EFFECTIVENESS OF ENDORPHIN MASSAGE ON LABOR PAIN IN THE ACTIVE PHASE: EVIDENCE BASED CASE REPORT (EBCR)

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Abstract, Background: *:* In Indonesia, 16% of women labor experienced birth complications and 21% stated that the labor they experienced was painful because they felt excruciating pain. Pain is a cause of frustration and despair so some women labor often feel that they will not be able to undergo the birthing process. One non-pharmacological treatment to reduce pain is Endorphin Massage in the form of touch therapy or light massage performed on pregnant women before delivery.
Methods: Research was conducted through literature searches from several e-data-based sources such as Pubmed, Science Direct, and Google Scholar in 2018-2023.
Result And Discussion: Giving endorphin massage for 10 minutes during the first stage of labor in the active phase was proven to reduce the pain scale of women labor in labor
Conclusion: Endorphin massage is an effective way to reduce pain during the first active phase of labor.

Keywords: endorphin massage, first stage of labor, labor pain

Background

Based on the Indonesian Hospital Association Data Center, it is explained that 16% of mothers giving birth in Indonesia experience complications during childbirth, and 21% stated that the childbirth they experienced was painful because they felt extraordinary pain, while 63% did not receive information about complications during childbirth. (1)

Pain is a cause of frustration and despair so some mothers often feel that they will not be able to go through the labor process. Murray in Nurkhasanah (2021) reported the occurrence of pain in 2,700 mothers in labor, 15% experienced mild pain, 35% experienced decreased fetal oxygen supply and weakened uterine contractions, thus prolonging the labor process and can cause complications for the mother and fetus. (1)

Pain in labor causes easily recognizable symptoms. Increased activity of the sympathetic nervous system occurs in response to pain and can result in changes in blood pressure, pulse, respiration, and skin color. Affective changes include anxiety accompanied by the perception of narrowed airiness, groaning, crying, and hand movements (which indicate pain) with varying intensity in each person. (2)

Labor pain that occurs more frequently and for a long time causes the mother to be anxious, afraid and tense, even stressed, which results in the release of adrenaline,

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catecholamine, and steroid hormones. These hormones can cause smooth muscle tension and vasoconstriction of blood vessels which results in reduced blood flow and oxygen to the uterus, which can cause uterine ischemia, fetal hypoxia, and increased pain impulses. Labor pain can occur in all mothers giving birth, both primigravida and multigravida. The pain is caused by stretching of the perineum and vulva, vertical pressure on the uterus during contractions, and progressive pressure of the lower part of the fetus on the plexus lumbosacral, bladder, and other sensitive pelvic structures. (3,4)

One of the non-pharmacological treatments to reduce pain is with *Endorphins. Massage* in the form of touch therapy or light massage is performed on pregnant women before giving birth. Mothers giving birth usually feel anxious and worried about the labor process so the pain increases. *Endorphine massage* can also improve the immune system, reduce pain, reduce *stress*, and inhibit the aging process. This technique is done by giving a light massage from the left and right shoulders by forming the letter V towards the tailbone repeatedly when contractions occur during labor. (3)

Endorphin treatment *massage* will be performed during the active phase of labor considering that pain during this period is intermittent. This action is also expected to make the mother feel comfortable and control her emotions to remain calm during the labor process so as not to increase the pain. Massage therapy affects the surface of the skin, soft tissue, muscles, tendons, ligaments, and fascia with systematic techniques. By using the mechanism of endorphin release, controlling nerve gates, and stimulating the sympathetic nerves, massage therapy can cause muscle relaxation. (5)This is because massage stimulates the body to release endorphin compounds which are pain relievers and can cause a sense of comfort. (4)

massage stimulates specific points along the spinal cord which are transmitted through the formatioreticular nerve fibers , thalamus , and the body's limbic system to release endorphins. Endorphins are a neotransmitter or neuromodulator that inhibits the transmission of pain stimuli by attaching to the physiological receptor parts of the nerves and spinal cord so that they can block pain messages to higher centers and can reduce pain sensations. (6)

The case was taken at a Primary Health Center in Bandung. Mrs. D, 20 years old, came to the Health Center on September 18, 2023 at 18.00 WIB, claiming to be 9 months pregnant with her first child, complaining of cramps since 15.00 WIB, bloody mucus had come out but no water has come out of the birth canal. The mother still feels fetal movement until now. The mother said that this is her first pregnancy and has never had a miscarriage. HPHT: 25-12-2022. TP: 02-10-2023. The mother complained of pain during contractions. Then the pain scale was measured using a Numeric measurement scale Rating Scale (NRS). Maternal pain on a scale of 1-10 is 8 (severe pain).

