The Effect of Back Massage with *Virgin Coconut Oil* (VCO) on the Intensity of Labor Pain in the First Active Phase at PMB Restu Bunda Gunung Terang District, West Tulang Bawang Regency

Pipit Yulia Puspita [1], Iis Tri Utami [2], Inggit Primadevi [3],
Prisiari Kusuma Wardani [4], Eva Fatmaati [5]
[1,2,3,4] S-1 Kebidanan Fakultas Kesehatan Universitas Aisyah Pringsewu, Indonesia
Email: pipityuphus281107@gmail.com jannatunnaim892@gmail.com
inggitprimadevi@aisyahuniversity.ac.id psiarikusumawardani@gmail.com

Abstract *Childbirth is often perceived as frightening and causing extreme pain. Some mothers also feel traumatized by their first childbirth process because of various difficulties and pain during childbirth so that they are reluctant to plan to have children again. Labor pain is caused by uterine contractions and dilation of the cervix and lower uterine segment. Survey data from PMB Restu Bunda in 2024 on 5 mothers who gave birth, it was found that overall respondents experienced pain, as many as 3 people with a pain scale of 7 (severe pain) and as many as 2 people with a pain scale of 6 (moderate pain). One non-pharmacological therapy that can reduce the intensity of pain is back massage using Virgin Coconut Oil (VCO). The research objective was to determine the effect of back massage with Virgin Coconut Oil (VCO) on the intensity of active labor pain in the first stage of labor at the IMP Restu Bunda Gunung Terang Sub-District of West Tulang Bawang Regency. The quantitative research type is a pre-experimental design, one group pre-test - post-test design. The population in this study were all mothers who were going to give birth, as many as 22 mothers, with a sample of 18 people taken by accidental sampling. The study was conducted at the IMP Restu Bunda of Gunung Terang Sub-District West Tulang Bawang Regency. Data collection used observation sheets. Data analysis was carried out using univariate and bivariate tests (Wilcoxon test). The study results showed that the average labor pain before being given a back massage with virgin coconut oil (VCO) was 7.0 and after being given a back massage with virgin coconut oil (VCO) was 5.2. There was an influence of back massage with virgin coconut oil (VCO) on the intensity of active labor pain in the first stage at the IMP Restu Bunda of Gunung Terang Sub-District of West Tulang Bawang Regency with a p-value = 0.001 (p-value <α = 0.05). Suggestions for health workers can recommend back massage with virgin coconut oil (VCO) can be used as complementary therapy for mothers in the first stage of labor.*

Keywords *: Virgin Coconut Oil (VCO), Labor Pain, First Stage, Back Massage*

1. INTRODUCTION

Physiological changes occur naturally during labor and delivery. The arrival of a new family member is a happy moment that everyone has been waiting for for nine months (Widyastuti, 2018) . Labor pain in the uterus thins the amniotic membrane, dilates the cervix, and forces the baby out of the birth canal during the last hours of pregnancy. During the active phase of labor, the mother experiences increasingly painful uterine contractions that last longer and more frequently. At this time, many efforts are made. The process of painful myometrial contractions during labor is called labor pain (Prawirohardjo, 2020) .

Childbirth can be affected by labor pain. Increased plasma catecholamine levels, especially epinephrine, which can interfere with contractions, are the main effects that occur as a result of sympathetic system activation (Maryunani, 2015) . According to (Saifuddin, 2014) complications related to contractions can prolong the early phase of labor.

Uncoordinated uterine activity during labor is another consequence of pain, which can have serious consequences for the mother and unborn child (Mander, 2013) .

An estimated 36.4 % of laboring mothers in Ethiopia seek a cesarean section to avoid the pain of childbirth (Shiferaw, 2022). Over a quarter of primiparas find the pain unbearable, with another sixty- five percent rating the pain as very strong or severe and only nine percent finding it tolerable. In contrast, only 17% of multiparas find the pain unbearable, 46% find the pain moderate, and 25% find it tolerable. While up to 80% of laboring women in the US receive epidural analgesia, 77% of laboring women in Australia use pharmaceutical interventions to reduce pain (Pietrzak, 2022).

