

Effect of Jasmine Oil Back Massage on Pain Intensity among Primigravidae during the First Stage of Labor

Mona Gamal Mohamed Shedeed, Clinical Instructor

Obstetric and Gynecologic Nursing, Faculty of Nursing, Alexandria University

Soheir Ibrahim Sobhy, Professor Emeritus

Obstetric & Gynecologic Nursing, Faculty of Nursing, Alexandria University

Salama Mohamed El-Darier, Assistant Professor Emeritus

Plant Ecology, Faculty of Science, Alexandria University

Fatma Mohamed Nasr El-Din Shuaib, Professor Emeritus

Obstetric & Gynecologic Nursing, Faculty of Nursing, Alexandria University

Yasser Saad El-Kassa, Assistant Professor

Obstetrics and Gynecologic Medicine, Faculty of Medicine, Alexandria University

Abstract

Background: Back massage with jasmine oil is the most popular method that nurses can use during labor to reduce pain. It has no side effects for both the mother and the fetus as well as it lessens the need for intrusive pain relief techniques. **Objective:** This study aims to determine the effect of jasmine oil back massage on pain intensity among primigravidae during the first stage of labor. **Materials and Method:** A quasi-experimental research design was used at the labor and delivery section of El-Shatby Maternity University Hospital in Alexandria city. A convenient sample of 100 laboring women, who were meeting the inclusion criteria, was recruited. They were assigned equally (50 laboring women) to either the study or the control group. The study group received back massage with jasmine oil, while the control group received routine hospital care. Collection of data lasted 6 months, 3 days/week. **Results:** Both the study and control groups were matching in almost all of their socio-demographic characteristics and history of current pregnancy, where the relationship between them was not statistically significant. However, high significant reduction of labor pains was noticed in the study group following the intervention and at the end of the active phase of labor, compared to the control group. **Conclusion:** Lower back massage with jasmine oil during the active phase of the first stage of labor was highly significantly effective in reducing the intensity of labor pains. **Recommendations:** Non-pharmacologic pain relief methods during labor, including jasmine oil back massage, should be added to nursing curricula and nursing care protocols. Health teaching classes for pregnant women should be conducted to increase their awareness about the effect and benefits of jasmine oil back massage in decreasing labor pain.

Keywords: Jasmine oil, back massage, pain intensity, primigravidae, the first stage of labor

Introduction

Labor is a normal physiological process that begins with the onset of rhythmic uterine contractions as a result of effacement or gradual shortening and dilation of the cervix, whereas it ends with expulsion of the fetus, placenta and membranes from the uterus (**Cunningham et al., 2018**).

The 1st stage of labor starts from the commencement of true uterine contractions until full dilation of the cervix. It is classified into 3 phases; latent, prodromal or early phase, which characterized by slow, regular uterine contractions extending from the lumbar area to the anterior abdominal segment. During this phase, the duration of uterine contractions ranges between 30 to 45 seconds, their intensity gradually increases, and their interval ranged between 5 to 20 minutes. There is also slight cervical effacement and dilatation from 0 to 3 cm. Active or accelerated phase is marked by stronger uterine contractions with duration, usually from 45 to 60 seconds and interval from 3 to 5 minutes. During this phase, cervical effacement increases and dilatation is from 4 to 7 cm. Transient or transitional phase is distinguished by sharp, more intensified uterine contractions with duration of 60 to 90 seconds and interval of 2 to 3 minutes. It also characterized by full cervical effacement and dilatation of 8 to 10 cm (**Landon et al., 2021; Sharma, 2019**).

Pain is referred to as an unpleasant sensory and emotional experience connected to existing or potential tissue injury (**Raja et al., 2020**). The experience of labor pain is a complex, subjective, multidimensional response to sensory stimuli generated during parturition. Therefore, management and control of labor pain is the main objective of labor to support the mother during childbirth (**Shalaby et al., 2018; Wijayanti et al., 2019**).

There are two ways that can be used to relieve labor pain, pharmacological and non-pharmacologic therapy. Many pharmacological techniques implemented to alleviate labor pains, produce adverse effect on the maternal and fetal health. On the other hand, non-pharmacological, complementary or alternative therapy of relieving pain is an element of nursing management that can be safely carried out during labor. Back massage is one of the most effective non-pharmacological techniques used in labor, because it lessens the severity of pain, soothes the muscle spasm, enhances general relaxation and decreases anxiety. It is also comfortable, especially in woman suffering from back pain during labor (**Dhyani, 2019**).

