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Effleurage Massage and Acupressure's Effectiveness in Reducing Labor Pain in Active Phase of First-Stage Labor at Tembilahan Hulu Health Center, Riau

Haryati Astuti[1]* Syafriani[2]

[1] Department of Midwifery, Sekolah Tinggi Ilmu Kesehatan Husada Gemilang, Riau, Indonesia
[2] Department of Public Health, Universitas Pahlawan Tuanku Tambusai, Riau, Indonesia

Corresponding Author Email: haryatihusadagemilang05@gmail.com

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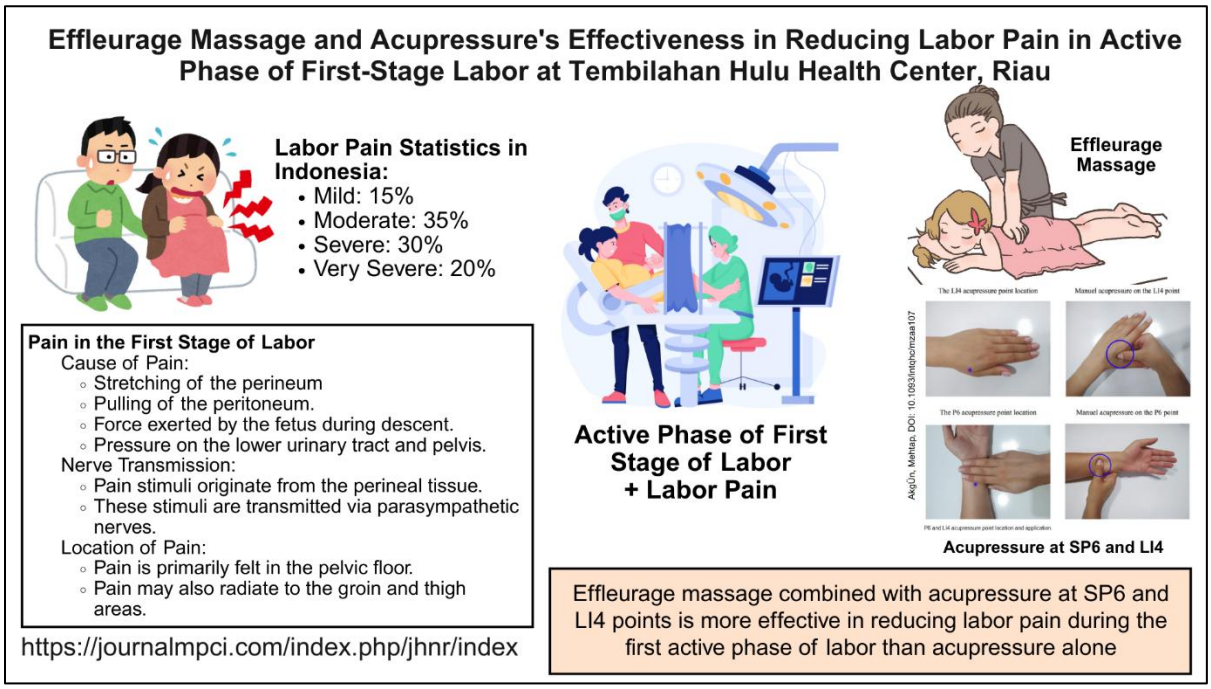
ABSTRACT

Uterine contractions cause labor pain in the first stage and can be alleviated through non-pharmacological methods like effleurage massage and acupressure. This study aims to evaluate the effectiveness of effleurage massage and acupressure in reducing labor pain and improving labor efficiency. This analytical experimental study used an RCT design with 30 participants, and data were analyzed using univariate and bivariate analysis with the ANOVA test. Both interventions significantly reduced labor pain during the first active phase of labor. The intervention group receiving a combination of effleurage massage and acupressure showed a more significant reduction in pain, with mean scores increasing from 2.27 (SD = 0.799) to 2.73 (SD = 0.594) and significant mean differences (3.44; 95% CI: 3.04–3.85 and 3.22; 95% CI: 1.79–2.88), with F-counts of 8.870 and 9.820 (p = 0.03). In the control group receiving acupressure alone, the mean scores decreased from 3.07 (SD = 0.799) to 2.93 (SD = 0.704), with mean differences of 2.33 (95% CI: 1.79–3.77) and 3.20 (95% CI: 2.64–3.76), F-counts of 8.310 and 9.034 (p = 0.02 and p = 0.01, respectively). The combination therapy proved more effective than acupressure alone in mothers giving birth in the first active phase.

