brazilian territory on the application of aromatherapy in labor need to be developed, in order to indicate more essential oils from native plants, whose chemotypes are suitable for reducing pain, anxiety and duration of labor. This would contribute to the survey of those that are produced here in Brazil on a larger scale, which makes the therapy cheaper and more accessible.

Ongoing assistance

Analyzing the methods of application of aromatherapy, massage and inhalation were observed as predominant techniques. In the case of massages, the technique takes place during times (minutes) and at regular intervals, and with a determined frequency, in the case of inhalation, it also has its frequency, periods and intervals determined.



Sometimes the techniques occur in association, and may even include the breathing technique. That said, it is clear that for the parturient to have access to therapy with essential oils, continuous and qualified assistance is necessary. Aromatherapy is part of the list of childbirth management techniques whose assistance understands the parturient as a biopsychosocial being, where the physical, emotional and spiritual dimensions influence each other and collaborate for a better childbirth experience.

Conclusion

Aromatherapy produces the effects of decreasing the sensation of pain, decreasing anxiety, shortening the duration of labor and improving the birth experience. By decreasing the sensation of pain and anxiety, there is a reduction in stress, and the plasma level of catecholamines decreases, which in turn increases the level of oxytocin, inducing greater effectiveness in contractions.

The most used essential oils were lavender, followed by rose, chamomile and citrus essential oils, which are sweet and bitter oranges and tangerine, respectively. The most used application methods and with better results were the essential oil in carrier vegetable oil being applied in massages, or inhaled for a few minutes frequently.

More research should be started in Brazil so that other typical Brazilian aromas are indicated for the birthing scene, since each individual has a history of aromas, very influenced by the smells of the country in which he grew up and lives. Domestic production would also be a factor in increasing access to therapy, by making the product cheaper, considering national production.

Finally, childbirth care must be continuous, with careful observation of the parturient, considering each period of labor in which she is and the symptoms that manifest, so that the aromatherapy intervention is effective.

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