Women, Midwives, and Midwifery
https://wmmjournal.org
Publisher: Asosiasi Pendidikan Kebidanan Indonesia (AIPKIND)
http://aipkind.org

Narative Review The Effect of Endorphin Massage and Counter Pressure During Labor On Endorphin Hormone Release

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ABSTRACT

Background: Labor pain is a subjective experience associated with uterine contractions, stretching of the cervix, and descent of the fetal head. According to the World Health Organization (WHO), every year, 210 million pregnancies occur in the world, and 20 million women experience pain due to childbirth. Of the 2700 mothers giving birth, 30% experienced severe pain, 20% of labor was accompanied by very severe pain, and 15% experienced mild pain. Non-pharmacological therapy continues to be developed in the world of obstetrics, which aims to provide comfort during the birthing process. Endorphin massage and counter pressure are non-pharmacological therapies that can stimulate the release of endorphins and reduce pain and anxiety during childbirth.

Objective: This study aims to determine the effect of endorphin massage and counter pressure during labor on the release of endorphin hormones and their benefits.

Methods: This research method was a literature review study. Journal searches were carried out by applying online databases such as PubMed, Garuda Portal, ScienceDirect, and Google Scholar. Articles were selected based on inclusion and exclusion criteria.

Results: The analysis was carried out on 32 research articles. It was found that endorphin massage and counter pressure are non-pharmacological techniques to overcome and reduce labor pain and anxiety through the help of endorphin hormones which are useful for a smooth delivery process.

Conclusion: The influence of endorphin massage and counter pressure during labor on the release of endorphin hormones, which are useful for reducing labor pain, reducing anxiety, increasing comfort, and speeding up the labor process.

Keywords: *Endorphin massage, counter pressure, hormone beta-endorphin levels, labor pain*

Corresponding email: yulizawati@med.unand.ac.id
Submitted: 29 February 2024; Accepted: 02 April 2024; Published: 30 June 2024

ISSN: 2775-4448
DOI: https://doi.org/10.36749/wmm.4.2.56-72.2024

BACKGROUND

Childbirth is a physiological process, namely the expulsion of the products of conception from the mother's uterus to the outside(Thornton et al., 2020). Labor begins with uterine contractions and the opening of the cervix.(Kenneth J. Leveno, Catherine Y. Spong, Jodi S. Dashe, Brian M. Casey, Barbara L. Hoffman, F. Gary Cunningham, 2018) However, childbirth is often considered a frightening process because of the intensity of the pain felt. The reason this pain occurs is because the levels of hormones estrogen and progesterone in the body decrease, thereby stimulating the release of the hormone oxytocin (Thornton et al., 2020). The pain felt is often accompanied by fear and anxiety related to the increasing pain felt.

According to The World Health Organization (WHO), every year, 210 million pregnancies occur in the world, and 20 million women experience pain due to childbirth. Of the 2700 mothers giving birth, 30% experienced severe pain, 20% of labor was accompanied by very severe pain, and 15% experienced mild pain (World Health Organization, 2018). The negative consequences of the pain felt during childbirth will encourage many women to refuse normal childbirth and the high rate of cesarean delivery without medical indications (Stoll et al., 2020). This happens because the current management of labor pain is not effective enough, so the mother in labor cannot adapt to the pain she feels, which makes the mother traumatized by her birth (Wang et al., 2020).

Pain management during labor can generally be done with pharmacological therapy and non-pharmacological therapy (Pratiwi et al., 2021). Non-pharmacological therapy continues to be developed in the world of obstetrics with the aim of providing comfort during childbirth. Minister of Health Decree 320 of 2020 concerning Professional Standards for Midwives also regulated the use of relaxation techniques and strategies to relieve pain during childbirth (Kashanian et al., 2010). One of the most common and widely used methods to reduce labor pain is massage (Wanyenze et al., 2022).

Massage is healing or traditional health therapy that involves applying pressure to the body, whether structured, unstructured, permanent, or moving by applying pressure, movement, or vibration, whether done manually or using mechanical tools (Hajiamini et al., 2012). Massage is one of the gate control techniques. According to the Gate Control Theory illustration, pain nerve fibers carrying stimulation to the brain are smaller, and the transmission travels more slowly than large touch fibers (Faadhilah & Y, 2022).

Several studies have proven that massage can reduce the intensity of pain because it can stimulate endogenous analgesics (endorphins) and disrupt pain transmission by increasing the circulation of neurotransmitters produced naturally by the body at the synapses in the central nervous system. Endorphin massage is a light touch or massage therapy that can be given during pregnancy, before and during delivery. Endorphin massage is a method to stimulate the production of endorphin hormones in the body (Sari et al., 2020). Meanwhile, counter pressure is a massage technique that places pressure on the source or area of back pain or the sacrum during contraction. This technique will cause the blocking of pain impulses, which will be transmitted more quickly to the brain (Hazma et al., 2022).

