THE EFFECTIVENESS OF COUNTER PRESSURE AND ENDORPHIN MASSAGE ON REDUCING PAIN DURING FIRST STAGE OF LABOR IN INTRAPARTUM MOTHERS

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ABSTRACT

Background: Comfort measures that provide natural pain relief can be very effective during labor and childbirth. Birthing techniques such as hydrotherapy, hypnobirthing, patterned breathing, relaxation, and visualization can increase the production of endogenous endorphins that bind to receptors in the brain for pain relief. Other methods of comfort therapy such as effleurage (light rhythmic stroking of the abdomen), massage, and hydrotherapy can provide pain relief by naturally creating competing impulses in the central nervous system that can prevent the painful stimuli of labor contractions from reaching the brain. This study aimed to examine the effectiveness of counter pressure and endorphin massage on reducing pain during first stage of labor in intrapartum mothers.

Subjects and Method: This was a quasi experimental study. The study was conducted at private midwifery clinic in Tangerang, Indonesia. A number of 30 intrapartum mother was selected by accidental sampling and divided into two groups, (1) 15 mother were given counter pressure and endorphin massage (intervention group) and (2) 15 mothers were not given any intervention (control group). The dependent variable was pain labor. The independent variable was counter pressure and endorphins massage. Mean difference of pain labor after intervention was assessed by independent t-test.

Results: Pain labor in the intervention group (mean= 9.5; SD= 1.57) was lower compared to the control group (mean= 21.5; SD= 0.66) and it was statistically significant (p= 0.003).

Conclusion: Pain labor in the intervention group is lower compared to the control group. Keywords: counter pressure, endorphin massage, pain labor.

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BACKGROUND

Labor is the process of opening and thinning the cervix and uterine contractions, causing pain during labor (JNPK-KR, 2017). In the active phase of labor, the frequency and duration of uterine contractions increases and the pain becomes unbearable (JNPK-KR, 2017).

Labor pain is an uncomfortable feeling during labor associated with uterine contractions, cervical dilation and effacement, and fetal decline during labor (Bobak, 2012). This happens because every mother in labor will perceive a different pain to the same stimulus depending on the pain threshold she has (Rejeki S, 2014).
According to the World Health Organization (WHO, 2014), the maternal mortality rate (MMR) in the world is 210/100,000 KH, in developing countries 230/-100,000 KH and in developed countries 16/100,000 KH. MMR in Indonesia according to the 2015 SUPAS results obtained 305/100,000 KH (Budijanto, 2018). Based on the 2019 RAKERNAS, it was found that around 15% of pregnancies/delivery had complications and 85% were normal. Approximately 75% of maternal deaths are caused by bleeding, infection, high blood pressure during pregnancy, prolonged/obstructed parturition and unsafe abortion (Achadi, 2019). The Data Center for the Association of Indonesian Hospitals explained that 15% of MMR in Indonesia was caused by childbirth complications and 21% stated that the labor experienced was a painful delivery because of the extreme pain, while 63% did not receive information about the preparations that must be made to reduce pain in childbirth (Persari, 2018).

An initial survey conducted by researchers at one of the BPM in Tangerang City in October 2020 on 9 mothers giving birth using the interview method, it was found that 50% of Canadians experienced normal pain, 30% experienced severe pain so that the maternity mothers said they were reluctant to give birth normally. Go back and choose a method surgery because they are afraid to feel pain during childbirth. The most effective non-pharmacological approach to reducing labor pain is to provide relaxation techniques, namely breathing, relaxation, setting the mother's position and massage (Nurasiah, 2012).

The problem of labor pain is a feeling of discomfort during labor or the subjective experience of physical sensations associated with uterine contractions, cervical dilatation and effacement, and fetal descent during labor. This happens because every mother in labor will perceive a different pain to the same stimulus depending on the pain threshold she has, therefore there needs to be non-pharmacological measures to reduce labor pain in the first stage, namely using the counter pressure method and the endorphin massage method. Based on the background above, the formulation of the problem is: Is there a relationship between Counter Pressure and Endorphin Massage Techniques with first stage pain in women in labor?

