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Original Research

Differences in pain intensity of mothers during labor with endorphin massage techniques

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Abstract:
Labor pain is a common yet significantly discomforting experience for women, especially during the first stage of labor. Based on field observations, most patients choose cesarean section due to their inability to endure labor pain. Out of approximately 10 patients, around 5 to 6 request a cesarean delivery, with the majority being primigravida mothers. This phenomenon indicates that the inability to manage labor pain, particularly among women giving birth for the first time, is one of the contributing factors to the increasing rate of cesarean deliveries. Furthermore, if labor pain is not properly managed, it can cause physical and emotional stress in the mother that interferes with her ability to push, breathe, and progress during labor, increases sympathetic responses and the risk of psychological trauma, reduces oxygen supply to the fetus which may lead to fetal distress, asphyxia, and other complications, as well as prolongs labor due to ineffective contractions, while also raising the risk of medical interventions and postpartum hemorrhage. This study aimed to determine the difference in pain intensity among mothers in the first stage of labor before and after the application of the Endorphin Massage technique. A quantitative research design was used, employing a pre-experimental method with a one-group pretest-posttest design. The sample consisted of 20 respondents selected through purposive sampling. The research instruments included the Standard Operating Procedure (SOP) for Endorphin Massage and a pain measurement sheet using the Numeric Rating Scale (NRS). The research results show a decrease in pain intensity, as indicated by a reduction in the incidence of pain from 70% of respondents experiencing moderate pain before the intervention to 60% of respondents after the intervention. The Paired Samples Test revealed a t-value of 17.085 with a significance level of 0.0001 ($p < 0.05$), indicating a statistically significant difference in pain intensity before and after the Endorphin Massage. The mean difference of 2.189 also demonstrated a substantial reduction in pain intensity following the intervention. These findings support existing theories that Endorphin Massage can stimulate the body's natural endorphin release, which acts as a natural analgesic. Therefore, this technique can be considered an effective alternative for labor pain management.

Keywords:
labor pain, endorphin massage, first stage of labor, pain management, numeric rating scale

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INTRODUCTION

Labor is a physiological process that involves complex physical and psychological changes in the mother. During labor, the body undergoes a series of physiological adaptations, including uterine contractions, cervical dilatation, and stretching of the birth canal tissues (Cunningham et al., 2022). These changes often trigger pain responses of varying intensity, especially in the first stage of labor (latent and active phases), where pain results from myometrial ischemia, pressure on pelvic nerves, and emotional stress (Simkin & Klein, 2020). Labor pain can affect maternal comfort, increase stress, and even slow down the labor process (Smith et al., 2021). Without proper management, this pain can cause excessive anxiety, which negatively impacts the birth experience (Jones & Brown, 2020). In some cases, high pain intensity makes mothers feel unable to continue vaginal delivery, even asking for cesarean section intervention as a shortcut (Sulistyorini et al., 2021). This is a serious problem because the increase in the number of cesarean sections that are not medically indicated risks causing complications such as postpartum hemorrhage and infection (WHO, 2022). Based on WHO data (2023), around 60% of women giving birth in developing countries experience labor pain with moderate to severe intensity. In Indonesia, the prevalence of unmanaged labor pain reaches 45%, with variations in several regions, including North Kalimantan (Dinas Kesehatan Kaltara, 2022). This suggests the need for more effective interventions to reduce the burden of pain in laboring women. A study by Sari et al. (2021) showed that in North Kalimantan, only 30% of health facilities provide non-pharmacological therapy for labor pain. In fact, techniques such as Endorphin Massage can be an affordable and low-risk alternative (Lee & Park, 2020). The lack of education on non-pharmacological pain management is also a contributing factor to the high level of discomfort during labor (Dinas Kesehatan Kaltara, 2023).

