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Endorphin Massage on Intensity of Pain in the First Stage of Active Labour

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Abstract:
Most maternity mothers feel pain during labor; the causes of pain in Indonesia is 16% because they experience complications, and 63% because they did not get information on childbirth preparation. Pain arises due to increased activity of the sympathetic nervous system and results in blood pressure and pulse. A midwife cannot provide analgetic in reducing pain, so complementary treatments are very helpful, one of which is endorphins massage. Massage therapy can systematically affect the skin surface, soft tissues, muscles, and ligaments. It can release of endorphin hormone that can cause muscle relaxation. This study aims to determine endorphin massage's effect on pain intensity in the first stage of active labor at Public Health Center Mampang Prapatan District, South Jakarta. This study used a quasi-experimental design with a pretest-posttest type of control group. This type involved two groups of subjects, one was treated (experimental group) with 15 samples, and the other was not treated (control group) with 15 samples. The total sample is 30 respondents. The research instrument used an observation sheet to measure pain intensity using the FLACC scale (Face, Legs, Activity, Cry, Consolability). Data analysis used the Wilcoxon signed rank test and the Mann-Whitney test. Based on the results of the Mann-Whitney test, it shows that the Assign value sig. (2-tailed) of 0.000. This means that 0,000 < 0,05, there is a significant difference between the pain intensity of the experimental group that was given endorphin massage and the control group that was not treated. There is a difference between the pain intensity in the first stage of active labor at Public Health Center Mampang Prapatan, South Jakarta. It is recommended that services apply non-pharmacological pain control methods of endorphin massage in labor.

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INTRODUCTION

The success of maternal health efforts can be seen from the Maternal Mortality Rate (MMR) indicator. According to the World Health Organization (WHO) (2016), 830 mothers die from pregnancy and childbirth complications in the world every day, it is estimated that in 2015, around 303,000 women died during and after pregnancy and childbirth (Nurkhasanah & Hesti, 2021)

Based on the Data Center of the Indonesian Hospital Association, it is explained that 16% of mothers in Indonesia experience labor complications and 21% state that the labor experienced is a painful labor because they feel extreme pain, while 63% do not get information about the preparations that must be done to reduce pain in labor. Pain is a cause of frustration and despair, so some mothers often feel they will not be able to get through the labor process. Murray reported the incidence of pain in 2,700 maternity mothers, 15% experienced mild pain, 35% with decreased

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fetal oxygen supply and weakening uterine contractions that prolong the labor process and can cause complications for mother and fetus (Nurkhasanah & Hesti, 2021)

Pain arises due to psychic responses and physical reflexes. Pain in labor causes symptoms that are easily recognized. Increased sympathetic nervous system activity arises in response to pain and can result in changes in blood pressure, pulse, breathing, and skin color. Affective changes in the form of anxiety accompanied by narrowed perceptual airiness, groaning, crying, hand movements (which indicate pain) of different intensity in everyone (Antik & Handayani, 2017).

According to Judha (2012), the level of labor pain is described by the intensity of pain perceived by the mother during labor. The intensity of labor pain can be determined by asking the level of intensity or sulking on the pain scale (Judha, Sudarti, & Fauziah, 2018). For example, a scale of 0-10 (numeric scale), a discriptive scale that describes the intensity of no pain to unbearable pain, a scale with cartoon images of facial profiles and so on (Fitriana & Anggista, 2017).

Based on a preliminary study in the delivery room of the Puskesmas Mampang Prapatan District, South Jakarta with interviews and observations from 5 maternity mothers at the Puskesmas Mampang Prapatan District, it was found that mothers felt severe pain during childbirth, especially in the active phase, even two out of five mothers who were observed stated that they could not bear the pain felt.

The authority of midwives is regulated in Permenkes RI No. 28 of 2017 the second part is stated in article 18 that in the implementation of midwifery practice, midwives have the authority to provide maternal health services, child health services and reproductive health services and family planning. In article 20, midwives provide only essential neonatal services; Emergency management, followed by referral; Monitoring the growth and development of infants, toddlers, and preschoolers; and Provide counseling and counseling. It can be seen in this case that a midwife is not allowed to provide pain management with pharmacological independently.