The purpose of this study was to determine the effectiveness of counter pressure and endorphine massage techniques on first stage pain in women giving birth at Tangerang.

**SUBJECTS AND METHOD**

1. **Study Design**
This study was conducted using a quasi-experimental technique, namely using Counter Pressure and Endorphin Massage techniques to reduce first stage pain in Maternal Maternity with a non-randomized pretest post-test design.

2. **Population and sample**
The population in this study were all maternity mothers who came to the independent practice of midwives in the Tangerang city area in the period August to September 2021 as many as...
30 respondents, consisting of 15 respondents in the control group and 15 respondents in the intervention group.

3. Operational Definition of Variable
The operational definitions in this study are as follows: Labor pain is an uncomfortable feeling during labor or a subjective experience of physical sensations associated with uterine contractions, cervical dilatation and effacement, and fetal descent during labor. Counter pressure massage is a massage that is performed by applying continuous pressure during contraction of the patient’s sacrum with the base or fist of one hand or with a tennis ball. Endorphin massage, this light touch and massage technique is very important for maternity mothers to help provide a sense of calm and comfortable.

4. Variable
The independent variables in this study were Counter pressure massage and Endorphin massage, while the dependent variable was pain in the first stage of labor.

5. Instrument
Data was collected by filling out a questionnaire based on the McGill questionnaire to assess the intensity of pain before (pretest) and after (posttest) the action. Implementation of Counterpressure massage techniques and Endorphin Massage, namely when the patient experiences contractions.

6. Data Analysis
The analysis used univariate and bivariate with non-parametric test, then interpreted and drew conclusions about the effect of Counter Pressure and Endorphin Massage Techniques on First Stage Pain in Maternal Maternity. This study uses the Wilcoxon test and the Mann Whitney test (Sugiyono, 2012).

RESULTS
Respondents in this study were 30 respondents with 15 control groups and 15 intervention groups using Counter Pressure and Endorphin Massage techniques.

<table>
<thead>
<tr>
<th>Table 1. Characteristics of Respondents</th>
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<tbody>
<tr>
<td>Characteristics</td>
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<tr>
<td>Age</td>
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<tr>
<td>TBJ</td>
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<td>Pain experience</td>
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<table>
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<tr>
<th>Table 2. Pain level in first-stage labor during delivery before and after using Counter Pressure and Endorphin Massage</th>
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<tbody>
<tr>
<td>Category</td>
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<tr>
<td>----------------------------</td>
</tr>
<tr>
<td>Pre Intervention</td>
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<td>Post Intervention</td>
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<tr>
<td>Pre Control</td>
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<td>Post Control</td>
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https://doi.org/10.26911/ICPHmaternal.FP.08.2021.14
Table 3. Tests of the Effectiveness of Counter Pressure and Endorphin Massage on reducing pain in maternity mothers in the 1st stage of labor

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean Rank</th>
<th>SD</th>
<th>p</th>
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</thead>
<tbody>
<tr>
<td>Intervention Group</td>
<td>15</td>
<td>9.5</td>
<td>1.57</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Control Group</td>
<td>15</td>
<td>21.5</td>
<td>0.66</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Based on table 2, it is known that the decrease in pain intensity during the first stage of labor occurred in the intervention group (mean 4.80) where the group had massaged with counter-pressure techniques and endorphin massage methods compared to the control group (mean 7.00).

In table 3, it is known that from the Man Whitney test results obtained $p < 0.001$, it can be concluded that there is a significant difference between the intervention group using the counter pressure technique and the endorphin massage method and the control group.

**DISCUSSION**

Based on the results of the study, it can be seen that the average value of pain in first stage mothers before the counter pressure technique and the endorphin massage method was 7.07. The results also showed that the majority of pain in childbirth before being given counter pressure techniques and endorphin massage methods as many as 8 respondents (26.67%) experienced moderate pain, there were 20 respondents (66.67%) who experienced severe pain controlled and there were 2 respondents (6.67%) who experienced uncontrolled pain. After being given the counter pressure technique and the endorphin massage method, there was a change in the perceived pain intensity, as many as 4 respondents (13.33%) experienced mild pain, there were 12 respondents (40%) who experienced moderate pain, and there were 14 respondents (46.67%) who experienced mild pain. Based on the results of the study, it can be seen that there was a significant reduction in pain in the first stage of labor using the counter pressure technique and the endorphin massage method compared to the control group ($p < 0.001$) with a mean value of 4.8 in the intervention group and a mean value of 7.00 in the control group.