Based on observations in the field, most patients choose cesarean section because they are unable to withstand labor pains. Out of about 10 patients, 5 to 6 patients requested cesarean section, and most of them were primigravida mothers. This phenomenon suggests that the inability to manage labor pain, especially in first-time mothers, is one of the factors driving the increase in cesarean delivery rates. In addition, if labor pain is not managed properly, it can cause physical and emotional stress in the mother that interferes with straining, breathing, and labor progress, increases sympathetic response and the risk of psychological trauma, decreases oxygen supply to the fetus which has the potential to cause fetal distress, asphyxia, and other complications, and prolongs the labor process with ineffective contractions, while increasing the risk of medical intervention and postpartum hemorrhage.

One solution that can be offered is the application of Endorphin Massage, a massage technique that stimulates endorphin production to reduce pain (Taylor et al., 2020). Previous research has proven that this technique is effective in reducing the pain scale in laboring women without side effects (Martinez et al., 2021). With proper training, midwives can apply this method in various health facilities. In addition, socialization of the benefits of Endorphine Massage needs to be increased to health workers and pregnant women (Nguyen et al., 2023). Prenatal education that includes relaxation and massage techniques can help mothers better prepare for labor (Puspitasari et al., 2022).

This aligns with the Indonesian Ministry of Health's initiative to enhance the quality of maternal care. This study is expected to provide empirical evidence on the effectiveness of Endorphine

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Massage in the context of maternal health in North Kalimantan. If proven effective, this technique can be integrated into midwifery service protocols to reduce dependence on pain medication (WHO, 2023).

In clinical practice, the use of analgesics such as mefenamic acid and diclofenac sodium is also common, especially in mothers with vaginal delivery who experience severe pain. To date, it has not been found that pain management methods based on increasing endorphins (such as massage techniques, nipple stimulation, aroma therapy, or supportive touch) have been systematically applied in hospitals. In fact, these methods are known to have the potential to naturally increase the mother's pain threshold and support smooth labor.

Based on this condition, Endorphin Massage is proposed as an alternative because it provides direct tactile stimulation that blocks pain through gate control mechanisms, does not require complex coordination such as breathing techniques, and is more in line with local cultures that are familiar with touch therapy.

This study aims to measure the difference in the intensity of labor pain in the first stage before and after the administration of Endorphin Massage as an effective and safe pain management alternative in health facilities, especially in the North Kalimantan area, with the hope of improving the quality of labor services and reducing the number of medically unnecessary cesarean sections.

METHOD

This study used a pre-experimental design with a one-group pretest-posttest approach. The research was conducted at UPTD RSD dr. H. Soemarno Sosroatmodjo, Tanjung Selor, North Kalimantan, from July 15 to July 28, 2025. The population consisted of all mothers in labor during the active phase of labor. A sample of 20 respondents was selected using a purposive sampling technique, with the following inclusion criteria: laboring mothers in active phase I, a live fetus, no indication of fetal distress, and a willingness to participate as respondents. Exclusion criteria included mothers with obstetric complications or spinal abnormalities.

The research instrument used a Numeric Rating Scale (NRS) observation sheet to measure pain intensity, with a score range of 0-10. Intervention in the form of endorphin massage was carried out according to SOP by trained midwives for ± 15 minutes on the upper back and neck area. Pain measurement was performed twice: before the intervention (pre-test) and after the intervention (post-test). Data were analyzed using a Paired Sample t-test with a significance level of 0.05.

RESULT

Based on the results of research conducted with 20 active-phase I laboring mothers, the following data were obtained.