Jasmine oil is one of the most effective essential oils used for lower back massage during labor. It has the capacity to lessen labor pain and discomforts as well as strengthen uterine contractions. Lower back massage with Jasmine oil provides three subjective advantages during the process of labor; it helps the body to secrete endorphins, which are organic compounds for relieving pain and improving mood. It also lessens pain and anxiety during the first stage of labor as well as decreases the duration of labor and reduces the risk of postpartum depression (**Dhyani, 2019**).

Although childbirth is a natural phenomenon, labor pain renders it a very unpleasant experience. Because of the adverse effect of pharmacological approaches of relieving labor pain on maternal and fetal health, using non-pharmacological intervention is the solution to reduce labor pain and make childbirth as a pleasant experience as it is easy to administer, cost effective, harmless, and appealing to the mother. Therefore, back massage with jasmine oil is the most popular method that nurses can use during labor to reduce pain. It has no

side effects for both the mother and the fetus as well as it lessens the need for intrusive pain relief techniques. So, this study offers guidance for introduction of jasmine oil back massage into nursing practice by examining its effectiveness to alleviate labor pain.

Aims of the Study

This study aims to determine the effect of jasmine oil back massage on pain intensity among primigravidae during the first stage of labor.

Research hypotheses

Primigravidae who receive back massage with jasmine oil during the active phase of the first stage of labor exhibit less pain intensity than those who do not receive it.

Materials and Method

Materials

Design: A quasi-experimental research design was utilized in this study.

Settings: This study was conducted at the labor and delivery unit of El-Shatby Maternity University Hospital in Alexandria Governorate.

Subjects: A convenient sample of 100 laboring women was recruited from the previously mentioned setting. They were assigned to either study or control group: The study group included 50 laboring women, who received back massage with jasmine oil. The control group involved 50 laboring women, who received routine hospital care. The sample size of laboring women was estimated by using the Epi-Info 7 program, where the following parameters were applied; population size = 416/month; expected frequency = 50%; acceptable error = 10%; confidence coefficient = 95% and minimal sample size = 78.

Tools: Three tools were used by researcher to collect the necessary data.

Tool one: basic and clinical data

It was developed by the researcher based on extensive review of recent and relevant literature and consists of three parts:

Part I: Socio- demographic data such as age, level of education, occupation and current residence.

Part II: Profile of current pregnancy such as number and place of antenatal visits.

Part III: Clinical data such as maternal vital signs, uterine contractions, cervical dilatation and fetal heart rate.

Tool two: Visual Analog Scale (VAS), which was adapted by the researcher to measure intensity of labor pain. It was originally developed by **Melzack & Katz (1994)**, and then revised for its reliability and validity by **Alghadir et al (2018)**. This scale is a self-report device that consists of a horizontal line in centimeters from 0 to 10, representing 0 (no pain), 1-3 (mild pain), 4-6 (moderate pain), 7-9 (severe pain) and 10 (unbearable pain).

Tool three: Present Behavioral Intensity (PBI) Scale, which was adapted by the researcher to measure the present behavioral manifestations of labor pain. It was originally developed by **Bonnel & Boureau (1985)** and included five categories:

Intensity 0: Normal respiration, no grasping, no agitation

Intensity 1: the frequency of respiratory rates is modified during contractions.

Intensity 2: Grasping reactions appear during contractions and cease between them (relaxation).

Intensity 3: Grasping reactions persist between contractions (absence of relaxation).

Intensity 4: Signs of agitation (e.g. abrupt uncontrolled movements) may arise during and between contractions.

Method

Approval from Ethical Research Committee, Faculty of Nursing, Alexandria University, was obtained. An Official letter from the Faculty of Nursing, Alexandria University was submitted to the responsible authority of the study setting to obtain permission for data collection after explaining the purpose of the study.

Tools were tested for content validity by 5 experts in Obstetric and Gynecologic Nursing field. They were checked for their reliability by using Cronbach's alpha test and the result was reliable for tool two and three (0.70).

A pilot study was carried out on 10 laboring women (excluded from the study subjects) to test the feasibility of the study as well as to ascertain the clarity and applicability of the tools, in addition to calculate the time needed to complete them.