The study conducted by Bonica involved 2,700 mothers who gave birth in 121 obstetric centers in 36 countries. The results showed that 15% of labors were painless or mildly painful, 35% experienced moderate pain, 30% severe pain, and 20% very severe pain. The level of pain experienced by mothers during labor can vary, but is almost universal (Dewi, 2023). According to the Indonesian Hospital Association data center, 15% of mothers giving birth in Indonesia experience complications, and 21% of these women reported that their labor was painful because of the extreme pain they felt (Fitri, 2023).

Prolonged first stage of labor and compromised fetal well-being can result from uncoordinated uterine contractions caused by the mother having difficulty adapting to labor pain. The most worrying, complex, and unpredictable labor complication is the absence of progress in labor or slow progress in labor. Intrapartum infection, uterine rupture, pathological retraction ring, fistula formation, pelvic floor muscle injury, and fetal head molasses are some of the serious consequences that can occur to both mother and child due to prolonged labor. (Manuaba, 2016) .

The mother's psychological condition, especially her perception of pain during labor, can affect the duration of labor. In Lampung Province, the incidence of prolonged labor is 3.72%, while the national average is 4.3% (Riskesdas, 2018) . Therefore, labor pain relief is very important. One of the most painful experiences in a person's life is labor. As the mother's pain increases, the intensity of her fear and anxiety also increases. Tension in the uterus and other parts of the body are common symptoms of fear. Anxiety, prolonged labor, and obstruction of the natural labor process are possible consequences of this condition (Ayu, 2017)

There has been an increase in the number of pregnancies and deliveries in recent years, highlighting the importance of health care providers' efforts to relieve labor pain and other problems that may arise during the process.

An important part of patient care is effective pain management. Pharmacological and nonpharmacological interventions are the two main categories of pain management. The use of medications is at the heart of pharmacological pain management. Cutaneous stimulation is one method of nonpharmacological pain management (Masfuri et al., 2023) . An important part of patient care is effective pain management. Pharmacological and nonpharmacological interventions are the two main categories of pain management. The use of medications is at the heart of pharmacological pain management. Cutaneous stimulation is one method of nonpharmacological pain management (Rasyidah et al., 2022) .

Many pharmacological and non-pharmacological efforts are made to relieve severe pain experienced by mothers during childbirth. However, mothers often choose the easiest and fastest method to relieve this pain. Fetal hypoxia, risk of neonatal respiratory depression, decreased heart rate/central nervous system (CNS) and increased temperature (CNS) and increased temperature (maternal body) are some of the adverse side effects of pain relievers used to relieve unbearable labor pain. (Juda, 2020)

Both pharmacological and non-pharmacological methods of pain relief are effective. Although pharmacological pain management is more effective than non-pharmacological methods, it is also more expensive and can cause unwanted side effects. Both the mother and the fetus, as well as the progress of the labor process, are affected by pharmacological approaches during pregnancy. For moderate to severe acute pain, the treatment of choice is mefenamic acid, a non-opioid analgesic (Perry, P., & Potter, 2018). However, there are non-pharmacological approaches that do not involve any form of medication (Perry, P., & Potter, 2018). In addition, non-pharmacological approaches are cheaper, easier, more effective, and risk-free (Perry, P., & Potter, 2018) .

Labor pain has a number of negative effects on mental health, including increased heart rate, blood pressure, pulse rate, and systemic peripheral resistance; as well as increased oxygen demand; hyperglycemia, liposis, incoordination of uterine contractions, acidity due to fetal oxygen deficiency; and increased cardiac output, anxiety, and fear (Setianingrum, 2021).

Mothers will feel fresher, more relaxed, and more comfortable with the help of a gentle massage during childbirth. According to research, labor pain can be relieved if the mother is massaged for 20 minutes every hour. Because massage triggers the release of endorphins, massage can also make you feel good and comfortable. Effort and counterpressure are two main massage techniques used during labor. Effluerage is a type of massage that consists of long, smooth strokes that are continuous or very gentle. Applying strong pressure with the palms, heels, or other flat surfaces of the hands is known as counterpressure (Pastuty, 2020).

Time, cost, safety (for both mother and fetus), and effectiveness are some of the factors to consider when deciding how to relieve labor pain (Rahmayanti, 2022) .