Key Messages:

- Effleurage massage combined with acupressure at SP6 and LI4 points is more effective in reducing labor pain during the first active phase of labor than acupressure alone.

GRAPHICAL ABSTRACT



INTRODUCTION

Childbirth is a process of removing the placenta and amniotic membranes from the mother's uterus with a full-term gestational age of between 36 and 40 weeks through the birth canal without any complications (1). The first stage of labor is the beginning of true labor contractions, which are marked by progressive cervical changes and end with complete dilation. In primigravida, the first stage lasts about 13 hours, while in multigravida, it lasts about 7 hours. The progress of labor in the first stage of the active phase is the most tiring and challenging, and most mothers feel very severe pain (2). Labor pain is a subjective experience by every mother due to uterine muscle ischemia, uterine ligament pulling and traction, ovarian traction, fallopian tubes, and distension of the lower uterus, pelvic floor muscles, and perineum (Hasnah et al., 2018). This physiological condition generally feels severe and is experienced by almost all mothers giving birth (3).

This first stage of labor pain is due to uterine muscle contractions that manifest due to labor pain. These contractions cause pain in the waist and abdomen and spread to the lower abdomen, causing the cervix to open until the baby is born (3). According to Hartinah (2019) (4), labor pain can also be influenced by psychological conditions, namely excessive fear and anxiety. Labor pain can be reduced with several methods to reduce pain, namely pharmacological methods by administering anti-pain drugs such as narcotic drugs and non-pharmacological methods, one of which is Effleurage Massage. Research by Herinawati (2019) (5) shows that massage and touch performed on mothers in the first active phase of labor have been proven to help mothers be more relaxed and comfortable during labor.

Massage effluent is done by massaging in the form of gentle, slow, and long or continuous strokes (6). Massage effleurage uses the palms of the hands to repeatedly apply gentle pressure to the surface of the body in a circular direction, which aims to increase blood circulation, provide pressure, and increase physical and mental relaxation (7). Massage effleurage can also be done on the back; the main goal is to relax and relieve pain such as labor pain (8). Acupressure is one of the most effective non-pharmacological techniques in labor pain management. Acupressure is also known as acupuncture without needles or acupuncture massage. This technique uses pressure, massage, and massage techniques along the body's meridians or energy flow lines. This acupressure technique can reduce pain and make labor time more effective. Acupressure points associated with reduced pain intensity during labor include LI4 (Hegu), BL67 (Zhiyin), SP6 (Sanyinjiao), PC6 (Neiguan), BL19 (Danshu), BL21 (Weishu), and BL60 (Kunlun) (9).

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WHO data states that pain during labor and delivery is a unique and most severe pain event in a woman's life. More than 90% of mothers have experienced tension and stress during labor. The Netherlands reported that 54.6% of women who gave birth lost control in controlling labor pain. A study conducted in Sweden showed that 41% of participants reported that labor pain was the worst experience they had. Pain stimulates the sympathetic nervous system, which causes increased heart rate, blood pressure, sweat production, and hyper endocrine function (10).

Indonesia, the incidence of labor pain in 2,700 mothers giving birth; only 15% of laborers took place with mild pain, 35% had moderate pain, 30% had severe pain, and 20% of laborers were accompanied by very severe pain. Pain stimuli are transmitted through the parasympathetic nerves from the perineal tissue. The pain that arises is felt in the pelvic floor and groin or thigh area (11).

The Maternal Mortality Rate (MMR) in Indragiri Hilir Regency in 2022 was eight people from deaths during pregnancy of as many as two people, maternal deaths during childbirth of as many as four people, and postpartum maternal deaths of as many as two people, then for the number of stillbirths as many as 45 babies and neonatal deaths as many as 32 neonatal (12). when viewed from the national achievement target, this condition is still far from the achievement target where Antenatal Care (ANC) examinations 6 times with a target of 60% have only reached 17.4% of ANC examination tracing in the polyclinic through the register book, many are still found without a history of examination but give birth at the Health Center, for AKB 43% and neonates 41% so that this problem is still far from the target so that special attention is needed from across sectors to address this problem (12).