After considering the brief explanation above, the author is interested in doing a literature study regarding the effect of endorphin massage and counter pressure during labor on the release of endorphin hormones and their benefits. Every mother giving birth will experience the consequences of uterine contractions and cervical dilatation. Therefore, efforts that can be made to reduce the intensity of pain during childbirth include endorphin massage and counter pressure, which can stimulate the release of endorphins so that pain impulses are blocked and not transmitted to the brain.

OBJECTIVE

The primary objective of this study is to explore and evaluate the effects of endorphin massage and counter-pressure techniques during labor, specifically focusing on their role in stimulating the release of endorphin hormones. Additionally, the study aims to assess the potential benefits of these techniques in alleviating labor pain and enhancing the overall childbirth experience for expectant mothers.

METHODS

The method used in writing this article is a narrative literature review. This literature study was conducted from July to December 2023, Data collection was carried out through four databases: PubMed, Google Scholar, ScienceDirect, and Portal Garuda. The keywords used in the journal search are “endorphin massage” OR “back massage” OR “counter-pressure” OR “sacral massage” OR “deep back massage” AND “hormone beta-endorphin levels” AND “labor pain” in English and Indonesian.

The inclusion criteria for journal searches are full-text journals that discuss the topic of the effect of endorphin massage and counter pressure during labor on the release of endorphin hormones and their benefits, primary research journals, English-language international journals indexed by Scopus, Indonesian-language national journals indexed by SINTA 1, 2, 3, and 4, and year of publication: 2018-2023. Meanwhile, the exclusion criteria is a journal that discusses the topic of endorphin massage and counter pressure, not during childbirth.