The therapeutic technique known as massage involves applying light, slow pressure to specific areas of the body in an effort to increase blood flow, metabolic rate, and overall health. To avoid dryness and injury to the massaged area, lotion is used to keep the skin moist and facilitate massage. Oleic acid, found in VCO (Virgin Coconut Oil), helps soften the skin. In addition, VCO is a good moisturizer for skin health because it is easily absorbed by the skin and contains vitamin E; increases skin hydration, accelerates skin healing, and is effective and safe to use (Zuryati, 2022)

Research (Lubis et al., 2020) Back massage has an effect on adaptation to active phase labor pain, duration of second stage labor, and labor bleeding in primigravida, according to research (Rahmi et al., 2021) HThe p value for this effect is 0.001. Based on research conducted by Rahmi et al. (2021) The study found that deep back massage reduces pain and opens muscles faster. There was a statistically significant increase from 1.52 in the initial test to 0.001 in the final test when comparing pain levels in the control group. People who received deep back massage reported significantly less pain (a decrease from 4.33 in the initial test) compared to those who did not (p test = 0.000). Two independent sample t tests comparing the speed of opening of the two groups showed p = 0.000, indicating that deep back massage does affect the rate of cervical dilation.

In a preliminary survey conducted in October 2024 and involving 5 new mothers, it was found that the majority of respondents felt pain, with 3 reporting pain at a scale of 7 and 2 reporting pain at a scale of 6. While five women who took the survey reported that deep breathing exercises and exhaling deeply through the nose helped relieve labor pain, no midwives reported the success of VCO-assisted back massage in relieving pain.

So based on the above phenomenon, the researcher is interested in conducting a study entitled " The Effect of Back Massage with *Virgin Coconut Oil* (VCO) on the Intensity of Pain in the First Stage of Active Labor in PMB Restu Bunda, Gunung Terang District, West Tulang Bawang Regency " .

2. RESEARCH METHODS

study uses a quantitative research method, namely a method based on positivism by studying a certain population or sample, collecting data using quantitative data analysis tools, then testing the hypothesis. The purpose of this study was to determine whether back massage with pure coconut oil (VCO) during the first stage of active labor at PMB Restu Bunda, Gunung

Terang District, West Tulang Bawang Regency can reduce the intensity of labor pain (Sugiyono, 2019) .

The research was conducted in October 2024 , researchers from West Tulang Bawang Regency visited PMB Restu Bunda, Gunung Terang District.

The analysis in this study used *a one-group, pre- and post-test design* . This research design includes a comparison of participants' experiences before and after treatment, as well as interventions for participants who will receive treatment. Researchers compared the pain levels of participants before and after receiving a back massage with virgin coconut oil (VCO), and they also provided interventions to those who would receive the massage.

Population is the entire object of research or object being studied (Notoatmodjo, 2018) . The population consists of all things that are being studied or researched. Based on the October delivery bag, 22 mothers were selected to participate in this study, which aims to achieve its objectives by including all mothers who plan to give birth at PMB Restu Bunda, West Tulang Bawang Regency.

According to (Sugiono, 2018) a sample is a representation of the population both in terms of size and composition. (Sugiono, 2018) , Researchers often use groups of 10–20 participants in their experiments. A total of 18 participants were surveyed for this study.

Anyone who happens to cross paths with the researcher can be a potential respondent in an incidental sampling study (Sugiyono, 2019) . This study used back massage using virgin coconut oil (VCO) as the independent variable. (Arikunto, 2017) . One variable affects another variable, and this relationship is called the dependent variable or bound variable. Dependent factor: typical pain in the first stage of labor (Arikunto, 2017) .

3. RESEARCH RESULTS AND DISCUSSION

Research result

Univariate Analysis

Average labor pain in the first active phase before and after back massage with *virgin coconut oil* (VCO) at PMB Restu Bunda

Labor pain	Mean	SD	Min	Max	N
Before Intervention	7.0	0.7	6	8	18
After the intervention	5.2	0.8	4	7	18

The table above shows that the first stage of labor, before receiving a back massage with virgin coconut oil (VCO), usually requires an average of 7.0 with a standard deviation of

0.7, ranging from 6 to 8. The average labor score for the first stage after a back massage with virgin coconut oil (VCO) is 5.2 , with a standard deviation of 0.8; the range is 4 to 7.

Data Normality Test

Variables	Back massage	*Shapiro Wilk*	Caption
Labor pain	Before	0.003	Abnormal
	After	0.023	Abnormal

Based on the table, the variables before and after the data normality test was carried out using *Shapiro-Wilk* , the significance value was obtained less than 0.05 . This indicates that the data does not conform to the normal distribution. This analysis is further supported by the *Wilcoxon* test .