Tembilahan District currently has three health centers (Commonly known as PUSKESMAS in Indonesia): Tembilahan City Health Center, Gajah Mada Health Center, and Tembilahan Hulu Health Center. Tembilahan City Health Center only provides outpatient services. At the same time, Gajah Mada Health Center and Tembilahan Hulu Health Center have inpatient facilities for delivery rooms, and Tembilahan Hulu Health Center is the only Health Center with acupuncture and acupressure services.

The number of deliveries each month is 40 people with 19 primiparas. The results of the initial survey conducted on Wednesday, July 10, 2024, in the Midwifery Care Room of Tembilahan Hulu Health Center found that 7 out of 10 mothers giving birth, 6 primi, experienced extraordinary and unbearable pain. Data on the number of deliveries in the last 3 months (June-August 2023) was 73. The results of interviews with midwives who were met in the Midwifery Care Room of Tembilahan Hulu Health Center said that ± 40% of mothers giving birth felt discomfort and anxiety about labor pain during the 1st active phase, both primiparas and multiparas and the pain reduction method applied so far is in the form of a deep breathing relaxation method and has not been effective in reducing pain during the 1st active phase in mothers giving birth, it is proven that there are mothers who still feel severe pain, for that other more effective methods are needed to reduce pain such as effleurage massage and acupressure. Currently, obstetrics room staff only perform postpartum acupressure; therefore, researchers are interested in conducting this research at the Tembilahan Hulu Health Center.

Since we have not found any sources that measure the pain scale in reducing pain intensity in mothers in labor with simultaneous interventions of effleurage massage and acupressure, which are often found to be effleurage massage alone and acupressure alone therefore, researchers conducted interventions simultaneously because they wanted to see and prove which is more effective of these two methods. Our study on national and international kinds of literature journals shows that while effleurage massage and acupressure have been studied individually for labor pain relief, no research has compared their effectiveness in reducing pain during the active phase of the first stage of labor. This study aims to compare the effectiveness of effleurage massage and acupressure in reducing pain levels during the active phase of the first stage of labor.

METHODS

This quantitative research uses a Clinical Trial with a Randomized Controlled Trial (RCT) approach. The study was conducted from 23 September to 25 December 2024 at Tembilahan Hulu Public Health Center, the only health center in Tembilahan Subdistrict, Indragiri Hilir Regency, providing patients with acupuncture and acupressure services.

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The population in this study consisted of primiparous women in the active phase of the first stage of labor who experienced labor pain at Tembilahan Hulu Public Health Center. A total of 30 participants were selected according to our inclusion and exclusion criteria, then randomly divided into two groups of 15 each: one group received the intervention of effleurage massage and acupressure, and one another just received acupressure treatment. Inclusion criteria were willingness to participate and cooperate, being in the active phase of the first stage of labor with cervical dilation of 4–10 cm, not receiving any analgesic or induction medications or herbal treatments (normal labor without induction), primigravida status, singleton pregnancy, intact amniotic membranes, and no prior exposure to similar interventions. Exclusion criteria included a history of cesarean delivery, labor complications, or prolonged first stage of labor.

The number of samples in this study was calculated using the formula which was adapted from (13), determining the sample size using the simple random sampling technique for finite (known) population data; the sample size formula is as follows:

$$n = \frac{NxZ^2xP(1-P)}{(N-1)e^2+Z^2x\,P(1-P)}$$

Information:
n = number of samples
N = Population number (39)
z = confidence level (95%=1.96)
P = Proportion (0.5)
e = tolerable (Absolute) error (10%=0.1)