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Table 1. Frequency of Respondents' Age

Age	Frequency	Percentage
Young reproductive age (≤19 years)	4	20
Healthy reproductive age (20 - 35 years)	14	70
Old reproductive age (≥36 years)	2	10
Total	20	100

Table 2. Frequency of Pregnancy of Respondents

Pregnancy	Frequency	Percentage
Primipara	8	40
Multipara	11	55
Grande multipara	1	5
Total	20	100

Table 3. Frequency of Respondents' Education Level

Education	Frequency	Percentage
Primary	7	35
Secondary	7	35
Higher	6	30
Total	20	100

Table 4. Frequency of occupation of respondents

Occupation	Frequency	Percentage
Housewife	16	80,0
Civil servant	2	10,0
Private employee	2	10,0
Total	20	100

Table 5. Identification of Pain in Mothers in Childbirth Period I: Before and after Endorphin Massage Technique

Pain Intensity	Before Endorphin Massage		After Endorphin Massage	
	Frequency	Percentage	Frequency	Percentage
Mild Pain (0 – 3)	0	0	7	35
Moderate Pain (4 – 6)	14	70	12	60
Severe Pain (7 – 10)	6	30	1	5
Total	20	100	20	100

Table 6. Test Analysis of Differences in Pain Intensity in Mothers in Labor Phase I Before and After Performing Endorphin Massage Techniques

		Paired Differences	t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference Upper			
Pair 1	Pre-pain - post-pain	2.189	17.085	19	0.0001

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DISCUSSION

From the results of Table 1, it was found that most of the respondents at UPTD RSD dr. H. Soemarno Sosroatmodjo, Tanjung Selor, Bulungan Regency, North Kalimantan, had a healthy reproductive age of 20–35 years with 14 respondents (70%). Healthy reproductive age is generally considered the most optimal age range for women to undergo the process of pregnancy and childbirth, because in this age range the risk of obstetric complications is lower and the ability of physiological adaptation to pregnancy and childbirth is better. Nevertheless, labor pain during the first stage can still be felt quite intensely because it is influenced by various factors other than age, such as pain tolerance threshold, previous childbirth experience, anxiety, and mental readiness.

Meanwhile, there were 4 respondents (20%) belonging to the young reproductive age group (≤ 19 years old). Pregnancy at this age is categorized as high risk because the reproductive organs are not yet fully mature. Pregnant women at a young age are also more at risk of complications. In addition, they tend to have higher levels of anxiety and pain perception during labor due to inexperience.

Among the respondents in the older reproductive group (≥ 36 years), there were 2 (10%). Pregnancy at this age usually increases the risk of complications of pregnancy and childbirth. Additionally, decreased tissue elasticity can also impact the smoothness of the labor process. However, previous experience of pregnancy and childbirth can help to be more emotionally prepared in the face of labor. Therefore, although age is not the sole determinant of labor pain, the age range still plays a significant role in influencing individual perceptions and responses to labor pain.

According to Handayani et al. (2019), maternal age is one of the factors that influence pain perception, where mothers of a younger age tend to experience higher levels of anxiety and tension, making them more vulnerable to feeling greater pain.

From the results of Table 2, it was found that most of the respondents at UPTD RSD dr. H. Soemarno Sosroatmodjo, Tanjung Selor, Bulungan Regency, North Kalimantan, were multigravida, namely women who were undergoing their 2nd to 4th pregnancy, as many as 11 respondents (55%). This indicates that most of the study participants already had experience in dealing with previous pregnancies and childbirth. This condition can have an impact on psychological and physical readiness during pregnancy and childbirth, because previous experience usually helps recognize signs of pregnancy and childbirth and reduce anxiety (Mumtaz et al., 2017). Additionally, 8 respondents (40%) were primigravida, meaning they were mothers undergoing their first pregnancy. The participation of this group is important because, in general, primigravida mothers tend to have higher levels of anxiety and pain compared to mothers who have previous labor experience. Meanwhile, 1 respondent (5%) was categorized as grandemulti, that is, mothers with their fifth pregnancy or more. Although small in number, this group remains relevant because grand multiparas have their own unique obstetric risks and distinct pain experiences.

Parity status or number of previous births has a close relationship with the perception and intensity of labor pain. Primiparous mothers, who are experiencing labor for the first time, generally feel stronger pain because they have no previous experience, and tend to experience higher tension, fear, and anxiety. This is reinforced by the research of Lestari and Wahyuni (2020) in the Journal of Midwifery and Nursing, which states that primiparous mothers are more at risk of experiencing

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severe pain during stage I than multiparous mothers because the process of opening the birth canal tends to be longer, and the pelvic muscles have never experienced stretching.

