



## **Abdominal lifting, effleurage, and deep back massages effective in reducing pain during active phase of first stage labor**

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### **ABSTRAK**

**Latar Belakang :** Walaupun persalinan merupakan proses alamiah, seringkali nyeri yang dialami saat persalinan membuat wanita merasa takut, cemas dan khawatir, sehingga mempengaruhi proses persalinan itu sendiri yang berakibat timbulnya prolonged labour dan neonatal asphyxia. Dimana persalinan lama merupakan komplikasi penyebab kematian ibu yang terbanyak nomor 5 di Indonesia. Nyeri persalinan dapat mempengaruhi kondisi ibu berupa kelelahan, rasa takut, khawatir dan dapat menimbulkan stress. Stress dapat menyebabkan melemahnya kontraksi uterus dan berakhir pada persalinan yang lama.

**Tujuan :** Penelitian ini bertujuan untuk menganalisa efektifitas teknik abdominal lifting, effleurage dan deep back massage dalam mengatasi nyeri saat persalinan kala 1 fase aktif

**Metode :** Penelitian ini menggunakan metode one-group pretest-posttest dengan total sampel sebanyak 30 ibu bersalin. Ada 3 kelompok yang diberi perlakuan, setiap kelompok diberikan satu Teknik massage. Perubahan nyeri diukur dengan skala nyeri numerik. Pengujian variabel menggunakan uji Wilcoxon dan effect size untuk melihat efisiensi masing-masing perlakuan. Perbandingan masing-masing uji intervensi yang dilakukan menggunakan Kruskal Wallis.

**Hasil :** ada perbedaan bermakna skor nyeri sebelum dan sesudah pemberian massage abdominal lifting dengan nilai  $p = 0,005$  ( $p < 0,05$ ). ada perbedaan bermakna skor nyeri sebelum dan sesudah pemberian massage effleurage dengan nilai  $p = 0,011$  ( $p < 0,05$ ). ada perbedaan bermakna skor nyeri sebelum dan sesudah pemberian Deep Back Massage dengan nilai  $p = 0,004$  ( $p < 0,005$ ). Hasil penghitungan size effect untuk teknik Abdominal Lifting menunjukkan efek sedang dengan nilai  $d = 0,67$ . Sedangkan untuk teknik effleurage dan deep back massage menunjukkan dampak yang kuat dengan nilai  $d > 2,00$ . tidak ada perbedaan bermakna skor nyeri sesudah pemberian perlakuan antara ketiga kelompok dengan nilai  $p = 0,080$  ( $p > 0,05$ ).

**Kesimpulan :** abdominal lifting, effleurage, dan deep back massage berkontribusi dan efektif untuk menurunkan nyeri persalinan Kala I fase Aktif. Deep back massage adalah Teknik yang paling efektif (diantara ketiga Teknik) untuk menurunkan nyeri persalinan Kala I aktif. Tidak ada perbedaan yang bermakna antara ketiga Teknik massage dalam menurunkan nyeri persalinan.

**KATA KUNCI :** abdominal lifting; effleurage; deep back massage; nyeri; persalinan

### **ABSTRACT**

**Background :** Although childbirth is a natural process, the time of childbirth makes women feel afraid, anxious and anxious, thus affecting the labor process which results in prolonged labor and neonatal asphyxia. Where prolonged labor is a complication of the cause of maternal death which is the fifth largest in Indonesia. Labor pain can affect the condition of the mother in the form of victims, fear, worry and can cause stress. Stress can cause the uterine contractions to weaken and lead to prolonged labor.

**Objectives** : This study was to analyze the effectiveness of abdominal lifting, effleurage and deep back massage techniques in reducing pain during active phase of first stage labor.

**Methods** : This study used one-group pretest-posttest design method with a total sample of 30 Participants mother in labor. There were 3 groups that were given treatment, each group was given one massage technique. Change in pain was measured by a numerical pain scale. Testing variables using the Wilcoxon test and effect size to see the efficiency of each treatment. comparison of each intervention test performed using Kruskal Wallis.