Data were collected from laboring women at labor and delivery unit, during their active phase of the first stage of labor. Data of tool one, part I & II were collected from laboring women through an interview schedule, which was conducted individually. Data of tool one, part III were collected from laboring women through an examination before and after intervention. Collection of data covered a period of 6 months starting from the beginning of January till the end of June 2021, 3 days/week; 1-2 laboring women /day.

The study group received back massage with jasmine oil. The researcher applied Jasmine oil (10 ml) to the lower back or lumbar region of the spine (L1-L5) of each laboring women from the beginning of her active phase (4 cm cervical dilation). It was performed by using the two palms and fingers in

rubbing gently, firmly, constantly, and slowly, forming two small collateral circles (Devi & Sangeetha, 2016; Sriasih et al., 2019). Jasmine oil back massage was given for 10 minutes, 3 times with an interval of 30 minutes, totaling 2 hours (Joseph & Fernandes, 2013).

Pain intensity was measured by VAS & PBI scales as follows:

- Before intervention for both the study and the control groups
- After the 3 rd. Intervention (2 hours) and at the end of the active phase (6 cm cervical dilatation) for the study group.
- After 2 hours and at the end of the active phase (6 cm cervical dilatation) for the control group.

Statistical Analysis

The collected data were categorized, coded, computerized, tabulated and analyzed using Statistical Package for Social Sciences (SPSS) version 23 program. Cross tabulation was carried out to explore the relationships between variables. A descriptive and analytical statistics were used such as percentages, Mean & Standard Deviation; whereas Chi-square-test, Fisher Exact-test and t-test were used to find out the difference in the results at ≤ 0.05 level of significance.

Ethical considerations

For each recruited subject the following issues were considered: securing the subjects written informed consent, after explaining the aim of the study; keeping their privacy and right to withdraw at any time as well as assuring confidentiality of their data.

Results

Table I presents the number and percent distribution of laboring women according to their socio-demographic data. Age clarified that 46% of the study group was 20 to less than 25 years old, compared

to 32% of the control group. In contrast, 36% of the latter group was 30-34 years old, compared to 18% of the former group. Level of education, occupation and residence also manifested that a sizeable proportion of the study and the control groups (74% & 64%) respectively were illiterate or just read and write; (74% & 82%) respectively were housewives and (64% & 76%) respectively were rural residents. However, the two groups' socio-demographic data were almost similar, where no statistically significant differences were found between them

Table II demonstrates the number and percent distribution of laboring women according to their profile of current pregnancy. Number of antenatal visits showed that 48% of the study group had less than 4 visits, compared to 26% of the control group. On the contrary, 44% of the latter group had no visits, compared to 30% of the former group. Place of antenatal visits also displayed that 62.86% of the study group went to family health /medicine center, compared to 28.57% of the control group. On the other hand, 57.14% of the latter group went to private clinics, compared to 28.57% of the former group. Thereby, the relationship between the two groups' profile of current pregnancy was not statistically significant.

Table III shows the number and percent distribution of laboring women according to their intensity of labor pains using VAS. A statistically significant difference was found between the two groups before intervention. ($P=0.022$), where 36% of the study group had unbearable pains, compared to 20% of the control group. However, the relationship between them was highly statistically significant after intervention and at the end of the active phase ($P=0.000$), where unbearable pain decreased sharply from 36% to 0% among the study group, while it increased from 20% to 36% & from

36% to 50% respectively among the control group.

Table IV expounds the number and percent distribution of laboring women according to their intensity of labor pain using BPI scale. The relationship between the two groups was statistically significant before intervention. ($P=0.037$), where 46% of the study group had unbearable pain, compared to 26% of the control group. However, a highly statistically significant differences were found between them after intervention and at the end of the active phase ($P=0.000$), where unbearable pain dropped sharply from 46% to 4% & from 4% to 0% respectively among the study group, while it elevated markedly from 26% to 76% & from 76% to 82% respectively among the control group.