Bivariate Test

The effect of back massage with *virgin coconut oil* (VCO) on the intensity of labor pain in the first active phase at PMB Restu Bunda

Labor pain	Median	Min-Max	Negative ranks	Positive ranks	Ties	p-value
Before intervention	7.0	6-8	17	0	1	0.000
After the intervention	5.0	4-7				

In Active Phase I labor at PMB Restu Bunda, Gunung Terang District, West Tulang Bawang Regency, there was an effect of back massage with pure coconut oil (VCO) on pain intensity, according to table 4.3 above and the results of the Wilcoxon statistical test (p value = 0.000, p value <α = 0.05). Based on the results of the study, 17 participants in the intervention group reported reduced labor pain after receiving a back massage with pure coconut oil (VCO). One participant did not report any change in pain levels, and no participants reported feeling any pain at all after receiving the massage.

Discussion

Univariate Analysis

Average labor pain in the first active phase before being given a back massage with *virgin coconut oil* (VCO)

Research shows that women typically experience an average of 7.0 during stage I of labor before receiving a back massage with virgin coconut oil (VCO), with a standard deviation of 0.7, ranging from 6 to 8.

Labor can be affected by labor pain. Increased plasma catecholamine levels , especially epinephrine, which can interfere with contractions, are the main effects that occur as a result of sympathetic system activation (Maryunani, 2015). Saifuddin (2014) noted that impaired contractions can prolong the first stage of labor. In addition to endangering the lives of the

mother and fetus, pain causes the uterine muscles to contract uncoordinatedly, which in turn prolongs the labor process (Mander, 2013) .

In line with the study (Tirtawati et al., 2020) This study found that before receiving a back massage, participants reported an average pain level of 6.7%. Before receiving a back massage, participants reported an average pain level of 6.7% (Parmini, 2019) According to the study (Apriyanti, 2022) before receiving a deep back massage intervention, most mothers (18 out of 20) reported severe pain, while a small proportion (3 out of 20) reported moderate pain.

With a range of 6–8, the level of pain of respondents is classified as moderate to severe according to the results of the study. Pain measurements before the intervention tended to be more in the severe pain category (pain score 8). Labor pain is a subjective description of the body's sensations felt during fetal descent, cervical dilation and thinning, and uterine contractions. When we are in pain, our bodies react by tightening muscles, increasing heart rate, breathing, sweating, and blood pressure. Scientists have shown that the sensation of pain during labor is actually a physiological response to the increasing frequency of uterine contractions.

Mothers may experience symptoms such as fatigue, anxiety, fear, and stress due to the pain they experience. Pain intensity is a measure of how severe the pain is for the person experiencing it. The level of pain a person feels can vary greatly from person to person due to the subjective and individual nature of measuring pain intensity. To ensure a smooth delivery, mothers need good care, including pain management (such as relaxation techniques), support from their husband and environment, friendly health care providers who educate them, and adequate nutrition and fluids.

Average labor pain in the first active phase after back massage with *virgin coconut oil* (VCO)

According to research findings, the average first-stage labor pain score after back massage with virgin coconut oil (VCO) was 5.2 (standard deviation=0.8), with scores ranging from 4 to 7.

Both medication and non-medication approaches can relieve pain. Although pharmacological pain management works better than non-pharmacological approaches, it is more expensive and can cause unwanted side effects. Pharmacological methods can affect the mother, fetus, and labor progress during pregnancy. In terms of treating mild acute pain, the most commonly used drugs are non-opioid analgesics, especially mefenamic acid (Juda, 2020). As for non-pharmacological approaches, this approach can be applied through drug-free activities such as self-hypnosis, distraction techniques, massage stimulation (back massage),

warm baths, and hot or cold compresses (Perry, P., & Potter, 2018). In addition to being more effective, less complicated, and cheaper, non-pharmacological methods also do not pose risks (Perry, P., & Potter, 2018).

A gentle, slow hand massage applied to specific areas of the body can have positive effects on blood flow, metabolism, and overall health. Applying lotion before the massage will help keep the skin moisturized and make the massage more comfortable for the recipient, reducing the risk of dryness and injury. Virgin coconut oil, also known as VCO, has oleic acid and solvents that make it a skin softener. Plus, vitamin E and its easy absorption make VCO a safe and effective moisturizer that speeds up the healing process and keeps the skin supple and hydrated according to Zuryati (2022)

Most mothers experienced moderate pain after receiving the intervention, with 13 mothers (65%) reporting this symptom and 3 mothers (15%) reporting severe pain, according to research (Apriyanti, 2022). Back massage was associated with an average pain level of 3.7 according to research (Tirtawati et al., 2020). Parmini (2019) found that after back massage, the average pain level reported by respondents was 3.7 .