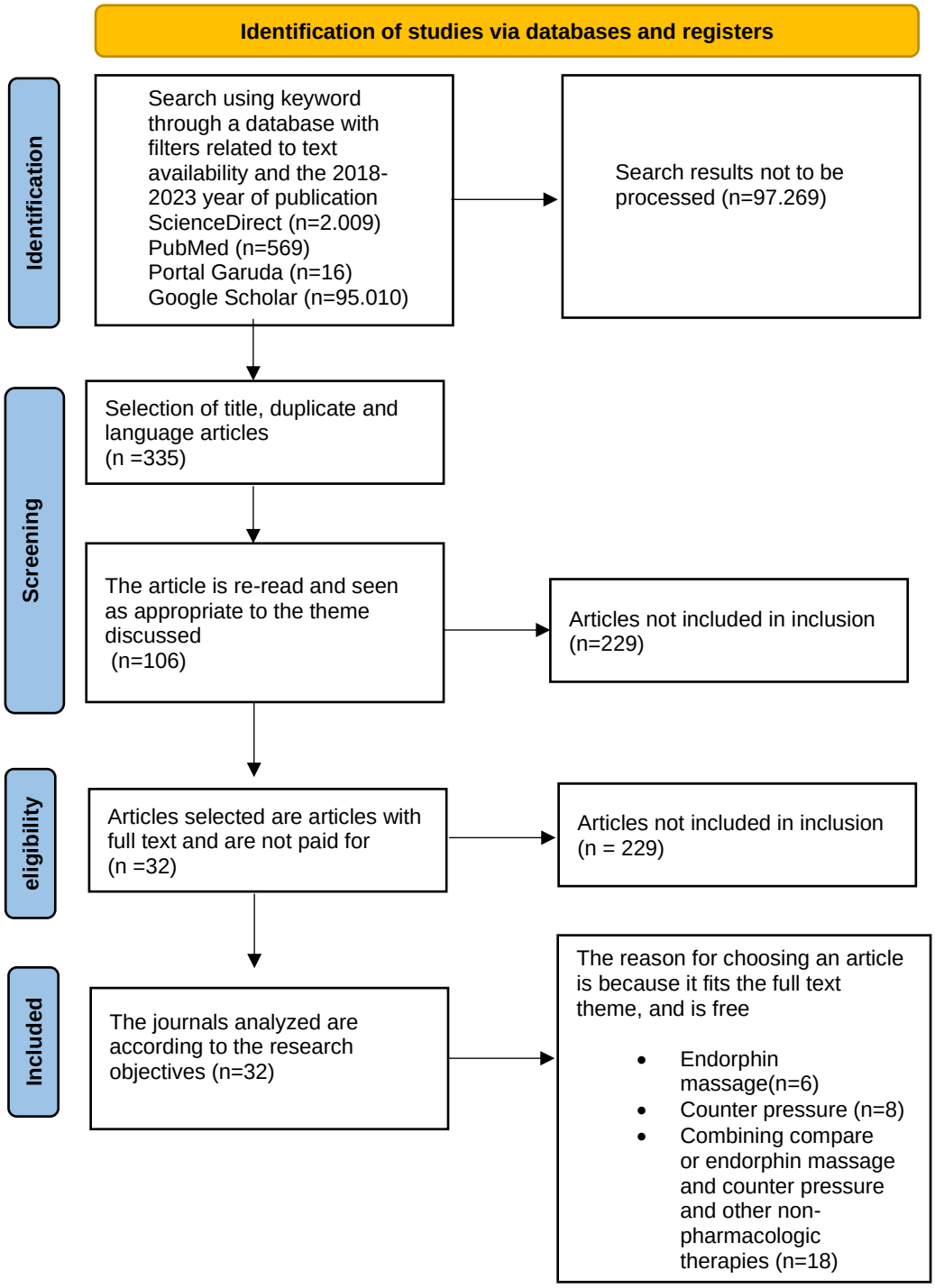

Figure 1. Journal Selection Steps

RESULTS

Journal searches are carried out through a database, selecting journals based on the criteria for inclusion and exclusion of established literature studies.

Relevant articles based on the inclusion criteria that were found in the four databases are 32 articles in 32 journals. In the analyzed articles, 6 articles discuss the effects of giving endorphin massage during labor on the release of endorphin hormones and reducing labor pain (source: Google Scholar, and Portal Garuda). In addition, 8 articles will be analyzed on the effects of giving counter pressure during labor on the release of endorphin hormones and reducing labor pain (source: PubMed, Portal Garuda, and Google Scholar), and 2 articles discuss giving endorphin massage and counter

pressure reduce labor pain (source: Google Scholar). As well, 16 other articles illustrate carrying out endorphin massage and counter pressure by combining it with another nonpharmacological therapy to reduce labor and other benefits.

No	Title/Author/Year	Country	Objective	Method	Result
1.	Effect of Change in Position and Back Massage on Pain Perception during First Stage of Labor/Suad Abdul- Sattar Khudbur Ali, Hamdia Mirkhan Ahmed/2017	Iraq	To identify the impact of position changes or back massage on pain perception in the first stage of labor.	A quasi-experimental study • Intervention position changes are carried out for 10 minutes, rest for 10 minutes • Back massage is done for 20 minutes during contractions • It begins Active phase 1st stage (3-4 cm opening)	It shows that back massage is more effective in reducing pain in women during the 1st active phase than changing position.
2.	Reduction of Labour Pain with Back Massage/ Rosmiarti, Riska Marlin, Murbiah/ 2020	Indonesia	To determine the effect of back massage on reducing active phase labor pain	A quasi-experimental design • It begins when entering stage, I of the active phase. • Massage is carried out for 30 minutes	Shows that giving a back massage for 30 minutes during the labor process has an effect on reducing labor pain during the 1st stage of the active phase
3.	Massage and Heat Application on Labor Pain and Comfort/Hulya Turkmen, Nazan Tuna Oran/2018	Turkey	To determine the effect of sacral massage and the application of heat on the perception of labor pain and the mother's comfort level.	A quasi-randomized controlled experimental study • Massage is carried out for 10 minutes • Heat application is carried out for 20 minutes • Begins during the first stage of the active phase (4-5 cm, 6-7 and 8-9 cm opening)	Shows that the application of sacral massage therapy reduces the perception of labor pain.
4.	The Effect of Sacral Massage on Labor Pain and Anxiety/Semra Akkoz Cevik/2019	Turkey	To determine the effect of sacral massage on labor pain and anxiety	A randomized controlled experimental study	Shows that sacral massage performed during labor reduces pain, reduces levels of worry and anxiety,

				• Sacral massage is performed for 30 minutes • Massage begins at each stage of labor, latent (3-4 cm), active (5-7 cm) and transition (8-10 cm)	results in increased satisfaction with the labor process, has a positive effect on labor
5.	The Effect of Using Endorphin Massage for Decreasing at First Stage in Normal Labor/Siti Choirul Dwi Astuti, Riana Trinovita Sari/ 2022	Indonesia	To determine the effect of endorphin massage on pain suppression in the active phase of normal labor in multiparous mothers	Quasi experimental with a cross sectional approach (pretest-posttest) • Massage is carried out for 20 minutes • Massage is carried out during the active phase of normal labor normal	Shows that there is an influence of endorphin massage on the intensity of normal labor pain in multiparous mothers.
6.	Package of Birthing Ball, Pelvic Rocking and Endorphin Massage (BPE) Decrease The First Step Labor Pain/Nila Marwiyah, Lenny Stia Pusporini/2018	Indonesia	To find out the effect of the birthing ball package, pelvic rocking (shaking the pelvis) and endorphin massage	Quasi Experimental (one group pretest and posttest) • Intervention, birth ball, pelvic rocking and endorphin massage are carried out for 20 minutes during labor pain • Massage is carried out during the first stage of the active phase (cervical dilatation 4-8 cm)	Data shows that the combination of birthing ball, pelvic rocking and endorphin massage has a significant effect on 1st stage labor pain.
7.	Counter Pressure dan Effleurage Massage Effectively reduces 1st stage labor pain/ Matilda Paseno, Rosmina Situngkir, Heny Pongantung,	Indonesia	To determine the difference in the effectiveness of counter pressure massage and effleurage massage for 1st stage labor pain at the Pertiwi Mother and	Quasi Experiment (pretest posttest control design) • Massage begins during the first stage	Shows that counter pressure massage and effleurage massage can have an impact on reducing pain intensity in the 1st stage of labor, but the results show that