One way of nonpharmacological management to reduce labor pain with endorphin massage. Endorphin massage is a touch therapy or light massage given to pregnant women before delivery. Massage therapy affects the surface skin, soft tissues, muscles, tendons, ligaments, and fascia with systematic techniques. Using endorphin release mechanisms, controlling nerve gates, and stimulating sympathetic nerves, massage therapy can lead to muscle relaxation (Khasanah & Wiwit, 2020). This is because massage stimulates the body to release Endorphin compounds which are pain relievers and can create a feeling of comfort (Rahmi et al., 2021).

According to the theory, Back massage stimulates a specific point along the spinal cord which is transmitted through the formatioreticular nerve fibers, thalamus, and limbic system of the body to release endorphins. Endorphin is a neotransmitter or neuromodulator that inhibits the delivery of pain excitatory by attaching to the receptorophysiological parts of the nerves and spinal cord so that it can block pain messages to higher centers and can reduce pain sensation (Aryani, Masrul, & Evareny, 2015).

Research conducted by Antik et al. (2017) with the title "the effect of endorphin massage on the scale of pain intensity during the active phase of labor" obtained the results of 23 respondents showed a better response to the scale of pain during labor after endorphin massage. Another 7 respondents showed no change. In 23 respondents who experienced changes for the better, this proved that endorphin massage is an effective method to reduce pain during labor (Antik & Handayani, 2017)

Endorphin massage treatment will be carried out during the active phase of labor considering that pain at this time is intermittent. This action is also expected so that the mother feels comfortable and can control her emotions to stay calm during labor so as not to increase the pain

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felt by the mother. This study aims to determine endorphin massage's effect on pain intensity in the first active labor stage at Public Health Center Mampang Prapatan District, South Jakarta.

METHOD

This study used a quasi-experimental design with pretest–posttest control group. This type involved two groups of subjects, one was given treatment (experimental group), and the other was given nothing (control group) with a population of all maternity mothers during the first stage of active labor and sampled according to Sugiyono's theory (2018), for experimental research use 10-30 respondents to represent the population (Sugiyono, 2018). The sampling technique used purposive sampling with inclusion criteria, like maternity mothers who enter the active phase (Openings 4 to 9), and in normal or physiological labor, while for exclusion criteria: maternity mothers who have contraindications to endorphin massage such as preterm, premature rupture of membranes, high-risk pregnancy, uterine contraction abnormalities; and Mothers who have swelling or tumors, hematomas, hot temperatures on the skin and the presence of skin diseases. The instrument used by the researcher is an observation sheet. The observation sheet in this study used a pain scale assessment that had been tested for validity and reliability. The first part of the research instrument on patient demographic data includes age and parity. The second part of the instrument used is to study data related to pain intensity, using a FLACC scale (Face, Legs, Activity, Cry, Controllability scale) that has been modified according to research needs in compiling observation sheet questions. This research will be carried out in November 2022, which will be carried out on maternity mothers who have entered the active phase during the first phase of childbirth at the Mampang Prapatan Health Center. The analysis used was the paired t-test, Wilcoxon, and Mann-Whitney. Before the research, researchers had conducted an ethical test at the Research Ethics Commission of the University of Respati Indonesia with letter number 039/SK.KEPK/UNR/II/2022.

RESULT

Table 1. Average Values of Pain Intensity Before and After the Intervention Group and Control Group

Group		N	Mean	Std. Deviation	Min	Max
Intervention	Before	15	8.07	0.884	7	10
	After	15	5.60	0.986	4	8
Control	Before	15	7.60	1.056	6	10
	After	15	7.93	1.100	6	10

Table 1 shows that the intervention group before endorphin massage averaged a pain intensity of 8.07 with a standard deviation of 0.884. After being given endorphin massage in the experimental group, the average pain intensity was 5.60 with a standard deviation of 0.986. In the control group, the average pain intensity before 7.60 with a standard deviation of 1.056, and the pain intensity after it averaged 7.93 with a standard deviation of 1.100.

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Table 2. Normality Assumption Test

		Shapiro-Wilk		
	Research Group	Statistics	df	Sig.
Pain Scale Before	Intervention	0.868	15	0.031
	Control	0.845	15	0.015
Pain Scale After	Intervention	0.863	15	0.027
	Control	0.924	15	0.218

Table 2 shows that the Significance values on both variables have probability values before and after<0.05 (p<0.05). This means that group data distribution is distributed separately in both pre-intervention and post-intervention groups. Test the hypothesis of this study using the Wilcoxon signed rank test using the SPSS 26 application. Here are the results of the analysis.