**Results** : There is a significant difference in pain scores before and after giving abdominal lifting massage with a value of  $p = 0.005$  ( $<0.05$ ). There was a significant difference in pain scores before and after giving effleurage massage with a value of  $p = 0.011$  ( $p <0.05$ ). There is a significant difference in pain scores before and after giving Deep Back Masaage with a value of  $p = 0.004$  ( $p <0.005$ ). The result of calculating the effect size for the Abdominal Lifting technique shows a average effect with a value of  $d=0.67$ . Meanwhile, the effleurage and deep back massage techniques showed a strong impact with a  $d$  value  $> 0.8$ . There was no significant difference in pain scores after treatment between the three groups with a value of  $p = 0.080$  ( $p > 0.05$ ).

**Conclusions** : abdominal lifting, effleurage, and deep back massage are contribute and effective to reducing the pain during active phase of first stage labor. Deep back massage is the most effective technique (between the three techniques) to reducing the pain during active phase of first stage labor. There was no significant difference between the three massage techniques in reducing labor pain.

**KEYWORD** : abdominal lifting; effleurage; deep back massage; pain, labor

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## INTRODUCTION

Childbirth is a very spectacular condition in a woman's life. Many anthropological studies show that the process of pregnancy and childbirth is very important in the life cycle of women (1). Most (90%) of labor accompanied by pain (2). Labor pain begins to arise in the first stage due to the stretching of the uterus and the occurrence of effacement and cervical dilation (3). The pain will get stronger with increasing frequency, intensity, and duration of uterine contractions. The peak of pain begins to occur during the active phase of labor (4).

Although childbirth is a natural process, often the pain experienced during childbirth makes women feel afraid, anxious and worried, thus affecting the labor process itself which results in prolonged labor and neonatal asphyxia (5). Long labor is a complication that causes maternal

death in the fifth largest number in Indonesia (6). Labor pain can affect the mother's condition in the form of fatigue, fear, worry and can cause stress. Stress can cause uterine contractions to weaken and result in prolonged labor (7). Bonica in her study of 2,700 mothers giving birth in 121 obstetric centers from 36 countries found that only 15% of deliveries took place without pain or mild pain, 35% of deliveries with moderate pain, 30% of deliveries with severe pain and 20% of deliveries with very severe pain (8). A previous study conducted at a public health center in the city of Yogyakarta on 57 mothers during the active phase of labor, found that 42.1% of mothers experienced severe pain, 57.9% moderate pain, and none of the mothers experienced mild pain (9). That shows that labor pain is still a problem for most mothers in labor today.

There are two methods that can be used to reduce labor pain, namely pharmacological (using drugs) and non-pharmacological (traditional). Pharmacological methods have been shown to be more effective at reducing labor pain, but they are more expensive and have the potential for adverse side effects to both the mother and the fetus (7). The advantages of non-pharmacological methods in reducing labor pain are that the mother can control her own feelings and strengths so as to increase satisfaction during childbirth, the methods are usually simple, effective, without adverse effects and relatively cheaper (10).

Non-pharmacological (traditional) methods vary widely that can be applied to help reduce pain, including massage / massage. The principle of this method is to reduce maternal tension so that the mother feels comfortable and relaxed in facing childbirth. This method can also increase stamina to deal with pain and does not cause respiratory depression in the baby being born (10). There are several types of massage that can be done to reduce pain during childbirth, including the effleurage massage method, abdominal lifting, and deep back massage. Previous research has proven that these three techniques can reduce labor pain. So far, most of the studies that have been done comparing the three techniques with the counterpressure technique and almost all of them state that counter pressure is more effective. Researchers are interested in seeing how the effectiveness comparison between the three techniques is said to be no more effective than counterpressure. This study is expected to provide a real picture of the effectiveness of effleurage massage, abdominal lifting, and deep back massage in reducing labor pain so that it can prevent women from prolonging labor, which is a contributor to maternal mortality rate in Indonesia.

## **MATERIALS AND METHODS**

This study uses a pre-experimental research design with one-group pretest-posttest design.