Discussion

Non-pharmacologic strategies to manage labor pains can be helpful when there is a personal preference to avoid medications or in low-resource settings. Although the effectiveness of non-pharmacologic strategies is not proven by research, they are considered safe to try (**Jin & Son, 2021**). Back massage with jasmine oil is the most popular non-pharmacologic method that can be used by nurses to decrease labor pain severity. It is a noninvasive method of pain relief as well as it has no negative effects on the mother and her fetus. Therefore, this study was carried out to determine the effect of jasmine oil back massage on pain intensity among primigravidae during the first stage of labor.

The results of the present study indicated that all socio-demographic characteristics and history of current pregnancy of both the study and control groups were almost identical (Tables I & II). This indicates that the majority of El-Shatby Maternity University Hospital

attendants come from a similar socioeconomic background. This uniform profile was helpful in reducing extraneous influences that may interfere with the participants' response to the planned intervention. It was also beneficial in comprehending and ensuring securing the accuracy and validity of the upcoming study's results.

On investigating the effect of jasmine oil back massage on intensity of labor pains using VAS & PBI, the results of present study demonstrated high significant reduction among the study group after intervention and at the end of the active phase of labor, compared to the control group (Tables III & IV). This finding confirms the ability of jasmine oil back massage to reduce labor pains, spasms and anxiety by providing a relaxing and comfortable effect as well as a sense of wellbeing. Lower back massage with Jasmine oil causes the body to produce endorphins, which act as natural pain killers and mood enhancers (Mukhlis et al., 2018; Wulandari et al., 2020).

The current finding is relatively in harmony with a study executed in Bangalore, India, where it was evidenced that jasmine oil back massage is one of the non-pharmacological methods that can be done to reduce the intensity of pain felt in the first stage of labor (Devi & Sangeetha, 2016).

The present finding is also proportionally consistent with a study conducted in Abadan, Iran, where the efficiency of back massage with jasmine oil on pain relief during childbirth was indicated (Alavi et al., 2017). In addition, it corresponds with a study fulfilled in Lampung, Indonesia, where it was proven that a back massage with jasmine oil helped reduce labor pain in primigravidae. (Mukhlis et al., 2018).

Moreover, the current finding proportionally concurs with a study conducted in Baghdad, Iraq, where it was found that back massage with jasmine essential oil is the most widely used non-pharmacological pain relief method, especially during labor, because it has many benefits (Fadhil & Ali, 2019). Furthermore, it is relatively congruent with a systematic review and meta-analysis, which identified more credible evidence validating that aromatherapy, involving jasmine oil back massage, could significantly decrease labor pain in the active phase of the first stage of labor (Liao et al., 2021).

On the other hand, the present finding is incompatible with a Cochrane Database of Systematic Reviews, which demonstrated that jasmine oil back massage is effective in decreasing labor pain, aids women deal with this pain and give them a better birth experience. Yet, low - quality evidence that this technique provides a greater reduction in labor pain intensity was found (Smith et al., 2018). The discrepancy between this review's finding and this of the present study may be due to different research design and data collection. It is also due to small trials without sufficient numbers of participants.

Conclusion

Based upon the findings of the current study, it could be concluded that the implementation of lower back massage with jasmine oil during the active phase of the first stage of labor was highly significantly effective in reducing the intensity of labor pains. Therefore, the research hypothesis "Primigravidae who receive back massage with jasmine oil during the active phase of the first stage of labor exhibit less pain intensity than those who do not receive it" was accepted.

Recommendations

Based on the findings of the present study, the following recommendations are suggested:

- Non-pharmacologic pain relief methods during labor, including jasmine oil back massage, should be added to nursing curricula and nursing care protocols
- In-service training programs should be conducted for midwives in maternity hospitals and primary health care centers to help them implement jasmine oil back massage as a non-pharmacological labor pain relief method
- The responsible authority should prepare a simplified guideline about the proper use and advantages of jasmine oil back massage for the relief of labor pain should be made available for midwives.
- Health teaching classes for pregnant women should be conducted by maternity nurses to increase their awareness about the effect and benefits of jasmine oil back massage in decreasing labor pain.
- Repeat the current study with greater sample sizes and different settings for generalization of the findings.