	Febriana Wulandari, Desi Astria/2019		Child Hospital, Makassar.	of the active phase during contractions • How long the massage takes is not explained in the journal	counter pressure massage is more effective.
8.	Application of Counter Pressure to Reduce Labor Pain at Rahayu Clinic Ungaran/Tya Lestari, Ari Andayani/2021	Indonesia	To determine the effectiveness of counter pressure in reducing labor pain during the first active phase at the Rahayu Ungaran Clinic	Pre-Experimental (one group pretest-posttest) • Massage is carried out in the first stage during labor pain • How long the massage takes is not explained in the journal	Shows that giving counter pressure massage to mothers in labor during the first active phase can reduce labor pain, this is proven based on a decrease in pain intensity before and after the intervention.
9.	The Effect of Endorphin Massage on Anxiety in Maternity Women at TPMB Feby Jatinegara/Feby Margarite Dupe, Imroatul Azizah/2023	Indonesia	To determine the effect of endorphin massage on maternal anxiety at TPMB Feby Jatinegara	Pre experimental (one group pretest-posttest) • This massage is carried out for 20 minutes every hour during labor • Massage is performed during the first stage of labor	Shows that there is an influence of endorphin massage on the anxiety of mothers giving birth before and after the intervention.
10.	Effect Endorphin Massage on Anxiety Labor Levels of First Stage/Anis Nikmatul Nikmah, Dhita Kris Prasetiyanti, Eko Winarti, Karima Meireza, Hiromi Ogasarawa/2022	Indonesia	To prove the effect of endorphin massage on maternal anxiety levels in the 1st stage	Pre experimental (one group pretest-posttest) • Endorphin massage is done by the husband for 10 minutes or 20 minutes in 1 hour and every 10 minutes in 30 minutes during contractions • Massage is performed during the first stage of labor	Shows that the average respondent experienced severe anxiety before being given an endorphin massage, but after being given an endorphin massage the average respondent experienced moderate anxiety, which means that there is an influence of endorphin massage on the level of anxiety in the 1st stage of labor
11.	The Effect of the Birthball Method and Endorphin Massage on the Intensity of	Indonesia	To determine the effect of the birth ball method and endorphin massage	Quasi experiment (pre	Research results show that the birth ball and endorphin massage

	Labor Pain in Mothers Giving Birth/Rika Hairunnisyah, Ekadewi Retnosari/2022		on the intensity of labor pain in independent midwife practice (PMB) Yuniarti and Piska Mariati in 2021	posttest with control group) • Birth ball is done for 30 minutes while endorphin massage is done for 15 minutes. • Carried out during the first active phase	methods are both effective in reducing labor pain
12.	The Effect of Endorphin Massage on the Anxiety Levels of Primigravida Mothers/ Diana Arianti, Ledia Restipa/2019	Indonesia	To study and identify the effect of endorphin massage on anxiety levels in 1st stage pregnant women in private practice midwives in the working area of the Tunggul Hitam health center, Padang City.	Quasi Experimental (two group pretest-posttest design) • Massage is performed during the first stage of labor • How long the massage takes is not explained in the journal	Shows that there is a significant level of anxiety in the experimental group before and after being given endorphin massage and there is a significant level of anxiety in the control group before and after not being given endorphin massage
13.	Effectiveness of Deep Back Massage and Endorphin Massage on Pain Intensity During 1 Active Phase at BPM Setia/Artika Dewie, Merey Joice Kaparang/2020	Indonesia	To determine the effectiveness of the deep back massage and endorphin massage methods on pain intensity during the first active phase at BPM Setia	Pre experimental (two group pretest posttest) • This massage is carried out for 20 minutes/hour during the active phase of labor	This shows that deep back massage and endorphin massage techniques are both effective in reducing labor pain during the first active phase.
14.	Effectiveness of Endorphin Massage and Counter Pressure on the Intensity of Labor Pain in the 1st Stage/Benny Karuniawati/2019	Indonesia	To find out the difference in the effectiveness of endorphin massage and counter pressure	Pre experimental (pretest posttest design) • Massage is performed during the first stage of labor • How long the massage takes is not explained in the journal	Showed that there is no difference in effectiveness between endorphin massage and counter pressure
15.	The Effect of Giving Endorphin Massage on Pain Intensity in the Physiological Labor Process/Sumawati, Putu Mastiningsih/2019	Indonesia	To analyze the effect of endorphin massage techniques on pain intensity during the physiological labor process	Pre experimental (one group pretest posttest design)	Shows that there is a decrease in labor pain before and after the intervention. Of the 16 respondents, the majority experienced