The study authors claim that, after receiving a massage with VCO (*Virgin Coconut Oil*), participants reported significantly less pain than they had experienced during childbirth (pain scores between 4 and 7). The reason behind this reduced pain is the calming effect of the VCO (*Virgin Coconut Oil*) massage on the participants. Feeling at peace and at ease allows for better management of the discomfort experienced. The way a person perceives pain varies depending on the health problem they are experiencing. A mother will feel more positive, motivated, and enthusiastic about giving birth when she is at ease, which is achieved through pain management techniques such as aromatherapy.

Bivariate Analysis

The effect of back massage with *virgin coconut oil* (VCO) on the intensity of labor pain in the first active phase

In the first active phase of labor at PMB Restu Bunda, Gunung Terang District, West Tulang Bawang Regency, there was an effect of back massage with pure coconut oil (VCO) on pain intensity, based on the results of statistical tests shown by the Wilcoxon test (p value = 0.000, p value $<\alpha = 0.05$).

If a mother is about to give birth, a light massage can help her feel fresher, calmer, and more comfortable. According to research, labor pain can be reduced by massaging the mother for 10 minutes every hour. This is because massage triggers the release of endorphins, which in turn can create feelings of satisfaction and health. Usually, there are two massage techniques

used during labor, namely counterpressure and effluerage. The effluerage massage method requires long, continuous, gentle, and slow movements. Applying strong pressure with the palms, heels, or both is known as counterpressure (Pastuty, 2020). When deciding on a method to relieve labor pain, it is important to consider the following factors: efficiency, safety (for both the mother and the unborn baby), cost, and timeliness (Rahmayanti, 2022).

Massage therapy involves applying light, slow strokes to specific areas of the body in an effort to increase blood flow, metabolic rate, and overall well-being. To prevent dryness and injury to the massaged area, lotion is used to keep the skin moisturized and facilitate massage. The oleic acid and sol in virgin coconut oil, also known as VCO, make it a skin softener. In addition, VCO is a great moisturizer for skin health because it is easily absorbed by the skin and contains vitamin E; increases skin hydration, accelerates skin healing, and is effective and safe to use (2022, Zuryati).

The results of the data analysis showed a p value of 0.001 (p <0.005) which is in accordance with the study (Parmini, 2019). Mothers who gave birth at the Momalia Health Center, South Bolaang Mongondow Regency reported that active phase I labor pain decreased after receiving a back massage with VCO. Based on research conducted by Hangewa in 2019, the use of Virgin Coconut Oil (VCO) for back massage therapy had a significant effect on the intensity of labor pain both before and after the procedure, with a ρ value = 0.001 < α = 0.05 which was statistically significant. Research conducted by Tirtawati et al. (2020) found that mothers who gave birth at the Momalia Health Center, South Bolaang Mongondow Regency experienced a decrease in the level of active phase I labor pain after receiving a back massage with VCO. The statistical significance of this effect was determined with a p value of 0.001 (P <0.05) .

The study authors claim that, after receiving a massage with VCO (Virgin Coconut Oil), participants reported significantly less pain than they had experienced during childbirth (pain scores between 4 and 7). The reason behind this reduced pain was the calming effect of the VCO (Virgin Coconut Oil) massage on the participants. Feeling at peace and at ease allows for better management of the discomfort experienced. The way a person perceives pain varies depending on the health problem they are experiencing. A mother will feel more positive, motivated, and enthusiastic about giving birth when she is at ease, which is achieved through pain management techniques such as aromatherapy. Two-Sample Test

The impact of back massage with virgin coconut oil (VCO) on the severity of pain in the first active phase of labor In the first active phase of labor at PMB Restu Bunda, Gunung

Terang District, West Tulang Bawang Regency, there was an effect of back massage with virgin coconut oil (VCO) on pain intensity, based on the results of statistical tests shown by the Wilcoxon test (p value = 0.000, p value $<\alpha = 0.05$) .