Meanwhile, in multiparous mothers, the labor process generally progresses more quickly, and the perception of pain is relatively lower because the body has undergone physiological adaptations from previous childbirths. However, in grand multiparous mothers, despite previous labor experience, the risk of obstetric complications increases, which may trigger more severe labor pain, depending on the current pregnancy condition. Therefore, pregnancy status or parity is one of the important factors in determining the intensity of pain felt by the mother during the first stage of labor.

From the results of Table 3, it is found that almost half of the respondents at UPTD RSD dr. H. Soemarno Sosroatmodjo, Tanjung Selor, Bulungan Regency, North Kalimantan, have the same level of primary and secondary education, namely 7 respondents each (35%). Meanwhile, those with higher education were slightly lower at 6 respondents (30%). This indicates that the 20 respondents have varied educational backgrounds, with a majority holding primary and secondary education levels. This difference in education level needs attention because education plays an important role in shaping the mother's understanding and attitude towards the labor process, including in accepting interventions such as endorphine massage. Mothers with higher education tend to have a more open understanding and are more likely to easily accept non-pharmacological methods (Sari & Wijayanti, 2021). Conversely, mothers with primary or secondary educational backgrounds may require a different educational approach so that interventions can be accepted and optimally implemented (Rahmawati & Prasetyo, 2020).

From the results of Table 4, it was found that most of the respondents at UPTD RSD dr. H. Soemarno Sosroatmodjo, Tanjung Selor, Bulungan Regency, North Kalimantan had jobs as housewives as many as 16 respondents (80%). This illustrates that most laboring mothers work as housewives. The existence of housewives can also affect aspects of mental readiness and how to manage pain during the labor process. Maternal occupation can play a role in the management of labor pain because it is related to the level of physical activity, the level of exhaustion, and stress before labor. Previous studies have shown that maternal employment variables do not always have a significant direct relationship with the level of labor pain, but employment factors can contribute to the physical and psychological condition of the mother before and during labor, which ultimately affects the experience of labor pain (Digilib Unisayogya, 2023). In addition, the effectiveness of endorphin massage interventions or other nonpharmacological methods in managing pain can be influenced by readiness and conditions, which are closely related to work and fatigue factors (Lestari et al., 2022).

Based on Cross Table 5, it is known that there are changes in the level of pain in mothers in labor in the first stage before and after the Endorphin Massage technique at UPTD RSD dr. H. Soemarno Sosroatmodjo, Tanjung Selor, Bulungan Regency, North Kalimantan. Before the intervention, most mothers experienced moderate pain (70%) and severe pain (30%). This data shows that most mothers experience a fairly high level of pain before being given the intervention, so an action is needed to help reduce the intensity of pain during the labor process.

After being given the Endorphine Massage intervention, most mothers experienced moderate pain, as many as 12 people (60%), 7 people (35%) experienced mild pain, and only 1 person (5%) still experienced severe pain. These results indicate an improvement in pain levels after treatment, with a significant decrease in the proportion of mothers experiencing severe pain and an increase in

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the proportion of mothers experiencing mild pain. This suggests that Endorphin Massage is effective in reducing the intensity of pain in mothers during the active phase of labor.

Labor pain is an uncomfortable sensation felt by the mother during the birthing process, especially during uterine contractions and cervical dilatation. This pain is subjective, and its intensity can vary depending on the pain threshold, the mother's physical and psychological condition, the position of the fetus, and the length of the labor process. Physiologically, this pain is triggered by nerve stimulation resulting from uterine muscle contractions and pressure on surrounding organs, such as the bladder, rectum, and pelvic tissue (Cunningham et al., 2022).