				• Massage is carried out for 30 minutes • Massage is performed during the first stage of labor	severe pain before the intervention and after the intervention the majority experienced moderate pain
16.	The Effect of Endorphin Massage on The Intensity of Pain in The Normal Primipara Mother in BPS Ririn Dwi Agustin Jombang/Hidayatun Nufus/2018	Indonesia	To determine the effect of endorphin massage on the intensity of pain in the first stage of primiparous women giving birth normally at BPS Ririn Dwi Agustin Jombang	A quasi-experimental quantitative with posttest only control group design. • Massage is performed during the first stage of labor • How long the massage takes is not explained in the journal	The results showed that there was an effect of endorphin massage on the intensity of normal labor pain in the first stage of primiparous mothers at BPS Ririn Dwi Agustin.
17.	The Difference Between Rolling Massage and Counter Pressure Massage for Mothers in Labor in the 1st Active Phase on Reducing Pain Scale at PMB Domingas Surabaya/Arkha Rosyaria, Kholifatul Ummah/2022	Indonesia	To find out the difference between rolling massage and counter pressure on reducing the pain scale at PMB Domingas Surabaya	Quasi experiment with two group design posttests • This massage is carried out for 20 minutes • Performed during the first stage of the active phase when there are contractions	This data shows the influence of counter pressure massage on the pain level of primigravida mothers during the first active phase
18.	Tren of Non Pharmacoloical Therapy for First Phase of Active Labor Pain/Agus Gunadi, Nurhayati Adnan, Fitrianingsih Endang Cahyawati, Tri hapsari Listyaningrum, Sri Sumaryani/ 2022	Indonesia	To determine the effectiveness of warm compress therapy and counter pressure massage, either alone or in combination, for the management of labor pain during the active phase of the first stage	Quasi Experimental (two group pretest-posttest design) • Warm compress therapy is carried out for 20 minutes, while counter pressure is carried out for 30 minutes during the first stage of the active phase of labor	Shows that there are significant differences between the three groups, with the results of combination therapy showing the highest pain reduction effect on pain levels during the first active phase, however, counter pressure massage therapy shows better effectiveness than warm compresses and combination therapy.

19.	The Effectiveness of Counter Pressure Massage on Pain Intensity in the 1st Stage of the Active Phase of Labor at the Langgam Inpatient Health Center, Pelalawan Regency/Isrowiyatun Daiyah/2020	Indonesia	To analyze the effectiveness of counter pressure massage on the level of labor pain during the first active phase	Pre experimental (one group pretest and posttest design) • Massage is performed during the first stage of labor • How long the massage takes is not explained in the journal	The results of the study prove that there is a difference in pain intensity before and after being given counter pressure massage
20.	The Effect of Counter Pressure Massage on the Length of the 1st Stage of the Active Phase of Normal Labor/Yussie Ater Merry, Mardiani Bebasari, Olana Rahma Ridanta/2023	Indonesia	To determine the effect of counter pressure massage on the length of the first stage of the active phase of normal labor	Pre experimental (static group comparison) • This massage is done for 20 minutes/hour • Massage is carried out during the first active phase (opening > 4cm)	Shows that there is a significant difference in the length of labor in the 1st active phase between the treatment group the control group which means that there is an influence of giving counter pressure massage on the length of the 1st stage of the active phase of normal labor
21.	The Difference of Pain Labor with Counter Pressure and Abdominal Lifting on Primigravida in Active Phase of First Stage Labor/Tuti Oktriani, Ermawati, Hafni Bachtiar/2018	Indonesia	To analyze the difference between counter pressure and abdominal lifting on reducing labor pain during the first stage of the active phase	Experimental with pretest posttest design • Massage is performed during the first stage of labor • How long the massage takes is not explained in the journal	The results showed that abdominal lifting is more effective in than counter pressure.
22.	Effect of Counter Pressure with Birth ball on Reduction of Labor/Wira Ekdeni Aifa, Fajar sari Tanberika, Sumandar/2022	Indonesia	To determine the effect of counter pressure and birth ball on reducing pain in the first stage of labor	Pre experimental • Massage and birth ball are carried out for 20 minutes. • Performed during the first stage of the active phase, namely the maximum dilation phase (4-9 cm) and the deceleration	Shows that before using counter pressure with a birth ball, the average mother's labor pain was severe pain, but after counter pressure and birth ball were applied, the average mother's labor pain was moderate pain and mild pain.