This also shows a conformity with the theory which states that light touch and massage techniques are very important for pregnant women to help provide a sense of calm and comfort both before and during the delivery process (Kuswandi, 2013).

Non-pharmacological methods can be used to reduce pain intensity, one of which is endorphin massage and counter pressure (Ma’rifah AR, 2014). Counter pressure massage is a massage that is performed by applying continuous pressure during contraction of the patient’s sacrum bone with the palm of one hand or fist. The counter pressure technique is carried out in the lumbar region where the uterine and cervical sensory nerves run with the 10-11-12 thoracic nerves to the 1st lumbar. Thus, these pain impulses can be blocked, namely by providing stimulation to large diameter nerves that cause gate control to be controlled. closed and pain stimuli
cannot be transmitted to the cerebral cortex (Ma’rifah, 2014).

Endorphin massage is a light touch/massage therapy given in the first stage of the active phase of labor (Leni, 2017). Endorphin technique is one of the brain chemicals known as neurotransmitters that function to transmit electrical signals in the nervous system. Endorphins can be found in the pituitary gland. Stress and pain are the two most common factors that cause the release of endorphins. Endorphins interact with opiate receptors in the brain to reduce our perception of pain and act similarly to drugs such as morphine and codeine. Unlike opiate drugs, however, activation of opiate receptors by the body’s endorphins does not cause addiction or dependence. (Stopler, 2017).

Endorphins have been known as substances that have many benefits including, regulating the production of growth and sex hormones, controlling persistent pain and pain, controlling feelings of stress, and increasing the immune system. Endorphine is actually a combination of endogenous and morphine, substances which are elements of proteins produced by body cells and the human nervous system. Endorphins in the body can be triggered by various activities, such as deep breathing and relaxation, touch/massage, and meditation. Because endorphins are produced by the human body itself, endorphins are considered the best painkillers (Ma’rifah, 2014).

This study is in line with Ma’rifah (2014), which shows that both techniques are effective in reducing pain, but if you look at the average pain reduction in the counter pressure technique, it is 2,364 greater than the average pain reduction in the endorphin massage technique, namely 2,273. From the results of the t-test, it was also found that the counter pressure technique was higher at 8,480 than the endorphin massage technique, which was 8,333, so it can be concluded that the counter pressure technique is more effective than the endorphin massage technique. This study provides recommendations to nurses or midwives so that they can help meet the mother’s need for comfort in pain control when providing help (Ma’rifah, 2014).

In line with the results of the study, it was found that there was an effect of decreasing labor pain in the active phase of the 1st stage (p <0.001), so it is recommended that the Counter-Pressure Technique be used as an alternative to non-pharmacological therapy in the management of labor pain in the active phase of the 1st stage (Persari, 2018). A study conducted at Ambarawa hospital, Semarang, in 2012 showed that the counter pressure technique was more effective in reducing labor pain compared to the back effleurage technique with a p=0.046 (Rejeki, 2014).

Dinengsih (2018) states that there is a significant effectiveness of the counter pressure technique on active phase 1 labor pain before and after the intervention with a p value of 0.001 (Dinengsih, 2018).

From the results of the study, it can be concluded that there is an effect of counterpressure techniques and endorphin massage methods on
reducing first-time pain in women in labor.

**AUTHOR CONTRIBUTION**
Siti Maisaroh, conducted a preliminary survey conducted at BPM Tangerang City Area, drafting research proposals, compiling research instruments, training in counterpressure massage and endorphin massage techniques, taking sample data, processing and analyzing data, reporting research results and publications. Diani Maryani, conducting research proposals, compiling research instruments, conducting licensing, collecting sample data, conducting training in counter-pressure massage and endorphin massage techniques, processing and analyzing data and reporting research results.

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