In addition to physical factors, psychological aspects also influence the perception of labor pain. Tension, fear, and anxiety can increase the intensity of perceived pain, whereas emotional support, relaxation techniques, and understanding of the labor process can help mothers reduce pain. Therefore, a holistic approach is essential in labor pain management, including both physical and psychological interventions (Simkin & Klein, 2020).

Labor pain management can be achieved through both pharmacological and non-pharmacological methods. Pharmacological methods include the use of analgesics such as epidurals, while non-pharmacological methods involve techniques such as controlled breathing, massage, aromatherapy, music therapy, and partner or doula support. The application of non-pharmacological techniques not only reduces pain but also increases maternal satisfaction with her labor experience (Smith et al., 2021).

It is essential for healthcare workers, particularly midwives and nurses, to understand and appreciate each mother's unique pain experience. Prenatal education on pain management, training in relaxation techniques, and providing emotional support during labor can be effective strategies in helping mothers deal with pain. With the right approach, the labor process can be a more positive, safe, and less traumatic experience (Jones & Brown, 2020).

The researcher argues that these results show that most mothers who undergo labor in the first stage experience pain in the moderate to severe category. This suggests that the physiological process of labor, particularly in the early phase, places considerable physical and emotional stress on the mother. The pain experienced can stem from uterine contractions, cervical stretching, and fetal pressure on surrounding structures. This condition, if not managed properly, has the potential to cause stress, fatigue, and even prolong the labor process.

Therefore, appropriate and measurable pain management strategies are needed to help mothers face the labor process more comfortably and effectively. Supportive, educative approaches, as well as interventions that are safe for the mother and fetus, are expected to reduce pain intensity and increase the mother's positive experience in childbirth. These findings underscore the crucial role of health workers in providing support and effective pain management from the early stages of labor.

Endorphin massage is one of the non-pharmacological methods to reduce pain intensity, including labor pain. This technique involves massaging specific areas of the pregnant woman's body, such as the lower back, shoulders, and neck, using gentle pressure that stimulates the release of endorphins. Endorphins are natural neurotransmitters in the body that function as analgesics, or pain relievers, allowing the body to respond to pain more calmly and comfortably (Simkin & Klein, 2020).

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After an endorphin massage, most mothers reported a decrease in pain intensity, especially during the early phase of labor. This decrease occurs because increased levels of endorphins in the blood can suppress the brain's perception of pain. In addition, massage performed rhythmically and attentively provides a relaxing effect, which helps reduce muscle tension and anxiety, two factors known to exacerbate labor pain (Sulistyorini et al., 2021).

The effectiveness of endorphin massage is also related to the emotional support the mother receives during the massage. Warm touch, the presence of a partner or companion, and a calm atmosphere also reinforce the positive effects of this technique. The use of endorphin massage has been shown not only to reduce pain but also to increase maternal satisfaction with the overall birth experience, as they feel more valued and cared for as a whole (Black et al., 2021).

Thus, endorphin massage is one of the intervention options that is safe, easy to do, and does not cause side effects. Midwives or health workers can integrate this technique as part of labor care, especially for mothers who choose natural methods of managing pain. This intervention not only helps reduce pain intensity but also supports a more comfortable, relaxed, and meaningful labor process for the mother (Wulandari et al., 2021).

The researcher argues that the results of this study show the effectiveness of the Endorphin Massage technique in reducing the intensity of pain in mothers in labor during the first stage. The decrease in the number of mothers who experienced severe pain, from 30.0% to 5.0%, and the increase in the number of mothers who felt mild pain, to 35.0%, indicate that this technique has a real positive impact on pain perception. This intervention not only reduces pain physiologically by stimulating endorphins but also psychologically by creating a sense of calm and comfort during labor.

Furthermore, the researcher considers that the application of the Endorphin Massage technique has the potential to be integrated into midwifery care as a non-pharmacological method that is safe, cheap, and easy to do. This technique does not require special equipment and can be administered by health workers or birth attendants who have received basic training. Therefore, the results of this study provide a scientific basis for recommending Endorphin Massage as one of the effective pain management strategies for improving the quality of labor services, while strengthening the humanistic approach in midwifery practice.