Table 3. Wilcoxon Test of Pain Intensity in the Intervention Group

Group Intervention	Mean	SD	Min	Max	p-value
Before the Intervention	8.07	0.884	7	10	0.001
After the Intervention	5.60	0.986	4	8	

Table 3 above found that the average pain intensity in the intervention group before endorphin massage was 8.07, and after endorphin massage, the average pain intensity was 5.60. This indicates a decrease in the intensity of pain. The Wilcoxon signed rank test shows that the p value is 0.001 the probability value is at 5% significance (p<0.05). From the results above, it can be concluded that the Ha hypothesis can be accepted so that there is a significant difference before and after endorphin massage is carried out on the intensity of pain during active labor. The difference in results was marked by decreased pain intensity after an endorphin massage was carried out on the mother when I was actively giving birth at the Mampang Prapatan Health Center, South Jakarta.

Table 4. Wilcoxon Test of Pain Intensity in the Control Group

Group Intervention	Mean	SD	Min	Max	p-value
Before the Intervention	7.60	1.056	6	10	0.059
After the Intervention	7.93	1.100	6	10	

In table 4 of the control group, it shows that the p-value of 0.059 probability value is at 5% significance (p>0.05). This means there is no noticeable or significant difference between the intensity of pain before and after in the control group for mothers during active childbirth at the Mampang Prapatan Health Center, South Jakarta.

Table 5. Differences in Pretest Pain Intensity in the Intervention Group and the Control Group

	Pain Intensity Before Intervention					
	Mean	SD	Min	Max	Mean Rank	p
Group Intervention	8.07	0.884	7	10	17.80	0.130
Control Group	7.60	1.056	6	10	13.20	

Table 5 shows that the average of pain intensity in the intervention group was 8.07 with a standard deviation of 0.884, and in the pain before the control group obtained a mean value of 7.60 with a standard deviation of 1.056. The mean rank value of pain intensity in the intervention

group was 17.80, and in the control group, it was 13.20. The p-value shows a result of 0.130. This means that 0.130 > 0.05, it can be concluded that there is no significant difference between the intensity of pain before endorphin massage is carried out in the intervention group and the control group for the mother when I was actively giving birth at the Mampang Prapatan Health Center, South Jakarta.

Table 6. Differences in Changes in Pain Intensity of Posttest Interventions in the Intervention Group and the Control Group

	Pain Intensity Before Intervention					
	Mean	SD	Min	Max	Mean Rank	p
Group Intervention	5.60	0.986	4	8	8.93	0.000
Control Group	7.93	1.100	6	10	22.07	

Table 6 shows that the mean value of pain intensity after the intervention group was 5.60 with a standard deviation of 0.986. In the pain after the control group obtained a mean value of 7.93 with a standard deviation of 1.100. The mean rank value of pain intensity after in the intervention group was 8.93 and in the control group it was 22.07. P value shows a result of 0.000. This means that 0.000 < 0.05, it can be concluded that there is a significant difference between the intensity of pain after endorphin massage in the intervention group and the control group for mothers when I was actively giving birth at the Mampang Prapatan Health Center, South Jakarta. Because there is a significant difference, it can be said that there is an influence of endorphin massage on the intensity of pain when I was actively giving birth at the Mampang Prapatan Health Center, South Jakarta.

DISCUSSION

Endorphin massage influences the intensity of pain during active labor. It was evidenced by the difference in the average pain intensity in maternity mothers as measured by the FLACC scale observation sheet. Based on the results of the Mann-Whitney test, the p-value was 0.000 with a probability value below 0.05. So endorphin massage significantly influences the intensity of pain during active labor.

This is in line with the results of research conducted by Nurkhasanah and Arni (2017), namely the intensity of pain after intervention in the intervention group obtained an average pain scale of 3.23 with a standard deviation of 1.013 and a standard error of 0.281. The average pain scale after intervention in the control group was 4.64, with a standard deviation of 1.008 and a standard error of 0.269. The results of the statistical test obtained a p-value of 0.001, so it can be concluded that there is a significant difference in the pain scale after the endorphin massage method was carried out in the intervention group and the control group (Nurkhasanah & Hesti, 2021).