				phase (9-10 cm)	
23.	Effectiveness of the Firm Counter Pressure Technique and Deep Back Massage Technique on Pain Intensity in Mothers in Labor during the 1st Active Phase/Awwalul Wiladatil Qodliyah/2021	Indonesia	To determine the effectiveness of the firm counter pressure technique and the deep back massage technique to overcome pain in mothers giving birth during the first active phase	Quasi experiment design with pre-post nonequivalent control group • Massage is carried out for 20 minutes • Massage is carried out during the active phase or after delivery	It was found that there was a difference in the effectiveness of using the firm counter pressure technique and the deep back massage technique on the pain intensity of mothers during labor 1 active phase
24.	Effectiveness of Effleurage and Counter Pressure Massages in Reducing Labor Pain/Retty Nirmala Santiasari, Detty Siti Nurdaiti, Wiwin Lismidiati, Noer saudah/2018	Indonesia	To analyze the effectiveness of effleurage and counter pressure massage in reducing labor pain during the first active phase	Quasi experiment design with pre-post nonequivalent control group • Massage is carried out for 30 minutes, carried out during the first active phase	Shows that the effleurage and counter pressure techniques can reduce labor pain in the 1st stage of the active phase and from the results both methods, it was found that there was no significant difference between effleurage and counter.
25.	The Effect of Counter Pressure Massage Technique on the Intensity of Reducing Labor Pain during the 1st Active Phase at BPM Herasdiana/Selvy Apriani, Enderia Sari/2021	Indonesia	To determine the intensity of labor pain before and after counter pressure massage and the effect of the counter massage technique	Quasi experiment with design one group pretest posttest • Massage is carried out during the first stage of the active phase of labor • How long the massage takes is not explained in the journal	Shows that there is a difference in pain intensity before and after counter pressure. The results of statistical tests show that there is a significant difference in the average pain intensity before and after doing it.
26.	Counter Pressure and Effects on Labor Pain in the 1st Stage of the Active Phase in Primigravida Mothers/Ririn Harini/2018	Indonesia	To find out how effective counter pressure is on labor pain in the active phase of 1st stage in primigravida mothers at Kanjuruhan Hospital, Malang Regency.	Pre experimental • Pemijatan dilakukan pada kala I fase aktif persalinan • How long the Massage is carried out during the first stage of the active	It shows that in the 10 treatment groups there was a significant reduction in pain before and after being given treatment. It can be concluded that there is a significant difference in the reduction of labor pain during the first active phase in primigravida mothers

				phase of labor. • How long the massage takes is not explained in the journal	
27.	Counter Pressure Massage Technique for Reducing Pain Intensity in the 1st Stage of the Active Phase in Maternity Women at Dr. M.M Dunda Limboto Regional Hospital, Gorontalo Regency/Endah Yulianingsih, hasnawatty Surya Poruw, Suwarni Loleh/2019	Indonesia	To analyze the effect of counter pressure massage techniques on reducing pain intensity during the first active phase in mothers giving birth	Pre experimental with one group pretest-posttest design • Massage is carried out during the first stage of the active phase and during contractions • How long the massage takes is not explained in the journal	Shows the results proves that counter pressure massage given to women giving birth during the 1st stage of the active phase is effective in reducing labor pain.
28.	Effectiveness of Effleurage and Sacral Vertebra Counter Pressure Techniques in Reducing Pain in 1st Stage of Labor/Lina Puspitasari/ 2020	Indonesia	To determine the effectiveness of effleurage and sacral vertebra counter pressure techniques in reducing pain in the first stage of labor	Quasi-experiment with one group without control design • Massage is carried out for 30 minutes alternately • Carried out during the first active phase	The result showed that the effleurage massage and sacral vertebra counter pressure techniques are effective in reducing labor pain
29.	The Effect of Back Massage on Pain Intensity in the 1st Stage of Normal Labor Latent Phase by Increasing Endorphin Levels/Yeni Aryani, Masrul, Lisma Evanery/2018	Indonesia	To determine the effect of back massage on pain intensity during the first stage of the latent phase of normal labor through increasing endorphin levels	Experimental with posttest only control group design • Massage is carried out for 30 minutes • Carried out during the first stage of the latent phase	It shows that mothers who are massaged have lower pain intensity than those who are not massaged. So, it is proven that there is a correlation between endorphin levels and a decrease in pain intensity.
30.	Effect of Endorphin Massage Technique Towards The Decrease of Pain At The First Childbirth in BPM and Cociety Health Center Palembang/Adys Azelea, Elita Vasra, A. Kadir/2019	Indonesia	To determine the effect of endorphin massage on the first stage of labor	Quasi experimental with pre and post-test design • Massage is carried out during the first stage of the active	Shows that before being given endorphin massage most of the respondents experienced moderate pain and after being given endorphin massage most of the respondents

