

Rubbing Massage and Deep Back Massage as an Alternative Therapy Reduces Active Phase 1 Labor Pain

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ABSTRACT

Background: Pain is a common complaint felt by mothers during childbirth. Non-pharmacological therapies can minimise labor pain which can be reduced by applying rubbing massage and deep back massage.

Aim: To determine the effect of rubbing massage and deep back massage on labor pain among mothers during active phase 1 in Pekalongan City.

Methods: Quantitative research used a quasi-experimental approach with a pretest and posttest control group design. The sample of each group was 21 mothers, taken using purposive sampling. A numeric pain rating scale measures pain. The statistical test used the Wilcoxon and Mann-Whitney tests.

Results: The bivariate analysis of the rubbing massage group revealed a mean difference of -1.09 and p 0.000. The bivariate findings of the deep back massage group obtained a mean difference of -0.9 and p 0.000. A comparison of the effectiveness between the rubbing massage and deep back massage groups was p 0.032.

Conclusion: Rubbing massage and deep back massage are effective in reducing active phase 1 labor pain. Rubbing massage is more effective in reducing pain than a deep back massage.

Keywords: Pain, labor pain, massage, pain management

INTRODUCTION

The mother's pain during childbirth has a unique character. Labor pain can be influenced by culture, fear, anxiety, previous labor experiences, preparation for labor, and support¹. Mothers who are in labor experience pain. Pain experienced during labor is a form of body defence mechanism. Uterine muscle contractions cause labor pain. The goal of uterine contractions is to enhance the progress of labor. Pain can induce elevated nervous system function, increases in blood pressure, heart rate, and breathing. If pain is not treated promptly, discomfort, distress, fear, and stress may increase². Pain can also cause death for both the mother and the baby when it allows blood supply and oxygen to the placenta to be disrupted. Handling and monitoring of labor pain, particularly during the first stage of the active phase, is essential³.

Pain impulses during the first stage of labor are transmitted by the spinal nerve segments (thoracic 11 and thoracic 12) and lumbar sympathetic lower thoracic accessories. These nerves originate from the uterus and cervix. The discomfort from cervical changes and uterine ischemia is visceral pain located in the lower abdomen spreading to the lumbar back and inner thighs⁴. Pain can be measured with the Numeric Pain Rating Scale and Visual Analogue^{5,6}. Management of labor pain can use pharmacotherapy and non-pharmacotherapy. Pharmacotherapy techniques have minimal side effects⁷. Non-pharmacologically, it can be done in several ways, such as skin stimulation, massage, and acupressure^{8,4}.

Some techniques to reduce pain with skin stimulation are effleurage, rubbing, and deep back massage. Rubbing is a massage technique that is applied to the back between contractions. Rubbing back massage is a non-

pharmacological technique to reduce pain by providing massage and rubbing on the spine, namely the thoracic, 10, 11, 12, and lumbar 1⁴. Deep back massage is performed by emphasising the sacrum on the sacroiliac joint from the occiput posterior fetal position. Gently rubbing and pressure on the back increases endorphins, which are useful in reducing pain⁹.

The application of rubbing massage and deep back massage techniques to reduce labor pain has never been made at Pekalongan City. Based on this background, researchers are interested in researching rubbing massage and deep back massage to reduce labor pain in Stage 1 Active Phase 1 mothers.

METHODS

This study was a quasi-experimental study with a pretest and posttest control group design. The research was conducted at Bendan Inpatient Health Center and Bhakti Ibu Maternity Home in Pekalongan City from September to November 2017. The population in this study were mothers who gave birth in the City of Pekalongan. The research sample, namely 42 respondents, was calculated using the Lemeshow formula. The sample was divided into two groups, namely the group that received rubbing massage and the group that received deep back massage. The number of samples for each group is 21 respondents. Samples according to the inclusion criteria, namely willingness to be a respondent, primiparous delivery mothers, standard delivery, and an active phase 1. The exclusion criteria were all women giving birth by action. The sampling technique used was purposive sampling. All respondents signed informed consent to be research subjects. The study was conducted after obtaining ethical clearance from the ethical commission.