Labor pain is a combination of physical pain due to the contraction of the myometrium and the strain of the uterus's lower segment fused with the mother's psychological condition during labor. The anxiety, fatigue, and worry of the mother are all fused so that they can alleviate the physical pain that already exists. Labor pains are experienced mainly during contractions (Indrayani, Djami, & Moudy, 2017).

Pain in childbirth manifests the presence of contractions (shortening) of the uterine muscles. This contraction causes pain in the waist and abdominal area and radiates toward the thighs. This contraction causes an opening of the uterine mouth (cervix). It is with the presence of this opening

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of the cervix that it will be childbirth. The pain experienced during childbirth is unique to each mother (Maryunani, 2016).

The mother feels pain during I or during contractions. In this condition, visceral pain occurs and feels like a feeling of mules emanating from the uterus and cervix. Pain is caused by stretching of the uterus and dilatation of the cervix. Pain is transmitted through the striped bone nerve system T10-L1. Pain can be felt in the abdominal wall, lumbosacral region, iliac crist, buttocks and thighs. The sensation makes the mother's expression look helpless, the mother's hearing ability, and concentration also decrease (Indrayani, Djami, & Moudy, 2017).

Endorphin is a combination of endogenous and morphine, which is a substance in the body that is an element of protein produced by body cells and the human nervous system. Endorphin in the body appearance can be triggered in various ways, namely deep breathing, touch or massage and meditation. Endorphin massage is a touch and massage technique in pregnant women. This technique can help provide a sense of calm and comfort during and before delivery. This is because massage stimulates the body to release endorphin compounds which are pain relievers and can cause feelings of comfort (Irawati, 2018). Endorphin is considered the best painkiller because it can be produced by the human body.

The benefits of endorphins massage are regulating the production of growth hormone and sex, controlling persistent pain and pain, controlling feelings of stress, and improving the immune system, so that endorphins in the body can be triggered through various activities, such as deep breathing and relaxation, as well as meditation that can be done on pregnant and maternity women (Kuswandi, 2011).

Pain gate control theory states that impulse pain can be regulated and inhibited by defense mechanisms along the central nervous system, where impulse pain is delivered when a defense is opened. Impulse is inhibited when a defense is closed. Pain gate control theory seeks to explain variations in pain perceptions of identical stimulation (Andarmoyo, 2013). Gate control theory to explain why rubbing or massaging a painful part after an injury can relieve pain, since this action stimulates the activity in the large fibers, so the gate for the activity of small diameter fibers (pain) is closed (Price & Wilson, 2014).

According to researchers' assumptions, administering endorphin massage when I was active affected the intensity of labor pain. Mothers who are given endorphin massage feel calmer, more comfortable, less restless, and can comfort themselves. When the delivery process goes easier because the mother can communicate and cooperate well. Meanwhile, in the control group, mothers tend to feel restless about childbirth and cannot control the pain that is felt, especially during contraction. the average mother uses pain control techniques with a walk, squat and sitting. Although labor pain is a physiological process, a method of controlling pain is needed so that childbirth can feel comfortable.

Respondents who were given endorphin massage experienced a decrease in the scale of pain. The respondent's condition before the endorphin massage experienced severe pain. The pain felt was evident from the mimic of the respondent's forehead-cramped face, the activity of appearing to bend stiffly, sometimes whimpering to tears and difficulty comforting or comforting. After being given endorphin massage respondents mostly experienced changes in pain, fine endorphin massage was done on parts of the body that can stimulate endorphin hormones so that the increase in endorphin hormones can inhibit the delivery of pain messages. The endorphin massage technique made respondents feel more comfortable and relaxed.

From the discussion above, it can be assumed that the administration of endorphin massage which is carried out as a form of intervention in maternity mothers who have entered the times

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when active in childbirth significantly influences reducing the intensity of pain when I am active in labor.

CONCLUSION

The intensity of pain before and after the intervention in the first group (intervention) showed a difference in the intensity of maternity pain before and after endorphin massage. However, there was no difference in the intensity of maternity pain before and after in the second group (control). The conclusion is that there were differences in pain intensity after endorphin massage methods in the intervention and control groups.

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