				phase and during contractions • How long the massage takes is not explained in the journal	experienced pain on a mild scale.
31.	Natural Methods for Relieving Labor Pain and Anxiety during the First Stage among Primigravida Mothers/Nawal Kamal Abd Elkhalek, Safaa Ebrahim Ahmed, Inas Mohamed Mohamed Lotfy, Marwa A. Shahin/2021	Mesir	To evaluate the effect of natural methods in reducing pain and anxiety in the first stage of labor in primigravida mothers	A Quasi Experimental design • Massage is carried out during the first stage of the active phase and during contractions • How long the massage takes is not explained in the journal	Shows that back massage and breathing exercises are effective in reducing labor pain and reducing anxiety during the first stage of labor in primigravida mothers
32	Practice of Counter Pressure and Birth ball Exercise Combination to Increase β-Endorphin Hormone Level in Labor Pain/Novita Sari, Runjati, Diyah Fatmasari, Tri Ismu Pujiyanto/2019	Indonesia	To find out whether the combination of counter pressure and birth ball therapy has an effect on increasing β-endorphin levels.	A Quasi Experiment with a random cluster design pretest and posttest control group • Massage and birth are done 2 times in 30 minutes. • Performed in the first stage of labor	Shows that in the treatment group there was an increase in endorphin hormones after being given a combination of counter pressure and birth ball therapy.

DISCUSSION

1. Effect of endorphin massage on the release of endorphin hormones and reducing labor pain

Pain is an unpleasant sensory and emotional experience resulting from actual or potential tissue damage. Labor pain occurs due to physiological changes in the body, namely uterine contractions, stretching of the cervix, and lowering of the fetal head (Çevik, 2019). The resulting pain impulses are transmitted to the spinal cord by small unmyelinated afferent C fibers, which run with sympathetic fibers through the pelvic plexus to the middle hypogastric nerve then spread to the superior hypogastric to the lumbar sympathetic nerve. Pain fibers from the sympathetic chain enter the dorsal horn associated with spinal nerves T10 to L1 and pass through the posterior nerve roots to synapses in the dorsal horn of the spinal cord (Wanyenze et al., 2022).

Meanwhile, somatic pain occurs near the early second stage of labor; the pain is localized to the vagina, rectum, and perineum. Somatic pain radiates to adjacent dermatomes T10 and L1 (Faadhilah & Y, 2022; Magoga et al., 2019). All generated nerve impulses (visceral and somatic) travel to the dorsal horn cells, which are then processed and transmitted to the brain via the spinothalamic tract. This transmission accounts for

the emotional and autonomic responses associated with pain. The negative consequences of pain felt during labor will encourage many women to refuse normal delivery and the highest rate of cesarean delivery without medical indications (Hazma et al., 2022).

Non-pharmacological therapy continues to be developed in the world of obstetrics with the aim of providing comfort during the birthing process (Çalik et al., 2018). One of the most common and widely used methods of treatment is endorphin massage and counter pressure. Endorphin massage is a light touch or massage therapy that aims to stimulate the production of endorphin hormones in the body. This hormone can help relieve pain and contribute to maternal euphoria during labor.

Research conducted by Aryani shows that the group of mothers who received massage showed that the intensity of labor pain in the first stage of the latent phase was lower than the group who did not receive massage; this difference was 29.62 points. Then, in the group that was massaged, endorphin hormone levels were higher than in the group that was not massaged; the difference was 142.82 pcg/ml. So, it can be stated that there is a correlation between endorphin levels and pain intensity. In this study, it was proven that the higher the endorphin levels, the less intense the pain felt by the mother in labor.

This research is supported by research conducted by Rosmiarti in the research, it was said that a back massage done for 30 minutes can stimulate the release of endorphins and block pain messages. Of the 31 respondents, before the massage was carried out, more experienced severe pain five people (48,4%), five people had moderate pain (48,4%), and one person had very severe pain (3,2%). After massage five people (16%) experienced moderate pain, five people (16%) experienced mild pain, and four people (13%) experienced severe pain. Research shows that there is a reduction in pain after massage.