Respondents measured the level of pain pretest and posttest. The pain was measured with the Numeric Pain Rating Scale 1-10. Pretest pain was measured 5 minutes before the intervention, and posttest pain was measured immediately after the intervention was completed. Rubbing massage is performed by giving massage and rubbing to the back area (thorachalis vertebrae 10, 11, 12, and lumbar vertebra 1). Deep back massage is an emphasis on the sacrum on the sacroiliac joint from the occiput posterior fetal position. The intervention was given to each group, starting from stage 1 to complete opening by the nurse. The normality test used the Shapiro-Wilk test, and the results were not typical. Bivariate analysis using the Wilcoxon and Mann-Whitney tests.

RESULTS

Table 1 shows that in the rubbing massage group, most of the mothers were in the young age category, and the level of primary education was 12 respondents (57.1%). In the deep back massage group, most mothers were in the young age category; namely, six respondents (76.19%) and the secondary education level was 15 respondents (71.4%). Table 2 shows that in the Rubbing Massage group, there was no known relationship between age and education level with changes in pretest-posttest pain (p-value 0.674 and 0.646). Table 3 shows that in the Deep Back Massage group, there was no known relationship

between age and education level with changes in pretest-posttest pain (p-value 0.149 and 0.495). Table 4 shows that Rubbing massage and Deep Back Massage are effective in reducing pain among mothers in intra natal period during the first active phase with each p-value of 0.000. Comparison between Rubbing massage and Deep Back Massage in reducing pain in labor among mothers during the first active phase obtained a p-value of 0.032. Rubbing massage is more effective in reducing pain in women during the first active phase seen from the difference in the average pain reduction. The difference in average pain reduction in the Rubbing massage group was more significant than the Deep Back Massage group (1.09 > 0.9).

Table 1 Distribution of the characteristics respondents

Characteristics Respondents	Rubbing massage Group		Deep Back Massage Group	
	f	%	f	%
Age				
Young	12	57.1	16	76.19
Old	9	42.9	5	23.81
Total	21	100.0	21	100.0
Education				
Basic	12	57.1	3	14.3
Middle	8	38.1	15	71.4
University	1	4.8	3	14.3
Total	21	100.0	21	100.0

Table 2 The Relationship between Characteristics of Respondents and Changes in Pain in the Pretest and Posttest Rubbing Massage Group in Active Phase 1 Childbirth Mother

Characteristics Respondents	Σ	Pretest-posttest Pain				P-value*
		Min	Max	Mean	Difference Mean	
Age						
Young	12	4-4	10-9	6.12-4.94	-1.18	0.674
Old	9	4-3	8-7	6.28-5.22	-1.06	
Level of Education						
Basic	12	4-3	8-7	6.26-5.21	-1.05	0.646
Middle	8	4-10	4-9	6.17-5.00	-1.17	
University	1	4-4	4-4	4.00-4.00	0.0	

*Spearman Rank

Table 3 The Relationship between Characteristics of Respondents and Changes in Pain in the Pretest and Posttest Deep Back Massage Group in Active Phase 1 Childbirth Mother

Characteristics Respondents	Σ	Nyeri pretest-posttest				P-value*
		Min	Max	Mean	Difference Mean	
Age						
Young	16	5-5	8-8	6.71-5.81	-0.9	0.149
Old	5	4-3	8-7	6.67-5.92	-0.75	
Level of Education						
Basic	3	6-5	7-5	6.58-5.00	-1.58	0.495
Middle	15	5-5	8-8	6.71-5.81	-0.9	
University	3	6-5	6-5	6.00-5.00	0.0	

*Spearman Rank

Table 4: Effect of Rubbing Massage and Deep Back Massage on the Pain Scale of Pretest and Posttest in Active Phase 1 Childbirth Mother

Pain Scale	Rubbing Massage		Deep Back Massage	
	Pretest	Post-test	Pretest	Post-test
Min	4	3	5	5
Max	10	9	8	8
Mean	6,23	5,14	6,71	5,81
Mean ±SD	6,23±1,51	5,14±1,42	6,71±0,90	5,81±1,03
Difference mean	-1,09		-0,9	
Pvalue*	0,000		0,000	
Pvalue**	0.032			

* Wilcoxon

** Mann-Whitney

DISCUSSION

Childbirth is a process of expelling a full-term baby, with the release of the placenta and fetal membranes from the mother¹⁰. The expected delivery is when the baby is delivered from the womb through the vagina¹¹. Normal labor is the occurrence of regular uterine contractions, physiological changes, and biochemical changes that cause pain. Apart from these physical factors, other factors that can affect labor pain are psychological, emotional, and motivational^{12,13}. The reaction to pain varies from person to person—assumptions and reactions to beliefs about culture, gender, religious beliefs, age¹⁴.