Table (I): Number and percent distribution of laboring women according to their socio - demographic data

Socio - demographic data	Study Group (50)		Control Group (50)		F / χ^2 (P)
	No	%	No	%	
Age (years):					
20 –	23	46.00	16	32.00	1.843 (0.398)
25-	18	36.00	16	32.00	
30-34	9	18.00	18	36.00	
Level of education:					
- Illiterate/read & write	37	74.00	32	64.00	2.029 (0.566)
- Basic	8	16.00	12	24.00	
- Secondary or its equivalent	3	06.00	2	04.00	
- University	2	04.00	4	08.00	
Occupation:					
- Housewife	37	74.00	41	82.00	0.932 (0.334)
- Working	13	26.00	9	18.00	
Current residence:					
- Rural	32	64.00	38	76.00	1.714 (0.190)
- Urban	18	36.00	12	24.00	

χ^2 (P): Chi-Square Test & P for χ^2 Test

F (P): Fisher Exact test &P for F Test

*: Significant at $P \leq 0.05$

Table (II): Number and percent distribution of laboring women according to their profile of current pregnancy

Profile of current pregnancy	Study Group (50)		Control Group (50)		F / χ^2 (P)
	No	%	No	%	
No. of antenatal visits:					
None	15	30.00	22	44.00	5.21 (0.074)
< 4	24	48.00	13	26.00	
≥ 4	11	22.00	15	30.00	
Place of antenatal visits:	(n=35)		(n=28)		
- Governmental hospital	2	05.71	3	10.71	7.432 (0.059)
- Private hospital	1	02.86	1	03.57	
- Private clinic	10	28.57	16	57.14	
- Family health/medicine center	22	62.86	8	28.57	

χ^2 (P): Chi-Square Test & P for χ^2 Test

F (P): Fisher Exact test &P for F Test

*: Significant at $P \leq 0.05$

Table (III): Number and percent distribution of laboring women according to their intensity of labor pain using VAS

Intensity of labor pain	Study Group (50)		Control Group (50)		F / χ^2 (P)
	No	%	No	%	
Before intervention:					
Moderate (4-6)	2	04.00	10	20.00	7.619 (0.022)*
Severe (7-9)	30	60.00	30	60.00	
Unbearable (10)	18	36.00	10	20.00	
After intervention:					
Mild (1-3)	4	08.00	0	00.00	58.318 (0.000)**
Moderate (4-6)	37	74.00	4	08.00	
Severe (7-9)	9	18.00	28	56.00	
Unbearable (10)	0	00.00	18	36.00	
At the end of active phase:					
Mild (1-3)	4	08.00	0	00.00	92.247 (0.000)**
Moderate (4-6)	45	90.00	1	02.00	
Severe (7-9)	1	02.00	24	48.00	
Unbearable (10)	0	00.00	25	50.00	

χ^2 (P): Chi-Square Test & P for χ^2 Test

F (P): Fisher Exact test & P for F Test

*: Significant at $P \leq 0.05$

** : Highly Significant at $P \leq 0.05$

Table (IV): Number and percent distribution of laboring women according to their intensity of labor pains using PBI

Intensity of labor pains	Study Group (50)		Control Group (50)		F / χ^2 (P)
	No	%	No	%	
Before intervention:					
- Moderate (2)	0	00.00	3	06.00	6.581 (0.037)*
- Severe (3)	27	54.00	34	68.00	
- Unbearable (4)	23	46.00	13	26.00	
After intervention:					
- Moderate (2)	36	72.00	0	00.00	68.4 (0.000)**
- Severe (3)	12	24.00	12	24.00	
- Unbearable (4)	2	04.00	38	76.00	
At the end of active phase:					
- Moderate (2)	42	84.00	0	00.00	83.059 (0.000)**
- Severe (3)	8	16.00	9	18.00	
- Unbearable (4)	0	00.00	41	82.00	