The formula for calculating the sample size (n) is:
Calculate = = $3.8416Z^2 1{,}96^2$
To calculate = 0.5 x (1-0.5) = $0.25P(1-P)$
Calculate the numerator
$NxZ^2x\ p\ (1-p)$= 39 x 3.8416 x 0.25 = 37.7064
Denominator
$(N-1)e^2 + Z^2x\ P(1-P)$
=(39-1)x+3.8416x0.25=38x0.01=3.8416x0.25=0.38=0.96040,1^2
Final count =$\frac{51.763237,7064}{1,3404} = 28,22$

n =$\frac{NxZ^2x\ p\ (1-p)}{(N-1)e^2+Z^2x\ P(1-P)}$

n =$\frac{39x\ 3,8416\ x\ 0,25}{(39-1)0,1^2+1,96^2x\ 0,5(1-0,5)}$

n =$\frac{39x\ 3,8416\ x\ 0,25 = 37,7064}{=(39-1)x0,1^2+3.8416x0,25=38x0,01=3,8416x0,25=0,38=0,9604}$

n =$\frac{51.763237,7064}{1,3404} = 28,22$

n = 29 rounded up to 30 respondents

In the intervention group, a combination of effleurage massage and acupressure was administered by applying gentle stroking and pressure to the back area using both hands during contractions. The intervention was performed for 10 minutes, consisting of 50 strokes, each lasting 10 seconds with a 2-second rest between strokes, from cervical dilation of 4 to 10 cm. Acupressure involves applying pressure along the body's meridian or energy flow lines for the same duration and frequency. In the control group, acupressure alone was administered using the same technique by applying pressure along the body's meridian lines for 10 minutes, consisting of 50 repetitions, each lasting 10 seconds with a 2-second rest, during the active phase of labor at 4 to 10 cm dilation.

The instrument in this study was an observation sheet with a checklist using a pain scale with the Numeric Rating Scale (NRS) for mothers giving birth in the first active phase, where the NRS pain scale measurement observation sheet was used before and after the intervention. Each measurement scale was given a score of 0-10, which was detailed as follows: 0-2 = no pain, 3-5 = mild pain, 6-8 = moderate pain, and 9-10 = severe pain. The implementation of the intervention of providing effluent massage and

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acupressure following the standard operation procedure (SOP) for implementation with 3 stages of data collection: the preparation, the implementation, and the final.

Data analysis in this study is both univariate and bivariate. Before the hypothesis test is carried out, a normality test is first carried out, namely the Shapiro-Wilk normality test, to determine whether the data obtained is normally distributed. If the data obtained is normally distributed, the hypothesis test uses Anova, but if the data obtained is not normally distributed, the hypothesis test uses the Wilcoxon test.

CODE OF HEALTH ETHICS

Ethical Clearance (EC) Number: 033 / KEPK / IX / 2024 is ethical feasibility, which is a written statement given by the Health Research Ethics Commission (KEPK) of STIKES Guna Bangsa Yogyakarta for research conducted by researchers involving living things stating that a research is feasible after meeting certain requirements.

RESULTS

Data analysis was carried out by looking at the results of frequency calculations and percentages of research results, which were used as a benchmark for discussion and conclusions of univariate analysis to obtain a picture of each variable studied to see the normality of the data, the Shapiro Wilk test was carried out and presented in the form of a table where the data was normally distributed.

The characteristics of the research subjects in this study include age, education, occupation, and gestational age, which are homogeneous with a p-value> 0.05, which shows that all respondents in both groups have homogeneous subject characteristics (Table 1).

Table 1. Characteristics of Research Subjects and Homogeneity

Subject Characteristics	Intervention Group (Massage Effluerage and Acupressure)		*P-value*	Control Group (Acupressure)		ᵽ - *Value*
	n	%		n	%	
Age						
1. ≤ 20 y. o	2	13.3	0.075	0	0.0	0.092
2. 21-30 y. o	13	86.7		9	60.0	
3. ≥ 31-35 y. o	0	0.0		6	40.0	
Education						
Elementary/Junior High School	4	26.7	0.092	9	60.0	0.093
Senior High School	11	73.3		6	40.0	
University	0	0.0		0	0.0	
Work						
Working	6	40.0	0.073	4	26.7	0.074
Not Working (Housewife)	9	60.0		11	73.3	
Gestational Age						
36 weeks	1	6.7	0.076	0	0.0	0.078
37 weeks	4	26.7		3	20.0	
38 weeks	3	20.0		5	33.3	
39 weeks	5	33.3		4	26.7	
40 weeks	2	13.3		3	20.0	
Total	15	100		15	100	