Physical examination results showed that BP: 100/70mmHg, N: 85x/minute, R: 23x/minute, S: 36.4°C. The conjunctiva of the eyes was pink, the sclera was white. Breasts: nipples protruding, there was already colostrum discharge. Abdomen: There were striae gravidarum, no surgical scars, TFU: 32 cm, Leopold I: The buttocks can be felt, Leopold II: The fetal back can be felt on the left side of the mother, Leopold III: The fetal head can be felt, Leopold IV: Divergent. Fifth 3/5. Contraction 3x10'35". Fetal heart rate 150x/minute, regular. Internal examination: v/v normal, portio thick soft, 5 cm dilation, intact cervix, head presentation, station 0, molasses 0, no small prominent parts. Diagnosis of G1P0A0 inpartu case aterm kala 1 active phase, single fetus alive intrauterine, head presentation.

The formulation of the problem in this case study is how effective endorphins are. massage to reduce pain in mothers giving birth during the active phase?

PICO
P: *Labor / first stage*

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I: *Endorphin massage*
C: *No comparison*
O: *Labor pain*

Methods

Evidence search method *based on* this using *e-data based* Pubmed , Science Direct , and Google Scholar . The keywords and *boolean operators* used during the search were *First stage OR Labor AND Endorphin massage AND Labor pain*. Use *OR* to expand the search and use *AND* to focus the search. The journal articles that have been found are then selected using the limitation of the year of publication, namely the last 5 years, from 2018 to 2023, *full text ,* the research design used is *randomized control trial, systematic review, quasi experiment,* and pre- experiment in both English and Indonesian.

Based on the screening results, 4 articles were used in the literature review of this research. The four journal articles were then identified in terms of research design, validity, importance, and applicability.

From the results of the journal literature search, 3 articles were found that can be used in the application of EBCR regarding endorphin massage to reduce labor pain in mothers giving birth in the first active phase. Based on the first article entitled *" Endorphin Massage on Intensity of Pain in the First Stage of Active Labor "* stated that the level of pain in the intervention group before endorphin massage had an average pain intensity of 8.07. After endorphin massage was given to the experimental group, the average pain intensity was 5.60. In the control group, the average pain intensity before was 7.60 and the average pain intensity after was 7.93.

The second journal entitled *" Effect Of The Birthball Method And Massage Endorphin On The Intensity Of Labor Pain "* states that the pain scale measurement before being given an endorphin massage was 6.5 and after being given it dropped to 4.1.

In the third journal with the title "The Effect of *Endorphins Massage* on Pain Intensity in Women Giving Birth in the First Active Phase" shows that before endorphins were given massage Most respondents experienced labor pain in the first stage on a moderate pain scale, whereas after being given endorphins massage most respondents experienced labor pain in the first stage on a mild pain scale. Therefore, there is an effect of giving *endorphins massage* on pain intensity in mothers giving birth in the first active phase.

In the case of the research conducted, previously the mother was assessed on the scale of pain felt by the mother using the *Numeric method. Rating Scale* (NRS) 1-10 is 8. In the objective data, it can be seen that the mother feels anxious and feels pain during the labor process in the first active phase, especially during contractions. So the researcher carried out *endorphin care massage* to reduce pain and make the mother feel comfortable during labor. After being done *endorphin massage* for 20 minutes and an evaluation was carried out on the pain scale felt by the mother which decreased to around 5.

Results And Discussion

Based on the literature search and journal review that has been carried out, several journals were found that were in accordance with the research and then *Evidence was created. Based Case Report* (EBCR)

Labor pain can be caused by contractions, stretching of the perineum, vulva, uterine pressure cervical during contractions. Progressive pressure of the lower part of the fetus on the plexus lumbosacral, bladder, bowel, and other pelvic (6)

Pain cannot be measured objectively, but the type of pain that occurs can be predicted based on signs and symptoms or based on the patient's speech and behavior. Patients are sometimes asked to describe their pain verbally as mild, moderate, or severe.