The design was chosen to know the difference in pain before and after giving massage. Thirty participants were selected in the study using purposive sampling in independent practice midwives, Bantul Regency. The inclusion criteria of the participants were the mother is in active phase of first stage labor, not under analgesic effect, and not in complicating labor. The sample exclusion criteria were grandemultipara mothers. Scale of labor pain was measured using the Numeric Rating Scale. The scale consists of numbers 1 to 10. The pain scale is measured before and after massage.

Data collection was carried out in October-November 2020. Data collection was carried out in three independent midwife practices. Each independent midwife practices was taken 10 mothers and given 1 massage technique. The intervention was carried out by a midwife on duty who had been given prior guidance. To avoid bias, one technique is only performed by one midwife, so it is hoped that there will be no difference in the massage methods used. This study used a one-group pretest-posttest design, in which the mother's pain level was measured before the intervention. Then given an intervention in the form of one type of massage for  $\pm$  15 minutes. After the intervention, the mother again measured the level of pain.

Univariate analysis was used to determine the frequency of each variable. For the bivariate test analysis, we used Wilcoxon test with a 95% confidence interval because the data were not normally distributed. The level of effectiveness of each treatment is calculated by the effect size formula from Cohen. To determine the comparison of each intervention test, the Kruskal-Wallis test was used. The data analysis used SPSS Statistics 20. The study was ethically approved by the Alma Ata Ethics Committee, Alma Ata University, Indonesia, with approval number No. 093/A/SM/PSIB/AA/IX/2020. All of the respondents in this study were given formally

informed consent. The respondents had the right to refuse to participate without penalty if they want to do so.

the respondents were housewives and the most recent education of the majority of respondents was Senior High School (SMA).

## RESULTS AND DISCUSSION

### Characteristic of Respondents

**Table 1. Frequency Distribution of Respondent Characteristics**

Characteristic	F	%
<b>AGE</b>		
17-25	9	30
26-35	17	56,7
36-45	4	13,3
Total	30	100
<b>PARITY</b>		
primipara	7	23,3
multipara	23	76,7
Total	30	100
<b>OCCUPATION</b>		
Housewife	19	63,4
Teacher	1	3,3
Worker	4	13,3
Employe	3	10
Enterpreneur	3	10
Total	30	100
<b>EDUCATION</b>		
Junior	8	26,7
Senior	16	53,3
College	6	20
Total	30	100

Based on **Table 1**, it is known that the majority of respondents are in the range of early adulthood or age between 26-35 years and had given birth more than once (multiparous). Most of

### The effectiveness of Abdominal Lifting, Effleurage, and Deep back Massage

Based on **Table 3**, the results of the Wilcoxon paired nonparametric difference test show the value of  $p = 0.005$ ,  $p = 0.011$ ,  $p = 0.004$  ( $p < 0.05$ ), which means that there are significant differences in pain scores before and after giving the Abdominal Lifting Effleurage massage, and deep back Massage. The result of calculating the effect size for the Abdominal Lifting technique shows a moderate effect with a value of  $d=0.67$ . Meanwhile, the effleurage and deep back massage techniques showed a strong impact with a  $d$  value  $> 0.8$ .

**Table 3. Differences in pain scores before and after getting Abdominal Lifting, Effleurage, and Deep Back Massage**

Abdominal Lifting	N	Mean	SD	p-value	d
Before Massage	10	7.4	0.92	0.005	0.67
After Massage	10	5	0.89		
<i>Effleurage</i>					
Before Massage	10	8.1	0.3	0.011	2.1
After Massage	10	6.5	1.03		
<i>Deep Back Masaage</i>					
Before Massage	10	8.5	1.1	0.004	2.4
After Massage	10	5.8	1.14		

Based on the unpaired Kruskal Wallis nonparametric difference test which was carried

**Table 2. Frequency Distribution of Pain Scores Before and After Abdominal Lifting, Effleurage, and Deep Back Massage Treatment**