The combination of massage effleurage and acupressure in reducing labor pain levels in mothers giving birth in the first active phase at Tembilahan Hulu Health Center can be seen in Table 2. Before the intervention, most participants experienced severe pain: 40.0% (n=6) reported pain levels of 7–8, and 6.7% (n=1) reported very severe pain (9–10). Moderate pain (4–6) was experienced by 20.0% (n=3), while

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26.7% (n=4) reported mild pain (2–3), and only 6.7% (n=1) experienced no or minimal pain (0–1), with an average pain score of 4. After the intervention, there was a notable reduction in pain levels. Most participants, 60.0% (n=9), reported moderate pain, and 33.0% (n=5) reported mild pain. Only 6.7% (n=1) experienced severe pain, and none reported severe pain. No participants remained in the "no pain" category. The average pain score decreased to 2, with a minimum of 2 and a maximum of 4. These findings indicate that effleurage massage and acupressure effectively reduced labor pain intensity in the first active phase of labor.

Table 2. Level of Labor Pain in the Intervention Group Before and After Effleurage Massage and Acupressure at the Tembilahan Hulu Health Center

Pain Level	Before					After				
	n	%	Average	Min	Max	n	%	Average	Min	Max
No Pain (0-1)	1	6.7				0	0.0			
Mild Pain (2-3)	4	26.7				5	33.0			
Moderate Pain (4-6)	3	20.0	4	1	5	9	60.0	2	2	4
Severe Pain (7-8)	6	40.0				1	6.7			
Severe Pain (9-10)	1	6.7				0	0.0			
Total	15	100				15	100			

This study also measured the acupressure effect on reducing labor pain levels in mothers in the first active phase of labor at the Tembilahan Hulu Health Center (Table 3). Before the intervention, 40.0% (n=6) of participants experienced severe pain (score 7–8), and 6.7% (n=1) experienced very severe pain (score 9–10). About 26.7% (n=4) reported moderate pain (score 4–6), 20.0% (n=3) reported mild pain (score 2–3), and 6.7% (n=1) reported no or minimal pain (score 0–1), with an average pain score of 4. Following the acupressure intervention, pain levels decreased. A total of 46.7% (n=7) reported moderate pain, 40.0% (n=6) experienced mild pain, and only 13.3% (n=2) reported severe pain. No participants reported very severe pain or no pain. The average pain score was reduced to 2, with a minimum and maximum score range of 2 to 4. These results indicate that acupressure alone was effective in reducing labor pain intensity during the first active phase of labor. However, a portion of participants continued to experience moderate levels of pain.

Table 3. Level of Labor Pain in the Intervention Group Before and After Acupressure at the Tembilahan Hulu Health Center

Pain Level	Before					After				
	n	%	Average	Min	Max	n	%	Average	Min	Max
No Pain (0-1)	1	6.7				0	0.0			
Mild Pain (2-3)	3	20.0				6	40.0			
Moderate Pain (4-6)	4	26.7	4	1	5	7	46.7	2	2	4
Severe Pain (7-8)	6	40.0				2	13.3			
Severe Pain (9-10)	1	6.7				0	0.0			
Total	15	100				15	100			

Table 4 presents the effectiveness of effleurage massage combined with acupressure (SP6 and LI4 points) compared to acupressure alone in reducing labor pain among mothers in the first active phase of labor at the Tembilahan Hulu Health Center. In the intervention group (effleurage massage and acupressure), the mean pain score increased from 2.27 (SD = 0.799) before intervention to 2.73 (SD = 0.594) after intervention, with a mean difference of 3.44 (95% CI: 3.04–3.85) and 3.22 (95% CI: 1.79–2.88), respectively. The F-count values were 8.870 and 9.820, both exceeding the F-table value of 4.67, with statistically significant p-values of 0.03, indicating a significant effect of the intervention. In the control group (acupressure only), the mean pain score decreased from 3.07 (SD = 0.799) to 2.93 (SD = 0.704), with a mean difference of 2.33 (95% CI: 1.79–3.77) before intervention and 3.20 (95% CI: 2.64–3.76) after intervention. The F-count values were 8.310 and 9.034, also higher than the F-table value of 3.81, with p-

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values of 0.02 and 0.01, respectively, showing statistical significance. These findings indicate that both interventions effectively reduced labor pain, but the combination of effleurage massage and acupressure demonstrated a greater reduction in pain intensity than acupressure alone.