2. Effect of counter pressure on the release of endorphin hormones and reducing labor pain

Counterpressure is a massage with strong pressure on the source of back pain or the sacrum by placing the heel of the hand or the flat part regularly. This pressure can be applied with straight movements or small circles (Hajiamini et al., 2012). This massage technique is very effective in eliminating the pain of uterine contractions that radiate to the abdomen, back, legs, and hands. This counter-pressure technique is carried out in the lumbar area, where the sensory nerves of the uterus and cervix run together with the sympathetic nerves 10, 11, and 12 to lumbar 1. In this way, pain impulses can be blocked by stimulating the large-diameter nerves. which causes the gate control to close so that painful stimuli cannot be transmitted to the cerebral cortex (Abatabaeichehr & Mortazavi, 2020; Curzik & Jokic-Begic, 2011).

According to research by Sari, it was found that 40 respondents showed an increase in beta-endorphin hormone levels after the combination of counter pressure and birth ball therapy, which showed that the average difference in beta-endorphin hormone levels in the treatment group was 32.90 ng/mL while in the control group it was -17.26 ng/ml. It can be concluded that the application of a combination of counter pressure and a birth ball is effective in increasing beta-endorphin hormone levels during childbirth. This can happen because the presence of counter-pressure massage and birth ball can provide pleasant sensory stimulation which can stimulate the release of beta-endorphin which can inhibit pain and anxiety during childbirth.

The research is supported by research conducted by Cevik et al. (Çevik, 2019), sacral massage given to mothers in labor can reduce pain, because massage can reduce the secretion of adrenaline and noradrenaline and increase the release of endorphins and oxytocin, thereby reducing the duration of labor by increasing uterine contractions. In this

study, it was proven that at each stage of labor, the Visual Analogue Scale (VAS) points were found to be much lower in the experimental group that in the control group.

3. Effectiveness of Endorphin Massage, Counter Pressure and Other Non-pharmacological Therapies

Endorphin massage and counter pressure are done simultaneously or combined with other non-pharmacological therapies, they can both provide the benefits of reducing labor pain and reducing anxiety in women giving birth. Based on the result of research conducted by Karuniawati et al. (Karuniawati, 2019), out of a total of 48 respondents before the intervention pain, the pain scale was >6, but after interventions, there was a significant decrease in the pain scale from 85.7% to 14.3% of the total respondents. The results of this study indicate that there is no difference in effectiveness between endorphin massage and counter pressure. This research is supported by research conducted by Dewie et al. (Dewie & Kaparang, 2020) of the 30 respondents before the deep back massage was given, the pain scale was at 8 and 9, whereas after being given the deep back massage, the pain scale fell to 4, 6, 8. Then, for respondents who were given endorphin massage, before the intervention the pain scale was dominant at 8, after the intervention, pain scale was dominant at 6. From the results of the analysis, it was found that there was no difference in the effectiveness of deep back massage and endorphin massage.

Based on the results of the article analysis, it is known that endorphin massage and counter pressure are both effective in reducing labor pain, whereas if endorphin massage or counter pressure is combined with other non-pharmacological therapies will have a positive effect. In particular, the birth process can stimulate the release of endorphins more quickly, so that the intensity of pain and anxiety can be reduced.

4. Benefits of endorphin massage and counter pressure

Beside reducing labor pain, endorphin massage and counter pressure will also increase the mother's comfort during the birth process, because the mother will feel cared for by health workers, her husband and family (Ranjbaran et al., 2017). Anxiety during labor pain is also something that is often felt by mothers in labor which can increase noradrenaline, which has an impact on the well-being of the fetus. By providing endorphin massage and counter pressure, it can stimulate the release of endorphin hormones, which have the effect of lowering the heart rate and controlling feelings, so that the mother is better prepared to face childbirth (Bharti, 2021). Endorphin massage and counter pressure , apart from stimulating the release of endorphins, can also stimulate and increase the oxytocin hormone, which is useful for uterine contractions and cervical opening, thereby causing the first stage of the active phase to be shorter (Bonapace, J., Gagne, G. P., Chaillet, N., Gagnon, R., Hebert, E., & BUckley, 2018).

CONCLUSION

Based on the discussion from this literature study, it can be concluded that carrying out endorphin massage and counter pressure has greater intervention can stimulate endorphin hormone for reducing pain labor. Meanwhile, there is no difference in effectiveness between endorphin massage and counter pressure to reduce labor pain, whether not combined or combined with other non-pharmacological therapies. This proves that endorphin massage and counter pressure are both methods that can be used and useful during the birthing process. From the results of literature studies, it is proven that this non-pharmacological therapy is able to provide the benefits of reducing labor pain, providing comfort to mothers giving birth, reducing anxiety and speeding up the labor process with the presence of the hormone oxytocin.

ACKNOWLEDGMENTS

Thank you to the Faculty of Medicine, Andalas University, the supervisory lectures and academic staff who have support in writing this article.

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