In this study, at the initial stage, there were 6 respondents (30%) who experienced severe pain, and after being given an endorphin massage intervention, 1 respondent (5%) was still in the severe pain category. While the other 5 mothers showed a decrease in pain intensity to a moderate level. This shows that endorphin massage is effective for most respondents, but not always able to eliminate severe pain completely in all individuals, and may require additional approaches or other complementary therapies that can be combined with endorphin massage to manage pain.

Various factors can cause a mother to continue to experience severe pain despite the endorphin massage intervention. First, the pain tolerance of everyone is different; mothers who still experience severe pain may have a lower pain threshold or higher pain sensitivity to labor contractions, making endorphin massage less effective in relieving their pain. Second, psychological conditions such as excessive anxiety, fear, stress, or a history of past trauma can amplify pain perception because stress can inhibit the release of natural endorphins in the body, thus reducing the effectiveness of the massage (Sembiring, 2023). Third, parity and age also play a role;

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primigravida mothers (first-time mothers) usually experience more intense labor pain, and adolescence and old age also increase the pain perception.

Based on Table 6 of the Paired Samples Test results, the t value is 17.085 with a degree of freedom (df) of 19 and a significance value (Sig. 2-tailed) of 0.0001. This significance value is smaller than 0.05 ($p < 0.05$), indicating a statistically significant difference between pain intensity in mothers in labor phase I before and after the Endorphin Massage technique. The mean difference value of 2.189 also indicates a considerable decrease in pain intensity after the intervention is given. Thus, the Endorphin Massage technique proved to be effective in reducing pain intensity in laboring mothers in the first stage of labor at UPTD RSD dr. H. Soemarno Sosroatmodjo, Tanjung Selor, Bulungan Regency, North Kalimantan. These results support the use of non-pharmacological therapy as a safe and beneficial alternative in labor pain management.

Based on Cross Table 5 regarding the identification of pain levels in mothers in labor during stage I before and after the Endorphin Massage technique at UPTD RSD dr. H. Soemarno Sosroatmodjo, Tanjung Selor, Bulungan Regency, North Kalimantan, it is known that before treatment, most mothers experienced moderate pain, namely 14 respondents (70%), while 6 other respondents (30%) experienced severe pain. There were no mothers who experienced mild pain before treatment. However, after the Endorphine Massage technique, there was a significant decrease in pain levels. A total of 7 respondents (35%) experienced mild pain, 12 respondents (60%) were still in the moderate pain category, and only 1 respondent (5%) still experienced severe pain. This data shows that the Endorphin Massage technique has effectiveness in reducing the intensity of pain in first-time laboring mothers, which is characterized by a shift in pain levels from severe to moderate and mild categories.

The results of this study are in line with the findings (Windayanti et.al., 2023), which show that prenatal yoga effectively reduces the anxiety level of pregnant women before childbirth. Prenatal yoga involves relaxation, breathing, and muscle control techniques that can activate the parasympathetic nervous system, reduce stress hormones, and increase a sense of comfort. This mechanism is similar to endorphin massage that stimulates the release of endorphins, neurotransmitters that play a role in reducing pain perception. Decreased anxiety has been shown to contribute to decreased pain intensity during labor stage I, so both methods are equally effective as non-pharmacological interventions for labor pain management.

Stage I labor is the initial stage of labor, characterized by uterine contractions and cervical opening up to 10 cm. In this phase, mothers generally experience quite strong pain due to intense and repeated uterine contractions. The pain originates from the process of cervical dilatation and the pressure exerted on surrounding tissues. Before interventions such as endorphine massage, the intensity of pain in mothers is usually at a moderate to severe level, depending on the pain threshold and psychological condition of each individual (Robinson et al., 2022).