If a mother is about to give birth, a light massage can help her feel fresher, calmer, and more comfortable. According to research, labor pain can be reduced by massaging the mother for 10 minutes every hour. This is because massage triggers the release of endorphins, which in turn can create feelings of satisfaction and health. Usually, there are two massage techniques used during labor, namely counterpressure and effluerage. The effluerage massage method requires long, continuous, gentle, and slow movements. Applying strong pressure with the palms, heels, or both is known as counterpressure (Pastuty, 2020). When deciding on a method to relieve labor pain, it is important to consider the following factors: efficiency, safety (for both the mother and the unborn baby), cost, and timeliness (Rahmayanti, 2022).

Massage therapy involves applying light, slow strokes to specific areas of the body in an effort to increase blood flow, metabolic rate, and overall well-being. To prevent dryness and injury to the massaged area, lotion is used to keep the skin moisturized and facilitate massage. The oleic acid and sol in virgin coconut oil, also known as VCO, make it a skin softener. In addition, VCO is a great moisturizer for skin health because it is easily absorbed by the skin and contains vitamin E; increases skin hydration, accelerates skin healing, and is effective and safe to use (2022, Zuryati).

The results of the data analysis showed a p value of 0.001 (p <0.005) which is in accordance with the study (Parmini, 2019). Mothers who gave birth at the Momalia Health Center, South Bolaang Mongondow Regency reported that active phase I labor pain decreased after receiving a back massage with VCO. Based on research conducted by Hangewa in 2019, the use of Virgin Coconut Oil (VCO) for back massage therapy had a significant effect on the intensity of labor pain both before and after the procedure, with a ρ value = 0.001 $<\alpha = 0.05$ which was statistically significant. Research conducted by Tirtawati et al. (2020) found that mothers who gave birth at the Momalia Health Center, South Bolaang Mongondow Regency experienced a decrease in the level of active phase I labor pain after receiving a back massage with VCO. The statistical significance of this effect was determined with a p value of 0.001 (P <0.05) .

4. CONCLUSION AND SUGGESTIONS

Conclusion

A mean of 7.0 with a standard deviation of 0.7, a minimum of 6, and a maximum of 8 was noted for the first stage of labor before receiving back massage with virgin coconut oil (VCO). Back massage with virgin coconut oil (VCO) was associated with a mean score of 5.2 during the first stage of labor, with a standard deviation of 0.8, range 4–7. At PMB Restu Bunda in Gunung Terang District, West Tulang Bawang Regency, back massage with virgin coconut oil (VCO) reduced pain intensity during the Active Phase of the First Stage of Labor (p-value = 0.000).

Suggestion

For respondents

The mother's psychological readiness for childbirth can be improved with the help of health care providers, and expectant mothers can learn more about how to prepare for childbirth and how to manage their pain during labor so that it does not drain their energy and cause complications.

For PMB, Mother's Blessing

In helping mothers during labor, PMB Restu Bunda can use non-pharmacological methods that are easy to apply and have no negative side effects.

For Further Researchers

Researchers can investigate the possibility that massaging the back with virgin coconut oil (VCO) during labor can reduce some of the pain experienced by mothers. In addition, the sample size of the study was increased, and the study design was divided into two categories.

5. BIBLIOGRAPHY

Apriyanti, YP (2022). Deep back massage using lavender oil on labor pain in the work area of Polonia Community Health Center. *Embryo, 14* (1), 97–104. https://doi.org/10.36456/embryo.v14i1.4718

Arikunto. (2017). *Research procedures: a practical approach* (4th ed .). Rineka Cipta.

Astuti, LP, Dedi, B., Midwifery, P., Nursing, P., Husada, UK, Tennis, SB, Labor, N., & Fase, KI (2022). Journal of obstetrics labor contractions begin the uterus can affect circulation and metabolism that must be addressed immediately Labor pain is caused by uterine contractions through the secretion of catecholamine cortisol levels which can cause death. *XIV* (02), 145–156.

Ayu, NGM (2017). Characteristics of mothers giving birth in relation to the intensity of first-stage labor pain in Bogor City. *Malahayati Midwifery Journal, 3* (4), 204–210.

Hangewa, UNM (2019). Back massage therapy with virgin coconut oil (VCO) on labor pain intensity. *Manado Health Polytechnic, 8* (5), 55.

Hastono. (2021). *Data analysis in the health sector* . Raja Grafindo Persada.

Hidayat, A. (2015). *Midwifery research methods and data analysis techniques* (2nd ed .). Salemba Medika.