Table 4. Effectiveness of the treatment in the intervention group (effleurage massage & acupressure) and control group (acupressure) in reducing labor pain.

Treatment Group	Mean	SD	Mean Difference (95%CI)	F- Count	f-Table	*P* - *Value*
R1: Intervention Group (Massage effleurage and Acupressure (SP6 & Li4))						
Before	2.27	0.799	3.44 (3.04.– 3.85)	8.870	4.67	0.03
After	2.73	0.594	3.22 (1.79 – 2.88)	9.820		0.03
R2: Control Group (Acupressure)						
Before	3.07	0.799	2.33 (1.79.– 3.77)	8.310	3.81	0.02
After	2.93	0.704	3.20 (2.64 – 3.76)	9.034		0.01

DISCUSSION

In this research, we measured how the combination of massage effleurage and acupressure reduced labor pain levels in mothers giving birth in the first active phase at Tembilahan Hulu Health Centre. The results of the study showed that before being given effleurage massage and acupressure intervention in the intervention group, an average of 4 levels of pain were obtained in respondents, the majority of whom experienced severe pain (40.0%), a minority had no pain and severe pain (6.7%) with a pain scale of 8 or at a severe pain level, while after being given effleurage massage and acupressure, an average of 2 pain level measurement results were obtained in respondents, the majority experienced moderate pain (60%), a minority experienced severe pain (6.7%). The average respondent, after receiving acupressure, experienced pain at level 6 or at a severe pain level. This means that there is a relationship between the provision of effleurage massage and acupressure interventions in mothers giving birth in the first active phase in reducing the intensity of labor pain.

According to acupressure on reducing labor pain levels in mothers in the first active phase of labor at UPT Tembilahan Hulu, the results of the study showed that before the acupressure intervention was given to the control group, an average of 4 levels of pain were obtained in respondents, the majority of whom experienced severe pain (40.0%), a minority had no pain and severe pain (6.7%) with a pain scale of 8 or at a severe pain level, while after being given acupressure, an average of 2 pain level measurement results were obtained in respondents, the majority experienced moderate pain (46.7%), a minority experienced severe pain (13.3%). After receiving the intervention, the average respondent experienced pain on a scale of 5 or at a moderate pain level. This means there is a relationship between the provision of acupressure intervention in mothers giving birth in the first active phase and reducing the intensity of labor pain.

Comparing the effectiveness of the combination of effleurage massage and acupressure with acupressure only on reducing the level of labor pain in mothers giving birth in the first active phase at the Tembilahan Hulu Health Center. The analysis used to assess which is the most effective of the interventions given to mothers in active phase 1 labor was tested using the ANOVA test. Anova is a statistical analysis that tests the average difference between groups, namely R1 of the intervention group with effleurage massage and acupressure reducing the level of labor pain in mothers in active phase 1 labor and R2 of the control group with acupressure. The results obtained in the intervention group of effleurage massage and acupressure, where the calculated F of 9.820 is greater than the f table of 4.67 with a p-value of 0.00, means that effleurage massage and acupressure are 9.820 times more effective in reducing labor pain during the first active phase in mothers giving birth than the control group with acupressure alone.

This first stage of labor pain is due to uterine muscle contractions that manifest due to labor pain. These contractions cause pain in the waist and abdomen and spread to the lower abdomen, causing the cervix to open until the baby is born (3). According to Hartinah (2019) (4), labor pain can also be influenced by psychological conditions, namely excessive fear and anxiety. Irza Nopra Yudha (2023) (14) mentions

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that labor pain is a subjective, personal, and complex multi-factorial phenomenon influenced by psychological, biological, socio-cultural, and economic factors. So, it is natural that each respondent's pain level varies according to the factors that influence it.