After the endorphin massage technique, there was a significant decrease in the intensity of pain felt by the mother. Slow and consistent massage on certain points, such as the lower back and shoulders, can stimulate the production of endorphins, which function as the body's natural analgesic. Endorphins suppress the perception of pain in the brain, allowing contractions that were previously very painful to feel lighter and more easily tolerated by the mother. This technique also helps the body to become more relaxed, increase blood flow, and reduce muscle tension (Martinez et al., 2021).

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The difference in pain intensity before and after the intervention shows that endorphin massage is an effective method in managing labor pain. This is supported by various studies, which indicate that touch and massage therapy can enhance a mother's emotional and physiological responses to pain. Most mothers report feeling calmer, more confident, and better prepared to face the labor process after receiving an endorphin massage, indicating that this technique offers dual benefits: physical and psychological (Puspitasari et al., 2022).

By examining the results of differences in pain intensity before and after endorphin massage, healthcare workers can consider this technique as part of midwifery care, especially in the early stages of labor. The use of this technique is also considered safe, non-invasive, and can be performed by trained assistants, making it very suitable for use in efforts to improve the comfort and quality of the natural birth experience (Ziegler et al., 2022).

The researcher argues that the results of the data analysis obtained show a significant impact of the intervention on reducing the intensity of labor pain in mothers in the first stage. The results of the Paired Samples Test statistical test showed a t-value of 17.085 with a significance value of 0.0001 ($p < 0.05$), indicating a statistically significant difference between the pain levels before and after the intervention. The mean difference of 2.189 indicates that the reduction in pain is not only statistically significant but also clinically considerable. This suggests that the intervention provided has a significant impact on reducing the pain sensation experienced by the mother during the first stage of labor.

Based on the results of the study, it was found that before the Endorphin Massage technique was performed, the majority of respondents were in the moderate pain category (score 4-6) as many as 14 people (70%), followed by severe pain (score 7-10) as many as 6 people (30%), and there were no respondents who experienced mild pain (score 0-3). After the intervention, there was a significant change in pain intensity. Respondents with mild pain increased to 7 people (35%), moderate pain decreased slightly to 12 people (60%), while severe pain decreased dramatically to only 1 person (5%). These results indicate that the Endorphin Massage technique is effective in reducing the intensity of pain in mothers during the labor phase, where most respondents experience a shift in pain levels to a lighter category after receiving the intervention.

It is known that after the Endorphin Massage technique, most respondents experienced a decrease in pain intensity. However, there was still 1 respondent (5%) who remained in the severe pain category (score 7-10). This can be caused by various factors, such as low individual pain thresholds, high levels of anxiety, or the presence of labor complications that trigger increased pain perception. These conditions indicate that although the Endorphin Massage technique is effective for most mothers in first-stage labor, in certain cases, additional interventions, both pharmacological and non-pharmacological, may be required to optimize pain management.

These changes indicate that the intervention was able to reduce pain intensity in almost all respondents. No respondents experienced an increase in pain or stayed in the same condition without change. Overall, the final results showed that the majority of respondents (60.0%) fell into the moderate pain category, 35.0% into the mild pain category, and only 5.0% still experienced severe pain. This means that most mothers experienced improvements in terms of pain perception after the intervention was provided.

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This finding has important implications for midwifery practice, where non-pharmacological interventions that are simple, safe, and do not require special tools have been shown to have significant results in labor pain management. Especially in healthcare facilities that may have limited resources, this approach can be an alternative option to help mothers navigate the labor process more calmly and comfortably. With this scientific evidence, it is hoped that healthcare workers can more actively incorporate non-pharmacological approaches into holistic and humanistic services for assisting laboring mothers.

CONCLUSION

There is a significant difference in the intensity of labor pain during the first stage before and after endorphin massage, where this technique has been proven effective in significantly reducing pain intensity, with an average decrease in pain score of 2.19 points and a p-value of 0.0001 (<0.05). Therefore, endorphin massage can be used as an effective nonpharmacological pain management alternative in health facilities and should be recommended as part of normal labor care.

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