Labor pain can be caused by control of the nerve endings between the muscle fibres of the uterine fundus. Painful receptors are stimulated, causing muscle spasm. Spas also increase the metabolic rate, which aggravates the ischemic condition, which releases chemicals that cause pain. In ischemia, pain is caused by the accumulation of several lactic acids, which stimulates the nerve endings of the pain fibres. Contractions also cause myometrium and cervical ischemia. The contraction of the cervix and lower uterine segment causes fear, which stimulates the overactivity of the sympathetic nervous system. Much evidence supports the theory of duration of labor discomfort primarily due to dilatation of the cervix and the lower uterine section due to dilatation, swelling and potential tissue tearing during contractions. Fear and reports of the release of large amounts of stress hormones (epinephrine, norepinephrine), which result in prolonged and severe labor pain¹⁵.

During the first stage of the active phase of labor, pain is felt in the lower abdomen and radiates to the lumbar region, increasing with the intensity of uterine contractions¹⁶. Labor pain causes feelings of fear and stress for the mother. Stress will cause the release of stress hormones such as catecholamines and steroids, resulting in a reduction in maternal blood flow to the fetus. Severe and continuous pain due to uterine contractions can cause physiological changes in the body such as hyperventilation, increased cardiac output (50-150%), increased blood pressure (20-40%), increased metabolic processes and oxygen use, and decreased motility of the digestive tract¹⁷. Labor pain is felt the most severe, especially by primigravida. Proper management of labor pain is one of the essential interventions in delivering care to ensure optimal outcomes for both mother and fetus. Labor pain, if not treated properly, can have harmful effects on the mother and the fetus¹⁸. Many women now choose to avoid using drugs to reduce labor pain. They are more interested in using complementary therapies because it avoids the pharmacological effects of drugs. Based on action research, complementary methods such as massage, reflexology, and warm compresses can reduce labor pain. However, several studies show that the quality of evidence of reduction is still low. Nevertheless, research reports that this action is safe to do in women who give birth¹⁹.

Medical management for pain relief during labor is controversial. There are several non-pharmacotherapy methods to reduce labor pain with different side effects and

efficacy²⁰. The treatments given in this study were rubbing massage and deep back massage. Rubbing massage is giving massage and rubbing to the (thorachalis 10, 11, 12, and lumbar 1 area). Deep back massage is an emphasis on the sacrum on the sacroiliac joint from the occiput posterior fetal position. Rubbing massage and deep back massage are given during the 1st active phase.

Massage therapy can soothe and relieve tension that builds up during pregnancy and childbirth. Gently rubbing the stomach will also feel comfortable when contracting. The preferred plan for using massage or touch during labor can be chosen as follows: gentle touch with rhythmic beats, hard strokes, massage to relax stiff muscles, and hard massage or rubbing on the back¹⁵. Stimulation of the skin can reduce pain because it causes the release of endorphins so that clients have a sense of control over pain²¹. Back massage can also be done by couples. According to research, massage conducted by couples has a positive effect on reducing pain intensity and reducing anxiety compared to only using relaxation techniques²².

The results showed that rubbing massage and deep back massage reduced pain in women during the first active phase. Rubbing massage is giving a massage or gentle rubbing on the back. Rubbing that is given triggers relaxation to reduce pain when the uterus experiences contractions by closing the gate of the gate control theory. Giving a rubbing massage also increases the production of neurotransmitters and neuromodulators, namely endorphins. Endorphins have the effect of inhibiting or reducing pain sensations. Previous studies have shown that the results of massage effect reducing pain in first-stage mothers^{23,16,24,25}.

Deep back massage reduces pain when deep back massage touches and pain when contractions come together, the sensation of touch travels to the brain and closes the gates in the brain, so the amount of pain felt in the brain is limited. Deep back massage has a distracting effect; regular massage is balanced with breathing exercises during contractions to divert pain effectively. Deep back massage can also increase the formation of endorphins in the descending control system. Massage can make patients more comfortable because massage relaxes the muscles^{26,27}.