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(7)The numeric rating scale is one of the most commonly used pain scales in medicine. The NRS consists of a numeric version of the visual analog scale. The most common form of the NRS is a horizontal line with an eleven-point numerical range. It is labeled from zero to ten, with zero being an example of someone with no pain and ten being the worst pain. This type of scale can be given verbally. (8)

When a mother experiences pain during labor, she is given *endorphins. massage* to increase success which shows that massage provides pressure that can prevent or inhibit pain impulses originating from the cervix and uterine corpus using the *gate theory as a basis control*, by using pressure, the pain that spreads from the afferent fibers to reach the thalamus is blocked. This can happen because the delta A and delta C pain afferent cells that come from receptors throughout the body when the pain transmission must enter the medulla spinalis through the back root and synapse in the gelatinous lamina II and lamina III are blocked so that the synapse does not spread to the thalamus so that the quality and intensity of pain are reduced. The sensation of pain is transmitted along the sensory nerves to the brain, and only a certain number of sensations or messages can be transmitted through the nerve pathway at the same time by using endorphin massage techniques the intensity of pain felt by the mother is reduced and tension does not occur, so that ineffective uterine contractions due to pain can be prevented, so that prolonged labor does not occur. (9)

In this case, the mother's pain score before *endorphin was administered massage* in *Numeric Rating Scale* (NRS) 1-10, namely 8. After intervention and evaluation, the pain scale felt by the mother decreased to around 5.

This is in line with Dahlan's research (2023) The results of the intervention group before endorphin massage had an average pain intensity of 8.07. After being given endorphin massage in the experimental group, the average pain intensity was 5.60. In the control group, the average pain intensity before was 7.60 and the average pain intensity after was 7.93. (10) Supported by Hairunnisyah's research (2022) The results of the pain scale measurement before being given endorphin massage were 6.5 and after being given it decreased to 4.1. (11)

Acupressure or acupressure is a development of acupuncture techniques. In principle, the purpose of these two treatments is no different, both are used to stimulate points on the body, pressing until they enter the nervous system. By doing acupressure using only finger movements and pressure such as rotating pressure, point pressure, and straight pressure, it is almost similar to the *Endorphin massage technique* (a light touch/massage therapy). (12)

Labor pain can be controlled by providing stimuli to stimulate local endorphin production, in addition, the main action of this endorphin massage is to inhibit the passage of pain stimuli to higher centers in the nervous system. (13)Furthermore, tactile stimulation and positive feelings, which develop when a form of caring and empathetic touch is performed, act to strengthen the effects of *massage* to control pain. How *Endorphins Work Massage* in reducing pain the theory of light touch is about smooth muscles that are just below the surface of the skin. (5)Touch or massage that is done can also help increase the release of the hormone oxytocin and through increased endorphins the transmission of signals between nerve cells so that it can reduce the intensity of labor pain. (5)

There are two types of pain impulse transmitters that function to regulate pain, namely A fibers and C fibers (small diameter receptors) and large diameter transmitters (A-Beta), when stimulation occurs the fibers carry them to the medulla. spinalis. Physiological effects affect endorphin massage on blood circulation in the deepest part of the tissue and in the muscles. In addition, when massage is done, the body releases endorphin compounds as a natural body pain reliever and creates a feeling of comfort. The theory of pain states that endorphin massage prevents the sensation of pain from traveling to the

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central nervous system. (5)

Endorphin massage has benefits in reducing or eliminating pain in mothers who are in the process of giving birth. (14) Endorphin massage techniques involve light touch and massage that can help stabilize heart rate and blood pressure, as well as increase relaxation conditions in the body of pregnant women. Endorphin massage also stimulates the release of substances oxytocin, a hormone that facilitates the labor process. Through skin surface stimulation, endorphin massage can create a feeling of comfort for pregnant and laboring mothers. (15)

Conclusion

From several journal articles reviewed for Evidence Based Case Report (EBCR) it can be concluded that endorphins Massage is an effective way to reduce pain during the first active phase of labor.

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