Idris, F.P. (2022). The effect of oxytocin massage by husband on mother's response. 1–12.

Juda, M. (2020). *Theory of pain measurement* . Nuha Medika.

Kristeti, H. (2024). Application of back massage to reduce pain in the first stage of labor in NY C at the Tanjung Balai Karimun Health Center. *14* (2), 54–63.

Lubis, DR, Maryuni, & Anggraeni, L. (2020). The effectiveness of back massage in reducing labor pain in the first active phase in primigravida & multigravida. *1* .

Mander, R. (2013). *Labor pain* . EGC Medical Book Publisher.

Manuaba, IB (2016). *Obstetrics and gynecology and family planning for midwife education* . EGC.

Maryuni, M. (2020). The relationship between maternal characteristics and labor pain. *Journal of Health Science and Physiotherapy, 2* (1), 116–122. https://doi.org/10.35893/jhsp.v2i1.42

Masfuri, Arista, L., & Absa, J. (2023). Virtual reality (VR) therapy on the pain scale of osteoarthritis (OA) patients after total knee replacement (TKR). *Silampari Nursing Journal, 6* , 1570–1580.

Mochtar. (2019). *Synopsis of obstetrics: Obstetrics physiology and pathology* . ECG Medicine.

Muldaniyah. (2022). The effect of counter pressure massage on pain intensity in mothers giving birth in the first active phase at the Jumpandang Baru Health Center, Makassar. *2* (1), 42–50.

Notoatmodjo. (2018). *Health research methodology* (6th ed .). PT. Rineka Cipta.

Nursalam. (2016). *Nursing management: Application in nursing practice* (4th ed .). Salemba Medika.

Parmini, IAM (2019). The effect of back massage with virgin coconut oil (VCO) on the intensity of labor pain in the first active phase at Momalia Health Center, South Bolaang Mongondow Regency. *Thesis* .

Perry, P., & Potter, P.A. (2018). *Nursing fundamentals textbook: Concepts, processes, and practices* (4th ed .).

Prawirohardjo. (2020). *Obstetrics* . Sarwono Prawirohardjo Library Development Foundation.

Rahmayanti, R. (2022). Counseling on labor pain management using effleurage massage for

pregnant women in the third trimester. *04* (October), 106–110.

Rahmi, J., Andriati, R., Nasroh, & Ramadanti, D. (2021). Application of deep back massage to reduce pain in the first stage of labor. *5* (2), 48–53.

Rakhmawati, S. (2023). The relationship between back massage, pregnancy gymnastics, and warm compresses on pain intensity during labor. *02* (08), 788–793.

Rasyidah, Tarwiyah, & Maulani. (2022). The effect of handheld relaxation techniques on the pain scale of postoperative patients. *2* (1), 27–32.

Riskesdas. (2018). *Riskesdas Report 2018 Ministry of Health of the Republic of Indonesia* . In *National Report Riskesdas 2018* (Vol. 53, Issue 9, pp. 154–165). http://www.yankes.kemkes.go.id/assets/downloads/PMK%20No.%2057%20Tahun%202013%20tentang%20PTRM.pdf

Saifuddin, A. (2014). *Practical guide to maternal and neonatal health services* . EGC.

Setianingrum, RS (2021). Efforts to reduce labor pain in the first active phase with counter pressure massage and chocolate infusion at the Restu Bunda Clinic, Kebumen (Doctoral dissertation, Muhammadiyah University of Gombong).

Smeltzer, SC (2018). *Brunner & Suddarth's medical-surgical nursing* (12th ed.; EA Mardella, Ed.; D. Yulianti & A. Kimin, Transl.). EGC Medical Book Publisher.

Sugiono. (2018). *Quantitative, qualitative, and R & D research methods* . Alfabeta.

Sugiyono. (2019). *Research methods (quantitative, qualitative, and R & D approaches)* . CV. Alfabeta.

Tirtawati, GA, Tujua, SO, Keintjema, F., Donsu, A., Kusmiyati, & Parmini, IAM (2020). Back massage with virgin coconut oil (VCO) reduces pain intensity of active phase of 1st stage labor. *Back Massage with Virgin Coconut Oil (VCO) on Pain Intensity of Active Phase of 1st Stage Labor* , 1–7.

Widyastuti. (2018). *Reproductive health* (4th ed .). PT Bina Pustaka.