The test results showed that there was a significant difference between rubbing massage and deep back massage in reducing pain in women during the 1st active phase ($p < 0.05$). Rubbing massage was more effective in reducing labor pain among mothers in intranatal period during the first active phase seen from the difference in mean posttest-pretest pain. They were rubbing massage - 1.09 and deep back massage -0.9. A negative sign indicates a decrease in the pain scale after the intervention. The Rubbing massage group experienced a decrease in mean pain 0.19 more incredible than the deep back massage group.

Age can indirectly affect labor pain. Age influences the mother's emotions and influences parturient expectations of care during labor. Women's satisfaction with the delivery process changes over time²⁸. Adding age to a person will cause physical and psychological (mental) changes. These changes occur due to the maturation of

organ functions. In the psychological (mental) aspect, the older a person is, the more mature and mature he is. As mothers get older, the more experiences they get, so that mothers understand themselves, are mentally mature, and think mature^{7,29}.

The maturity of thinking affects the mother in giving birth when dealing with pain that is felt. This is not following the results in this study, in both groups showed that there was no relationship between age and changes in labor pain during the 1st stage of the active phase ($p > 0.05$). Based on research, although more significant pain can be controlled in mothers aged 19-24 years, a person's pain tolerance at delivery is also influenced by endurance, pain acceptance, and a mother's physical condition³⁰.

The age in this study was categorised into young age and old age. Young age, which ranges from 16 to 26 years and > 26 years, is categorised as old age. Although statistically, there was no relationship, in terms of the mean value, all age groups experienced a decrease in pain after being given rubbing massage and deep back massage. The average reduction in pain scale in the two groups obtained the same results; namely, the reduction in pain at a young age was higher than in old age. The results of the study are following previous studies that found that young people experience a more significant reduction in pain after treatment than mothers with more than 26 years of age¹².

Labor pain will always be a source of concern since pregnancy. The choice of pain reduction method is always a concern. Many factors influence the choice of pain reduction methods, including the level of education and knowledge of the mother. The level of education and knowledge of a mother has a significant relationship with the effect of the method of using pain relievers³¹. In this study, the results showed that there was no relationship between education level and changes in labor pain during the first active phase ($p > 0.05$). This could be because labor pain is more influenced by physiological factors besides the mental and emotional factors of a mother. Also, factors such as age, parity, physical strength in labor, and maternal status can have an impact on the level of pain and duration of labor. For variations in pain, it can be influenced by factors of age, level of education, pain expectations, and socioeconomic conditions³².

Another technique can be done by giving warm compresses or a combination with rubbing massage or deep back massage. Giving warm wet or dry compresses can provide a feeling of warmth to some regions of the body that are given the compress. The heat generated from the compress can make blood vessels dilate so that blood flow is better and oxygen is well supplied. This condition can relieve muscle tension so that the pain you feel can scale down. The results of previous studies showed that warm compresses could reduce pain ($p=0.000$)²⁹. The combination of rubbing massage or deep back massage can accelerate pain reduction by different methods. This is supported by research that giving massage can reduce pain more than standard delivery care, as well as can reduce the length of delivery and can improve emotional control in mothers in labor. The massage method also has a more significant effect on reducing pain than only applying compresses and manual thermal administration¹⁹.

CONCLUSION

The results showed that rubbing massage and deep back massage was effective in reducing pain in mothers during the first active phase in Pekalongan City. Rubbing massage is more effective in reducing maternal pain during the first active phase than a deep back massage. The results of this study can be used as the basis for implementing rubbing massage and deep back massage for mothers when facing labor. Rubbing massage and deep back massage can be done with the help of a birth attendant or a family who accompanies mothers when they are in labor. Rubbing massage and deep back massage are performed during uterine contractions and repeated when there are contractions.

Acknowledgements: This work was supported and funded by the Health Ministry of the Republic of Indonesia. The authors acknowledge the academic community of Poltekkes Kemenkes Semarang and Universitas Respati Yogyakarta for all supports.

Disclosure: This study was not a Thesis or Dissertation

Source of funding: The source of funding from Health Ministry of Republic Indonesia fund in 2018 based on competitive research.

Conflict of interest: There was no conflict of interest in this study.

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