

## Alleviating Active Labor Pain: The Impact of Virgin Coconut Oil (VCO) Back Massage During the First Stage of Labor

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### ABSTRACT

Labor pain is one of the most intense sensations experienced by women during childbirth, particularly during the first stage of labor. This study aimed to evaluate the effect of back massage with Virgin Coconut Oil (VCO) on the intensity of active labor pain during the first stage. The research employed a quantitative, pre-experimental one-group pretest-posttest design, involving 18 mothers in active phase labor at IMP Restu Bunda, West Tulang Bawang Regency. Pain levels were measured using the Visual Analog Scale (VAS) before and after the back massage with VCO. Results showed that the average labor pain intensity before the intervention was 7.0, and after the back massage with VCO, the average pain decreased to 5.2. Statistical analysis using the Wilcoxon test revealed a significant reduction in pain intensity ( $p$ -value = 0.000), indicating that back massage with VCO effectively reduced labor pain. Seventeen respondents reported a decrease in pain, while only one respondent experienced no change. The findings suggest that back massage with VCO is a viable non-pharmacological method for managing labor pain, with minimal side effects.

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## INTRODUCTION

Childbirth is a profound and often physically challenging experience, with labor pain being one of the most intense sensations many women endure, particularly during the first stage of labor. While medical interventions such as epidurals are commonly used to manage this pain, there is growing interest in natural and non-pharmacological methods to provide relief and promote comfort. One such method is back massage, which has been shown to relax muscles, reduce tension, and alleviate pain. Virgin Coconut Oil (VCO), with its natural analgesic and anti-inflammatory properties, may enhance the effectiveness of massage in reducing labor pain.

During childbirth, particularly in the active phase, increased uterine contractions cause intense pain and require significant energy from the mother. Labor pain, stemming from painful myometrial contractions, varies in intensity among women. Bonica's research, which involved 2,700 mothers from 121 obstetric centers in 36 countries, revealed that 15% of deliveries were painless or mildly painful, 35% involved moderate pain, 30% involved severe pain, and 20% involved very severe pain (Dewi, 2023). In Indonesia, the Hospital Association's data shows that 15% of mothers experience complications during childbirth, and 21% report severe pain (Fitri, 2023).

Health professionals, particularly midwives, play a vital role in reducing labor pain and addressing issues related to childbirth, regularly assessing pain and evaluating the mother's condition (Fitri, 2023). Pain management can be approached through pharmacological and non-pharmacological methods, with non-pharmacological techniques such as massage, warm baths, and compresses offering a simpler, cheaper, and effective alternative without adverse effects (Perry & Potter, 2018). While pharmacological methods like mefenamic acid are effective, they come with higher costs and potential side effects. Pharmacological methods, such as sedatives and analgesics, are commonly used but come with potential side effects, including fetal hypoxia, increased maternal body temperature, decreased heart rate, CNS depression, and neonatal respiratory issues (Fitri, 2023). Massage during labor, such as effleurage and counterpressure, has been shown to reduce discomfort by stimulating endorphin release and promoting relaxation (Pastuty, 2020). A pre-survey conducted in June 2024 on five mothers revealed that most experienced significant pain during labor, with pain management methods such as deep breathing being employed, but the use of Virgin Coconut Oil (VCO) massage was not yet explored (Fitri, 2023).

Despite growing evidence supporting non-pharmacological methods such as massage for labor pain management, there remains a gap in understanding their full efficacy compared to pharmacological methods. Recent studies have highlighted the effectiveness of massage and other non-drug approaches, but they are often less preferred due to perceptions of lower effectiveness compared to medications (Brezeanu et al., 2023). Additionally, few studies have directly compared Virgin Coconut Oil (VCO) massage with other methods, leaving a gap in targeted research on VCO's potential benefits (Pastuty, 2020; Perry & Potter, 2018).

The objective of this research is to investigate the impact of back massage using Virgin Coconut Oil (VCO) on the intensity of labor pain experienced during the first stage of active labor. Specifically, the study aims to achieve three key goals: first, to determine the average pain intensity before the application of VCO-enhanced back massage; second, to assess the average pain intensity after the massage intervention; and third, to evaluate the overall effectiveness of VCO back massage in reducing the pain intensity during the first stage of active labor. By comparing pain levels before and after the application of this non-pharmacological intervention, the research seeks to explore whether VCO back massage can provide significant pain relief and offer a natural alternative to traditional pharmacological pain management methods during labor. The hypothesis guiding this research posits that there is a measurable effect of back massage with VCO on lowering the intensity of labor pain during the active phase of the first stage of childbirth. This study contributes to the growing body of evidence supporting non-pharmacological approaches for pain management during labor, with a specific focus on the potential analgesic and soothing benefits of VCO when used in conjunction with massage techniques. By doing so, it hopes to provide insights into whether this method can be recommended as a viable and effective option for managing labor pain, enhancing maternal comfort, and potentially reducing the need for more invasive medical pain interventions.