χ^2 (P): Chi-Square Test & P for χ^2 Test

F (P): Fisher Exact test & P for F Test

*: Significant at $P \leq 0.05$

** : Highly Significant at $P \leq 0.05$

References

- Alavi, A., Askari, M., Nejad, E. & Bagheri, P. (2017). Study the effect of massage with jasmine oil in comparison to aromatherapy with jasmine oil on childbirth process in hospitals of Abadan city in 2013. *Annals of Tropical Medicine and Public Health*, 10(4), 904-9.
- Alghadir, A., Anwar, Sh., Iqbal, A. & Iqbal, Z. (2018). Test–retest reliability, validity, and minimum detectable change of visual analog, numerical rating, and verbal rating scales for measurement of osteoarthritis knee pain. *Journal of Pain Research*, 11:851-6.
- Bonnel, A. & Boureau, F. (1985). Labor pain assessment: Validity of a behavioral index. *Pain*, 22(1), 81–90.
- Cunningham, F., Leveno, K., Bloom, S., Dashe, J. & Spong, C. (2018). *Williams Obstetrics*, 25th ed. New York: McGraw Hill Medical.
- Devi, R. & Sangeetha, C. (2016). Effectiveness of routine back massage versus jasmine oil back massage versus coconut oil back massage on labor pain among parturient mothers in selected tertiary care hospital Bangalore. *International Journal of Health Sciences & Research*, 6(8), 219-24.
- Dhyani, M. (2019). Effectiveness of jasmine oil massage on back pain and selected fetomaternal parameters among primigravida mothers. *International Journal of Research in Engineering, Science and Management*, 2(9), 88-91.
- Fadhil, S. & Ali, R. (2019). Effect of non-pharmacological pain management methods on reduction the duration of labor stages in primigravida women at AL-Elwya Maternity Teaching Hospital. *Iraqi National Journal of Nursing Specialties*, 32(1), 31-8.
- Jin, J. & Son, M. (2021). Pain management during vaginal childbirth. *JAMA*, 326 (5), 450.
- Joseph, R. & Fernandes, Ph. (2013). Effectiveness of jasmine oil massage on reduction of labor pain among primigravida mothers. *Nitte University Journal of Health Science*, 3 (4), 104-7.
- Landon, M., Galan, H., Jauniaux, E., Driscoll, D., Berghella, V., Grobman, W. et al. (2021). *Gabbe's Obstetrics: Normal and Problem Pregnancies*. 8th ed. Philadelphia, US: Saunders.
- Liao, C., Lan, S., Yen, Y., Hsieh, Y. & Lan, S. (2021). Aromatherapy intervention on anxiety and pain during first stage labor in nulliparous women: A systematic review and meta-analysis. *Journal of Obstetrics and Gynecology*, 41(1), 21-31.
- Melzack, R. & Katz, J. (1994). *Pain measurement in persons in pain*. In: Wall, P. & Melzack, R. *Textbook of pain*. 3rd ed. London: Churchill Livingstone, 337-51.
- Mukhlis, H., Nurhayati, N. & Wandini, R. (2018). Effectiveness of jasmine oil (jasminum officinale) massage on reduction of labor pain among primigravida mothers. *Malahayati International Journal of Nursing and Health Science*, 1(2), 47-52.
- Raja, S., Carr, D., Cohen, M., Finnerup, N., Flor, H., Gibson, S. et al. (2020). The revised international association for the study of pain: Concepts, challenges, and compromises. *Pain*, 161 (9), 1976-82.
- Shalaby, H., Hemada, H. & Faris, M. (2018). Efficacy of intravenous tenoxicam as an analgesic during the first stage of labor: A randomized controlled trial. *The Egyptian Journal of Hospital Medicine*, 70(4), 601-9.

- Sharma, R. (2019). *Stages of labor and nursing care*. Available at URL: https://www.researchgate.net/publication/335518026_Stages_of_Labor_and_Nursing_Care. Retrieved on: 14 March 2021.
- Smith, C., Levett, K., Collins, C., Dahlen, H., Ee, C. & Sukanuma, M. (2018). Massage, reflexology and other manual methods for pain management in labor. *Cochrane Database of Systematic Reviews*, 3(3), 1-96.
- Sriasih, N., Hadi, M., Suindri, N., Surati, G. & Mahayati, N. (2019). The effect of massage therapy using frangipani aromatherapy oil to reduce the childbirth pain intensity. *International Journal of Therapeutic Massage and Bodywork*, 12(2), 18-24.
- Wijayanti, I., Ratnaningsih, S. & Ismarwati, I. (2019). *The effect of aromatherapy on the level of pain in mother*. Available at URL: <https://www.prosiding.respati.ac.id/index.php/PIC/article/view/90>. Retrieved on: 14 March 2021.
- Wulandari, A., Rohmah, M. & Natalia, Sh. (2020). The effect of jasmine aromatherapy and back massage to reduce the intensity of labor pain in the active phase. *International Journal of Psychosocial Rehabilitation*, 24(7), 8697- 702.