Pain Score	Abdominal Lifting		Eflourage		Deep Back Massage	
	Pre (%)	Post (%)	Pre (%)	Post (%)	Pre (%)	Post (%)
1	0	0	0	0	0	0
2	0	0	0	0	0	0
3	0	10	0	0	0	0
4	0	10	0	0	0	0
5	10	50	0	20	0	60
6	0	30	0	30	0	10
7	30	0	0	30	20	20
8	60	0	90	20	30	10
9	0	0	10	0	30	0
10	0	0	0	0	20	0
Total	100	100	100	100	100	100

out according to the results of **Table 4**, it shows that the value of  $p = 0.080 > 0.05$ , which means there is no significant difference in pain scores after treatment between the three groups.

**Table 4. Differences in pain scores for Abdominal Lifting, Effleurage, and Deep Back Massage Techniques**

	N	Mean Pre Test	Mean Post Test	p-value
Abdominal Lifting	10	7.4	5	0.080
Effleurage	10	8.1	6.2	
Deep Back Massage	10	8.5	5.8	

## DISCUSSION

Labor pain is a physiological condition that is felt by almost all mothers who give birth. Labor pain began to appear since the first stage of the latent phase. As the intensity and frequency of uterine contractions increase, the pain you feel will get stronger, the peak of pain occurs in the active phase where there is a complete opening up to 10 cm (4). One of the non-pharmacological methods to reduce pain is massage. Massage Massage is a method that provides relief to many women during the first stages of labor. It is a manipulation performed on soft tissue that aims to address physical, functional or sometimes psychological problems (11).

During the first stage of labour, painful sensations are produced by dilatation of the cervix and lower uterine segment and uterine distension. The intensity of pain in the first stage of labor due to involuntary uterine contractions is felt from the waist and radiates to the abdominal wall with varying quality of pain (12). The pain impulses of the first stage of labor are transmitted through the lower thoracic spinal nerves (T10-12) and the upper lumbar spinal nerves (L1). The afferent fibers of these nerves originate from the uterine body and cervix. Sensory impulses from the uterus are transmitted through synapses in the posterior horn of the spinal cord, thoracic segments 10, 11, 12 and lumbar 1. Certain groups

of nerve cells in the spinal cord, brain stem and cerebral cortex have the ability to regulate pain impulses through an inhibitory mechanism (Gate Control Theory). According to the Gate Control theory, pain sensations are transmitted along sensory nerves leading to the brain and only a certain number of sensations or messages can be transmitted through these nerve pathways at the same time (12).

The results of statistical tests showed that there are significant differences in pain scores before and after giving the Abdominal Lifting of the Latent Stage I labor, with p value = 0.005 ( $<0.05$ ). Abdominal lifting is effective in reducing labor pain during the 1st active phase with d value = 0,67. The results of this study are in line with the results of Malawat's research which examined the effect of the Abdominal Lifting method on the Intensity of Pain in the Phase I Inpartum Active Phase I of Dr. The results of this study indicate that there is an effect of the abdominal lifting method on reducing the intensity of pain in the active phase I part of the mother (p value 0.0001) (13). Anita's Systematic Review research related to techniques for reducing labor pain also states that abdominal lifting can be a way to reduce labor pain (14). The abdominal lifting technique is done by giving the opposite stroke towards the top of the stomach without pressing inward. This can stimulate large nerve fibers to increase the mechanism of activity of the substantia gelatinosa which results in the closing of the mechanism door so that T cell activity is inhibited and causes the transmission of stimuli to be inhibited and pain will not be transmitted to the cerebral cortex (15).