The study also found that mothers who were younger (18 years old) were two people (13.3%) in the intervention group; this can cause risks that need to be considered during labor. As a result of increased anxiety, it will increase the intensity of labor pain stimulus (15). This study is in line with the results obtained by Nurcahyanti FD (2020) (16); the study showed a significant difference in reducing pain intensity in patients with active phase I labor between those who underwent the effleurage technique with a p-value of 0.000 <a (0.05). The effluerage technique is effective in reducing pain in patients with active phase I labor by 1.42 times. The results of this study are also following those conducted by Mukhoirotin (2020) (9) which showed an effect of acupressure in both intervention groups on the intensity of labor pain with a p-value = 0.000 (p 0.05). Acupressure on the combination of BL32 (Ciliao) and LI4 (Hegu) points with BL32 (Ciliao) and SP6 (Sanyinjiao) points was effective in reducing the intensity of labor pain so that it can be used as an alternative non-pharmacological intervention in reducing pain levels.

The definition of pain, according to Potter (2021) (17), is a sensation of taste felt by the subject and varies from individual to individual. Psychosocial, cultural, and endorphin hormone factors influence pain. Factors that influence pain during labor also include 1) individual culture, 2) emotions ranging from anxiety to fear, 3) past experiences, 4) preparation for labor, and 5) support systems (18). The three basic components in acupressure are vital energy, the meridian system and its path, and acupressure points, their functions and locations. This study collected data on factors that influence labor pain, such as age, education, occupation, gestational age, and dilation, in addition to other factors such as parity, race, culture, ethnicity, emotions, and attitudes including psychological responses (anxiety/fear), labor experience, preparation for labor and support systems from both close people or family and health workers accompanying labor that require further study to prove how far the relationship is to labor pain that can be overcome with effleurage massage and acupressure interventions that can be given. Health education begins at the end of pregnancy so that mothers are better prepared to face pain during labor.

Touch or massage could stimulate cutaneous mechano-receptors and provide information to pain nerve fibers in the spine to block the painful part when effleurage massage is performed (19); it provides a pleasant sensation because it stimulates the nucleus in the brain to reduce spinal nerve activity and helps release endogenous opioids as inhibitors of neurotransmitters (Inhibitors) of pain responses to arrive in the brain, then the intensity of pain to the center is inhibited so that it is very effective for mothers giving birth in the first active phase if combined with acupressure. Acupressure generally uses specific points of approach and specific pain outcomes such as pain intensity, use of pharmacological analgesia, and duration of labor, and this study was carried out at points Sp-6 (Sanyinjiao), and LI-4 (Hegu) (20). This is because when the pressure action is carried out with acupressure, the mother feels comfortable, the release of endorphin hormones increases, and the control gate, which channels the pain receptors' function, can be closed. Therefore, this therapy is recommended to be applied to women in labor who are in the first stage of the active phase of labor.

The Gate control theory proposed by Melzack and Wall states that pain is transmitted through nerve fibers. Nerve fibers pass through the spinal cord before reaching the central nervous system, namely the brain. Dorsal horn synapses function as gates to guard impulses before they reach the brain (21). Giving acupressure at the SP6 and L14 points can reduce pain during labor. This activates because acupressure releases endorphin hormones, which reduce pain. The cause of pain in the body can be influenced by the activity of large or small nerve impulses (22). Pressure is applied to the L14 point, the point between the 1st and 2nd metacarpal bones on the distal side, with a rotating motion. Pressure is applied at the peak of contractions in active labor stage I (23). Pain impulses that pass through very small fibers. These nerve fibers close impulses through tiny fibers. Stimulating and pressing acupuncture points on the skin's surface, which contain many large-diameter sensory nerve fibers, is a method that can be used to perform acupressure. The cause of pain reduces or eliminates pain, which helps open the impulse gate (24). Research previously said acupressure did not harm patients and could be performed by therapists or health workers such as midwives, nurses, or companions during the labor process. Pressure is applied with the

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heel of the hand, fist grip, thumb, and fingers (25). Pressure can be applied from the beginning of the contraction until the contraction ends, then continues as the first stage of labor progresses until the end of labor (26).