## LITERATURE REVIEW

Childbirth pain is one of the most intense and challenging sensations many women endure, particularly during the active phase of the first stage of labor. While pharmacological pain management methods, such as epidurals and analgesics, are widely used, they carry potential side effects, including risks to both maternal and neonatal health, such as CNS depression, fetal hypoxia, and respiratory issues (Fitri, 2023). In response to these limitations, non-pharmacological techniques, including massage therapies like effleurage and counterpressure, offer a safer and often cost-effective alternative by enhancing comfort through natural pain relief mechanisms, such as endorphin release (Perry & Potter, 2018). Back massage with Virgin Coconut Oil (VCO) holds promise as a specific technique, combining muscle relaxation with VCO's analgesic and anti-inflammatory properties to help alleviate labor pain. Studies indicate that VCO massage may provide substantial pain relief during the active phase by reducing muscle tension and promoting relaxation (Pastuty, 2020). Thus, VCO massage is a promising complementary method that may bridge the gap in effective, non-invasive pain management during labor, encouraging maternal comfort and minimizing reliance on pharmacological interventions.

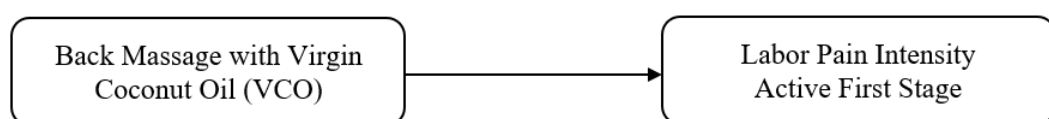


Figure 1. Conceptual Framework

## METHODOLOGY

The research design is described as follows:



Figure 2. Research Design

The research methodology for this study employs a one-group pretest-posttest design, which involves measuring the intensity of labor pain before and after the intervention within the same group of participants. Initially, a pretest will be conducted to assess the baseline level of active labor pain experienced by mothers during the first stage of labor. Following this, the treatment will be administered, where participants will receive a back massage using Virgin Coconut Oil (VCO) as the non-pharmacological intervention aimed at reducing labor pain. After the treatment, a posttest will be conducted to measure any changes in the intensity of labor pain. The difference between the pretest and posttest pain levels will provide insights into the effectiveness of the VCO back massage in alleviating pain during active labor. This design allows for a direct comparison of pain intensity before and after the intervention, helping to isolate the impact of VCO massage on labor pain and offering valuable data on its potential benefits as a natural pain management technique.

## RESULTS AND DISCUSSION

This study employs a quantitative research methodology with a pre-experimental one-group pretest-posttest design. The key feature of this design is the comparison of data collected before and after an intervention, allowing researchers to measure changes in response to the treatment. The intervention involves providing participants with a back massage using Virgin Coconut Oil (VCO) and assessing their pain levels before and after the massage. The Visual Analog Scale (VAS) is used as the measurement tool to evaluate pain intensity, with participants' pain thresholds being recorded prior to and following the back massage. The massage technique involves hand strokes from the sacrum to the upper back and neck, targeting muscles along the spine. This approach is applied during the first stage of labor, particularly during the active phase, when pain is most intense.

The study's population consists of mothers planning to give birth at IMP Restu Bunda, West Tulang Bawang Regency, with 22 mothers scheduled to give birth in September. Following Sugiyono's (2018) recommendation for a minimum sample size in experimental studies, 18 mothers were selected using incidental sampling, adhering to the inclusion criteria of being in the active phase of labor (4-10 cm dilation), experiencing normal labor with a single

pregnancy, and having a normal head presentation. Exclusion criteria included labor induction, labor complications, placenta previa, hypotension, polyhydramnios, premature labor, and known allergies to VCO. The study aims to evaluate the effectiveness of VCO back massage in reducing labor pain by comparing the pretest and posttest pain scores of these participants.

### Univariate Analysis

Table 1. Average pain during active first stage of labor before being given a back massage with virgin coconut oil (VCO)

Labor pain	Mean	Std. Deviation	Minimum	Maximum	N
Before intervention	7,0	0,7	6	8	18

Based on Table 1, the average intensity of labor pain during the first stage before receiving a back massage with Virgin Coconut Oil (VCO) was 7.0, with a standard deviation of 0.7. The recorded pain levels ranged from a minimum value of 6 to a maximum value of 8, indicating that the majority of participants experienced moderate to severe pain prior to the intervention.