The results of statistical tests showed that there are significant differences in pain scores before and after giving the effleurage of the Latent Stage 1st labor, with p value = 0,011 ( $<0.05$ ). Table 3 shows that effleurage is effective in reducing labor pain during the 1st active phase with d value = 2,1. The results of this study are

in accordance with previous research, namely research by Paseno M, et al which states that there is a difference between the intensity of the first stage labor pain before and after effleurage action with the statistical test results p value = 0,000 with t count = 9,000 (t table = 1,833) (16). The results of this study were also supported by the results of research conducted by Santy and Ramly that effleurage massage had an effect on labor pain with a p value of 0.001 ( $p < 0.05$ ) where the group that received effleurage massage experienced a decrease in labor pain compared to the group that did not get effleurage massage (17). Effleurage technique is the act of rubbing the abdomen slowly in rhythm with breathing during contractions, used so that the mother does not focus her attention on contractions. This pain reduction occurs because the effleurage massage can stimulate tactile fibers in the skin so that pain signals can be inhibited. When the touch is made with circular motions of both hands such as butterfly movements in the abdomen with soft and light strokes slowly, it will increase abdominal relaxation and reduce muscle tension so as to provide comfort to the mother and reduce pain intensity (16). From the calculation of effect size, it shows that the effleurage technique (d value = 2.1) is more effective in reducing pain than the abdominal lifting technique (d value = 0.67), but is not more effective than the deep back massage technique (d value = 2,4).

There are significant differences in pain scores before and after giving the deep back massage of the Latent Stage 1st labor, with p value = 0,004 ( $< 0.05$ ). Based on the results of statistical tests, it was found that deep back massage was effective in reducing labor pain during the first active phase with d value = 2,4. The results of this study are in line with the results of research by Oktarina et al, which states that there are differences in the intensity of labor pain before and after being given deep back massage. The results of data analysis using the

T-test with p value: 0.000 and alpha: 0.05, so the p value  $< \alpha 0.05$  (18). Idyawati's research also obtained similar results where it was found that there was an effect of the deep back massage method on reducing the intensity of labor pain during the active phase of labor. The results of the independent t-test concluded that there was a significant difference after the massage method was carried out in the intervention group, namely the value of  $P = 0.001$  (19). Deep back massage is done by pressing on the sacrum using the palms of the hands and the mother's position in lying on her side. Deep back massage can reduce the tension of the sacroiliac joint from the occiput posterior position of the fetus by applying pressure to the sacrum. The technique is performed in a reclining position to provide a relaxing condition for the mother, thereby increasing circulation in the genital area and improving cervical elasticity (20). From the calculation of effect size, it shows that deep back massage is most effective to reduce pain labor than effleurage and abdominal lifting.

Based on the unpaired nonparametric difference test performed by Kruskal Wallis according to the results of Table 4, it shows that the value of  $p = 0.080 > 0.05$ , which means there is no significant difference in pain scores after treatment between the three groups, namely the abdominal lifting, effleurage, and deep back groups. massage.

Based on the results of the study, the three massage techniques studied were proven effective in reducing labor pain. Basically, massage can improve the circulatory system that can deliver acids and foodstuffs to the cells more optimally and the remains of unused substances will be repaired. So there will be a better exchange process, increased cell activity will reduce local pain (21). Giving massage helps relaxation and reduce pain by increasing blood flow to the affected areas, stimulating skin touch receptors so as to relax muscles, change skin

temperature and generally provide a feeling of comfort associated with a close human relationship (22).

The massage given is believed to stimulate the release of endorphins, reduce the production of catecholamine hormones, and stimulate the results of afferent nerve fibers blocking the transmission of pain stimuli (gate control theory), thereby helping to reduce labor pain (22). Research in Canada states that mothers who are massaged for 5 hours can delay the use of epidural analgesics compared to mothers who are not massaged (23).

Touch relaxation will help the mother relax by touching or rubbing her body parts. Gently massage will help the mother feel more refreshed, relaxed and comfortable during labor. Massage stimulates the body to release endorphins, which are natural pain relievers. Endorphins can also create a feeling of comfort and goodness (24).

Other studies also prove that massage techniques are very useful in supporting maternal and infant health such as breastfeeding, perineal rupture during delivery, and others (25)(26).

## CONCLUSION AND RECOMMENDATION

Abdominal lifting, effleurage, and deep back massage are contribute in reducing the pain during active phase of first stage labor. Deep back massage is the most effective technique to reducing the pain during active phase of first stage labor. There was no significant difference between the three massage techniques in reducing labor pain.

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