The pain level was measured using the Numeric Rating Scale (NRS) observation sheet; it has been shown that acupressure impacts the intensity of pain in mothers in the first active phase of labor. Pain intensity produced after acupressure is dominant on a lighter scale. With a p-value = 0.000, it can be concluded that there is a significant difference in pain intensity before and after using acupressure. Based on the results of the tests that have been carried out and the results of previous studies, it has been proven that effluent massage and acupressure are more effective in reducing pain levels in mothers in the first active phase of labor due to increased production of the hormone endorphin which functions to reduce pain (27). The results of the study showed that after being given effleurage massage and acupressure, a combination of SP6 (Sanyinjiao) and Li4 (Hegu) points in the effleurage massage and acupressure intervention group and the control group with effleurage massage in the second group showed a decrease in the average intensity of labor pain from severe intensity to moderate intensity (28). Several studies have shown that acupressure on the SP6 (Sanyinjiao) point can increase uterine contractions in mothers in the first active phase of labor and manage labor pain because it can stimulate the release of oxytocin and endorphin hormones, relax the mind, and eliminate anxiety (22). Acupressure at the LI4 point is an effective, non-invasive, and easy-to-apply action to reduce labor pain (29). The results of the study obtained from respondents in the observation starting from 4-10 cm dilation in primiparous mothers and the increasing dilation showed that the pain felt increased but became controlled pain, and the mother could adapt to the pain felt. Previous studies also showed that acupressure at the SP6 point effectively reduces labor pain and shortens labor time (30).

During the study, there were no post-intervention side effects or complaints after treatment when interventions were conducted in both groups. During the intervention, while communicating with respondents and families, they expressed their happiness because health workers accompanied them during labor, and respondents could relax through the stages of labor from 5 to complete opening. This is what is really needed; besides the family, there are also health workers who do not leave them. This condition makes the mother's psychology calmer because she gets support from her family and health workers, of course, so the more the opening increases, the stronger the pain becomes, but it makes the mother calmer and more relaxed when given effleurage massage and acupressure interventions which have been proven to be effective in causing controlled pain until the baby is born.

The researcher's assumption that labor pain in the first stage is the beginning of labor that begins since the occurrence of uterine contractions or known as "his" which are regular and increase (both in frequency and strength) until the cervix dilates to 10 cm (complete opening), this condition causes discomfort related to uterine contractions, dilation and effacement of the cervix, decreased presentation, stretching of the vagina and perineum which ends in the fourth stage of labor or from the active phase until the baby is born therefore the method chosen to reduce pain is very appropriate with effluerage massage and acupressure which has been proven to be able to reduce pain levels from 7 (40%) to 6 (60.%) because pressure and massage in the back area and meridian points help the body produce endorphin hormones in the brain through the spinal cord, this is what really helps the body as a natural relaxation simulator so that it creates a feeling of comfort, the more often acupressure is done, the higher the production of endorphin hormone levels which play a role in reducing the intensity of labor pain. The research results also proved that effleurage massage and acupressure were more effective than effleurage massage. According to researchers, this is in line with several theories that acupressure will be more effective if it is preceded by massage.

This study has several limitations that should be considered in future research. First, some primigravida mothers who participated in the study arrived at the health center with high-risk conditions, which may have influenced their responses to the intervention. Second, a number of participants were in the latent phase of labor upon arrival, making it challenging to accurately identify the onset of the active phase. Third, pain intensity was only measured from the beginning of the active phase until full cervical dilation (10 cm), thus excluding pain level changes during the latent phase and the subsequent stages of

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labor. Lastly, the sample size in this study was relatively small, limiting the generalizability of the findings to the broader population.

CONCLUSION

The average of respondents who were given effleurage massage and acupressure interventions together was 60% effective, and the average of respondents who were given acupressure interventions was 46.7% effective in reducing the level of labor pain in mothers giving birth in active phase I at the Tembilahan Hulu Health Center. Also, the effleurage massage combined with the acupressure intervention group was more effective than the control group given acupressure only in reducing the level of labor pain in mothers giving birth in active phase I at the Tembilahan Hulu Health Center.

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CONFLICTS OF INTEREST

The author reports no conflicts of interest.

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