Table 2. Average pain in active first stage of labor after back massage with virgin coconut oil (VCO)

Labor pain	Mean	Std. Deviation	Minimum	Maximum	N
After intervention	5,2	0,8	4	7	18

Based on Table 2, the average intensity of labor pain during the first stage after receiving a back massage with Virgin Coconut Oil (VCO) decreased to 5.2, with a standard deviation of 0.8. The pain levels ranged from a minimum value of 4 to a maximum value of 7, indicating a noticeable reduction in pain for most participants following the intervention.

Table 3. Data Normality Test

Variable	Back Massage	Shapiro-Wilk	Note
Labor Pain	Before	0,003	Abnormal
	After	0,023	Abnormal

Based on Table 3, the Shapiro-Wilk normality test for the variables before and after the intervention resulted in a significant value of less than 0.05, indicating that the data distribution is not normal. As a result, the analysis was continued using the Wilcoxon test to assess the differences between pre- and post-intervention pain levels.

### Bivariate Test

Table 4. Average pain during active first stage of labor before being given a back massage with virgin coconut oil (VCO)

Labor Pain	Median	Min-Max	Negative ranks	Positive ranks	Ties	p-value
Before intervention	7,0	6-8	17	0	1	0.000
After intervention	5,0	4-7				

The results of the statistical analysis using the Wilcoxon test, as shown in Table 1.4, indicate a significant effect of back massage with Virgin Coconut Oil (VCO) on reducing the intensity of active labor pain during the first stage, with a p-value of 0.000 (p-value  $< \alpha = 0.05$ ). This demonstrates that the intervention provided at IMP Restu Bunda in Gunung Terang Sub-District, West Tulang Bawang Regency, had a positive impact on pain reduction during labor. Specifically, 17 out of 18 respondents reported a decrease in labor pain following the VCO back massage, while only 1 respondent experienced no change, and no participants reported increased pain after the massage.

Supporting this finding, research by Lubis et al. (2020) similarly identified that back massage positively influenced pain adaptation during active labor, shortened the duration of the second stage of labor, and reduced labor-related bleeding in primigravida women, with a significant p-value of 0.001. Another study found that deep back massage effectively reduced discomfort and accelerated cervical dilation. In the control group, pain levels increased significantly (p = 0.001), while the intervention group experienced a substantial reduction in pain (p = 0.000). Additionally, the rate of cervical opening was faster in the group that received back massage, with a p-value of 0.000, indicating the effectiveness of this technique in easing labor progression.

Massage, as a therapeutic method, involves applying gentle pressure to specific areas of the body, which helps improve blood circulation, metabolism, and overall bodily functions. Virgin Coconut Oil (VCO) enhances the benefits of massage by serving as a natural moisturizer. Rich in oleic acids and vitamin E, VCO helps hydrate the skin, promotes healing, and reduces the risk of injury or dryness during massage (Zuryati, 2022). This aligns with findings from Apriyanti (2022), who observed that after receiving a back massage intervention, most mothers reported experiencing moderate pain, with a smaller percentage experiencing severe pain. When considering techniques to alleviate labor pain, factors such as effectiveness, cost, safety for both mother and baby, and time efficiency must be carefully evaluated (7).

## CONCLUSION AND RECOMMENDATIONS

The study highlights that while back massage with Virgin Coconut Oil (VCO) is generally effective in reducing labor pain, individual responses may vary, as seen in one participant who did not experience pain relief. Factors such as family support and interpersonal relationships play a significant role in shaping pain perception, with those receiving strong emotional support often coping better with pain. Health professionals, particularly midwives, or family members can offer VCO back massages as a safe and effective intervention to alleviate pain and anxiety during labor. It is recommended that expectant mothers seek more information from healthcare providers to enhance their psychological readiness for labor, helping them manage pain more effectively and reduce the risk of complications. Health workers are encouraged to implement non-pharmacological techniques like VCO back massage due to their ease of use and lack of harmful side effects. Future research could explore

different designs or compare back massage with other pain-relief techniques, incorporating larger sample sizes for broader insights.

### **ADVANCED RESEARCH**

For future research, it is recommended to conduct comparative studies that evaluate the effectiveness of VCO back massage against other non-pharmacological pain relief techniques, such as warm compresses, aromatherapy, or acupressure, to determine relative efficacy and identify optimal pain management strategies during labor. Additionally, a larger sample size and diverse participant demographics would provide more generalized findings and allow for subgroup analyses, such as examining the impact of VCO massage on different pain thresholds and cultural perceptions of labor pain. Longitudinal studies assessing the lasting effects of VCO massage on maternal and neonatal outcomes postpartum could also provide valuable insights into its broader benefits in maternal care.

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